Monthly Reports, Data Support, for 1990 and 1991

❖ Reports for all 24 months are here.

❖ The NCEP/NCAR work on a long reanalysis gets started.

❖ Total of 82 pages, ready Mar 13, 2003, RJ0276.

Roy Jenne
Mar 13, 2003
Data Support Monthly Reports for 1990 and 1991

Roy Jenne
Mar 15, 2003

All of the reports are here for these two years (none missing). There are 24 monthly reports here and 80 pages plus 2 pages in front.

1. Jan 1990  ................................................................. p 3
2. Jan 1990  Assessments (international agriculture)............... p 5
3. Feb 1990  Assessments (rivers project) ............................... p 7
4. Feb 1990  List of popular datasets (requests in 5 years)........ p 8
5. Mar 1990  TRW project to win grant for NASA data .............. p 9
6. Mar 1990  Walt Roberts passed away ................................. p 10
7. Mar 1990  Too complex a data system ............................... p 10
8. Apr 1990  Our NCAR model committee .............................. p 14
9. Apr 1990  Information on forecast center in Brazil ............. p 14
10. Aug 1990 TD13 (sfc synop) and TD54 arrive from USAF, Asheville.. p 29
11. Sep 1990 NOAA library committee ................................ p 32
12. Jan 1991 Margaret Drake got very sick in Mexico and passed away
    before she could get back. Very sad. ................................ P 45
    - NASA turned it down; lucky
15. May 1991 How is NCAR viewed? .................................... P 58
17. Sep 1991 Three new staff start (Joey Comeaux, Bob Dattore, and
    Chi-Fan Shih) .......................................................... p 69
18. Oct 1991 Cost of EOSDIS (not this bad) ........................... p 73
    - Bring sanity to global change
19. Dec 1991 Size of Goddard DAAC (panel meeting) ................ p 79
DATA SUPPORT SECTION

Monthly Status Report
January 1990

Dataset Updates, Additions, and Requests (all)

The NMC Global grids and NH grids have been updated through 1989. In addition the surface subset and stratospheric grids are available through 1989. The Navy global band grids have been processed and the Navy surface subset grids have been processed through December 1989 (Walters). Several NMC grid subsets have been updated or created from scratch. These will be included in the archive for general use and sent to the University of Washington for use in the CD-ROM project. After considerable cleanup efforts, the 1988 World Monthly Surface Climatology update has been completed. The CAC global summary-of-day station dataset has been separated such that the monthly and snow subsets are more easily accessible (Spangler). A new set of Nimbus 7 satellite data from Garrett Campbell and a set of EPOCS drifting buoy data (Tropical Pacific 1979-1984) were added to the archive (Worley).

Thirty-eight new requests for data were received in January. One request was handled via communication links, three involved floppy disks, and the remainder were sent on magnetic tape. Documentation and supporting programs were often distributed via floppy disks, e-mail, or ftp. The requests ranged from one for Canada which involved selecting hourly observation data and time series raobs from 45 input volumes and creating 14 output tapes to one from a local high school student for a small amount of printed upper air data to support a class assignment.

Incoherent Scatter Radar Project (Barnes)

The effort to install the Millstone Hill database software was officially started with a visit by John Holt during the first week of January. Millstone Hill has the primary responsibility to install their code on an HAO Sun 4 to which they have a login via Internet. To facilitate this process Roy Barnes coded and checked out routines to read Cray-blocked record formats on the Sun system. The final product has been tested on a 32-bit UNIX machine and an IBM PC, and should easily port to any 16, 32, or 64 bit machine which has Fortran and C compilers.

EPA Project

Special diskettes were prepared to support an EPA meeting of agriculture experts from various countries. Codes were written to allow interfacing the climate model outputs with a crop yield model.

Consulting, etc.

The normal load of I/O and data consulting problems were handled by DSS members. One problem involved Cray blocked records written with IBM VBS format with record and block sizes chosen such that the Cray blocks were segmented in rather peculiar ways. Another involved an ACD staff member who needed to digitize information on a PC using an interface with Autocad.
Louise Lawrence digitized a DSS document using her scanner as an experiment to see if the scanner could help get some documentation received from outside sources into a computer readable form. The document included several font sizes and subscripts, but seemed legible and fairly straightforward. The results seemed to indicate that the document could have been key-entered in roughly the same time.

Meetings, Planning

Worley attended a COADS meeting with NOAA staff and a meeting with TRW people on the CME data experiment. Worley and Joseph met with Joel Martelet of WMO about COADS data, CD-ROMs, and other data issues. Several DSS staff were involved in discussions with Jim Thieman of NASA about the NASA data catalog system and how DSS interfaces with it.

Comments by R. Jenne

WMO MEETING FOR BASELINE DATASETS (Asheville): A number of datasets needed to study climate change and climate variability still need a lot of improvement (e.g., monthly station temperature and precip, upper air data. WMO sponsored a meeting in Asheville to work out international recommendations. I attended January 21-24. To get quicker results, I pushed for a pilot project to gather data from the countries represented. This will happen. The countries cover a lot of area: US, Canada, Brazil, UK, USSR, Algeria, Australia. I prepared more text info about data in Brazil, USSR, and Algeria. Brazil has digitized a lot of their data from 1911, but upper-air data is in poor shape.

US-USSR DATA EXCHANGE: The Asheville meeting helped me to follow-up on the exchange, because one of the USSR project leaders was there. It is progressing well. We owe them more ship data; they owe us a rivers list. Other types of data are being shipped back and forth. This was too much for us to do, almost by ourselves, so now we have Asheville, the Ocean data center, USGS, and others involved. I'm the US coordinator.

STORM DATA MEETING, January 24-26: Dennis attended 24 January, Jenne went 25-26. I think Nexrad radar data is one of the main questions; was pleased to make contact with someone (from Oklahoma) who has solid technical knowledge. Work is still needed to sort out the definition of data subsets that people will actually use. They don't have NCAR on the list to obtain the main hourly profiler that 97% of people would want. They do have us scheduled to get huge volumes of data that very few would use. We do need the hourly data and the processed six-minute data (not the raw, huge volume set).

NATIONAL CATALOG: The leader of the project (in NASA) visited the afternoon of January 26. He wanted to know how to have the catalog perceived as a national catalog, not NASA. They will restructure the advisory group some. Neither Dennis nor I could attend the last meeting.

USE OF CLIMATE MODEL DATA: The main projects that we are supporting are:

- Inputs for four climatologists (under EPA grant) to help assess the model output (main meeting, Wash., DC, Dec. 1989).
• An international agricultural assessments project (sponsored by EPA, and US AID) to assess yields under climate change (main meeting, Jan. 1990). Each of 24 countries got three PC disks (1.2 MB) with three variables from three models. Transient data will be sent later.

• An international rivers project (main meeting Feb. 1990).

• An international forest assessment project.

• US-USSR cooperative work on Great Lakes and Caspian Sea.

• A tape went to the USSR about June 1989. It should be updated.

• A tape went to Australia for assessment studies there.

• Model data for various other projects.

IMPLICATIONS OF CLIMATE CHANGE FOR INTERNATIONAL AGRICULTURE WORKSHOP, January 28-February 1: Sponsored by US EPA and US AID. The main purpose was to sponsor crop modeling in many countries for the present climate and for several possible future CO₂ climates. Representatives from 24 countries attended.

About 70% of the time was for hands-on computer use (about 20 PC/ATs were there). People learned the procedures to run the crop models. Daily weather data for a local station (for 30 years) is used together with output from three climate models (for present and double CO₂), (GCM data on disks from NCAR). It seemed to go very well.

For each of four main crops, they will run simulations for six sites, five climate models, with and without irrigation, etc. It is a total of 72 runs for each crop and GCM model. People said they could make 180 runs in two hours on a PC/AT. For a run, they input climate model data and daily observed temperature/precipitation for 30 years.

STRATOSPHERIC DRIFTING BALLOONS: I have given some encouragement, over the past year, to Larry Epply (expert on balloons) to work up a proposal for an observing system. I noted what balloon choices and measurements were needed. He just (January 31) gave me a proposal. The GPS positioning system (involves 17 satellites) would be used to locate the balloons within about 25 meters, in both vertical and horizontal dimensions. The output data would be wind, temperature, elevation, pressure. The cost for 100 operational balloons at any one time would be about $1.55 million per year. The data would:

• Permit a much more accurate analysis of S. Hemisphere winds, heights, and temperature for the 150-100 mb region.

• Help the tropospheric analyses. Together with ocean buoys, it would give a mean temperature between the surface and 150 mb.

• Provide a base-level to use for stratospheric analyses. Thus, LIMS thickness data would be "stacked" on this base level. It would yield in-situ data to compare with LIMS satellite sounder data.

US OBSERVING NETWORKS: NWS has had plans to fully automate the US surface observations. This would eliminate clouds above 12K feet, drop cloud types, and alter precipitation records. I've been involved (since April 1989) in arguing for the needs for climate...
research. Gene Bierly wrote a letter to the National Weather Service in January in which he expressed concerns on this issue.

STRATOSPHERIC ANALYSES: Bruno (works with NASA) called about obtaining better stratospheric winds. They are following fallout particles. Would like the spectral data that is more detailed than the 2.5° grids. However, the data inputs probably don’t warrant higher resolution at those levels.
Comments by R. Jenne

INTERNET: NCDC (Asheville) will be on Internet by about 8 March 1990.

PROFILER DATA: Woody Roberts, NOAA will get me some new data volume info. We should put the real-time hourly data into a rotating buffer (15 to 35-day save). They will do some data checks later, and try to recover hourly data when transmission lines are out. He hopes to have the archive quality data prepared with about a one-month delay.

- Stations are about 250 km apart in the dense net; otherwise 350 - 400 km spacing.

CD-ROM DISCUSSION: Cliff Mass (University of WA) called to tell me that he was rather frustrated with the discussion at the AMS Meeting, about CD-ROMs (organized by Cliff Jacobs), because it didn’t get focused on action.

RIVERS PROJECTS FOR EPA: Plans are to examine various aspects of water quantity, quality, and demand under scenarios of climate change. A workshop (Feb. 1990) helped start these projects. Jenne presented info about the climate models. For the basins:

- Indus river basin. There are four countries in the basin. The study mainly involves Pakistan. (I have special notes about the Indus basin: water amounts, irrigation, salt problems, etc.)

- La Plata river basin. The main rivers are the Parana and Uruguay. There are five countries in the basin; Brazil, Uruguay, and Argentina are the main countries involved. The upstream area in Brazil already has over 50 dams. I have a lot of notes about river and precip data in Brazil.

- MeKong basin.

- Zambezi river. Eight countries are in the basin in SE Africa. The study mostly involves Zimbabwe.

- Senegal river. Four countries in the basin.

- The main startup meeting for the rivers project was held in Boulder, CO, Feb 4 - 7, 1990. About 25 people attended, including about 10 from the five river basins.

DATA PLANS FOR EOS: Prepared info for Dickinson and Rotar for a new round of proposals to NASA.

DATA MANAGEMENT FOR CLIMATE AND GLOBAL CHANGE: NSF is sponsoring a workshop on scientific databases at the University of VA in mid-March. I wrote a four-page "position paper" for the meeting, as requested.

ARCTIC DATA: There was a meeting about Arctic research programs in Boulder, Feb. 26 - 28. Jenne joined a discussion on 27 Feb. about inventories, data management, and CD-ROMs. At some point, we will need to extract several data subsets for polar studies. Some early data for the 1950s have never been prepared, but that problem will have to wait.

Another group contacted me about obtaining data to support their new ice-core drilling project in central Greenland. They hope to get back to ice 200,000 years old. Will measure
isotopes, $\text{CO}_2$ and $\text{CH}_4$ in air bubbles, particles, chemistry, etc.

NUMBER OF REQUESTS FOR SCIENTIFIC DATA: I keep getting questions about preparing estimates of how much selected types of data will be used, and the order of the data most likely to be needed. Most recently, these questions are related to STORM planning. G. Walters prepared a summary of our requests (only where data are sent out, not online use at NCAR). A few items in the top 20 are:

<table>
<thead>
<tr>
<th>Popularity</th>
<th>Requests in Five Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NMC global analyses</td>
</tr>
<tr>
<td>2</td>
<td>Statistics from COADS ships</td>
</tr>
<tr>
<td>3</td>
<td>World upper-air (UA) obs. from NMC</td>
</tr>
<tr>
<td>10</td>
<td>Analyses over N. America</td>
</tr>
<tr>
<td>19</td>
<td>World climatological (UA) grids</td>
</tr>
<tr>
<td>20</td>
<td>World vegetation and soil type</td>
</tr>
</tbody>
</table>

I now have a packet of info about data use at several data centers, including NCAR.

Consider the requests for data at NASA's Space Science Data Center (NSSDC) at Goddard. Each year NSSDC receives about 1300 requests for tapes, 700 requests for computer paper prints, and another 1400 requests for microfilm, pictures, etc. In 1984, the staff at NSSDC was 100 people; in mid-1989, it had built up to 130 - 145 people. The CDC-205 computer support is outside of this group.

DATA IN BRAZIL AND AUSTRALIA: Put a lot of text together about data in Brazil and Australia. A copy has been sent to Brazil, along with a list of subjects I hope to discuss at a meeting there at the end of March.

ADVANCED ARCHIVES FROM NMC and ECMWF:

- ECMWF has the order for a copy of 275 tapes. They say it may take six or eight months to accomplish the work.

- NMC: Parts of the better archive (data from forecast run) started 1 Jan. 1990 and part (diagnostics from analyses and forecast) will start 1 Feb.

BALLOON OBSERVATIONS: Prepared info about this observing platform.

SURFACE SOLAR DATA: Dickinson and visitor need the data for US for early 1980s when US solar network management was disgusting. SERI may be able to help get us data, but they are only getting 50 to 60% of the data from the tapes.
DATA SUPPORT SECTION
Monthly Status Report
March 1990

Dataset Updates, Additions, and Requests (all)

The NMC global grids and global surface subset grids were updated through February 1990 and the NMC surface and upper-air observed station data files were updated through 2 March 1990. A new set of NMC R-30 grid fields was started in March. This set includes analyses and forecasts to 10 days (Walters). The 1989 data was added to the manually digitized radar dataset. The NGM and LFM analyses were updated through January 1990. A new set of GFDL analyses for the FGGE period was started but there were numerous tape problems and the data will be sent again (Joseph). A new dataset of quality controlled buoy data was set up. This set will be used in the COADS update (Worley).

New daily outputs from the GFDL climate model run has been added to the archive. The $1xCO_2$ model outputs for three years have been converted from the Cyber205 internal format to the same format as the monthly mean climate grids (Joseph).

There were 33 new requests for data in March. Three requests were sent on floppy disks, one over communications, and one on EXAbyte tape. Several requests for documentation, programs, and consulting assistance were handled over communications. There were several large requests for ECMWF analyses. The COADS set, climate model set, and World Monthly Surface Climatology set continue to be popular. Through the efforts of Val Shanahan, we were able to answer a request for some old microfilm outputs.

General Archive Activity (all)

Migration of smaller datasets and backup files to the MSS continues.

We began receiving AVHRR satellite images for central US from CU. These are being sent up using IRJE once per day and are available on the MSS.

Incoherent Scatter Radar Project (Barnes)

The archive has been completely moved to the MSS so no tapes are required. An archive update was completed, which involved adding 10 vsns and replacing one. Five of the vsns required editing. Two requests were completed involving 10 input vsns and 6 outputs.

Meetings, Planning

Worley, Joseph, and Jenne were involved in various in-house meetings and meetings with NOAA staff on COADS, TRW people on the EOS projects, and a person from NCDC on CD-ROM plans.
Comments by R. Jenne

DATABASE MEETING IN VA, March 12-13, 1990: At this meeting about scientific databases, sponsored by NSF, there were eight or nine people who knew about the data in various disciplines (astronomy, biology, meteorology, oceanography, etc.). I heard lots of interesting descriptions of the human (and mouse) genome project. About a dozen people from computer science departments had organized the meeting. The discussions were interesting, but even at the end I’m afraid that the CS people have almost no inkling of what happens in large data analysis projects.

One summary presentation was about the concept of a large "Scientific Database System." The view was that all scientific applications are inside of the database! I said that it looked like a big monolithic design. I was almost surprised that even a couple of the Database Computer Scientists tended to agree.

After the meeting I saw a very nice presentation. A person told how a "fast database system" for the UN was very slow. He developed a system to select desired features from several databases, and create a new database in a few minutes, based on 100,000 lines of code, they have. He often gets shot down in reviews, because people do not think it can be done at a low cost. This is consistent; for example, IBM would never vote to establish SUN computers.

FEDERAL COORDINATOR FOR METEOROLOGY CALLED (Glen Garte): Approval for one drug takes ten years —end up with 650 volumes of data and information, 350 pages each. Doctors may go down to the basement to glean necessary info from these files. He is talking to the medical group about the question "Are there lessons from data handling in meteorology that might be useful for this problem?" There are some approaches that they could learn from. Walt Roberts

MEMORIAL: Walt Roberts died Monday, March 12, age 74. Memorial services at NCAR Saturday, March 17 included music, talk by Mary Wolf, talk by Senator Wirth, all nicely handled by John Firor.

WHAT HAPPENED TO THE NASA OZONE HOLE DATA: People told me NASA screened the satellite data to get rid of bad data (3-sigma toss). In the process, they got rid of the ozone hole. This is called "quality control." After other observations found the hole, NASA went back to the original data and then they saw it too.

SATELLITE MICROWAVE DATA: Got more info about the SSMI dataset of microwave data emitted from the surface. Used for sea ice, surface winds, etc. Sent a copy of the notes to the snow and ice center for review.

SATELLITE ALTIMETER DATA: Talked to Zlotnicki (visiting from JPL) about the altimeter info. I think he is the best expert. He says the recent studies of changes in ice cap elevation weren’t as certain as the published paper stated.
OTHER TASKS:

- Drifting Balloons: distributed a few more copies about this promising observing platform.

- Wrote Paper: "Data Availability for Climate Studies." It is a heavy summary (3 pp) on where to find information. Done for Gene Rasmusson, University of Maryland, who will use it in a book. He said it was perfect for what he needs.

- Handled many interactions per day with users about needs for data, info and methods.

