Data for Selected Observing Experiments

- This covers various meteorological (and ocean) observing experiments such as Line Islands, GATE, FGGE, etc.
- It has developing ocean area synoptic storms (GALE and ERICA).
- It describes constant level balloon data.
- It includes some convective storm experiments.
- This text refers to 5 other bundles with more information.
- There are 16 items and 47 pages here.

Roy Jenne
NCAR
22 Feb 2002
Data for Selected Observing Experiments

Roy Jenne
NCAR
7 Feb 2002

A variety of observing experiments for meteorology and oceanography are briefly described here. The first one is during 1967. I have also gathered more detailed information about a number of programs. The references to those bundles of papers are given. We also indicate whether the special data for these observing programs have been used in the big reanalysis projects. Also remember that there is much year after year global operational observations that are not covered here, but which are used in reanalysis.

There are 16 items and 44 pages plus 3 pages in front.

1. One page has a little about GATE, GALE, EOLE, CCOPE

2. Information on Line Island Experiment (held Feb – Apr 1967) 3 p

3. The BOMEX Weather Experiment (held May – Jul 1969) 8 p
   • In Caribbean area

4. Constant Level Balloon Data, 5 p
   • EOLE French Balloon Data (Aug 1971 – Dec 1972, 17 mo)
   • TWERLE (13 Jun 1975 to 09 Aug 1976, 14 mo)
   • There is a bundle of papers about constant level balloon data, RJ0056, 56 p

5. The GATE Observations, Tropical Atlantic, 1974, 4 p
   • There is a bundle of papers about GATE, RJ  , 49 p

   • This was the big 1-year world weather experiment.
   • There is a bundle of papers about FGGE, RJ0158, 64 p

7. CCOPE (July 1981, in Montana) 6 p
   • Convective Storms
   • The status of the data in Feb 2002 is given.

8. Alpex Observations over Europe, 1 p

9. Sesame (in Apr 1979) 1 p

10. GALE and ERICA (1986 and 1988-89), 1 p
    • Atlantic storms
    • Much information in another paper bundle, RJ0107, 56 p

12. The TOGA ocean observations, 1 p

13. TOGA COARE Tropical Experiment, 1 p
   - 11/1992 – 02/1993 was the main period, held NE of Australia
   - There is a separate bundle of papers on TOGA COARE.

14. The WOCE Global Ocean Experiment, 5 p
   - Observations during 1990 to 1997

15. Ice Station Sheba in Arctic, 2 p
   - Observations started Oct 1997, lasted a year.
   - Includes rawinsondes, etc.

16. Data for Game Project, 2 p
   - Held near Asia, West Pacific, Apr – Oct 1998
   - Two CD-ROMs have analysis data.

Some comments about data that we used in reanalysis.

a. Used Line Island rawinsondes, not aircraft as yet.
b. Did not use data from BOMEX. It would be especially good to use the ship raob data.
c. Constant level balloons: We used the TWERLE data and the FGGE data. NCAR has the archive of French EOLE balloon location data, but we do not have a set of calculated winds. So EOLE data was not used. And the counts of TWERLE data could be increased.
d. GATE data: Used the ship raob data, research aircraft, and civilian aircraft. But it was in the wrong location. This hurt the NCEP/NCAR reanalyses over Africa during Jun – Sep 1974 (fixed Oct 2000, so data are okay in ERA-40).
e. FGGE data: All used.
f. Alpex: Data not used in US. It was used by ECMWF.
g. GALE and ERICA. Data not used; it should be used. We have it all on CD-ROMs, but no one has had time to extract the needed data and prepare it for reanalysis.
h. Ice Station Sheba. Not used yet. The UCAR JOSS archive has the high-resolution rawinsonde data (now Feb 2002). A university is working to prepare a normal rawinsonde archive with 50 to 90 levels in each. We hope to get the “normal” rawinsondes fairly soon. They should be used in new reanalysis projects.
i. Data for Game. Not used.
Section S

DATA FROM SELECTED EXPERIMENTS:

1. GATE Experiment (GARP Atlantic Tropical Experiment), 1974
   Time: Summer 1974
   Data included are ship observations (surface and UA) from an array of ships off
   the African coast. There are precip grids from ship radar. There are hourly
   satellite data. NCDC prepared a catalog. NCAR has a number of the datasets.