COADS: We held a meeting and had other interactions in DSS and ERL to help move this project along.
DATA SUPPORT SECTION
Monthly Status Report
April 1990

Dataset Updates, Additions, and Requests (all)

The NMC gridded global and hemispheric archives were updated through March 1990. The update of NMC observed surface and upper air archives through April 14, 1990 is nearly completed. The sea level and 500 mb Australian time series grid subsets were brought up to date with the current total holdings (Walters). The weekly snow and ice data set was updated and data is now available through 1988. The corrected version of the GFDL FGGE reanalysis was put in the archive and replaces an earlier version with several problems (Joseph). Updates for 1988 were added to the World Monthly Upper Air set and to the global rocketsonde set. June 1989 was added to the CAC global summary-of-day data set (Spangler).

There were 30 new requests for data received during April. The COADS and climate model sets had several requests and the remaining requests were distributed through a large number of different data sets. Most requests were handled via magnetic tapes, three were sent on floppy diskettes, and four were handled via ftp. Some of the ftp requests were quite large and one involved sending 8 10.2 MB files to Woods Hole. The transmission time for each file was 30 minutes.

General Archive Activity (all)

A new inventory program for plotting station data locations on background maps was developed using GKS graphics. Another data summary program was converted to GKS graphics. Several data sets were moved from tape to the MSS. Enhancements were made to the DATAHELP software to allow certain specified files to be accessed by remote users directly from the MSS.

Work continued on improving our understanding and the documentation for the Jones long term temperature set. In late April, we finally gave operations the go ahead to reuse the 3700 cartridges which were used to ship the 1985 - 1988 TOVS data from NOAA. We will soon be getting TOVS data for the first nine months of 1989.

Incoherent Scatter Radar Project (Barnes)

Documentation for the character version of the format description was completed. During this process additional knowledge about the details of troff me macros and tbl was gained which should be useful in work on an overhaul of the User Guide. There was one request for L.S. data which involved reading four archive volumes and writing one output.

Ocean Climate Analysis Project (Worley)

Worley has been programming and testing objective analysis techniques with the eventual goal of developing an improved climate representation for the world oceans.
Comments by R. Jenne

CD-ROM: University of Washington/NCAR — We will soon have 50 copies of this disk here. Cliff Mass and I agreed that the price will be $150. The money will be used to continue the effort.

EXAbyte and DAT DRIVES: R-Squared Company, Denver will sell either of these to NCAR for $2,400 each.

TOVS DATA AT NCAR (Dollars saved): The standard NOAA price to update our TOVS dataset is $92 per tape, five tapes/day. Therefore, the price is $14,000 per month. Part of the problem is that they don't block the data properly, so there is only 40 to 55 MB on a cartridge. An update for January - October 1989 is being shipped to NCAR (we hope - it's been on their dock for three months). This exhausts our data trade rights.

We then will have 11 years of TOVS. The regular purchase price for all this would be $1.69M. Even if NOAA gave us a 30% discount on a volume purchase, the cost would be $1.19M.

So, NCAR got $1.19M worth of data by spending our people and computer time. We also got a very high data recovery rate from the NOAA tapes — about 98 or 99%. NOAA had to use systems as a black box and was only getting 75% recovery.

<table>
<thead>
<tr>
<th>Data</th>
<th>Volume (Gbits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOVS October 1978 - April 1985</td>
<td>2075</td>
</tr>
<tr>
<td>TOVS update -- April 1985 - December 1988</td>
<td>1680</td>
</tr>
</tbody>
</table>

Also, we got lots of GAC data for which I'll figure costs later.

IMPROVE MONTHLY SURFACE DATA (NCDC - DOE - NCAR project: I went to an April 16 - 18 meeting at Oak Ridge on this subject. This dataset is used for information about global temperature trends over land. NCAR was the leader in making this available, but we do not have time to do all the additional work that is needed.

CLIMATE SYSTEMS MODELING PROGRAM: I went to meetings at NCAR on April 11-13. There were university and agency scientists, representatives from other countries, industry representatives, etc. The UCAR hope is that several agencies would put money into a UCAR office that would administer the work — to be done at NCAR and universities. GFDL doesn't want to be involved; they would rather keep getting their money straight from NOAA. A few companies were there. Some companies are users of climate change info. Other companies want to obtain Global Change contracts. I think UCAR hoped to obtain about $20 million/year for this program. TRW said that about $100 - 200 million/year was needed. I wondered how they could be so precise when they didn't show any evidence of knowledge about the subject. Finally, a rough budget, near $40M/year, was hammered out.

Serafin noted that NCAR was set up to handle big projects like this, and asked why we weren't being trusted to handle it. Ghil noted that a better commitment by NCAR management would help. (Ghil, from UCLA, was co-chair in preparing the scientific
program.) Bretherton said that NCAR had origins in meteorology (one of six discipline boxes on the chart), and now has some oceanography and some chemistry, but, can't be trusted to be broad enough. Shukla noted that NCAR would be in a good position to make a proposal to carry out a significant fraction of the work.

Would the US Agencies jointly fund a CSMP program like this? People are skeptical. No one agency would get much credit; nor would they have much program review control. Mike Hall was there (he has the Global Change funds for NOAA), and he remarked privately that he wasn't very thrilled with the idea of the funds passing through another office to get the work done. I note, however, that someone has to worry about both program balance as well as the competence of the work. The UCAR office could help with that.

STATUS OF THE RELATED MODEL WORK AT NCAR: The Pilot Projects are coming along, but without any new support. Some proposals are being sent from NCAR directly to funding agencies. Our NCAR climate modeling committee met on April 24. We feel that accelerated progress in the NCAR modeling should not depend on success of the UCAR CSMP proposal. The committee has begun the design of NCAR's program beyond the Pilot Project. One specific suggestion is to have an early focus on solving parts of the carbon cycle problem (over 2 x 10^9 tonnes of carbon are removed from the atmosphere each year and people don't understand how). This carbon problem still requires the pilot projects, but gives a better focus to the program, and solves (we hope) a very important carbon cycle mystery.

The other CSMP goal of achieving a useful prediction of future regional climate (assuming given estimates of trace gases), still stands as an NCAR goal also.

LATE NEWS (about May 10): Francis Bretherton has accepted the job of heading up the UCAR modeling office. He will still reside in Wisconsin. Bretherton's involvement should improve the chances for the CSMP program. Some of us think that the funding for individual grants would still probably come directly from Agency pots of gold, but that UCAR could play an important role in maintaining program balance and involving the best talents of the community.

NEWS FLASH: Honeywell sale (May 14)

Jerry Wade, Honeywell, just called to say that their $100M/year division is for sale. It has been making $4 or $5M/year profit for the company for a long time, but this is small potatoes for the $4B/year company.

Wade's section is a $20M/year operation with 40 people. It nearly makes a profit. I hope that a good home for the section can be found. Perhaps STK.

NEW FORECAST CENTER IN BRAZIL: Brazil will soon achieve the capability to prepare operational analyses and forecasts, both global and regional. The new forecast organization has been established, called CPTEC. In April 1990, it had a staff of 44 people; the planned staff is 150. The new supercomputer will be installed about July 1991.

A. Four Sections in CPTEC:

- **Jenne attended a meeting (May 1990) in Brazil to help define activities.**
- **About 70 people from Brazil and the US attended.**
1. Research and development of forecast models (about 30 people)
   - This division has the components (1) modeling (2) weather (3) climate (4) high performance computing and visualization operations.

2. Operations, etc.

B. More Information About the Sections

The staffing plans for CPTEC call for about 40 people for computer operations and computer systems. Another 30 to 35 people will monitor weather and climate, and develop applications. The organization and staffing levels are similar to the experience of ECMWF, which has a total staff of about 135 people. CPTEC in Brazil now has 44 people, and the total is planned to become 150. The planned operations staffing follows:

1. Computer operations and systems (~ 40 people)
   - Computer operations (4 shifts/day, of 3 people each) (6 hr/day) (6 day/week)
     — gives 18 operators
   - Hardware systems people, use 2 system analysts per system (NEC, DEC, workstations, etc.)
     — total 9 people
   - Networks, 3 or 4 people
   - Maintenance: 7 people plus NEC people, plus DEC
   - Tape librarian: 1 person

Note: Hiring policies are poor: if an operator leaves, have to wait two years before another is hired.

2. Operational meteorology section, about 30-35 people. This section monitors output and develops applications.
   - Weather monitoring (5 people)
     — Monitor the output of model runs. Implement software for diagnostics. Do training for GTS.
   - Climate monitoring (5 people), started 1986
     — Prepare a monthly climate bulletin for South America (started about 1988) PROVIDE some operational climate services like CAC in Washington DC. Concentrate on precip for Brazil. Give outlook for 30-60 days.
     — Monitor observed data. Prepare statistics on data. Do quality control on observations. Handle data preprocessing. This involves 90K lines of code, mostly from ECMWF. Handles decode, QC, archives, etc.
   - Graphics; they got ECMWF graphics, called Micro-Magics. Develop graphics software. Install it, train people (about 4 people).
3. Communications (to get global data)

There has been a 75 baud line Brazil to Wash DC. A 9600 baud line is almost operational for the Washington - Rio - Brasalia link. When this line gets to Brasalia, then CPTEC will have a 9600 baud connection to Wash DC. The Brasalia lines haven't been very reliable. CPTEC prefers a direct tap on the line to Wash DC. During a week in March, Brasalia was out for three days.

4. Output

CPTEC will prepare the forecast. They will distribute the output to several government agencies. The weather service (INEMET) will distribute data to agriculture, civil defense, and the general public. Others will interface with aviation, hydrology, and marine services.

5. Other

The director of CPTEC (Pedro da Silva Dias) was a student at Fort Collins, 1975-79. Got to INPE in 1988. He has a strong background in modeling. He works well with people. Seems like a very good person for the job.

C. Computing in New Center in Brazil

1. There will be a new, fast computer for Brazil. It will be delivered about July 1991.
   • It will be a NEC SX-3/12 (1 proc, 2 pipes). It will arrive by July 1991.
   • It has a 2.75 G flops peak speed
   • 256 MB memory and 1000 MB extended memory
   • 70 Gbytes of disks (20 Gbytes high speed disks, 50 Gbytes regular)
   • Uses hyperchannel

2. An archive Vax
   • Has 25 Gbytes of disks

3. Mass Storage
   • An automatic cartridge system that holds 270 Gbytes. This uses 3480 cartridges (200 Mbytes each).
   • Also 8 cartridge drives and 4 ordinary mag tape drives.
   • They have 200 m² for tapes. They can put 80K cartridges in half this space.

4. Two Vaxes for telecom
   • have 3.7 Gbytes of disks

5. Costs:

The cost for the building and systems is about $25 million; the new building costs $9 million. Most of it is foreign money. They still need $2 or 3 million from the government of Brazil. The operational cost of the whole center and computer
upgrade is projected to be $6 million/year.

6. Computer Bid

The bid for the NEC computer was just under $10 million. The two processor YMP was bid at $18.5 million. Cray said it was this high because of the need for an office there. Brazil people noted that in India, Cray provides each of their people with a car and driver. Cray contested the contract because the NEC computer doesn’t really exist yet. In January 1990 Brazil won the case.

7. Timing tests to help select the computer (I think a T106 ECMWF model was used). They said the benchmark had some bias to favor Cray. In spite of this, the NEC was about 25% faster than a 2-processor YMP.

- A 24 hour forecast took 14.7 minutes CPU time on 2 proc YMP (6 ns cycle time)
- same 24 hour forecast, 11.8 min CPU on 1 proc SX3, (2.9 ns)

8. Time for a forecast

- For an 8-day forecast, (using T106 global model), it will take 3.5 hours of time.
- They will use 40% of the computer time for operations, 60% for research.
DATA SUPPORT SECTION

Monthly Status Report
May 1990

Dataset Updates, Additions, and Requests (all)

The NMC global grid set and global grid surface subset have been updated through May 1990. The NMC observed surface and upper air station data have been updated though 14 April 1990. The first shipment of NMC flux analyses (March 1990) was received and a data set established. Updates to the Australian southern hemisphere analyses through 1989 have been received and are in the process of being added to the archive (Walters). Australian upper air observations are in house through mid 1988, but there may be some problems with the data received. A request for clarification of problems has been sent to Australia. Australian aircraft data through 1988 has been received and copied. Daily and monthly 47x51 grids of NMC fields have been updated through March 1989. The stratospheric 47x51 NMC fields are now available through June 1989 (Spangler). After requesting a replacement for a bad tape, the Typical Meteorological Year data for the US was added the archive. The NGM and LFM grid products were updated through March 1990 (Joseph). Eight months were added to the ERBE satellite data set. An update of the NODC ocean observation set was found to be incorrect and NODC will resend this update (Worley).

A new set of Japanese min and max temperature and precipitation has been added to the archive.

There were 31 new requests for data in May. One request was sent out via ftp, three on floppy disks, and the remaining requests were sent on magnetic tape. The COADS ship set, climate model output set, and the hourly observation set were requested most frequently.

General Archive Activity (all)

Modifications were made to the online catalog software to make the code more portable (Walters).

Access programs for the set of gridded ocean data by Bauer and Robinson have been updated, and plotting and processing programs written (Worley).

Incoherent Scatter Radar Project (Barnes)

The primary effort in May was to complete adding 20 vsns to the database and prepare the annual catalog. New data types and irregularities required making some modifications to the catalog software. Four ISR requests were completed.

CDrom Project with U. of Washington

Version II of the NMC grid CDrom is now available. Copies will be distributed by DSS and the University of Washington. The price of a CDrom with documentation and basic software is $150.
NOAA Satellite Data (Joseph)

Data for January through September of 1989 was received on 660 cartridges, the data have been imported to the MSS, and further processing is proceeding. A NOAA catalog of TOVS sounder files was received on a separate cartridge. This information was cross referenced with our own holdings and this revealed that we were missing data which we apparently should have received. Preliminary checks on the most recent shipment indicate one entire month missing for the set. We will be discussing these problems with NOAA.

Comments by R. Jenne

NEW NMC DATA: We are starting to obtain many new diagnostic fields from NMC. We are gradually resolving the technical and science questions.

STORAGE TECHNOLOGY: Because of questions about data distribution (mostly from Spring 88-on) and mass storage, we pulled together more information about the technology. This will make it easier to answer questions. Kreitzberg is one of the people very interested in this.

AIR FORCE DATA: For two years Air Force (Asheville) has been working to copy two large sets of data for us (on about 1400 plus 500 original tapes). These have world surface data and upper air data for periods prior to about 1966. They did a lot of work to insure that they located all the tapes and could read them. They said that it was good we asked so that they did this before significant data were lost. By about mid-June they will send 600 tapes.

AUSTRALIA: We obtained an update of rawinsonde data from Australia, but some data are missing. We requested that they tell us whether the data are also missing in their files (doubtful).

COMMON FORMATS: A little more information about format structures was pulled together. Paegle (Utah) and Bob Fox (Wise) also gave me some info. The immediate reasons for this effort were questions from NOAA/CIRES in Boulder.

US OBSERVATIONS BY NWS: Questions about whether the necessary observations for climate studies will continue are still not resolved. The new automated net will have trouble with some variables. I was contacted twice about this subject.

STRATOSPHERIC DATA FOR GREECE: Zerefos called from Greece. He is on a national panel there and badly needs some stratospheric data. He is correlating zonal winds with ozone. We will do some extra calculations and get him the condensed products he needs — by Omnet and floppy.
DATA SUPPORT SECTION

Monthly Status Report
June 1990

Dataset Updates, Additions, and Requests (all)

The NMC global grids and upper air and surface station data are now updated through May 1990. The NMC set of tropospheric and stratospheric grids to 0.4 mb were updated through February 1990 and daily and monthly 47x51 subsets were updated also. The TDL hourly station data for North America were updated through November 1989. The LFM and NGM analyses for North America were updated through May 1990.

The set of global temperature grids, derived by NASA from the satellite data we sent to them, has been added to the archive. A video tape showing a ten year series of global temperatures is also available. A set of Antarctic monthly ice extent fields has been added to the archive. A new set of 10 years of climate diagnostics from the NMC grids is now available.

DSS received 26 new requests for data during June. Two users requested the new CD-ROM and activity continued to be high on the climate model output products. One CD-ROM user was frustrated by the slow transfer rates of the CD-ROM since their application involved moving the data from a PC with a CD-ROM reader, through a mainframe, to a PC with no reader. Six requests were filled on floppy disks, two via communication, and the remainder on tape.

General Archive Activity (all)

Enhancements to the data catalog during June, included general documentation additions and additional statistics gathering capabilities. Old software which accessed NAVY station data was updated. Modifications were made to the global summary-of-day set and the CAC climate statistics to make access more direct on the NCAR systems.

Incoherent Scatter Radar Project (Barnes)

The annual CEDAR meeting was held 12-16 June and a workshop on the database was held. Barb Emery led the talks with assistance from Roy Barnes. There is a shift away from the IBM interface to a UNIX platform. During the workshop, John Holt (Millstone Hill) described their level of development of the "interactive user friendly" database software to be installed on the UNIX system. They are half way through the two year project so there was not much to show but it appears that he is offering an interactive interface to the NCAR inventory information and a data browse utility. One data request was filled which was a reissue the Poker Flat data on EXAbyte with UNIX access software to a site that originally requested VMS read software and 9-track tapes.
COADS Project

The 1989 interim product set was added to the archive. New data and updates were received for the USSR ship set, drifting buoy set processed by Canada, and the NODC data sets. These will all be inputs into the full 1980s update. Shortage of staff is slowing progress on this update process.

NOAA Satellite Data (Joseph)

Further studies and comparisons of the NOAA catalog to our holdings has confirmed that there are significant gaps in the data sent to us. We have corresponded with NOAA about this and will be talking with them on the issue.

Meetings, Planning

Worley attended the TOGA Prediction Meeting at Lamont-Doherty.

TAPES FROM ECMWF: Eleven boxes (120 tapes) arrived about 21 June with many analyses in spectral form. ECMWF says that there are data problems on 16 of the tapes and they will be sent again. There are some old files I've been looking for!

ALASKA 10-17 June: Attended the conference "Role of the Polar Region in Global Change" held at the University of Alaska, Fairbanks. I was on a panel; also gave a poster paper. There were many good talks; Antarctic and Greenland ice cores (CO₂, temperature, methane, dust, sulfate, etc.). One thousand years of tree ring temperature over N. Russia; Model of the Greenland ice sheet for 150,000 years; sea ice from satellite microwave; etc.

Also, I visited the satellite SAR facility, and the Gilmore Creek readout site. Watched a strip of Landsat pictures being taken (from Ellsmere Island, N. Canada, to Arctic Ocean; to land over NE USSR). Fascinating.

I have a list of 15 to 20 follow-up items where I need to send people info, or where they will send data or info to me.

NOAA LIBRARY, Rockville, MD: The library has a "foreign meteorology collection" (2250 feet of shelf space). Some of it contains data back into the 1800s. She asked if I would help to evaluate it. Yes, if the time needed is not over two or three days.

ECMWF LIMITS DATA SUBSET GENERATION: New Zealand scientists want a subset of ECMWF analysis data starting 1980. NZ wants data only at the bottom level. They can't afford all levels for that many years. ECMWF will no longer prepare such a subset. We can easily make the subset but need ECMWF permission to send data out of the US.

What puzzles me is that ECMWF spent about 18 man-years to automate some of the subsetting process. Their system probably dealt with about five or ten different datasets (instead of 350 at NCAR). ECMWF used to generate a subset like the one NZ wants, but will no longer support this request. This may be another example of automation that gets too costly, too complicated, and too hard to convert when necessary. Also, they have been
working from January-June 1990 to copy 120 tapes for us (out of 275 they will finally send). How can it be this slow??

PROBLEMS WITH DATA STRUCTURES; ECMWF ANALYSIS UPDATE FOR 1989: We have archived ECMWF daily analyses from 1980-on. This is the "WMO" set that has just seven levels (1000-100 mb) and has two times per day.

The data has had 310 MB of volume each year. The update for 1989 just arrived. It has a volume of 440 MB. Prior to this year the fields were variable length, which is desirable. For 1989, ECMWF has padded all the fields to a fixed length. We guess that they have done this because UNIX isn't set up to conveniently handle variable length. This is a bad omission in UNIX. Also, it is a pain that the new data did not follow the standard data layout.

We have to retain variable length data capability. It is needed to reasonably handle many types of data. Also, data compression schemes require variable-length data handling capability.

THE SEVEN-STATE NEBRASKA NETWORK: This is an automatic station network that produces hourly data for seven variables: temperature, precip, wind, solar, soil temp., etc. It started in 1981. There are now 80 stations. We will continue to track the data to help answer questions, but not necessarily obtain the numbers. Talked to Willhite from the University of Nebraska about this data. He received climate model data from us.
DATA SUPPORT SECTION
Monthly Status Report
July 1990

Data Set Updates, Additions, and Requests (all)

Data through June 1990 was added to the NMC Global grid set and the May and June were added to the surface subset of these grids. April through June were added to the NMC stratospheric grids and the NMC tropospheric northern hemisphere grids. The 1989 NMC observed upper-air files have been split into subsets for permanent archive. Monthly mean fields through April 1990 for the NMC global surface subset are now available. The 1989 update for the ECMWF 2.5 degree analysis set was added and we have started processing the new high resolution ECMWF grid set. We recently received 116 tapes containing 1985 through 1989 for this set. A new set of Antarctic sea ice data and a set of Antarctic station data were added to the archive. Some older sets which had not been accessed for some time were recovered and made available. This included data from the Line Islands Experiment (1967) and the GATE experiment (1974). We began receiving the complete set of Navy analyses (previously we got only a surface subset) and will begin to include these in our archive. A new set of TOGA moored buoys and island station data was added to the archive. These will be used in the COADS update.

There were 40 new requests for data in July. The ECMWF analyses and the climate model outputs each had several requests.

General Archive Activity (all)

Sets continue to be migrated to the MSS from tapes. India monthly precipitation and Navy surface analyses were moved in July. Several of the most frequently run codes have been converted to run under UNICOS. Problems were numerous but so far none were insurmountable. The conversions should be easier as the staff gains experience. Other heavily used codes will be converted soon and many of the less frequently used codes will be converted only as needed.

COADS Project

More data was added to buoy set and the NODC set has been updated. These will be inputs to the COADS project.

Incoherent Scatter Radar Project (Barnes)

Two highlights this month were the review of a new data type and upgrade of the height profile plot program. Consider time was spent coding for new variations in the data formats provided to the archive. The U. of Illinois Lidar data are being processed on a machine that does not produce variable length binary blocks and the data volume was large enough to prohibit use of the character version. A reasonably efficient fixed length pad was devised
and verified. Several routines were recoded and checked out for execution with GKS graphics.

Comments by R. Jenne

MEETING ABOUT COADS PROJECT (6 July): This was about the fourth meeting this year with ERL people to keep progress going. Univ. of WA will provide tapes with basic Arctic Ice Buoy data. MEDS in Canada will clean it up for us.

MORE INFO ABOUT CLIMATE MODELS: Several have asked for an updated set of references for climate models, the possible date when we can release certain runs, and for detailed information about several of the variables. I obtained new info from two model groups, and brought all of main info we have into two updated documents. This meets present needs, but it still needs more work.

INFO FROM ECMWF: L. Bengtsson told me (16 July) that they are getting 1.42 Gflops from the Y/MP. They will get the Y-16 within two years (cycle 4 ns), and they expect 6 to 7 Gflops. He also noted that the present use of satellite soundings has no impact on the quality of the forecasts in the N. Hemisphere.

FORD AEROSPACE (two here 12 July): They have reanalysis projects with the Univ. of MD, and also work with Ramanathan at Chicago. They were here to discuss what data we have, methods used, etc. (Ward and Choudhary). The Univ. of MD plan is to make the calculations at NCAR.

TALK FOR UN: Jim Hansen, NASA, needs to give a UN talk about climate change in early Sept. to mayors of 100 world cities. He needs daily data. Can we send him 22 tapes within a few days (of 31 July). Yes. He will send us results of a 100-year model run.

HOW MUCH OF OUR DATA SUPPORT IS FOR MESOSCALE?: NSF wanted to have an answer. The estimates of people-time and computing resources were as follows:

1. Personnel time:

<table>
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<th>Task</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate model tasks</td>
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</tr>
<tr>
<td>Climate tasks</td>
<td>1.6</td>
</tr>
<tr>
<td>Overall meteorology, not meso</td>
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<tr>
<td>Mesoscale</td>
<td>.9</td>
</tr>
<tr>
<td>Ocean</td>
<td>1.4</td>
</tr>
<tr>
<td>Upper atmosphere (80-100 km)</td>
<td>.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6.0</strong></td>
</tr>
</tbody>
</table>

The same data often is needed for several discipline areas. By preparing the data only once, the cost to any one discipline is very low. For this reason, if we did the work we do, but only for mesoscale, the requirements would be about 3 FTE.

2. Routine use of computer time
~70 GAU/month (25% counts toward mesoscale)

3. Special project to save NOAA satellite data

>From Sept. 86 - April 89, we used about $1.4M of computer time on this project. About 15% of this should be counted as a benefit to US-region mesoscale research (and a total of 20 to 25% toward world mesoscale research.

DATA FOR POLAR STUDIES: I wrote a paper about data available for polar studies. It will be in the proceedings from the June meeting in Fairbanks.

REANALYSIS PROJECTS: The NOAA Climate and Global Change office has set aside $80K for us to start preparing data for reanalyses. They take 6% leaving $84.6K. They wanted some more details, including how Asheville will contribute to the project. I have written a new version of the proposal. It still needs more work. We will try to have reanalysis data (R-data) version I ready by Nov. 1992; Version II in 1995.

DATABASES: Attended workshop on the management of environmental databases (Monterey, 24-27 July). Many groups gave presentations, mostly ocean and fisheries people. A few groups will get into computer timing problems because of the methods being used; most are OK. I also got a good deal of information about the status of various models and methods (and time history) at FNOC. Many products are prepared by FNOC. Each day they also receive 900 requests for special products. The answers (1,000 messages) are sent within one or two hours. Emergency answers are sent within 15 minutes.

The total staff at FNOC is 296 people, the staff is half military.

NWS OBSERVING NET PROBLEMS: There is still a big potential problem of losing critical national observations (precip, clouds, dust storms, etc.) because of excess zeal in automation: "If you can’t automate it don’t observe it." On 19 July, I sent a draft memo to NWS HQ, Climate Analysis Center, Asheville, and selected cloud scientists. Feedback indicates that we may yet be able to keep a smaller network of essential observations. The positive side of the NWS plans is that we will have observations from more sites.

US SOLAR RADIATION OBSERVATIONS: John Deluissi called from NOAA. He shut down the national turbidity observing network. Now he is thinking of shutting down the solar radiation net (31 stations). When we are trying to sort out the effects of clouds on climate, and trying to get radiation right in models, it would be very bad to drop these measurements. The US has a bad track record on this basic network. Countries like Canada are smart enough to do it. We aren’t! And they don’t pretend that an EOS program needs to cost $34 billion! John wants a memo from me on whether the science really needs the data -- Yes!
DATA SUPPORT SECTION
Monthly Status Report
August 1990

Dataset Updates, Additions, and Requests (all)
NMC observed station data has been updated through 11 August 90. An updated and corrected file of the CAC SST data file was archived (Jan. 1970 - June 1990). A new set of Canadian coastal water temperature and salinity station data was added to the archive. The Willmott terrestrial water budget climatology has been added to the archive. More buoy data from Canada and the data from fishing boats have been logged in and will be used for the COADS update. Updates on several datasets have been delayed while work proceeds on converting update and access software to run under UNICOS. Processing has begun on extensive sets (600 tapes) of older station surface and upper-air data received from AF Asheville (see below).

There were 31 new requests for data during August. Several requests involved the ECMWF WMO analyses. Five requests were shipped on floppy disks, one on exabyte, and one via ftp.

ECMWF Datasets
We have received about 200 tapes from ECMWF. These include high resolution analyses, surface and upper air 2.5 degree analyses, and diagnostic fields. The high resolution set has been archived and several problems such as format changes, missing dates, and tape parity errors were encountered. These are being worked out with ECMWF.

Incoherent Scatter Radar Project (Barnes)
Testing and documenting the height profile plot program are nearly completed. Much time during August was spent becoming more familiar with the UNICOS environment. Two requests for data from the archive were filled.

Comments by R. Jenne

TECHNOLOGY FOR DATA TRANSFER AND STORAGE: A draft copy was sent to Bob Fox, University of WI about 17 July. Bob Fox called on 2 August. He had taken the copy home the previous evening and "got to page 39 before his wife kicked him away from it." He "didn't even get sleepy or bored." He is going to spread some copies around the lab and have J.T. Young collect some review comments for me. Bob Fox has always been good to work with.

COADS: Scott Woodruff says the final tweaks in the format are coming along OK.

- People there are getting very worried about the schedule for completing the 1980s update. Can we avoid further delays. I'm worried too!
CANADIAN CLIMATE MODEL DATA: Tapes arrived from Canada on 13 August with
data for N. America (21 tapes). It is a nice model. We really need the whole world, but
they can’t release it yet.

CHINA DATA: In March 1988 I worked out a very good data exchange with China, but
politics and time pressures have slowed it down.

I found that Tom Karl, Asheville was going there on Aug. 7, so perhaps he can get me a
good status report.

CALL FROM PEM HART, NAS (August 14): My term on the Geophysical Data Commit-
Guess so.

A BAD CRUNCH: The period in late July and August has been especially bad. Some of
the main tasks:

- Finish and send an Arctic paper to Alaska (sent 1 August)
- Rewrite much of the reanalysis plan for the joint project with NMC
- Handle the problems with the NWS observing net (loss of cloud, dust, and precip info)

This has taken a lot of effort, but we need some policy changes to preserve observations
needed for climate research. My main memos are being considered by NWS. There are
other interactions involving the top levels of NWS. Steve Warren has a letter (many sig-
natures) going to Bul AMS. An Academy panel has also gotten into the act (mtg. 5
Sept).

- Write a paper for a climate trends meeting which was held May 1989 (sent 10 August
1990)
- Prepare plans for next year for the US-USSR data exchange

This involved a lot of coordination with people in NOAA, USGS, EPA, located about six
different places. It involves climate, oceans, rivers, glaciers, pollution, solar, etc. (trip to
Russia August 18 - 27). See below for more details.

- Make a two-year plan for SCD
- Work on hiring a person
- Plus, phone, letters, visitors, and monthly report for July and half of August.

GET READY FOR THE USSR TRIP (August 18 - 26, 1990): The purpose of the trip is to
develop plans for the data exchange between the US and USSR for the coming year. Jenne
is the coordinator for the US side. I needed to write a preliminary data exchange plan. It
includes lists of all data exchanged in the past year (a lot of data, about 300 tapes, 18
datasets). The exchange of regular climate data (land data, upper-air, ship data) is going
especially well. The following steps were necessary to prepare for the new year:
• Coordinate with the US Geological Survey to start an exchange of river, lake, and snow data. After a start-up of 1.5 years, I think our side is ready to make this go now.

• Coordinate with ice people to start a glacier data exchange.

• Work with EPA to start an exchange of pollution data for both countries.

• Write position info on the exchange of data for solar particles, magnetic fields, etc. Coordinate with Goddard and the Geophysical data center on this.

• Try to speed up the ocean exchange.

• Get plans in place (on the US side) for a special dataset of meteorological observations (surface and UA) for Antarctica.

• The preliminary plans came into place rather well. In the USSR, we made many additions and some changes based on the discussions. I am happy with the way that the exchange is progressing.

• Sent a summary of the Data Plans to the National Climate Program Office for their meeting about all aspects of the US-USSR bilateral.

• In the USSR we discussed river flow, trace gases, ship data, surface and UA meteorology, air pollution, radiation, etc. On 22 August we discussed glacier data and space data in Moscow. On Thursday, 23 August, we worked until 7:15 pm to make the last set of changes to the documents. On Friday, and Saturday, people worked to prepare the text to sign. During that period they showed us two very interesting ancient (about 1,000 years old) cities, Vladimir and Suzdal.

• Most of the people involved in the meetings were from the Moscow/Obninsk area. They brought in one person from Tashpent for the glacier discussions. Three came down from Leningrad (one radiation, two for climate).

• The USSR shipped another 8,000,000 ship observations in July 1990, not received yet.

US-USSR EXCHANGE; ANOTHER BENEFIT: Some of the activities under the exchange will have the side benefit of making US data more readily available. This is true for some ordinary climate data. I believe that it will become true for pollution data, river data, and selected ice and snow data.

US-USSR BILATERAL PROJECT OFFICE IN WASH., DC: They called August 30 to see if I could go to the USSR October 4 - 16. This would be a useful time to coordinate with other US and USSR project leaders, but I don't think that the trip is completely necessary. We have our data exchange project mapped out in detail. I declined the trip. I will try to meet with all the project leaders next year.

AN "IN" THING IN THE USSR: PCs are very "hot" in the USSR. People will make tremendous offers to obtain a PC. By contrast, there was no talk of workstations or supercomputers. The USSR Academy of Sciences got 6250 bpi tape drives about 1986, or so; the data center first got one about Dec. 1989 (it is hooked to a PC). Now the data center has several drives, not attached, as yet. They said the first 6250 drives made in the USSR were produced during the past year.

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NOAA CLIMATE AND GLOBAL CHANGE BUDGET (Mike Hall):

- Budget has been $18M in FY-90
- Presidents request for FY-91 is $87M
- The house reduced this to $48M, but it could go up or down. They may have a better reading by mid-October.

LOTS OF DATA FROM USAF/ETAC-OL/A: Since January 1989, the Air Force unit at Asheville has been working to prepare two large datasets for us. This has been a big job for the USAF. There were tapes they couldn’t read and tapes that had strayed. It is probably all under good control now. We will make various inventories and checks to provide further control.

- TD13 World Surface Synoptic: This set has 3- and 6-hourly observations from many world stations, for various periods between 1901 - 1972. There should be about 814,154 station-year-months of data, and 107,231,000 observations. In 1975 the data was on 1411 reels of tape (800 bpi). The Air Force worked with 497 reels (1600 bpi) to assemble our data.

- TD54 World Upper-Air Data: Rawinsonde data for about 681 stations covering various periods between 1943 and 1967. In 1975 there were 56,412 station-year-months of data, listed as on 251 reels (800 bpi). I have the feeling that these old numbers didn’t include everything. We will find out exactly what is on these tapes.

RECEIPT OF USAF DATA AT NCAR:

- On 13 August we got a letter and old manuals saying they are sending:
  - 405 tapes of TD13
  - 195 tapes of TD54

- On 15 August the data arrived ("one full pallet" on the dock)

FURTHER WORK: It will take us a lot of work to sort this all out. We may get some help from GFDL. The Air Force prepared this data between about 1955 and 1970. It was key-entered from hard copy forms obtained from many countries. Some data (iron curtain countries) came from radio intercept. For many stations, this is the only digital data in the world for these years.

ADVANCED TECHNOLOGY AREA, STORAGE TEK: Mike Leonhardt called (673-5627). He is the head of Advanced Technology. Beal gave him a copy of "Technology for Data Storage and Transfer." He read it and would like a final copy when possible. He had questions about desirable media form factors, capacity of cartridge, data rates, etc.
PROBLEMS IN HANDLING VARIABLE-LENGTH DATA:

- See 14 Aug. memo by Dennis Joseph
- See 17 July memo from Jenne to Bengtsson, ECMWF. One relatively small set of ECMWF data had a volume of 310 MB per year. The data for 1989 had 440 MB, because of variable length issues. Yuks.

GRIB FORMAT (most important format for grid data): A revised GRIB format (dated August 8, 1990) was sent to me by John Stackpole, NMC. It includes all previous changes. The weather centers are going to start using this format for analyzed fields. I’ve been worried because a few adjustments are badly needed and we haven’t had time to interact with the centers. Unlike CDF and Net CDF, this format has most of the features that we need for grid data. GRIB is now an official format of the World Meteorological Organization (WMO).

CD-ROM: We sent info about our CD-ROM to a data listing service in London (on request).