2. GALE Experiment (Genesis of Atlantic Lows), 1986
   Kreitzberg at Drexel gathered the many datasets. They are also on a CDROM
   made by U. Wash. It is hoped to make a better CDROM in 1989. See paper
   The data are not at NCAR.

3. EOLE Balloon Experiment (over S. Hemisphere), 1971
   The constant-level balloons drifted near 200 mb.
   Balloons: 50 in Sept 1971, 130 in early Oct, 280 in Nov 1981, about 40 balloons in
   July 1972.
   There were 155 days with more than 100 balloons. The French made a motion
   picture of balloon tracks. See paper about EOLE by Morel and Bandeen, Bull
   The data are at NCAR.

CCOPE (Cooperative Convective Precipitation Experiment)

Summer 1981, in Montana. Rawinsondes, radar, aircraft, photographs. Contact
the NCAR Mesoscale and Microscale Meteorology Division for more info about
these data. In Feb 1982, the Bureau of Reclamation and NCAR published an
extensive data inventory.
The Line Islands Experiment,
Its Place in Tropical Meteorology
and the Rise of the Fourth School of Thought
Edward J. Zipser
National Center for Atmospheric Research, Boulder, Colo.

Abstract
The Line Islands Experiment has resulted in unique and comprehensive data for studies of the meteorology of the equatorial Pacific. It is one of several recent field programs in tropical meteorology designed to attack the central problem of scale interactions, especially the role of convective and mesoscale systems. Some of the recent evidence is reviewed that indicates the importance of these interactions in understanding the non-steady state aspects of tropical disturbances. A variety of results from the Line Islands Experiment are summarized, with emphasis on their relevance to the planning of GARP tropical experiments.

1. Introduction
The Line Islands Experiment (LIE), conducted on and near Palmyra, Fanning and Christmas Islands (Fig. 1) during February–April 1967, produced a comprehensive sample of satellite, aircraft and surface-based meteorological data. The time seems right to review the progress of LIE-related research and to identify some of the most promising areas for future achievements.

---

*The National Center for Atmospheric Research is sponsored by the National Science Foundation.
Fig. 5. Spectra of meridional winds (m/sec) for the period 5 March–20 April 1967. Total variances (m²/sec²) in parentheses (after Madden, 1970).

Fig. 6. Height time cross-section of the meridional winds at Christmas in m sec⁻¹. The time of individual rawinonde releases is given by the arrows along the top of each section (after Zipser, 1969b).
Rawinsonde Data Obtained During the Line Islands Experiment
Volume I: Data Reduction Procedures and Thermodynamic Data

R. MADDEN
E. ZIPSER
E. DANIELSEN
D. JOSEPH
R. GALL

February 1971

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH
Boulder, Colorado
The BOMEX Weather Experiment

- Held May through July 1969
- Location in the Caribbean near Barbados Island
- There were a few ships, also aircraft
- NCAR has part of the data

Roy Jenne
9 Aug 2000
Radiative Transfer Observations and Calculations During BOMEX

P. M. KUHN
L. P. STEARNS

BOULDER, COLORADO
April 1971

Price $1.50
AEC-DEPARTMENT OF COMMERCE-DEPARTMENT OF DEFENSE-NASA-NSF
DEPARTMENT OF INTERIOR-DEPARTMENT OF TRANSPORTATION

NOAA Technical Report EDS 12
BOMEX Permanent Archive:
Description of Data

Center for Experiment Design and Data Analysis
Washington, D.C.
May 1975

There were a series of "Bulletins"

Prepared by
Center for Experiment Design and Data Analysis
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ROCKVILLE, MD. 20852  TELEPHONE 301-496-6871
See a map on next page

This has 47 pages
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Research Laboratories

BOMEX
Atlas of Satellite Cloud Photographs

Vance A. Myers

Barbados Oceanographic and Meteorological Analysis Project Office
Rockville, Md.
July 1971

This has 250 pages

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Research Laboratories

BOMEX
Period III High-Level Cloud Photography Atlas

Barbados Oceanographic and Meteorological Analysis Project Office
Rockville, Md.
May 1971