HONEYWELL STORAGE HARDWARE: This hardware development is still progressing well and the prices that I was given still hold. The storage division (Denver) is now separate from Honeywell and will become a part of Alliant Tech Systems. I have a memo with more info.
DATA SUPPORT SECTION

Monthly Status Report
September 1990

Dataset Updates, Additions, and Requests (all)

NMC gridded and observed data updates have been stacking up while processing software is converted. Most conversions have been completed and updates are beginning. Processing of over 400 tapes of older surface station data is continuing with very few tape read problems. A new set of elevation data for South Africa was added to the archive.

There were 26 new requests for data during September. Several requests involved NMC datasets and there were two large requests for COADS data. A small set of TOVS files were extracted and made available to TRW for use via ftp.

General Archive Activity (All)

There has been a steady increase in consulting questions, most involving using our access programs and datasets under UNICOS. Some conversions of code have been necessary, but often it involves setting the users up with correct script files to access the data and run the code. Some of the smaller character datasets have been restructured for more convenient use under UNICOS. This usually means putting multifile Cray-blocked files into multiple-named files or insuring that files do not contain blank compression characters.

Incoherent Scatter Radar Project (Barnes)

Documentation of height profile plot program was completed but it still has some COS references. Various processing programs are being converted to UNICOS. The basic access (sample print) program is running and the binary to ASCII conversion and reverse direction conversion are running. Requests for data on floppy disk and via ftp were answered.

COADS Ship Data Project

Programs for the binary conversion step were converted to run under UNICOS. The codes are running but considerable checkout remains to be done. The COADS plan seems to be evolving to a product for the 80’s which is comparable to the earlier products and then to later produce an improved product for the entire set. More work was done on the USSR ship set and on the MEDS buoy set for inclusion into the update.

Comments by R. Jenne

NEW HIRE: An offer was made to Ilana Stern. She will start work in mid-October. We are very pleased.
REANALYSIS PROJECT: Completed the new text on Sept. 5. Have had several discussions about this large project with NMC, Kung at Univ. of MO etc.

USSR ICE DATA: Got info about ice and glaciers (from our bilateral exchange meetings) to R. Barry for his trip to the USSR.

OCEAN INSTITUTE, KOREA: Worley and I met with Kee Soo Nam from an Ocean R&D Institute with 300 people. He is head of data management and computer services. Gave him many publications to help get started.

NOAA LIBRARY COMMITTEE MEETING, 19-21 Sept.: This meeting was held in Rockville, MD to determine whether data listed in old documents would help with climate research. We also had to address issues of document preservation. A report is nearly written that has recommendations and a discussion of the issues. It includes a section about microfilm and scanning technologies to preserve documents. Jenne is the chief scribe on this report.

GRIB FORMAT: Prepared a four-page text about the GRIB format (for grid data), to try to get needed changes. Sent to NMC and ECMWF.

MEETINGS AT NMC, 24 Sept.: Met with the research section (Kanamitsu, etc.) about the newer archives. We will start a full resolution archive with data in sigma coordinates, each 6-hour, start 1 Sept. 1990.

Talked with John Stackpole and others about the GRIB format. He is chair of the international committee about this format. I have text about needed format changes. Some of these problems are already on their list for the next meeting. I hope we can end up with a good code. The discussion was very useful.

VARIABLE-LENGTH FORMAT PROBLEMS: Russall Jones (NMC Automation Division) had read Dennis Joseph’s memo about variable-length problems in Unix. He has proposed solutions for about five types of computers. He will prepare notes and send us a copy (as of 24 Sept. 1990).

UNIVERSITY OF WISCONSIN (25-26 Sept.): Met with Charles Stearns about Antarctic data. He has an automatic network of stations for Antarctica and a few for Greenland. Some stations have 10-years of data. Now 38 stations. Other countries have smaller networks. He will try to have other countries send him three-hour data. We will try to facilitate the data gathering, but can’t offer much work. This will be a very useful set of data; Stearns also needs it.

Met with Don Johnson about problems in the US observing net. He received a copy of my info via NAS. NWS is working on plans to augment the automatic observations at NWS sites.

Kutzbach: We discussed paleoclimate issues of mutual interest. He gave me papers about continental uplift. I gave him info re N. America ice modeling. I have a 20-year old paper (from a book) that gives a 70,000-year history of ice movements into Ohio and Minnesota. This
would help to model N. American ice, if correct. He has a geologist colleague who will help assess the quality of dating (sent 9 Oct.).

NCAR graphics: Pat Behling programs for Kutzbach. They don’t like the way our graphics package draws contours; they also want shaded continent outlines, etc., so they use another graphics package.

Bob Fox and Crew: We discussed their archives and storage technologies.

NEW LIST OF DOCUMENTS: A new list is available that includes 41 of our documents. Some of these are summary sheets that point to other documents in a given subject area.

NWS OBSERVATIONS: Jim McNitt (NWS HQ) called a couple of times to tell me about the developing NWS plans to provide some periodic human input to the automated net. An Academy committee got into the act by asking about the impact of NWS ASOS plans on climate. I gave my memo to NAS and it has been distributed.

FORD AEROSPACE: Choudhary was here at a UCAR meeting. Wanted to talk about an inventory proposal for NOAA satellite data, done at the NOAA satellite center in Wash., DC. We discussed the problem. I said that he could name me as a consultant in the proposal, but not a PI.
DATA SUPPORT SECTION

Monthly Status Report
October 1990

Dataset Updates, Additions, and Requests (all)

The NMC global grids and hemispheric polar stereographic grids were updated through September 1990. The surface subset of NMC global grids was updated through August 1990. The NMC stratospheric grid data has been updated through September 1990. We now have the full set of Navy analyses for May - September 1990 and need to use these to update the Navy data subsets. Work continues on moving the Air Force surface and upper air datasets to the mass store and verifying the contents. More data were added to the PMEL buoy dataset.

There were 21 new requests for data during October. Several requests were filled on floppy disks and one was sent on exabyte tape. We sent a copy of some GATE satellite products to the World Data Center to replace tapes they lost in a flooding incident.

General Archive Activity (All)

There continues to be an increased load of consulting from users converting to UNICOS. There were several special services provided to NCAR system users. A version of read code for daily climate model outputs was constructed for user access to the raw format for this set. Extractions of subsets of Rocketsondes, US rainfall, Singapore raobs, and Canadian Summary-of-Day obs were done to facilitate usage on NCAR systems.

Support was provided to IBM for the joint SCD TRW/IBM project involving CME ocean model experiment data.

Incoherent Scatter Radar Project (Barnes)

Conversion work to allow archive software to run on front-ends and the Crays continues. Time computations were changed to double precision (formerly integer when runs were only on Crays) and the getndcs program is now working on both machines. Most of a week was spent cracking a tape for a Russian (visitor of Art Richmond). It was made on an IBM look-alike, using some sort of a disk dump. A request for contour plots required another COS -> UNICOS program conversion.

Visitors, Meetings, etc.

Worley and Joseph attended the SCD retreat. Jenne, Joseph, and Worley consulted with an INO data archive specialist to help INO address their archive problems.

Staff

DSS added a new staff member, Ilana Stern, in October. She will be working in the general archive and data request area and her office is room 111A, x-1214.

Will Spangler is on part time for several weeks. He will be logging on the system regularly from Omaha, but will not be available at NCAR.
Comments by R. Jenne

VISUALIZING METEOROLOGICAL DATA: This is the title of a paper in the Bulletin of American Meteorological Society, July 1990. There is a color plate with nine color examples.

COMMITTEE ON GEOPHYSICAL DATA, October 16-18: This panel of about 12-14 members has two members from each discipline such as Meteorology, Oceanography, Solar Terrestrial Physics, Solid Earth, etc. I attended the meeting and inherited some jobs related to interagency data planning, and declined a review trip to two data centers. George Ludwig and several others gave presentations to the group. DOD was represented and I hope that they can declassify some terrain data.

TRIP TO ASHEVILLE (28 October to 2 November) - Purposes:

- Attended Climate Diagnostics Meetings: Many talks about overall aspects of the climate system. Nearly all studies use real data. Models are also involved.

  I have a copy of slides that show there is a problem with the Navy SST analyses. CAC is a good source for SST also. NMC are not good.

- Attended two meetings about the new weather service observing system and its effect on climate observation. I am getting more hopeful that we can preserve enough continuity for climate needs, but it is not solved yet.

- Reanalysis Project: Attended a meeting of fifteen people to coordinate national activities, to achieve a world set of upper air rawinsonde data. Asheville has a DOE grant. We should get a NOAA grant. The upper air data is one important component of the observations needed for reanalyses. I gave two talks at this one (one talk was for Chuck Wade, NCAR, who couldn’t go) The Air Force was represented. They and the Navy are interested in more participation in global change work.

- US/USSR Exchange: About four people were there from Russia including my main contact on the exchange. We talked about several datasets.
DATA SUPPORT SECTION
Monthly Status Report
November 1990

Dataset Updates, Additions, and Requests (all) NMC set updates have been delayed by the receipt of some bad tapes. These will be replaced and updates completed. Most NMC processing software is now running on Shavano. Australian grid processing software now needs to be converted. We continue to receive the Navy analyses and observed data, but programs need to be developed and/or modified to fully archive these data. The Navy surface 47x51 surface grid subset has been updated through June 1990, but further updates will depend on processing the new Navy tapes. The LFM and NGM grid sets have been updated through September 1990.

There were 27 new requests for data in November. Consulting loads continue higher than normal due to UNICOS conversions. We selected and printed monthly mean surface and upper air data for Labitzke. We also provided detailed satellite inventory information to a user.

Incoherent Scatter Radar Project (Barnes)

Interuptions still impede progress on the primary objective of converting software to run on front-ends and Shavano. Two requests, a simple tape copy and one involving tailoring some read software were filled. Also, a few afternoons were spent getting Art Richmond's Russian visitor, Nikolay Gavrilov, started computing on HAO front-end and Shavano using database access routines.

NOAA TOVS Data

We received 750 more cartridges containing TOVS data. These should fill some gaps in earlier data and likely will include some data more recent that September 1989. The data are being imported and then inventory and reorganization runs can be made.

NODC Archive update

A cooperative study with CU on bringing the local NODC archive up to date was begun. The intent is to make future updates more systematic.

WOCE_CME Data System

Worley attended meetings, provided consulting support, and provided several data sets in support of this effort.

Comments by R. Jenne

THE MAIN TASKS WERE:

- Finish text for chapter in book
- Handle the ongoing saga of US observing_net problems
- Give talks at NAS and WMO meetings
• Make changes in Reanalysis proposal; handle review and budget issues. Consider technical issues with Shukla, Fein, NMC, Paegle (Univ. of UT), and ECMWF.

• Various questions from users, status of data projects, data storage and computing.

PREPARED CHAPTER FOR BOOK: I made changes in response to editors for the chapter "Climate Trends, the US Drought of 1988, and Access to Data," which I wrote.


MAJOR INTERNATIONAL STUDY ON CLIMATE CHANGE: The study by the Intergovernmental Panel on Climate Change (WMO and UNEP) is now out (Cambridge Univ. Press, 1990) – "Climate Change, the IPCC Scientific Assessment." It should be a very useful book.

MEETING OF NAS CLIMATE RESEARCH COMMITTEE: I was asked to attend this meeting, November 14-15, to report on the effect of the planned automated observing net (ASOS) on the US climate record.

• Integrating national themes for FY-92 (Corell report to NAS Climate Committee):
  — Climate modeling and prediction
  — Global water and energy cycles
  — Global carbon cycle
  — Ecological systems and population dynamics
  — Sea-level change

• FY-91 budgets (NSF report by Corell, 14 Nov. 1990):
  — NSF overall budget increase about 11%
  — Research areas got 6% increase; Geo and ATM will do significantly better than 6%.
  — The Global Change budget probably will get a 60% increase for FY-91.
  — Education and human resources got 50% increase. NSF research divisions are now involved with the education divisions.
  — The President’s FY-91 Global Change budget request was $1,034M (seven agencies). The actual amount will be about $970M. The agencies will have to show that they accomplished what they said they would.
  — In FY-92, DOD and the Smithsonian will be included in the Global Change request.
  — There is now an international equivalent to CES that meets each six months.

• Funding for NOAA Global Change Research (Mike Hall, 14 November 1990)

Budget was $18M in FY-90; It was going to be $87M in FY-91. They will get $47M. Mike said that they had packaged over $80M of first class work for FY-91, so a lot of people will be disappointed. The reanalysis initiative is in this pot of money.
WMO MEETING OF EXPERTS TO PLAN THE CLIMATE CHANGE DETECTION PROJECT, November 25-30, 1990: I attended this meeting near Toronto to give a talk about NCAR activities that contribute toward climate change detection, and to participate in the discussions and writing that lead to a plan. The NCAR projects that help are climate modeling activities and our data activities which include many climate datasets, climate model data, and data preparation for reanalysis. Some results of side discussions were:

- Schmidt from Germany may make it possible for us to obtain daily data from about five upper-air stations, back to 1950.

- I started a discussion that could lead to the collection of better datasets for Brazil, and specifically for the Amazon. Before this, they will send me data for several big rivers in Brazil.

- Perhaps we can obtain a tape with monthly surface data for Canada to improve our tape of data for the world. Concerning Canadian upper-air data, I will write to Canada to show our inventory and Canada’s info about the availability of early Canadian upper-air data.

- I have a list of data for India. It is said that their data is now more generally available. I double that this is true, but we will test the system.

- A book is also being published by Bradley (US) and Jones (UK), that has 500-1000 year records of many climate series. The related data is being gathered into a PC floppy disk. Jones will try to get us a copy.

- A Canadian delegate presented info about precipitation gages and problems, especially for snow. I also had related conversations about the US automated net (ASOS). We still have to get what we need for climate.

REANALYSES: I had talks about these projects with David Burridge from ECMWF. He will also visit NCAR in one or two months, where we can discuss the data at more length.

MONTHLY WORLD SURFACE REPORTS (temperature, precipitation, etc.): I am hopeful that we got enough language into the report to radically improve the collection of these data.

VISITOR FROM AUSTRALIA: Karoly visited NCAR in November. He is going to get a lot of stratospheric data from us. He helps to keep me informed about changes in their S. Hemisphere analyses.
DATA SUPPORT SECTION
Monthly Status Report
December 1990

Dataset Updates, Additions, and Requests (all)

The ISCCP satellite data was updated with 3 new volumes. A fourth volume had some problems and will be replaced. A new SST climatology by Shea, Trenberth, and Reynolds was added to the archive. An ocean atlas set by Bottomly was added to the archive.

Fifteen requests for data were completed during December. Half of these requests involved NMC gridded and observed data. In addition to requests, there is still a significant consulting load for users converting to UNICOS. Several more data access programs were converted for execution on UNICOS.

NOAA TOVS Data

The most recent shipment has been recopied, subsets developed, and inventories made. Unfortunately, the data seems to be mostly a duplicate of an earlier shipment. The missing March 1989 data was filled in. Due to personnel changes at NOAA, they did not have the documentation and inventories we sent with the data to them. This was regenerated and sent.

Incoherent Scatter Radar Project (Barnes)

The installation of database programs on the CRAY and a SUN continues and a deadline of ~11 Feb approaches. By that time, all of the access and display routines should be running on both machines. While individual routines can be ported to either machine relatively quickly, the intent is to support a single version using a common library of subroutines. Thus programs that could otherwise be installed in short order are requiring extensive modifications and improvements.

COADS Ship Data Project

More Russian ship data has been received and inventoried. Distribution maps of some special data sources has been done to evaluate these data. New UK data tapes have been added to the source datasets. Work continues on finalizing the data format and correcting various problems in the source data.

Comments by R. Jenne

ATTEND PANEL MEETING AT SERI: They are making progress on a project to prepare US hourly solar data for 30 years.

INFO ABOUT SEVERAL NATIONAL AND SUB-NATIONAL OBSERVING NETS IN THE US: I added to previous notes about these nets, using the SERI meeting and three other sources as inputs. It has a bearing on measurement problems in the new NWS net.
THE NWS-NET ISSUES (ASOS): Got an up-to-date set of notes and other text ready. Sent it to seven places including: Asheville, Graeme Stephens (on NAS panel), CAC, Tom McKee (CSU, wants to analyze temperature problems), Gene Bierly and Jay Fein at NSF, NMC.

TRIP LENINGRAD IN JANUARY, US-USSR: Declined to go, but made notes about the status of each main agency program involved and sent material to the National Climate Program Office.

EOS: Ed Greene and an associate visited from MITRE. They seem to want to get in on part of the EOS work, and want some data to experiment with.

REANALYSIS DATA PLANS: Asheville is ready to move forward with a similar proposal (CARDS) to prepare one component of data for reanalyses—part of the world upper air data. They need info from me about what they (and the Air Force) could do to help the reanalysis data effort.

I started writing text to describe the data program in more detail and to suggest their roles. I will also visit the University of MO in February for similar discussions about how E. Kung will help.

COADS MEETING: We had another Boulder meeting about the status of various COADS data subsets, including errors and timing.

- NCAR received the third batch of USSR tapes (the three batches arrived April 1989, February 1990, December 1990). These have 22.9 million reports for the past century.

- I started working on new text to summarize the status of COADS.
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CRAY Y-MP UNIVERSITY
Average RG Job Turnaround Time

AUG 90 - JAN 91

CPU  waiting to execute  JQM

The Cray Y-MP (with 8 processors) arrived at NCAR in May 1990.

Ray Janne

CRAY Y-MP NON-UNIVERSITY
Average RG Job Turnaround Time

AUG 90 - JAN 91

CPU  waiting to execute  JQM

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DATA SUPPORT SECTION

Monthly Status Report
January 1991

Dataset Updates, Additions, and Requests (all)

The NMC global grids and surface subset have been updated through December 1990. The 65x65 NMC grids and the NMC stratospheric grids have also been updated through December 1990. A gap in the NMC data in October 1990 was recovered after discussions with NMC and NCDC. NMC is considering changes in their operational procedures to avoid this type of problem in the future. The ISCCP data was updated and a procedure for continued updates was set up with NASA.

Several inventories of the recently received TOVS satellite data were run. The GFDL R30 model run output was added to our archive of climate model runs.