This has 123 pages
NOAA Technical Report EDS 10

BOMEX Temporary Archive
Description of Available Data

TERRY DE LA MORINIERE
Office of the Associate Administrator for Science and Technology
National Oceanic and Atmospheric Administration

SILVER SPRING, MD.
January 1972
This collection of papers is about the world's constant level balloon data during 1970 through 1980. These balloons were not allowed to overfly the land masses of the Northern Hemisphere so they had to remain in the Southern Hemisphere. The data include:

**EOLE:** Many balloons over the Southern Hemisphere Aug 1971 – Dec 1972. NCAR has the dataset of balloon locations. *(From France)*

**TWERLE:** Data on NCAR tape for 13 Jun 1975 to 09 Aug 1976. The Southern Hemisphere balloons floated near 150 mb. By 17 Aug 1975, there were 95 balloons up and working, and more later.

**FGGE:** Jan 1979 – on. About 10 balloons were operational by 8 Jan 1979 and a peak of about 80 operational by about 3 Feb 1979. Since there were no more launches, the active balloons decreased to about 18 by 5 Mar 1979. *(This was for the Winter Monex period.)* Maybe there were more launches for summer Monex?

*This has about 12 papers, and 56 pages. It is in bundle RJ0056* 
*See the bundle*
EOLE French Balloon Data (Aug 1971 - Dec 1972)

This data gives the position of constant level drifting balloons (at about 200 mb) over the southern hemisphere. The total data period is 21 Aug 1971 to 23 Dec 1972 (satellite orbits 0065-7075). A total of 480 balloons were launched. Six tapes have all of the data and one tape has data for 27 Aug 1971 - 5 Jul 1972 without correction matrices (see the Format 2 data below). The data is at NCAR. The French prepared a movie showing balloon drift; NCAR DSS has a copy of the film. EOLE is dataset DS 800.0 at NCAR.


This tape was sent from Morel in France to Bandeen at NASA Goddard. This tape has more QC of the data and it gives data for 27 Aug 1971 to 4 Jul 1972 (orbits 151 to 4622). Morel has high confidence that most of the location errors (relatively few) that remained on the CNES tapes have been eliminated. Therefore this Format 2 tape gives only the single high-confidence location of each balloon. The correction matrices are not included because they have been applied (see the letter to Paul Julian from Bill Bandeen, Dec 13, 1972).

The format has orbit number, balloon number, date, location, temperature, and pressure for each balloon position (not winds). There was no altimeter on EOLE; there was an altimeter on each balloon in the later TWERLE experiment.

2. Amount of data

How many reports are there? The approximate number of operating balloons were as follows (also see the plot in Bul AMS, Apr 1973):

<table>
<thead>
<tr>
<th>Date</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sep 1971</td>
<td>50</td>
</tr>
<tr>
<td>10 Sep 1971</td>
<td>100</td>
</tr>
<tr>
<td>15 Nov 1971</td>
<td>280, the peak</td>
</tr>
<tr>
<td>1 Mar 1972</td>
<td>100</td>
</tr>
<tr>
<td>15 May 1972</td>
<td>50</td>
</tr>
<tr>
<td>31 Jul 1972</td>
<td>40</td>
</tr>
</tbody>
</table>

During the 1-year period, Sep 1971 to Sep 1972, the EOLE satellite logged 168,000 balloon interrogations, all of which were processed and logged on digital files.

- Aug 21 - Oct 28, 1971 (~70 days, 36,696 records)
- Oct 29 - Dec 6 1971 (39 days, 40,333 records), about 1000 per day
- Dec 6, 1971 - Jan 12, 1972 (37 days, 36,958 records), about 1000 per day
- Jan 12 - Mar 1, 1972 (48 days, 32,490 records)
- Mar 1 - Dec 23, 1972 (~290 days, 48,646 records)

3. Source of more information

See Morel and Bandeen, 1973, in the Apr 1973 issue of Bul AMS.
Dear Roberto:

My memory is that we did not use the EOLE winds, but I will check with my colleagues. Good question, it lends itself to research either way.