An improved version of the wind stress fields derived from ECMWF analyses was added to the archive. An error in the ETOPOS (5 minute elevation and depth) set was found and corrected. Customers who received the set with this minor error were notified.

The monthly OLR set from CAC was updated via ftp. CAC had a 56Kb link in their path and achieved about a 32 Kb data rate in transferring this 14 MB file.

There were 25 orders completed during January and request activity seems to be increasing as the spring semester rush begins. Special runs and services were provided to users who wanted to access the daily GFDL model outputs. They wanted variables which are not part of the standard archive.

General Archive Activity (all)

Other archive activity included continued code conversions for UNICOS and consulting with users on data use under UNICOS. Some small sets are now being maintained in both UNIX and COS blocked formats for convenient use by various applications.

Additional improvements were made to the DSS online system. Some enhancements to the user interface were added and better statistics summarizing capabilities were developed. Summaries of the most frequently used datasets were run.

COADS

The work on the buoy data and Russian ship data continues.

Incoherent Scatter Radar Project (Barnes)

As of 11 Feb, the programs (print, time series plot, height profile plot, height versus time averaging and plot, and antenna scan plot) were installed on Shavano and Bierstadt. A common library of subroutines was established for subroutines. The work is not quite complete though. During the course of the install on Cray, I uncovered a cft77 compiler bug, but it turns out the bug has been fixed in the new compiler. One request for database and access information from Brazil was answered.
Comments by R. Jenne

US-CHINA EXCHANGE: I negotiated what could become a very good data exchange with China in March 1988. With the problems since, there has been little contact.

A high-level Chinese delegation came to the US in January 1991. I visited with them both in Washington, DC and later at NCAR. The Director of China’s Weather Service outlined guidelines to me that are just what I asked for in Washington: (1) continue the exchange; (2) consider the March 88 agreements in force, but perhaps extend them; (3) involve both the research group and the data center on the Chinese side. Whether I fully achieved #3 is a bit more open to question. The Chinese data center wanted to take over the exchange but they did not have all of the needed skills.

FEBRUARY 4: I got a call from USDA. They said that there were six groups in the mid-west who wanted access to one of the datasets in the exchange (daily max/min temps, etc. from 1950 -on). I plan to write China soon to get status info.

EPA Contract: Joel Smith called and said that he couldn’t give us a full $60K for FY-91. He will provide $50K.

I told Larry Kalkstein, (EPA-Oregon) that I would write a chapter (about climate model output) for his book. Needed by July.

I am behind a couple of months in getting EPA some task description that they need.

VISIT TO NMC: I visited NMC on 10 January, mainly about two issues: new formats and new models.

- New codes: The international committee has incorporated many of our suggestions (and others), to improve the GRIB format for gridded data. I lobbied with NMC to choose options for implementation that will control the volume of data that we receive.
  
  In the best of cases, the volume will get fairly high.

- New models: These are exciting times at NMC with forecast model development. In December they got the main bugs out of a new scheme that does analyses in sigma coordinates, not pressure, as before. The way it inserts data is a lot better. This new T80 scheme gives a nice jump in forecast skill. I have text about the different models and plans.

REANALYSIS WORK:

- Oort, from GFDL, was here 29 - 30 January to discuss 1930 - 65 upper-air data. I dug out a lot of old info to show him. He will help with the data work needed for the old data.

- I visited NMC, 25% on this subject. NMC joked to me that I should threaten to quit to get this national program going.

- Groups lined up to help us are:
  
  - GFDL (older data), Oort and one other person
— Asheville (raobs, station libraries)
— Kung at University of Missouri (and two grad students)
— ERL in Boulder (COADS, more if I ask)

• I have written much of a text (now 45 pp) needed to give somewhat more detail about many of the datasets needed. Plus, what tasks the different groups will do. Plus, outstanding questions that we all need to resolve.

• Phil Arkin visited 5 - 6 February about proposal for this project.

• In January I spent about five days of my time on this project.

COADS: Wrote an eight-page summary of the status of this project for the reanalysis text.

There will be a major COADS meeting in Boulder the week of 13-18 January 1992, for three days.

ABOUT NCAR GRAPHICS: A scientist (Fritz Zaucker) visited 14 January from Lamont Lab; he will be returning to Germany. He wants good data on atmosphere moisture transports and on world river flow.

He also talked about NCAR graphics. He had the program for a number of weeks, but hadn’t yet been able to figure out how to use it. He said "There is a ten-page description on each subroutine, but it is hard to just get going without a lot of work." He felt that a two-page set of subroutine calls and output examples would help.

MARGARET DRAKE’S FUNERAL: 3 January 1991; it is a shame that she departed us at a relatively young age.
DATA SUPPORT SECTION

Monthly Status Report
February 1991

Dataset Updates, Additions, and Requests (all)

The NMC global grids have been updated through January 1991. NMC observed station data files are now updated through 1990. This update was delayed by code conversion requirements but should now be kept current. The 1000mb subset of the Australian grid data was made current with the complete set. The complete set and time series subsets need to be brought up-to-date.

An update to the wind stress fields computed from ECMWF analyses was done. The Bauer-Robinson ocean climatology was reformatted and access programs written to improve ease of access. Surface temperature and wind data was added to the Canadian coastal ocean dataset. Some new USSR upper air data was added to the Russian exchange dataset. A new Ocean Surface Temperature Atlas by Bottomley was added to the archive. This set includes 5 degree and 1 degree grids and has a number of interesting fields available.

Considerable effort has gone into archiving and cleaning up the new ECMWF grid archive. A significant percentage of tapes and cartridges have had read problems or contained incorrect or incomplete data. ECMWF has replaced most of these. The NMC flux, sigma level, and 10-day forecast archives are beginning to take shape. The updates should begin to be routine after a few problems are corrected.

During February, 33 data requests were completed. Most notable was the large rush order of data for the Persian Gulf area. CME model output data was send to IBM, Houston as part of the joint EOSDIS project with TRW/IBM.

General Archive Activity (all)

A set of Air Force raob data on 215 7-track magnetic tapes was recovered for possible inclusion in the reanalysis project. There were surprisingly few unrecoverable errors and most of these should be recovered by using backup volumes. All data is now on the MSS. We also helped NCDC read an old 7-track tape from their archives. It was 200 bpi, mixed parity.

There has been more feedback on the online information system. This should help us to continue to improve the system (time permitting). One user accessed the system from Germany and his major problem seemed to relate to network delays.

Incoherent Scatter Radar Project (Barnes)

Steve Cariglia (Millstone Hill) visited for the Front Range AGU meeting. Roy Barnes and Steve were to run a demonstration of their interactive interface to the database but Barnes had to attend a funeral so Steve did it by himself. Some color prints generated on the Tektronics 4096 printer were shown. Apparently the demo did not generate much interest (solar-terrestrial was only a small fraction of the attendance). Most important outcome was to meet the programmer responsible for installing Millstone’s interactive interface on the Cedar machine. An MSS to front-end machine interface to their software will be provided.
Barnes spent time becoming more familiar with his new Sun IPC diskfull workstation. With cross-mounted file systems both on HAO and SCD machines there are inconsistencies in utilities due to different versions that are both bothersome and show the flexibility of distributed computing.

**COADS Ship Data (Worley)**

More Russian ship data was received and archived for the update.

**Comments by R. Jenne**

DATA FROM MID-EAST: On Friday, February 8 about 9am, a company in MA called. They wanted 10-years of upper-air data for Kuwait City and surrounding area (finally got data in region 0-60°N, 0-90°E). Wanted a fast rush job. We sent the first tape on Friday to get there Saturday. They have been very appreciative of the timing.

This is one for Janice’s son, who is an AH-64 (Apache helicopter) pilot serving in Saudi Arabia.

History: Gulf ground war started February 23, 6pm MST; it ended 100 hours later, February 27, 10pm MST.

**NOAA CLIMATE & GLOBAL CHANGE MONEY:** Phil Arkin came on 6 Feb. to talk about getting us some money to start the reanalysis data work. He said that the max he can pull together for 8-months in FY-91 is $90K. I wrote a letter proposal with this constraint included. NOAA funds in this program:

- $18M in FY-90
- $47M in FY-91
  - over $10M of this will continue non-NOAA tasks started
  - about $20M continues NOAA tasks started before

- They hoped that the FY-92 request would be $160M. At this level reanalysis was still in (at $.75M per year). The President’s request for FY-92 is $78M. At this rate, the full reanalysis project is not affordable; it may be in two years.

- The NOAA RFP we got is $9.9M. Phil Arkin has $2.8M in his area. This has to cover climate diagnostics, model development, TOGA, reanalysis, etc.

- He noted that we have a big head start with the data needed, and that they should take advantage of this while I’m still here.

**REANALYSIS:** Feb 12 — Three people visited from Asheville (Quayle, Williams, Eskridge). We spent a long day discussing how each side could help the other with one component of the data we need for reanalysis — rawinsonde reports.

**VISIT TO UNIVERSITY OF MO:** On Feb. 18-20 I visited the University of MO. Ernie Kung and two grad students will work with us on the reanalysis project. I also gave a more general talk to the department about reanalysis, data availability, and NCAR.
REPORT OF THE REANALYSIS PROJECT: During February I added several new sections to this report. A few more sources for early upper-air data (1940s, 1950s) are gradually showing up.

FOREST SIMULATIONS FOR USSR (Feb. 1991): Dan Botkin’s forest group in CA called about their project to make climate change forest simulations for two sites in the USSR (one in Central Siberia, one for Urals). This is a joint project between the US Forest Service and the USSR State Forestry Committee. The forest simulations will be similar to the Great Lakes simulations that they previously did.

They need the GISS Transient A data for Russia. Bob Nisbet [(805) 893-2962] called for information about the data. It is on a tape we sent a year ago.

TOTAL PRECIPITABLE WATER IN THE ATMOSPHERE (over oceans): Charles North, CU, 492-0488, has made comparisons of algorithms to calculate precipitable from SSMI satellite microwave data during July - Sept. 1987. The algorithm differences are .2 to .95 grams/cm². He needs to compare this with "truth" from raob sites. He will use our data online to do this. I am very glad to see these comparisons being made.

VISIT FROM ASHEVILLE: Ken Davidson and associate visited about Feb. 7. We will return a copy of VTPR satellite data to them. Ken said there is no sign of a report from the Oct. WMO meeting on climate change held in Canada.
DATA SUPPORT SECTION

Monthly Status Report
March 1991

Dataset Updates, Additions, and Requests (all)

NMC global grids were updated through February 1991. NMC surface and upper-air observed data were updated through 23 February 1991. The upper-air subset which separates out the frequently used raob and pibal data was updated through 1991. February 1991 was added to the Navy grid set. Another 33 tapes were added to the ISCCP satellite set. Two new oceanographic sets were added to the archive. One describes the Gulf Stream meander during 1988 and the other is warm core ring data from three ocean surveys.

Work was started on NGM and LFM updates. TDL has been lagging in sending these tapes but should soon catch up. The TDL hourly station data update is also behind schedule but new tapes have begun to come in.

Twenty-three data requests were completed during March. There were large requests for time series raob data and stratospheric grid fields. The largest order was for over five-years of NMC global analyses at a cost of $3104. A special rush order for an EPA customer involved extracting special model output fields and selecting station data nearest to certain latitude-longitude coordinates.

General Archive Activity (all)

Programming for the new Australian grid format was completed and updates can now be added to the archive. Work continues on the large Air Force sets. They have been archived on the mass store and inventories are being developed. Some bad tapes have been replaced.

Programming and cleanup continues on the Bottomley ocean atlas set. The set is complicated by a large number of files with different data formats. A problem of index reversals was confirmed in the weekly snow and ice data set. This problem was corrected.

COADS Ship Data (Worley)

More MEDS data was added to the archive for use in the COADS update.

Comments by R. Jenne

UPDATE TO GLOBAL TEMPERATURE TAPES: We obtained an update of tropospheric and stratospheric temperatures based on TOVS microwave data, from NASA Marshall.

They added the message: "We spend too much time trying to speed up the process of making tapes, so my programmer went back to the old way this morning." Sounds like fun.

March 1989 is missing on their charts. We now have the basic satellite data and will send them a copy.
LIST OF CD-ROMs: I prepared a list that briefly describes a number of CD-ROMs of interest to our research community. It also has some such as "Birds of America," with pictures and sound ($95).

I have been getting more requests for such a list, and a reviewer wanted the information in an Arctic paper. The information for the paper has been greatly extended, resulting in the present document.

RIVERS AND US SNOWPACK: For US-USSR exchange, I need to be able to exchange river discharge data and snowpack, and bring the right experts together.

- Coordinating with USGS on rivers. We want to exchange monthly data for many years for about 450 rivers in each country.
- Working with Soil Conservation Service (central office in Portland) to get snowpack; they are now reviewing a text for me.
- This is coming along quite well. I just hope we can actually get some data exchanged.

WORLD AGRICULTURE AND CLIMATE CHANGE: About Sept. 1989, EPA organized world studies to determine how crop yield would change if climate changes. Since Dec. 1989 we have supplied the climate model data (and extraction software) that are used in these studies in 25 countries. The results from the national crop models are fed into a world economic and agricultural trade model (to year 2060). I attended a conference of the PIs in Washington DC (March 10-13) and gave a talk about climate models and the data.

SCD REVIEW PANEL AT NCAR 4-5 March: The last one was four years ago. Nice to have this review over with.

FIND DATA ABOUT COLD TEMPERATURE FREQUENCY: Hughes and USAF have had troubles for a few weeks trying to find info about the frequency of severe cold at some sites -- such as Fairbanks. They have a missile that has problems in severe cold. Kevin Finn (Hughes aircraft) called 19 March 1991. Told them about:

- A CD-ROM with airport statistics.
- Datasets of daily max/min temp for stations, here and at Asheville.
- Daily upper-air data for temperature aloft.
- Using the basic data, they can calculate the statistics they really need, not a canned set.
- They were very relieved to find some info about data sources for their problem.
- Reflections on automatic data searches: A search probably would not have found the CD-ROM. It would probably have believed his request for statistics, and, therefore, not suggested the use of basic data too. It would have given info about many datasets, not the few that center on his needs. It is an interesting problem of cost and AI. Automatic searches are definitely still needed, but not sufficient.

VISIT TO EXABYTE: In mid-March, Rob Munio called from Exabyte saying that back east he had heard about Global Change and thought that their technology could help.
On 27 March five of us spent the morning at Exabyte hearing about their new 5 GB/500 KB/second drive, auto loaders, failure rates, and plans (Bovet, O'Lear, Kitts, Rotar, Jenne). Useful.

REANALYSIS TEXT: Got the last (for awhile) set of changes into this extensive text in early March and sent it to the main 15 people in the country who need it (NMC, NCDC, Univ. of MO, GFDL, ERL, etc.). Sent most copies between 8-15 March.

NOAA GLOBAL CHANGE FUNDS (Mike Hall): The NOAA reanalysis help for us is from this (info from Phil Arkin):

<table>
<thead>
<tr>
<th></th>
<th>FY 1990</th>
<th>FY 1991</th>
<th>FY 1992</th>
</tr>
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<tbody>
<tr>
<td>President’s request</td>
<td>--</td>
<td>$87</td>
<td>$78</td>
</tr>
<tr>
<td>Money provided</td>
<td>$18</td>
<td>$47</td>
<td>??</td>
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The NOAA RFP we recently got has $9.9M. Phil Arkin has $2.8M in his area. This has to cover climate diagnostics, model development, TOGA, reanalysis, etc. Our grant for reanalysis (below) is from this money.
STATUS OF DATA SUPPORT NEW FUNDS (26 March 1991):

a. One position and computing from NOAA funds

Phil Arkin visited NCAR in early Feb. 1991 to discuss this project. He said that he could fund $90K this year. This includes computing money. Phil said that at least $90K will be continued next year. Our proposal asked for about $300K per year.

- March 26 update: His office approved our revised budget and sent it to NOAA to transfer $ to NSF. There was a fire in that office. The money has now gone from NOAA to NSF.

- April 3 update: Jay Fein called to say that the money just got to NSF.

b. Support for reanalysis (NSF and Univ. of MD): About Dec. 1990, Jay Fein put money for NCAR ($50K, I think) in a grant to the Univ. of MD for reanalysis.

- To get the cash from the Univ. of MD to NCAR seems to incur a double overhead (Univ. of MD and UCAR), with a little left. This isn’t a useful option.

- Jay Fein thinks that he can send some directly here, and take it out of the Univ. of MD FY-92 budget. I have to check with MD.

c. NSF (Jay Fein) money for model verification and CD-ROMs

- This is $41K after NCAR overhead. We are in the process of hiring a person.

- Prepared a document that lists the available CD-ROMs in the community.

d. EOS grant (Bob Dickinson proposal: In March, Bob told me that funding for one DSS programmer II, plus overhead, should start Jan 1992.

STATUS OF DATA SUPPORT PRESENT GRANTS:

a. Status of present EPA grant: Since Oct. 1987, this grant has been for $60K per year; for FY-91, it is reduced to $50K. They have had overall budget problems.

--- I am late in sending EPA a list of projects.

b. NSF grant for Inch Scatter Radar data: these funds to HAO include money for 80% of Roy Barnes’ salary.

STORM PROGRAM: They recently hired Steve Williams to organize the field programs and help with the data. He came for a talk on March 29. It was a pleasure to talk with him, because he is really focused on the real problems. Finally, I feel like the Storm Program is going to get the help it needs.
DATA SUPPORT SECTION
Monthly Status Report
April 1991

Dataset Updates, Additions, and Requests (all)
Data through March 1991 were added to the NMC global, 65x65 tropospheric, and the NMC stratospheric analyses. Data through 23 March 1991 were added to the full stack global analyses from the NMC stratospheric group. The NMC observed data were updated through 16 March 1991. The NMC 10 day forecast and flux datasets are now current through March 1991. There are still a few missing months in this set which NMC has promised to fill. The LFM and NGM grid sets were updated through January 1991.

The Navy grid fields were updated through March 1991. The conversion of update codes for the Australian southern hemisphere analyses was completed and updates added through 1989. The time series versions of these grids were also updated. The World Monthly Surface Climatology was updated through 1989. A new version of the Air Force station dictionary was archived. The gridded OLR set from NESS was updated through October 1990.

We received a new version of the global temperatures derived from MSU satellite data. The process of copying about 50 tapes of Japanese geostationary satellite data was started. Several replacement cartridges were received for the ECMWF TOGA analyses bad volumes. These are being logged into the archive. Access and spectral transformation codes are being prepared for this set. We now have a new dataset of monthly averaged ISCCP data.

There were 45 requests for data completed during April. There were several requests each for climate model data, ECMWF grids, COADS data, the World Monthly Surface Climatology, and NMC grids. A request for the entire set of COADS ship observations (CMR data) was filled on 4 exabyte tapes. Conventional round tapes are still used for most data requests but exabyte, 3480 cartridges, PC floppies, and direct ftp are becoming more popular.

General Archive Activity (all)
As the need arises we continue to convert access codes for UNICOS execution. There seemed to be an unusually high load of consulting with users on local data access during April.

A few more access programs were ported to the PC. Problems were detected with an archive file in the Palmer Drought Index dataset. The primary files were recreated from backups.

COADS ship project
NOAA hired a new programmer for this project and we set her up for access to the system.

Climate Model Data
A new version of the primary climate model file was developed. New programs were added to the tape and the new GFDL R30 run data is now included. Documentation for this file was prepared. A special temperature and precipitation data extraction was done for a user who
needed these data from the GFDL year-month set. These year-month data are not included in the standard set due to the volume.

**Incoherent Scatter Radar Project (Barnes)**

Started converting the database inventory and summary table generation software in anticipation of the annual catalogue preparation. This ought to be the last of the program conversion (to UNICOS using standardized shared subroutine library). Also started an update and completed a single request.

**Weather Data Lines**

We noticed some minor problems with the NWS and NMC data lines which were corrected by Jim Weber. This can be troublesome since SCD has an agreement with USGS in Golden to supply earthquake bulletins to them. They seemed satisfied with our response to the problems.

The NWS lines now run on the IBM/CMS system and our plan was to replace this service with UNIDATA capabilities. Since IBM removed the system UNIDATA was running on, we now have no UNIDATA capability. This problem needs to be addressed.

**Staff**

We began advertising for two new positions to help with upcoming projects. Interviewing will begin at the end of May.

**Other**

We had Steve Sadler come in to measure radiation from the screens in our section. PCs and Macs seemed to have the highest values and the large screen color Sun workstations were surprising low. All were within acceptable limits.

**Comments by R. Jenne**

INTERAGENCY WORKING GROUP (IWG) ON DATA (April 8-10): This had representatives from each agency including NSF, NASA, DOE, USGS, EPA, DOD, State Dept., etc. Two of us represented an Academy panel and the users, etc.

A person from MITRE Corp. presented some of the NASA EOSDIS plans, then he left. Later I stated that I had some concerns about what I’m hearing about EOS. George Ludwig (meeting chair, writing IWG data plans now) had worked with NASA and NOAA to start a program on "pathfinder datasets," which I think is very good.

- **Pick on NCAR**

At a point later on George said that he was going to pick on NCAR. He said that the high level discussions in NASA had been that it would be desirable to have NCAR as a DAAC. He said that the amount of requested funding "choked the system". This is why it was turned down. I just checked the April 1990 proposal; our requested funding was:

\[ DAAC \text{ for } NCAR \]
I keep hearing that EOSDIS plans to spend $350 million per year, three years from now. It is all puzzling. I think that the amount of money being spent now is fairly small. My concern was the number of DAAC rules that NASA may have tried to enforce on us. Thus, the outcome is probably a blessing in disguise.

NOAA DATA QUALITY MEETING (April 11, 12): This was a meeting of scientists from various NOAA labs plus NOAA managers plus me. I was asked to help with the discussion of problems in upper air data. I turned in several "issues" about data in the US, where work is needed.

One NOAA person started talking about the fact that the NOAA microwave data was used by NASA to study tropospheric temperature. He said that NOAA shouldn't worry that they didn't make the study; however, he added: "Where NOAA should be criticized is that NASA got the data from NCAR. It was too expensive from NOAA." (We had pulled a subset with much less volume. Also, we put 185 MB on a cartridge, not 55 MB).

US/USSR HYDROLOGY EXCHANGE MEETING (April 19): During the past year a separate science exchange project for hydrological research started between the US and USSR under WG VIII agreements.

Four people from the USSR visited here with two from USGS (Wash. DC). We now have two ways to help ensure that river data in our two countries is exchanged. USGS (California) got me a needed list (and map) of the US rivers that we propose to exchange.

Igor Shiklomanov, the group leader, is head of the State Hydrological Institute in Leningrad (about 1400 people there). Russia's weather service plus research institutes (met., hydrology, ocean, etc.) has about 100,000 people, total.

MEETING AT RAP REGARDING AIRPORT WEATHER STATISTICS (23 April): RAP needs weather information fast and hadn't found a source that worked. Met with Cleon Biter and others about their need to define weather factors involved in the shut down (by FAA) of 121 observing sites around the US. They need answers before four months. They have talked with Asheville; NCDC would need three years to do the work. We have datasets that can be used and we will make it easy to access the data, but we don't have time to do all of the work. Their project timing should work.

NOAA GRANT FOR REANALYSIS: Pete said the $90K got to NCAR - April 16.

MEETINGS ON REANALYSIS AT NMC, 25-26 (April 91): This meeting was initiated by the head of NMC (Ron McPherson) and Rick Anthes. The goal was to review plans for the reanalysis program, plans for another climate production run (CDAS) and make recommendations. I gave a talk about the data program and chaired another session. There were talks about the development of various models at NMC.
For the long 35-year reanalysis, the group decided that T60, 28 levels was the best compromise. NMC production has been T80, 18 levels; in March 1991 it became T126, 18 levels. I was pleased with the decision, because for awhile it sounded as if the runs might be made at the low resolution of T40.

Some of the uses of reanalysis: drive ocean models, interannual variability, know the internal dynamics, chemical tracer work, etc.

Participants were Bretherton, Holingsworth (ECMWF), Shukla, an NMC Advisory Panel (I am on it), many from NMC, Goddard people, Quayle (NCDC), four from NCAR (Trenberth, Baumhefner, Hurrell, and Jenne).

We will be under significant pressure to deliver the data inputs for reanalysis when they are needed in about two years.
DATA SUPPORT SECTION

Monthly Status Report
May 1991

Dataset Updates, Additions, and Requests (all)

April 1991 was added to the NMC Global grid data archive and data through 11 May 1991, was added to the NMC surface and upper-air observed station data archive. The new NMC sets of ten-day forecast data, flux fields, and sigma-level data are now current through April 1991. NGM and LFM grid sets were updated through March 1991 and data for model terrain were added to these sets. The TDL hourly station data file for North America was updated through July 1990.

The Navy grid data archive as updated through April 1991, but more programming work needs to be done to this set for subset extraction and format conversion. The Navy observed data archive has been put on the MSS through March 1991. Data for 1989 was added to the US controlled time series raob data files.

A new set of monthly mean stratospheric analyses from the NMC stratospheric group was added to the archive. Spectral analyses for FGGE from ECMWF were added to the archive. A set from the Japanese geostationary satellite has been copied to the MSS. This set was obtained in exchange for some of our GAC satellite data. A new set of Scripps pier and west coast temperature and salinity data was added to the archive.

There were 39 requests for data completed during May. The climate model data continued to be popular. There were several requests each for ECMWF gridded data, NMC time series grids, and time series raobs. The largest orders were from TASC in Massachusetts, the NOAA Aeronomy Lab, Illinois State Water Survey, UC Davis, and Woods Hole. Media preference continues to be mag tape but there were an unusual number of requests for data on floppy disks.

General Archive Activity (all)

Access programs for the ECMWF TOGA analysis set have been cleaned up and put in a consistent form. These are based on the original code received from ECMWF. Work has begun on converting Navy observed data access and selection programs to run with new data types under UNICOS.

COADS Project

An inventory of files from several of the data sources for input to the COADS update was developed. This will be used to set up inputs to the first step in the processing.

Administrative Activity (all)

The accounting office requested assistance in collecting some past due bills. We contacted some of the customers with limited success. New filing cabinets, reorganization of files, and some room rearranging have made access to files much simpler and provided some possible office space for a new hire.
Comments by R. Jenne

NASA CATALOG MEETING (May 13-15): I am on the NASA Catalog panel and attended 60% of this meeting. It was a good thing that I went because the panel was becoming a bit too much of a vigilante group (NASA did not have an adequate plan). Also, I helped introduce concepts that help balance costs and benefits.

LASER WIND SOUNDINGS: Obtaining global winds using satellite based lasers would yield a big benefit for meteorology and it is a technology that has been used from surface and aircraft platforms. We are now losing hope of achieving such a satellite, even for the year 2000. The number of laser shots before failure was a problem; I understand that the design life is now about $10^9$ shots. The laser can give winds each km or so in the vertical and can provide related information about particles in the atmosphere. It also gives cloud height.

I've been asked to their panel meeting in July.

DATA FOR EUROPE: Griffith Morgan visited Boulder from Italy to obtain all surface and upper air observations for Europe, for 1974-82. The cost is about $2100.

HOW IS NCAR VIEWED? On a trip to Baltimore, I sat next to Steve Clifford, Director of the Wave Propagation Lab. At one point, he talked some about how NCAR is viewed by the universities:

The universities often see NCAR as being in direct competition with them. They go to NSF and find that NCAR has run off with all of the cash. So, they think, "NCAR doesn't help me; why was it set up?" The NCAR research groups don't act as a unit on big problems; the work is very individual. NCAR tries to be uniformly good in all areas instead of building on a set of strengths.

I've heard this before. I wonder how general the feeling is. The services that we can provide are certainly important.

EOS BUDGETS: Tom Spence, NSF, is working with the Senate this year. He is faced with helping the Senate sort out what is sensible for EOS and EOSDIS. They worry about the large price tags:

<table>
<thead>
<tr>
<th></th>
<th>FY-91</th>
<th>FY-92 Request</th>
</tr>
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<tbody>
<tr>
<td>EOS</td>
<td>$155M</td>
<td>$250M</td>
</tr>
<tr>
<td>EOSDIS</td>
<td>36M</td>
<td>83M</td>
</tr>
</tbody>
</table>

Paul Rotar thinks the $36 million for 1991 was probably really only about $9 million of "actual" money.
DATA SUPPORT SECTION

Monthly Status Report
June 1991

Dataset Updates, Additions, and Requests (all)

The NMC globals were updated through May 1991. Navy gridded fields were logged in through May 1991, but software conversions need to be completed before the data is fully available in the archive. Year-month means for the 1989 time series raobs were computed and added to the archive. The time series raobs for US controlled raobs were re-sorted to bring the archive into time series for the entire period of record. Recent updates were previously only available in annual update files. A new version of the WBAN station dictionary was added to the archive.

There were 18 requests for data completed during June. Several requests were sent out on Exabyte tape.

General Archive Activity (all)

Considerable work was put into converting programs which select and read the Navy surface and upper-air observational (SPOT) dataset. Inadequate documentation from the Navy has made it difficult to figure out new data types and the upper-air data in general.

Calculations of running means of six stations from the World Monthly Surface Climatology were done for Harry van Loon.

Changes to the order handling and dataset tracking software were necessary to accommodate changes in MASNET.

COADS Ship Data

Several more tapes of data for the COADS update were added to the archive. The 1990 interim product statistics and ship observations were added to the archive and documentation updated appropriately.

Incoherent Scatter Radar Project (Barnes)

The conversion of database inventory software was completed and the new software was used to make the major annual update for the Catalogue preparation. A new summary output table was added because of the new types of data. The update involved replacing one vsn, correcting inventory information for 6, and adding 29, including 9 new instruments.

Prepared for and ran two Database workshops during the annual CEDAR meeting held 17-21 June. All went reasonably smoothly, except a bug was uncovered in one of the plot utilities. It seemed to take forever to uncover the cause of ieee 32-bit floating point gradual underflow and correct it by going to double precision for part of an averaging calculation. Filled one hurry-up request.
Comments by R. Jenne

COOPERATIVE OBSERVERS IN COLORADO: There are about 244 sites in Colorado where unpaid observers take daily measurements of temperature and precipitation. I attended a meeting (about 200 people) to honor the observers (June 7 and 8). One person has been taking observations for 50 years. The head of the National Weather Service, and many others, were there.

CAN WE MAKE CD-ROMS FOR UNIVERSITIES? A Unidata policy meeting was held 24-25 June. There was a sub-group of 20 who prepared a resolution that UCAR should routinely prepare CD-ROMS holding data for two main datasets:

- Surface and UA data, especially North America
- Global NMC grids

Their group presented the idea to a larger group and about 75 were enthusiastic about the idea. On 26 July, Jon Ahlquist, FSU, called to say what happened and that he is talking with Harriet Crowe to get this into the Fall Members Meeting. On 27 July, Cliff Mass, University of Washington, called to tell me more details. He is writing to Rick Anthes.

I support their proposal. It appears to be sufficiently constrained so that we wouldn’t be buried with work. Mass said that Lance Bosart gave the comment that what we need is a Ford, not a Cadillac. I think it should be a good Ford, and designed so that it may be better than many designs that cost much more and are inflexible.

KUWAIT FIRE DATA: Aircraft from several countries have been in Kuwait to take scientific measurements. Some regional surface data is being gathered. WMO is starting to coordinate events. The data needs to be gathered together. There needs to be a data center in Saudi Arabia and probably one at NCAR. I went to a meeting on the subject at RAF. They will write a proposal. I sent information to help scale the tasks and define what we could and couldn’t do. Unidata does not want to help with displays. There will be a big meeting at NCAR in July.

ECMWF DATA TO CHECK CLIMATE MODELS: Trenberth’s group will get us some carefully prepared statistics that are needed to check climate models. Livermore needs this soon.

DAILY RAOBS FOR WORLD: With Will’s help, we are doing a lot of work to figure out the relative amounts of data from different data sources, for several countries. One problem area is U.S. data. There are lost years of data on recent tapes from Asheville that are still on tapes we got from them 12 years ago. It frustrates me that they don’t even have controls to know if they lose data!!

CLIMATE TRENDS DATA: I wrote a paper about key datasets that relate to the study of global temperature trends. This will be used at a meeting in July, run by NASA.
DATA SUPPORT SECTION
Monthly Status Report
July 1991

Dataset Updates, Additions, and Requests (all)

NMC global grids, global surface subset grids, 65x65 tropospheric grids and 65x65 stratospheric grids have all been updated through June 1991. The NMC observational sets have been updated through 15 June 1991. A problem in handling certain buoy reports was discovered and reported to NMC. They will fix the problem for future data but we will need to correct it in data we already have in the archive. We now have Navy observed data through June 1990 on the mass store. There are still issues to be resolved before the upper air data can be fully recovered. NMC tropical grids were updated through March 1990 and the NMC 47x51 derived grid set was updated through June 1991. NMC flux grids, sigma level grids, and MRF grids were all updated through June 1991. Extremely large record sizes in the high resolution sets have been adjusted for easier handling.

CAC monthly mean global analyses were updated through April 1991. The ECWMF Consolidated set updates were arranged so that we could get the data for no charge through NCDC. We now have data through March 1991. Monthly statistics computed from the ECMWF WMO analyses by Kevin Trenberth have been added to the archive.

Thirty-four requests for data were completed during July. Several requests were handled for the new ECMWF grid fields. There were several large requests one of which involved billing of $4900.

Other Archive Activity (all)

Ilana Stern wrote an article on the DSS for SCD Computing News. Some pointers on accessing the archive were given. Adjustments to the data base software were made to accommodate changes in the MASNET interface.

Incoherent Scatter Radar Project (Barnes)

Most of the backlog of data requests, one since February, have been cleaned up. One request required editing a dataset before it could be sent out. One request remains for which a new program is being built which allows logical record subset selection and output in character format. The requestor wanted a small amount of data on a floppy in a character format.

IBM/NCAR Data Base Study (Worley)

Below is a brief summary and status report for the IBM and NCAR (SCD and CGD) cooperative study. This study was initiated with the goals of gaining experience with large datasets and developing a prototype method for handling them within the scope of EOSDIS.
Accomplishments:

1. A subsample of a large dataset (WOCE - CME ocean model) was provided to IBM. Numerous meetings and discussions have been held in order to provide dataset documentation and to describe users access needs.

2. Various schemes of data reorganization were thoroughly examined. A scheme that reorganizes the raw model output into 10x20 degree (lat., lon.) boxes was found to be most advantageous in terms of the number of model time steps stored and number of 3480 cartridges required to store the data. The reorganized files are called the "binned" dataset. This data is saved in netcdf format and a directory file is generated during the process so that subsequent programs can determine where to find parts of the dataset. This post processing step was planned such that it could be run in near real time following the model output. The amount of delay is determined by the number of time step that are to be saved in each binned data file.

3. All scientific research and data requests from this dataset are planned to take place from the binned data files.

4. A data subsetting program has been written and tested. Based on geographical, ocean depth, and time limits specified this program automatically extracts the requested data from the binned dataset archive. This program uses the directory file (also netcdf) created during the binning process. The extract data is also in netcdf format. The subsetting program is a batch job program to be run on the CRAY. Initial testing was carried out using an EXABYTE robotics device, UNITREE mass storage software, and a local host computer at at IBM in Houston. Successful operation is nearly complete at NCAR.

5. An archive retrieval program has been written and tested. This program runs on a front-end machine/workstation. This program merely prepares a subsetting program job for the processing computer (the CRAY in the case of NCAR). Successful operations have been achieved at IBM and at NCAR (using Bierstadt as the front-end machine and the netsend utility to deliver a job to the batch queue on the CRAY)

6. An order processing program has also been written and tested at both IBM and NCAR. This program runs on the front-end machine and has the primary task of monitoring the e-mail system. Incoming data requests are scanned for validity and accurate estimates of output data file size are made. The requester is replied to and ask to confirm that the requested order is indeed desired. If confirmation is positive the archive retrieval program and subsetting program (described in items 5 and 4) are initiated. If the requester has supplied ftp return information the subset data file is return to that machine, if not the data is sent to the mass storage system.