Eugenia

"C. Roberto Mechoso" wrote (from UCLA on Dec 14, 2001):

> Querida Eugenia,
> 
> I have been enjoying a scientific collaboration with French colleagues at CNES/CNRS. Our project uses super-pressure balloons to gather in situ data for the lower stratosphere, with emphasis on the Southern Hemisphere. You might remember that in the early 70's another French project, EOLE, launched hundreds of balloons that drifted in the upper troposphere of the Southern Hemisphere. We would very much appreciate it if you help us to quickly find out whether data from the EOLE balloons was used in the production of the famous NCEP Reanalysis dataset.
> 
> My best personal regards,
> Roberto
> 
> Carlos R. Mechoso, Professor
> University of California, Los Angeles
> Department of Atmospheric Sciences
> 7127 Math Sciences Building
> 405 Hilgard Avenue
> Los Angeles, California 90095-1565
> Phone: 310-825-3057
> FAX: 310-206-5219
> 
> They were not used.

Eugenia Kalnay
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Home: Malise Dick and Eugenia Kalnay <ekalnay@erols.com>
56 Lakeside Dr, Greenbelt MD 20770
tel/fax 301-313-0208
Dear Roy:

Thanks a lot for your help. Shall we talk about the forecasts on Monday?
Eugenia

Roy Jenne wrote (from NCAR):

> Subject: EOLE Winds
> 
> We have not used EOLE winds in any reanalysis project. I found that people did calculate EOLE winds in the 1970s, but they did not get to any archive. About 2 or 3 years ago we still had an archive of the basic data and sent a copy to France, on request. The French made a very nice videotape of EOLE balloons in past years. If anyone calculates new EOLE winds, we would like a copy.
>
> The TWERLE data was used for reanalysis and it has an altimeter. Both EOLE and TWERLE have very valuable data, and should be used for more research. I have a bundle of information about these data. I think that it could be very useful to have continuous data like EOLE and TWERLE in the Southern Hemisphere. In 1990 I found that this could be done for under $2m per year.
>
> Sincerely,
Roy Jenne
>
> P.S. We do now have the reanalysis forecasts each 5 days and they are up-to-date. I still need a little discussion with you about this.

From: "Eugenia Kalnay" <ekalnay@metosrv2.umd.edu>
To: "Francois VIAL" <vial@nautilus.lmd.polytechnique.fr>
Cc: <ekalnay@metosrv2.umd.edu>; <jenne@ucar.edu>; <mechoso@atmos.ucla.edu>; <robert.kistler@noaa.gov>, <jack.woollen@noaa.gov>; <hertzog@lmd.polytechnique.fr>; <basdevan@ravel.ens.fr>
Sent: Tuesday, December 18, 2001 9:03 AM
Subject: Re: URGENT QUESTION ON REANALYSES

Dear Francois:

If it was possible, we would love to have a copy of the winds for the EOLE experiment.

Thanks!

Eugenia

Francois VIAL wrote (from France):

> Dear all:
>
> Thanks for your prompt responses to the inquiry of Roberto Mechoso. We, at Laboratoire de
Meteorologie Dynamique -LMD- in collaboration with Roberto, are now working again on the EOLE experiment. As you know, LMD was one of the leaders of EOLE experiment. LMD is now engaged in a new experiment, Vorcore, during which around 20 stratospheric pressurised balloons will be launched from McMurdo in austral spring of 2003. The preparation of Vorcore explain our present interest in EOLE data.

The EOLE data were archived by CNES (the French Space Agency) but the corresponding magnetic tapes were not copied on more modern supports and are not available anymore. Fortunately the data were still archived, thanks to NCAR, and sent back to France upon CNES request.

We spent some time to check what the archived data represent precisely and how they were used in the past. We made consistency check and are now able to correct some errors. Our next step will be to calculate horizontal winds. Of course, we will inform NCAR of our progress in this field.

Sincerely yours

Francois Vial
The GATE Observations, Tropical Atlantic, 1974
Roy Jenne
Jan 2, 2002

The GATE experiment involved a number of observing ships in the tropical Atlantic about 5° S to 20° N. The aircraft data was from both research aircraft and commercial aircraft. Also, there was conventional surface and upper air rawinsonde observations from 15 S – 25 N for the Americas and for Africa. An array of ships west of Dakar, Africa, took intensive observations. There is data from precipitation radars.