Current active projects:

1. Process 24 WOCE-CME ocean model raw output files into the binned dataset format.

2. Complete installation of the full system, items 4-6 above, on the NCAR systems (Bierstadt and Shavano). Some software work and testing is still required. Also software license agreement from the IBM administration is still not complete.
3. Complete written documentation.

4. Turn the software over to Steve Worley (DSS) and Frank Bryan (CGD) for further testing and implementation into current model activities.

Future projects:

1. Provide IBM with another very popular gridded dataset - probably ECMWF or NMC. They wish to continue work with the objectives of making the existing software more general and useful.

Comments by R. Jenne

TEMPERATURE TRENDS WORKSHOP, July 9-11, 1991: I attended a workshop organized by NASA, to discuss the latest world research about temperature trends. It included the cooling effects of volcanoes, history of large volcanoes, observed temperature trend data, natural variability that obscures signals, temperature perturbations due to El Nino, etc. We discussed the question of why we have not observed as large a warming as present models predict, given the change in greenhouse gases since 1850.

DATA FOR REANALYSES, NOAA GRANT: On 18 July Phil Arkin told me that their panel had made decisions about the reanalysis money. There is $220K of entirely new money to be split between NMC and NCAR. Summary for Data Support:

FY91: We received $90K of starter money about April 1991.

FY91: This $110K is additional money (I believe that I should think of this as money to be spent in 1992).

FY92: The $110K will continue in FY92 and probably FY93.

SATELLITE LASERS - MEASURE GLOBAL WINDS: There was a working group meeting of the science team for this NASA project on July 15-17. I attended this at the invitation of Wayman Baker. The backscatter and doppler shift from aerosols and cloud particles is used to measure winds which we badly need. Unfortunately, the earliest launch date is in 2001. Also, the instrument alone is projected to cost $200M. An Atlas launch costs about $120M. And these costs do not include the satellite itself. (I prepared a 3-page text about this project.)

DATA FOR FOREST FIRE LAB, MACON, GA: Gary Achtemeier (912) 744-0252, needs daily analyses for ten years from one of two NMC regional models with 180 Km resolution. He called NMC to determine whether the data existed and the cost and ease of using it. He said the situation was looking bad. Someone told him to call NCAR. He started the conversation by asking if we had the data (and whether it was on 1800 tapes). We have all the data; 10 years is on the equivalent of 48 round tapes. We can easily pull out the fields that he needs onto 12 tapes. He liked the flexible data extraction that we can offer. He said at the end, "Great, you have really made my day. I was really getting discouraged and thinking of trying another approach to the problem which would not have worked well."

EOS SCIENCE MEETING: On July 21-26 I attended a meeting at Penn State University which
was organized by the NASA EOS science panel on climate and hydrology. It was about physical climatology and hydrology. People need a lot more rain - river - snow data than we can readily provide. Eric Burton organized it; and it was quite good. EOS CO-I's were encouraged to attend.

KUWAIT FIRE DATA: We had another meeting with FOF about these data. An international meeting was held at NCAR on July 22-23. Dennis Joseph gave a presentation about what our group could offer for data management.

CD-ROMS: Cliff Mass called again. He says that this subject is on the agenda for the UCAR Members' Meeting.

- CD-ROMS are a frustration for me. They are very hot in the community. Many organizations are producing them rapidly. For three years NCAR has had a chance to be a leader in the area. We are now behind others.

- I'm writing a text about available CD-ROMS. This was started in March 1991 after several people asked for information. The text should help to put NCAR a bit on the CD-ROM map. During July I gathered information about many more existing and planned CD-ROMS. The extent of activity is surprising. We need to get this text on the street by the members' meeting.

HIRING PROCESS: We have been active in screening applications for our new positions.
DATA SUPPORT SECTION
Monthly Status Report
August 1991

Dataset Updates, Additions, and Requests (all)

Data sets updated during August and the most current dates available are:
- Navy gridded fields (not converted to archive format), April 1991.
- Gridded temperature fields from MSU satellite data, April 1991.

Work continues on entering the Colorado 3 second resolution elevation data into the archive. Replacements for two boxes which were not the correct location were requested. RAP expressed interest in this same data for Hawaii and an order has been placed.

There were 30 external orders for data completed during August. There were several requests for NMC data sets. The other requests involved a wide variety of sets. One large request for NMC observed data was sent to Italy and involved billing for $15000.

General Archive Activity (all)

A new station inventory of NMC ADP data sets was developed and run on the upper air data beginning in 1973. This inventory was run in combination with a pass through the data to answer a large data request. An error in the US precipitation values for 1981 was detected by a user. The error has been corrected in the affected data sets. A new version of the Chinese monthly precipitation set has been created in a format consistent with the other monthly sets.

Problems with record formats in the NMC flux data sets have been corrected by segmenting the long tape records. A summary document for the NMC data sets was written to give an overall view of the data sets and the supporting documentation and programs. An article for the SCD Computing News was written to summarize the various data sets from ECMWF, especially the new TOGA sets.

The TD13 dataset was revisited, plans were modified in order to expedite freeing up 405 V tapes. Now two copies are resident on the mass store and the inventory format was simplified in hopes that the inventory can be built to confirm what we really have. Digitizing the master station inventory is no longer an immediate hurdle and a short cut to confirm the 405 volumes contents has been devised.

With the additional staff in the section, enhancements to the data base were made to improve response and reduce contention for usage. Read-only capabilities were added. Capabilities for tracking exabyte and 3480 tapes were added to the system.

Incoherent Scatter Radar Project (Barnes)

In order to fill the last data request from the back-log and to satisfy other needs, I built a program which reads the binary format and writes a character file of "flat file" construction. User provided space and time selection criteria are applied to a primary parameter and, date/time and the parameter values passing the selection criteria are output. For each selected "row",
additional parameters may be added to the output. This program will become the new starting point for people building their own access programs. It also allows a convenient way to extract small volumes of data. This "gdat" program was installed on the Cray, a Sun and most painfully on a DEC 3000 (with Byte reversal and goofy Fortran). The DEC machine is at Utah State and represents Vince Wickwar's students preferred mode of work where they spin a small job on Shavano to select a subset of a MSS volume, copy the volume to a frontend (cedar.hao) using MIGS, and rcp (or ftp) the subset to Utah. The data are COS blocked binary at all stages.

Ocean Data Projects (Worley)

In order to support ocean, atmosphere, and coupled modeling activities a new data set has been acquired from Josef Oberhuber of the Max Planck Institut fur Meteorologie. Beginning with the COADS MSTG product gridded monthly climatological fields were computed. In addition to the basic data, grids of ocean/atmosphere fluxes, and anomalies were derived (see table below). Data grids of this type are becoming more and more essential as we strive to develop realistic coupled ocean/atmosphere models. Higher level data manipulation work such as this also illustrates the vital need of continued work on primary levels such as COADS.

<table>
<thead>
<tr>
<th>Data</th>
<th>Fluxes</th>
<th>Anomalies</th>
</tr>
</thead>
<tbody>
<tr>
<td>air_temp</td>
<td>buoyancy</td>
<td>air_temp</td>
</tr>
<tr>
<td>cloud_cover</td>
<td>c_transfer</td>
<td>cloud_cover</td>
</tr>
<tr>
<td>humidity</td>
<td>dqdt</td>
<td>humidity</td>
</tr>
<tr>
<td>pressure</td>
<td>latent_heat</td>
<td>pressure</td>
</tr>
<tr>
<td>rain</td>
<td>long_wave_rad</td>
<td>sst</td>
</tr>
<tr>
<td>sssalt</td>
<td>net_heat</td>
<td>u_component</td>
</tr>
<tr>
<td>sst</td>
<td>net_rad</td>
<td>uvabs</td>
</tr>
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<td>u_component</td>
<td>net_water</td>
<td>v_component</td>
</tr>
<tr>
<td>uvabs</td>
<td>sensible_heat</td>
<td>uvdev</td>
</tr>
<tr>
<td>udev</td>
<td>solar_rad</td>
<td></td>
</tr>
<tr>
<td>v_component</td>
<td>u_star</td>
<td></td>
</tr>
</tbody>
</table>

The research scientist from several institutions in Chile have requested data to support their activities in the TOGA study. The DSS has been able to provide five key oceanographic data sets. The origins of these data sets are, Scripps Institution of Oceanography, NODC, NMC, and GFDL. The Chilean group was extremely pleased to receive this important group of data from one convenient location. This illustrates the unique role the DSS and NCAR play in international research.

IBM/NCAR Data Base Study (Worley)

The joint project between IBM (Federal Sector Division, Houston) and SCD has made some advances. The plans for transferring and supporting the software developed at IBM to SCD are in place. The written software agreement between NCAR and IBM has been completed. New SCD accounts on Bierstadt and the Cray will be created from which the automated orders, subsetting, and data delivery prototype software will be run. At this time there is just one data type available (the CME model output data). IBM and SCD plan to continue this joint effort. The existing software will continue to be enhanced and supported, and other data sets will investigated for inclusion in the system.
Staff

Interviews and reference checks were completed and offers made for 3 new positions in the section. All offers were accepted and starting dates for new employees are Joey Comeaux, 3 September; Bob Dattore, 16 September; and Chi Fan Shih, 1 October.

Comments by R. Jenne

USE OF DATA ONLINE: One of our job candidates had a considerable amount of experience in using our data online. I asked him how easy it was to find the volumes needed for particular dates of data, plus the use of our access programs. He said that both of these functions worked very well and were very easy. We try to achieve absolute minimal learning time and it seems to be working. The access programs are also portable to many computers.

Catalog functions still need work in the areas: amount of information, updates, and access.

NOAA METADATA PROJECT: ERL has a project to develop software (now with Hypercard) to help keep track of metadata. COADS is an example to experiment with. Jenne is a member of the advisory committee which met August 13, 1991.

COST OF BASIC NOAA DATA: Our cost of NOAA data obtained via Zephyr will probably increase about 10%. It is fortunate that we do not obtain the data directly from NMC, because those fees were high and are increasing by a factor of about 3.36 for most users. Dennis says that the price for science users should not increase very much. Some examples of NMC annual fees are:

<table>
<thead>
<tr>
<th>Data Lines</th>
<th>July 1991</th>
<th>New Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Data Service</td>
<td>$3,500</td>
<td>$11,760</td>
</tr>
<tr>
<td>International Data</td>
<td>4,000</td>
<td>13,444</td>
</tr>
<tr>
<td>Numerical Products</td>
<td>10,000</td>
<td>33,600</td>
</tr>
<tr>
<td>Digital Facsimile</td>
<td>5,500</td>
<td>18,480</td>
</tr>
<tr>
<td>AFOS Graphics</td>
<td>20,500</td>
<td>68,880</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAC Products</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent user (100+ calls/yr)</td>
<td>$600</td>
<td>$1,452</td>
</tr>
<tr>
<td>Moderate (52-99)</td>
<td>400</td>
<td>968</td>
</tr>
<tr>
<td>Light use (12-51 calls)</td>
<td>140</td>
<td>339</td>
</tr>
<tr>
<td>Casual (1-11)</td>
<td>48</td>
<td>116</td>
</tr>
</tbody>
</table>
DATA SUPPORT SECTION

Monthly Status Report
September 1991

Dataset Updates, Additions, and Requests (all)

Datasets updated during September and the most current dates available are:
- NMC gridded flux and sigma fields, August 1991.
- Gridded temperature fields from MSU satellite data, August 1991.

A new dataset of high quality daily US station data was added to the archive. Overdue updates on the time series grid datasets have been started. Access and display programs were written for the new dataset of 3 second elevation data for Colorado and Hawaii. It took some interaction with the EROS data center to finally get the correct data.

There were 36 data requests completed during September. There were several orders each for NGM/LFM grids, NMC global grids, new NMC product grids, ECMWF grid fields, time series grids, and climate model grids. Large orders involved new NMC product grids, ECMWF grid fields, and LFM grids. There were two orders for data from the IS Radar archive.

General Archive Activity (all)

New inventories for NMC ADP surface data were completed. These will be useful for meeting customer requests and for assessing archive content for reanalysis.

Discussions and testing of improvements and new options for our internal database are ongoing. How best to enhance the system and interface it with the online information system for users are two of the primary issues.

New codes were written for extracting ECMWF GRIB fields from the archive, plotting NMC grid products, and writing 3480 cartridges directly from MSS archive volumes.

COADS Ship Data Archive

Two datasets that are new data sources for COADS were updated this month. During the USA-USSR Bilateral Data Exchange working group meeting at NCAR the Soviet scientist delivered an update tape for the USSR Marine Ship Data archive. This data was copied into the MSS archive and the data format was analyzed for consistency with data previously placed in the archive. The Inter-American Tropical Tuna Commission (IATTC) also furnished a new data tape for the fishing fleet data archive. This data was also incorporated into the existing fishing
fleet data archive on the MSS. Data format accuracy and consistency checks revealed this tape contains numerous problems. Communications with the IATTC have been initiated to get further information and to establish the proper way to make corrections.

Staff

Joey Comeaux, Bob Dattore, and Chi-Fan Shih joined the DSS in September and early October. They will be working on the reanalysis project, CD-ROM project, catalog enhancement, and other archive activities. Their time and time from other DSS staff was spent on training on the SCD systems, DSS techniques, and gaining familiarity with the archive.

Comments by R. Jenne

HYDROLOGY TRIP (23 August - 1 September): I attended a meeting in Germany about hydrological data in support of climate change studies, 26-30 August 1991. This was an "Advanced Research Workshop" sponsored by NATO. There were about 35 participants, mostly from NATO countries, but Ghana and the USSR were also represented.

I wrote a paper about hydrological data for the book, gave a talk, and chaired a half-day session about evapotranspiration and climate models. I proposed a project to prepare a CD-ROM with European hydrology data -- It may work. The hydrology person from WMO in Geneva (Askew) is interested and will try to push it. Remarks were made about how satellite data is hopeless to use because of volume. I outlined some sampling strategies to think about, and described the sampled data now available.

During the trip I also did about twelve hours of work on three texts: CD-ROM, Computing, and Data for Hydrology.

US - USSR MEETING AT NCAR: Three Russian visitors visited September 14-20. During August and early September we worked to get ready for the visit. A USGS person (California) came to discuss the US rivers list. I wrote the ocean plans and received partial lists from Asheville showing what was exchanged last year.

During the week we prepared two major documents with US - USSR agreements. The first was a plan for the exchange in 1992 with enough detail that PIs in both countries can tell what is scheduled to happen. The second document has less detail, and describes the different programs and accomplishments for the main National Working Group VIII document. It is about fifteen pages long.

The overall data program for US-USSR is going very well. Some comments:

- Climate data exchange is going well. NCDC (Asheville) is heavily involved.
- Ocean data exchange has been weak for ten years. It is now starting to go well.
- Ship data exchange for COADS. This is going very well.
- River data. I've been trying to get this going for five years. USGS has been involved for two years. They came to this meeting in Boulder.

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• Snow pack data. A representative from the US snow network was at the meeting. We also visited a Snotel (snow site) near Berthoud pass. The net uses meteorburst communications (bounce message off the ionized trail of a meteor).

The store shelves in the USSR are very bare. They don’t know what funding to expect. They had 1050 people in their organization in January 1990; this dropped to 900 in August 1991.

I sent copies of the USSR documents to the National Climate Program office and to the various groups involved in the exchange.

CD-ROM ACTIVITIES: I did a considerable amount of additional work on the CD-ROM text in August, September, and early October to have a useful version ready for the Members Meeting. More CD-ROMs have been made than I realized, including many that have good pictures of planets. 100 copies of the text was made for the Members Meeting (65 copies were taken).

UCAR MEETING AND CD-ROMs: We displayed information about storage media in general and CD-ROMs, in particular, for the UCAR Members Meeting on October 8, 9. Dennis Joseph and Steve Worley demonstrated several CDs.

The meeting had a discussion about CD-ROMs on the agenda. I presented information about technical options for sending data, satellite data possibilities, new NMC data archives, and a few other datasets. Some of our documents with more information were also indicated. One of our handout sheets told people how to find 30 of our inventories on-line.

ADVISORY PANEL FOR NCDC: I had to miss the first panel meeting at Asheville because of the USSR meeting here.

CLIMATE MODEL TEXT FOR BOOK: I finished the text that describes the general nature of climate models, gives specific info about some of the models for which we have data, and presents some sample output.
DATA SUPPORT SECTION

Monthly Status Report
October 1991

Dataset Updates, Additions, and Requests (all)

Data sets updated during October and the most current dates available are:

NMC Medium Range Forecast flux archive and sigma analyses, 2 October 1991.
NMC Medium Range Forecast model 10 day forecasts, September 1991.
ECMWF/TOGA basic surface and upper air analyses, June 1991.
NMC 65x65 grid data, September 1991.
NMC 65x65 stratospheric grid data, September 1991.
NMC surface and upper air station data, 28 September 1991.
Navy surface and upper air station data, September 1991.
World monthly upper air station climatology, December 1989.
US summary of day cooperative, December 1990.
Limited fine mesh analyses thru 91/09/30
Nested Grid Model thru 91/09/18
C1 ISSCP set updated to March 31, 1988.
C2 ISCCP set updated to 1987.
NMC 47x51 grid time series sets, June 1991.
NMC lat-lon grid time series sets, June 1991.
Global temperatures from MSU data, August 1991.

The Legates Willmott Global Temperature and Precipitation Data has been enhanced. References, correct description, and access programs were added to the set. Work has started on adding the South African raob update to the time series raob set.

A new precipitation data set is currently being processed. The data is GPCP rainfall estimates. These are pentad estimates derived from the GPI based on geostationary data from GOES, GMS and METEOSAT. The period covered is 1986 through June 1991 and has an areal coverage 0E to 0W and 40N to 40S.

There were 31 data requests completed during October. ECMWF analyses, NMC analyses, and elevation sets were the most popular sets. Total billing for the completed orders was $10,000.

General Archive Activity (all)

New versions of several modules of the internal database were brought on-line this month. These utility scripts do tasks such as logging database activity, removing temporary files, checking ownership of critical files, and extracting database information. The new versions execute up to ten times faster than the old versions. Discussions and testing of improvements and new options for our internal database are ongoing.
The inventory collection volumes for two of the NMC grid data sets, were updated through August 1991.

A special order for US hourly precipitation data, Jan-Apr 1991, was placed for Phil Haagenson, MMM, and he was set up with format and access program. This data is being used to verify the results of the Winter Icing Storm Project (WISP), 1991.

Inventory programs are nearly complete for the older hourly station data. Documentation for all decks regarding date/time and Tmax/Tmin fields has been reviewed. Stations location information is being integrated into the inventory runs.

Chi-Fan attended the Unidata workshop 23-25 October 1991. The SCD UNIDATA system is up and running and will ingest Zephyr weather data to replace the same functions currently done on the IBM system.

SCD/IBM Study

Some progress had been made in the cooperative SCD/IBM study. The prototype WOCEnode system has been installed on Bierstadt. The system remains in test mode since one software and one security issue still needs to be solved. The WOCEnode system manages and manipulates just one dataset, the WOCEnode CME Model output. Work toward a multi-dataset system has begun. The DSS has supplied IBM with a 10 year time series of COADS MSTG data. In later phases of development the full dataset (1854-1990) will be provided. The 60 MBytes of binary data and software designed to access the data on workstation type Unix systems has been delivered to IBM via FTP over Internet.

Data Exchange

In order to facilitate data processing and data exchange in the USA-USSR Bilateral Data Exchange project 60 blank magnetic tapes have been sent to the World Data Center B, Obinsk, USSR.

Incoherent Scatter Radar Project (Barnes)

With considerable difficulty the Utah State University, USUION model was installed at NCAR. An HAO visitor attempted to use the model and soon found a peculiarity which required further work on the model. The model provider was notified but it was most expedient for Roy Barnes to build and install a patch.

Comments by R. Jenne

ELECTRONIC PUBLICATIONS: The AMS (Met. Soc.) is studying the possible use of electronic methods to quickly publish some papers. Joanne Simpson (Goddard) visited on 18 October to discuss this. I gave her a batch of information on multimedia, image storage, image compression, automated fax, and Kodak plans. I also gave her a copy of the news story "New Journal Will Publish Without Paper" in Science, 27 Sept. 1991.

MEETINGS:

October 3, 4 SCD Retreat, Allenspark; three of us went.

October 8, 9 UCAR Members Meeting. We put on a display for data storage and distribution, especially using CD-ROMs (Dennis and Steve described the displays). I gave a talk to the members about CD-ROMs. People took about 65 copies of "Data Available on CD-ROMs".

2
October 14 SCD Panel. I gave a talk on CD-ROMs

GAO VISIT ON OCTOBER 7, 1991

Two from GAO visited Boulder to talk about EOSDIS. I think that they will recommend against funding the big super-data contracts being proposed by TRW, Hughes, and GE.

DOE AND EOS DATA (NASA COMPETITION?)

A few months ago DOE talked to the EOS review committee about their proposal to build small satellites, "Brilliant Eyes". This was contrasted with the NASA drift toward huge satellites. The review committee recommended a restructuring of NASA plans. This will happen.

On October 15, Chuck Leith talked with me about the idea of DOE making a proposal to handle EOS data. Their price would be better than NASA's. Livermore sent proposal ideas to DOE HQ. EOSDIS needs some competition; this may help.

Tom Spence (NSF) sent me information from his group at the Senate that listed EOSDIS as costing $3.6 to 4.0 billion through the year 2000. At a meeting in October, a NASA person referred to EOSDIS as costing $4 to 5 billion. No wonder we have deficit problems.

VISIT FROM FINLAND: On 18 October Raino Heino visited from Finland. He gave me information on two of their programs. I gave him six publications, including information about the China exchange. They will soon have some contacts in China.

TRIP 23 OCTOBER (Wed.)-31 OCTOBER TO WASHINGTON DC, WILLIAMSBURG: This trip was to attend a meeting of our NAS Panel on Geophysical Data, and to participate in US-USSR bi-lateral planning.

ACADEMY DATA PANEL: Our panel on Geophysical Data met 24,25 October. We discussed the status of various data programs in the country.

Briefing on Ciesin (a data group, funded by NASA) There is a "Consortium for International Earth Science Information Network". It involves six universities and is incorporated in Michigan. At our Academy Panel (for Geophysical Data), they gave us a briefing on October 25, 1991. Their job is to make some of the social, health, and economic data more readily available, especially USDA and EPA data. It is also to make sure that the earth science information gets more use for human needs. This all sounds fairly good if they knew the discipline area, etc. They are planning a 44 mbit/sec network speed. One of our panel members reacted in surprise. This is an awfully fast speed for the type of data they may obtain. In early October, two came to NCAR from Michigan and talked with me. They were gathering ideas about data, etc. They were nice people, but just getting started in this area. One had been an astronaut.

Our whole NAS committee was astounded at the budget. 1991. Money from NASA;$8.5 million;$28.4 million Other money;$.5;2.0 Total;$9.0;$30.4 million.

A New Academy Panel?: After hearing some of the big bucks talk, Dick Reed (Univ. of Washington) proposed that a new NAS committee be established: "Bringing Sanity to Global Change".
MAIN US-USSR BILATERAL MEETING (IN VA, OCT. 27-31): There were about five delegates from the USSR. Only one actually traveled from the USSR for this meeting; the others are visiting labs here for a year. About four more planned to come from Russia. There were problems buying airline tickets.

I gave a talk about the status of the data exchange project.

Golitsyn (Head of Soviet part of bilateral) gave information about the status of programs in the USSR. Most things are uncertain. He is in the Academy of Sciences. In early 1991 the republics, including Russia, decided they wanted their own academies. So planning has been going on to set up a Russian academy (90% of the people in the USSR Academy are from Russia). About August 1991, the funding prospects for the USSR Academy looked bad. Therefore, the USSR Academy declared itself to be the Russian Academy. So now Russia has two academies, one being developed and the other inherited from the USSR. These two will become one.

The USSR agency, under which this exchange was organized, was dissolved on November 1. But the Republics have promised to honor previous USSR treaties. So something will probably be worked out. Things are tough in the USSR.
DATA SUPPORT SECTION

Monthly Status Report

May 1991

Dataset Updates, Additions, and Requests (all)

General Archive Activity (all)

Comments by R. Jenne

WORK WITH GFDL: We sent Bram Oort an update of NMC raobs. China should be preparing raobs for us. I sent information about the exchange to Oort. He has a China contact who may help to independently check the data status. We want it for reanalysis.

INFORMATION ABOUT HUGHES AIRCRAFT

Question by Dick Reed at NAS Panel: Is the military cutback a part of this? (about EOS contractors)

Answer by Bob Mc Ferron (25 Oct. 91): "I talked to a person from Hughes yesterday. They had just laid off 800 of the 1600 people in his group". Hughes is near bankruptcy. They are desperate.

CD-ROMS

We have been spending a good deal of time to sort out issues relating to CD-ROMs, NetCDF, etc. It turns out that Net CDF blows up a number of formats more than we first realized.

TRIP WASHINGTON D.C., Nov. 17-21, 1991

- Nov. 18: Advisory Panel for NASA & Interagency catalogs
- Nov. 19-20: Workshop on interoperability. Mostly about catalogs and libraries, but other data too. About 70 people attended.
- 2 -

- Nov. 21: At meeting with Senator Gore. Help to make more classified data available. But he wants to also protect legitimate needs of protecting secrets.

NOAA Meeting About Data Support - 25 November 1991

NOAA just had a meeting about data support. Marsha Weeks (Nesdis) is writing up the notes from the meeting. She called to be certain that some technical points were correct. She said that "your name kept being mentioned as the kind of data support and response that should be provided." She said that especially Vernon Dear (ERL) and Wayman Baker (NMC) kept saying this. I know that quite a few NOAA and NASA people use our help. I hope that they complain if they don't get good service.

ANALYSES FROM GODDARD - November 26, 1991

Mike Seablom called from Goddard. Someone used an earlier version of their assimilations from our archives. They suggested that we now obtain the new version which is better and has a higher resolution (2x2.5). They will visit early 1992 to talk about details.
DATA SUPPORT SECTION

Monthly Status Report
December 1991

Dataset Updates, Additions, and Requests

Data sets updated during December and the most current dates available are:
NMC surface and upper air station data, 30 November 1991.
Navy N. Hem. 63x63 grid data, November 1991 (added 90Jul - 91Nov)
Navy S. Hem. 63x63 grid data, November 1991 (added 90May - 91Nov)
Navy N. Hem. 63x63 SST grid data, November 1991 (added 90Jul - 91Nov)
Navy band grid data, November 1991 (added 90May - 91Nov)
Navy spherical grid data, November 1991 (added 90May - 91Nov)
Navy 125x125 grid data, November 1991 (added 90May - 91Nov)
NMC Medium Range Forecast flux archive and sigma analyses,
  4 December 1991.
NMC Medium Range Forecast model 10 day forecasts, November 1991.
NGM Analyses through 11/18/91
The C1 data set (ds742.0) for the International Satellite Cloud
  Climatology Project (ISCCP) has been updated to April 16, 1989.
15 9-track tapes were received from NSSDC/GSFC.

U.S.A.F. ETAC DATSAV TD57 Global Aircraft Obs, 1976-1985) -- Labeled C-tapes were
  copied to Y-volumes and placed on the Mass Storage System. The U.S.A.F. DATSAV Global
  Aircraft data format continued to be examined, and sample printouts of the actual data are
  forthcoming. Also, aircraft data for the period 1947-1958 archived in ds360.0 was found to have
  a different format from the later data, and this format is currently unknown.

There was also more processing of the South African Raob data that are archived in ds390.0
  (Global TD56 Time Series Raobs, daily 1948-con). When we received the data tapes from
  South Africa, two tapes were found to contain parity errors while importing the data to mass
  store, and some records were lost from each tape. The records were recovered by reading the
  tapes on the IBM, and then the files were manually fixed to eliminate garbage characters and
  recover usable data. The next step for these data are to put them in RPTOUT format.

A new tape has been received for the Diaz precipitation data set. This tape contains gridded
  monthly precipitation, monthly precipitation anomalies, DOE precipitation station data and
  gridded precipitation climatology. The tape is currently being checked out and will be archived as
  soon as possible.

General Archive Activity

Versions of several modules of the internal database rewritten in the computer language
  'perl' were brought on-line this month. These scripts prompt the user for statistics on a data
  order, then parse the input to determine megabytes of data moved, number of tapes, etc. for
billing and record-keeping purposes. Finally, the results are recorded in various files. The new versions are in general many times faster than the previous versions.

Discussions and testing of improvements and new options for our internal database are ongoing. Made several small changes to handle the switch from Bierstadt to Huron. Made a few changes related to our new ftp procedures and our current weather info. Changed billing processing code to accommodate new charging algorithm.

The catalogs of TOVS data archived at NCAR have been regenerated. A cross-check of the new lists with the previous ones is in progress to make sure no data is lost.

In our continuing effort to inform SCD computer users about data availability and data access we published an article, Oceanographic data available at NCAR, Steve Worley, SCD Computing News, Dec. 1991, Vol. 12, No. 11. This article describes several popular datasets and instructs the reader on how to access more dataset information on the new DSS server (huron.scd.ucar.edu). The information within this article is proving beneficial, e.g. (from Howard Hansen @terra.Colorado.edu)

"I've just seen your article in the December SCD Computing News, and am delighted to see that these things are available locally. I have been struggling to develop a surface forcing dataset for the N. Atlantic from COADS (which is online at the CIRES/NOAA Climate Research Division), but it has no radiative fluxes or precipitation.

I'm going to download the catalog list from huron, and I may be in touch about acquiring the Oberhuber data soon."

CDROM Project

NetCDF software is installed on PAGODA and IBM PC. Issues of using NetCDF format as the standard format for the production of CD-ROM will be examined. Several meetings on the format issue have already been held.

SCD/IBM Study

The cooperative efforts with IBM in Houston concerning automated data acquisition have advanced. After a meeting in Boulder with Otis Graf and Fayne Sisco (IBM) it was decided to go ahead with more work that will develop automated data access for the COADS MSTG product. For our part in the project we have supplied the complete group 3 and 5 datasets (1854-1979). The new aspect for this data exchange is that now with sufficient disk space on the DSS server (huron.scd.ucar.edu) the data was totally transferred via Internet (430 MBytes). Many files were involved with small average size, about 3-5 MBytes. Otis at IBM had the following comments concerning the activities at their end:

"The download of the COADS data files was quite painless. It took awhile since the Internet link into our facility has a data rate of only 56K bits per second. The effective data rate was about 6.1K bytes per second. ......................
In my view, the ftp download process worked fine. I would like to go ahead and continue the process with Groups 5, 6 and 7. Just let me know when they are available on huron."

Data exchange like this are very effective (time savings way) for the DSS to operate. We certainly are making good use of our new server and will continue to expand our use of this method of data transfer.

UNIDATA System

The NCAR/LDM system on wetterhorn: Current weather information are now available under NCARDATA (anonymous FTP) account.

The rocketsonde and air quality data are missing for unknown reasons.

MMM group is using NMC GRIB data for real-time model simulation. The Stormfest field experiment will be from February 1 to March 15, 1992. It will be crucial to keep the NCAR/LDM running without interruption.

ACD group is going to use the NMC MRF GRIB data for trajectory analysis over Hawaii area. The field program will be from January 15 to February 15 of 1992. This is an on-going project and seasonal experiments are expected. Surface, 700mb and 500mb analysis and 24-hr forecasting maps at 0 and 12 UTC are needed. C-shell scripts to generate these weather maps are written and being tested.

UNIDATA has begun to use NCAR/LDM to supply weather data to RAP and NSF.

Comments by R. Jenne

Meeting of NASA Goddard DAAC (Dec 2,3):

I am a member of the advisory panel for the Goddard DAAC. Its core is made up of the Climate and Land data systems. Counting contractors, it has about 35 people. Things are just really getting started in the new organization. Bob Schiffer and most of the NASA EOS-Data people were there. Two scientists from Goddard are on the panel, and have some rather strong opinions about what kind of data system they want. I have written material.

NMC Meeting on reanalysis:

NMC wanted to talk for a day about reanalysis so I visited there on Dec 4. It was useful. There is going to be a lot of work at NMC and NCAR to get ready for this. I also got new information about their analyses and about the status of the Bufr format.

Data swap with Canada:

We are sending them a lot of Climate model runs for assessment studies. They will update our set of Canadian rawinsonde data.
A PC for the USSR:

The Main Geophysical Observatory (MGO) in St. Petersburg has collected world solar radiation data for many years. Scientists need a digital version of the data. We sent an i 486/33 computer to MGO. It left Denver on Dec 17 and arrived in Frankfurt on Dec 20.

Visit of Bob Fox, University of Wisconsin:

Bob visited on 17 Dec after a Unidata meeting to discuss various issues: satellite data, formats, etc. J.T. Young (Wisc.) had requested format information; I gave Bob some papers to take home.

Wordperfect 5.1 for Windows - Released November 8, 1991:

There is a story about the development and service efforts of Wordperfect Corporation in the Jan 1992 PC Computing Magazine. Some of the company’s operations may be of interest:

* There are 300 to 400 developers in Wordperfect Corp.
* They had been selling 150,000 copies of Wordperfect a month before the new release.
* There are more than seven million users of Wordperfect. Wordperfect 5.0 was released May 1988; 5.1 came out Nov 1989.
* Their delivery of Word Perfect for Windows was late. In May 1990 it was promised by the end of 1990. In Jan 1991 the date was June 1991. The actual release date was Nov 8, 1991.

* In July 1991 there were 787 people in the Tech Support Division
  - Average of 16,539 calls per day. The typical monthly phone bill has been $411,000. They spend 5 cents per dollar of revenues on supports. The average for other big software companies is 2 cents.
  - More than 300 toll free lines
  - In July 1991 there were 42% more employees and 58% more calls than in July 1989.
  - Average waiting time of calls: 43 seconds
  - They expected 5000 more calls per day after the Windows version was released
  - They had advance orders for 300,000 copies of Wordperfect 5.1 for Windows

They planned to release versions of the software in 13 different languages within a few weeks after the English version was shipped.

Microsoft:

Microsoft sold 4.0 million copies of Windows 3.0 during the first year on the market (starting in May 1990). Windows 3.0 has been very popular, but it is full of bugs and causes many system crashes. This increases the number of Help calls that Microsoft gets. Version 3.1 will soon fix
the bugs. Microsoft doubled its tech staff to 600 to handle all of the support calls, many for simple installation problems (Aug 1991). Microsoft has reduced the phone wait to under a minute for 85% of calls.

Education (computers and physics):

The State of Connecticut brings together about 200 to 600 teachers and students each year to talk about computer use in physics. George Rawitscher, Physics Department, U of Connecticut, will talk with them. He wanted information about climate models and forecast models for his talk.

Preparation for CD-Rom meeting:

We spent a good deal of time analyzing format issues for the January 6 & 7 meeting about CD-Roms. There are various memos.
Scientific Computing Division • Data Support Section

6 September 1991

MEMO TO: Bill Buzbee
        Bob Serafin
        Kevin Trenberth

FROM: Roy Jenne

SUBJECT: NCAR Plans

We have many data projects (services, oceans, Inch, radars, COADS, climate models, Kuwait fires, catalogs, etc.). I believe that the following two should be maintained in NCAR documents:

1. Global Reanalyses for 35 years

   An NMC/NCAR initiative to reanalyze the global atmosphere started about March 1991. An ocean analysis is included. The NCAR Data Support Section will prepare the necessary data inputs. NMC will develop the assimilation models and carry out the reanalyses. The output will be the usual fields such as winds and temperature, plus many diagnostic variables: precipitation, radiation, surface fluxes, etc. Many groups will use the results. Trenberth’s group in CGD will help to assess the quality of the output, as well as use the data. The first long set of analyses should be done by about 1995. Then other more advanced initiatives will follow.

   (Note: Rick Anthes and Ron McPherson, NMC have both helped to encourage this initiative.)

2. Prepare Datasets on CD-ROMs

   Many scientists find it very convenient to have access to large amounts of data locally at their workstation or PC. The CD-ROM technology makes it possible to provide data to meet this need at a relatively low cost. NCAR is starting a program to prepare CD-ROMs, as requested by a number of university scientists. The Universities will help with the task of developing and sharing software.

   The "Jay Fein" money will help to support this initiative.

- End of Memo -