There are 5 items with 47 p here, and 2 p in front.

1. An AMS paper about GATE (Bull. AMS, Jul 1974, 6 p)
   This describes the GATE observing experiment and shows the location of observations.

2. List of GATE datasets in NCAR archives (Jan 2002, 2 p)

3. Some papers from the GATE data catalog (Apr 1975, 8 p)

4. International data management plan for GATE (Apr 1974, WMO, 4 p here)

5. Users guide to GATE data at NCAR (C. Smith, 1978, 27 p)

See this bundle of papers
GATE
International Meteorological Radar Atlas

April 1977

Richard Arkell
Michael Hudlow

Center for Experiment Design and Data Analysis
Washington, D.C.

OTHER PRINCIPAL CONTRIBUTORS

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A. Korotov  Central Aerological Observatory  USSR
J. Marshall  McGill University  Canada
H. Schuster  Institute for the Physics of the Atmosphere, DFVLR  FRG
A. Shupiatkov  Central Aerological Observatory  USSR

223 pages in this

U.S. DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary
National Oceanic and Atmospheric Administration
Robert M. White, Administrator
Environmental Data Service
Thomas S. Austin, Director

For sale by the Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
Stock No. 003–019–00038–1
A reduced radar picture from the Atlas
Data for FGGE (Global Weather), 1979

- Describe the observing systems for this big international experiment.
  - Important new observations.

- Describe the datasets.

- The global data collections for reanalysis give us data, almost like FGGE, but for many years.
  - FGGE data was used for reanalysis.
  - The forecast scores made from the NCEP/NCAR 50-year reanalysis were about the same for 1979 as for other close-by years. I thought that because of the new TOVS sounder, and the FGGE buoys, that the forecast scores for FGGE might be better. The reanalysis did use sounder data from 03/1975 – on.

- This has 11 items and 67 pages

See this bundle of papers

Roy Jenne
2 Jan 2002
Data for the Global FGGE Experiment (12/1978 – 11/1979)

Bundle RJ 0158

The FGGE experiment had global collections of data and it had some new satellites. The NOAA satellites with the new TOVS sounder started Fall 1998, as did the NASA Nimbus-7 bird. A good set of global drifting buoys (including pressure data) got started for the first time. This observing experiment was later called the “Global Weather Experiment,” which is a better name, but this name did not seem to “stick” very well. – Roy Jenne

This bundle has 10 items with 62 pages and 3 pages in front.

   - A survey paper to describe the experiment, 2 p here
   - A memo to Firor about a data planning meeting in Geneva, May 1976, 1 p

2. FGGE Reanalysis and FGGE Observed Data (R. Jenne, 2 Dec 86, update 21 Jan 1987, 6 p)
   This is the most complete and up-to-date overview of data for FGGE that I know about. Be sure to save this.

3. FGGE News No. 7 (Aug 1977, 5 p)
   This has good info about some of the observing systems. And it has info about the data.

   This has information about observing systems. It has the location of 5 geosynchronous satellites. There is a map of the location of drifting buoys in the Southern Hemisphere. A chart shows the buildup of buoy counts for 10 Nov 1978 – 5 Jan 1979.

5. Garp News No. 47, Geneva, Sep 1979 (4 p)
   Shows intensive observations periods and summary of buoy operations, etc.

6. Description of QC procedures used by FGGE, etc. (Dec 1980, 126 p, 4 p here)

   This said that they planned for 43 ships, 300 tropical constant level balloons, etc.

   This has some information about the datasets.

9. Possible schemes for Level II-C data (meeting May 1976, 5 p here)
   The main FGGE data plans had not talked about a number of important data types. This meeting and short document was an effort to fill those gaps. This includes such data as snow, sea ice, ozone, water runoff, radiation, sfc albedo. I think we also got something started to gather daily precip (but we did not get very much precip data as I recall). – R. Jenne
   - The US position for May 1976 meeting, 3 p here

10. International conference on early results of FGGE, and—its monsoon experiments
    Florida 12-17 Jan 1981. Condensed papers. WMO text, text is 3.3 cm thick, 8 p are here.

11. NMC FGGE Reanalysis (RJ, 6 May 1988, 4 p)

#
This inventory text is 2.9 cm thick. A copy is at NCAR.

R. Jarno
Jan 2002

FEBRUARY 1982

There are a total of 6 pages here about CCOPE. Please turn the page.

COSPONSORING AGENCIES:

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH
Convective Storms Division
Boulder, Colorado

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Reclamation
Division of Atmospheric Resources Research
Denver Federal Center
Denver, Colorado
INTRODUCTION

During the summer of 1981, a joint field experiment in atmospheric research was conducted by the Bureau of Reclamation and the National Center for Atmospheric Research. It was aimed at answering many questions related to precipitation from convective storms. This experiment was titled "Cooperative Convective Precipitation Experiment," commonly referred to as "CCOPE."

The field site was at Miles City, Montana, where the Bureau has had an ongoing experiment since 1975. Involved in the program were other Federal agencies, numerous universities, and private organizations active in atmospheric research. After its inception, CCOPE evolved into a program of international interest with persons from Canada, England, Switzerland, and Italy participating.

This document contains a complete inventory of all data collected in association with CCOPE during the 1981 field season. It is intended to be a primary aid to researchers by helping them acquire the necessary data for their particular analysis.

The format used subdivides the sections into three main components:

1. A general description of equipment; modes of operation; types of data available; approximate date the data will be available; where the data will be archived; name, address, and telephone number of contact person for requesting data.

2. Samples of data as they will be supplied to analysts.

3. Tables of data inventories which list start and stop times, locations, and other pertinent information related to data sampling.

This document may be updated on occasion to make corrections and/or to add new information. Revisions will be sent to all who are on the CCOPE data inventory mailing list.
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# APPENDIX

1981 COCOPE Probe Data Available | A-1

# FIGURES

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<td>2-19</td>
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Rawinsonde Sounding Data and Synoptic Conditions for the CCOPE-VAS Experiment, July 1981

166 pages in this

Walter K. Henry
Texas A & M University
College Station, Texas

Prepared for
George C. Marshall Space Flight Center
under Contract NAS8-31773

Note: This tech note is in the NCAR library (# 21151) in Sept 2001 - Ray Jones

NASA
(National Aeronautics and Space Administration) 1982
Scientific and Technical Information Office
RAWINSONDE SOUNDING DATA AND SYNOPTIC CONDITIONS
FOR THE CCOPE-VAS EXPERIMENT, JULY 1981

I. Introduction

During the summer of 1981 the Cooperative Convective Precipitation Experiment (CCope) was conducted near Miles City, Montana. A network of weather observing stations was established to gather data for CCOPE. During CCOPE, eight observation periods were designated to collect data for the VISSR Atmospheric Sounder (VAS) Experiment. This report has some data for the VAS time periods.

The data collected for VAS were from five rawinsonde stations in the eastern part of Montana. These stations were operated by the Department of Meteorology of Texas A&M University. The location of each station is given in Table I.

Table I. Names, elevations, and locations of the rawinsonde stations used for VAS in Montana in 1981.

<table>
<thead>
<tr>
<th>No.</th>
<th>Station</th>
<th>Height(m)</th>
<th>Latitude(°N)</th>
<th>Longitude(°W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>5</td>
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<td>866</td>
<td>45°45'34&quot;</td>
<td>105°06'55&quot;</td>
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</table>

These stations are located on the map shown in Fig. 1, along with locations of the planned network of observations. The rawinsonde station locations are shown in Fig. 2 also.

The dates chosen for VAS data collection are in Table II.

For launch times of the soundings for each station, termination pressure and remarks about each flight see Appendix I. Appendix I serves as an index to the flights. Appendix II gives the meteorological data for each flight.
Cecilia Banner

From: "Steve Williams" <steve@joss.ucar.edu>
To: "Roy L. Jenne" <jenne@ucar.edu>
Cc: "Steven F. Williams" <sfw@ucar.edu>
Sent: Tuesday, February 19, 2002 1:38 PM
Subject: CCOPE Data

Feb 2002

The data for CCOPE

Roy,

Per our conversation, most of the CCOPE (1981) 9-track tapes were located in a storage room at MMM (FL3). Chuck Wade had contacted me in Fall 2000 to inform me that the storage room was being cleaned out and that he was concerned that data would be lost. Chuck and I did visit the storage room and spent some time looking at these tapes which consisted of satellite, aircraft, upper air, and surface data. I can't remember if there were any radar data tapes included in the archive. I volunteered to take the upper air and surface data tapes which we were able to read (after 18 years; a miracle in itself) and recopy the data to new exabyte tapes. This data consisted of the CCOPE rawinsonde releases and surface data from the NCAR PAM and BuREC PROBE networks. This data is now available at the JOSS Data Center. My recommendation was to not worry about the satellite data (since this data would be part of the SSEC archive at U. Wisconsin), but I was concerned that the aircraft data might not be available on the NCAR Mass Store. CCOPE would probably be the last time that 12 aircraft would be involved in a field project! I then contacted Al Cooper and explained the situation to him and suggested he take a look at these tapes and perhaps spend some time researching what (if any) aircraft data were copied to Mass Store. I don't know the outcome of this, but Chuck informed me later that the tapes were removed from the storage room. I should contact Al to find out the status of the aircraft data. Hopefully, something was done to preserve these data.

I hope this helps clarify the CCOPE data status. BTW, I do have hard copy reports of the "CCCOPE Data Inventory" and "CCCOPE Operations Plan" in my Office if you need them.

Steve

Note: All WISE geophysical satellite data for this period will be at their old site.

Note: NOAP and NASA polar orbiting satellite data is also available.

...and reanalyzed data is at NCAR too.

Roy Jenne

2/19/02
TO: ALPEX Focal Points, WDCs, SADCs, and NADCs

FROM: T. Kaneshige, Scientific Officer, JPS for WCRP

DATE: 6 February 1984

Alpex: Collect more surface, U.A. and satellite data from around Europe. Ref: 40.550/G/ALPEX

SUBJECT: Changes to the ALPEX Data Management Plan

The enclosed changes to the ALPEX Data Management Plan (GARP-ALPEX No. 4, Geneva, January 1982) concern the formats and specifications of the surface-based radiation data tapes and also the inclusion of additional available operations plans. Please duplicate these pages and forward copies to individuals and organizations, who require an updated ALPEX Data Management Plan. Thank you for your cooperation.

Enclosure
A series of informative contributions concerning the SESAME project and its 1979 field program, supported by the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the National Science Foundation, and others. Prospective contributions should be sent to Professor Frederick Sanders, Department of Meteorology, Massachusetts Institute of Technology, Cambridge, Mass. 02139.

Analysis and Prediction of Severe Storms Environment

Toby N. Carlson, Richard A. Anthes, Marc Schwartz, Stanley G. Benjamin, and Daniel G. Baldwin

The Pennsylvania State University, University Park, Pa. 16802

Abstract

Using the special data set collected in Project SESAME (1979), we describe our analysis and modeling efforts to test the hypothesis that a unique combination of terrain, boundary layer processes, and synoptic-scale circulations result in a preferred region of latent instability that determines the location of severe thunderstorm outbreaks in the midwestern United States. A conceptual model of severe local storm formation involves the juxtaposition over the Midwest of three airstreams. One originates in the tropics and crosses Mexico, a second originates over the northeast Pacific west of an upper-level trough, and a third low-level warm moist airstream, with high wet-bulb potential temperature, is overrun by the dry, warm air that was heated over the Mexican plateau, thereby producing a lid that inhibits moist convection. Severe thunderstorms may occur only when this lid is eliminated, which may occur when the low-level moist air moves northward from under the middle-level Mexican air, or through a combination of surface heating and upward vertical motion (Carlson and Ludlam, 1968). The three-airstream model is illustrated for the severe thunderstorm case of April 1979 in Fig. 1.

In April 1979, extensive special upper-air observations were obtained over a regional scale as part of the SESAME 1979 experiment. In line with one of the stated SESAME goals of being able to predict the detailed evolution of pre-storm environments for up to 24 h prior to the outbreak of severe storms, we have begun a joint research effort in the analytic interpretation of the SESAME data and the numerical modeling of the atmospheric behavior prior to severe thunderstorms.
The GALE and ERICA Experiments

(Roy Jenne, April 2001)

- These were held off the East Coast of the USA


- A CD-ROM for each has the data

- 13 items with 56 pages

Note: This bundle of papers at NCAR is RJ 0107
THE CONVECTION AND PRECIPITATION ELECTRIFICATION (CaPE)
OPERATIONS SUMMARY AND DATA INVENTORY

(Held in Florida Jul 8 thru Aug 18 of 1991)

preparèd by:

Steven F. Williams
National Center for Atmospheric Research

Kathy Caesar
State University of New York at Brockport

Kendall Southwick
National Center for Atmospheric Research

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH
OFFICE OF FIELD PROJECT SUPPORT
BOULDER, COLORADO

JULY 1992
The TOGA Ocean Observations

These observations are from drifting buoys, moored buoys, ships, etc.

JGR (in 1998) has a volume devoted to TOGA. See below.

Equatorial Circulation of a Global Ocean Climate Model with Anisotropic Horizontal Viscosity

WILLIAM G. LARGE, GOKHAN DANABASOGLU, JAMES C. McWILLIAMS, PETER R. GENT, AND FRANK O. BRYAN

National Center for Atmospheric Research, Boulder, Colorado

1. Introduction

Equatorial ocean regions play a fundamental role in the earth’s climate. In the tropical Atlantic, climate variability, including precipitation in adjacent continental regions, has been related to the hemispheric gradient in sea surface temperature (SST) (Hastenrath 1991; Carton et al. 1996). The Asian–Australian monsoon has been found to affect global as well as regional climate on seasonal timescales, with suggestions of a role for Indian and Pacific equatorial SST (Webster et al. 1998). Of course, the strongest and most predictable feature of interannual climate variability is the El Niño–Southern Oscillation (ENSO) phenomenon that is characterized by SST anomalies in the central and eastern equatorial Pacific. Describing the time-varying tropical Pacific Ocean, understanding the physical mechanisms of ENSO, and determining the associated predictability were among the objectives of the Tropical Ocean–Global Atmosphere (TOGA) program. The success of TOGA is documented in a series of review papers in a 1998 special issue of the Journal of Geophysical Research (Vol. 103, No. C7). An earlier view of ENSO and other features of equatorial air–sea interaction are comprehensively discussed in Philander (1990).

Many investigations of these phenomena rely on ocean general circulation models (Stockdale et al. 1998), which are sometimes coupled to an atmosphere (Delecluse et al. 1998; Biasutti and Battisti 2001). For process

© 2001 American Meteorological Society
TOGA COARE Tropical Experiment

- A big observing experiment, NE of Australia
- Main period 11/1992 – 02/1993 (4 months)
- Observations for atmosphere, surface ocean, ocean
- Bundle has 9 items and 48 pages

Roy Jenne
12 Feb 2002

- NCAR (Data Support) has an archive of much of the data
- UCAR has a copy of the high resolution rawinsonde data.
The World Ocean Circulation Experiment (WOCE)

- Data gathering from 1990 – 1997
- Data analysis continues during 1997 – 2002
- Much of the data is on CD-ROMs
- See the following 4 pages about WOCE

Roy Jenne
NCAR
22 Feb 2002

NOTE: Bill Large, NCAR, helped me to find this information.
Ocean Circulation and Climate
Observing and Modelling the Global Ocean

Edited by

Gerold Siedler
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Universität Kiel
Kiel, Germany
and
Instituto Canario de Ciencias Marinas
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<th>Elements&lt;sup&gt;b&lt;/sup&gt;</th>
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<td>WOCE data archive</td>
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</table>

<sup>a</sup>Abbreviations: GTS, Global Telecommunications System; SST, Sea Surface Temperature; UOT, Upper Ocean Thermal; WHP, WOCE Hydrographic Programme.

<sup>b</sup>Abbreviations for WOCE Data System elements:
- UDEL, USA – University of Delaware; BSH, Germany – Bundesamt für Seeschifffahrt und Hydrographie; MEDS, Canada – Marine Environment Data System; UH, USA – University of Hawaii; WHOI, USA – Woods Hole Oceanographic Institution; JPL, USA – Jet Propulsion Laboratory; JODC, Japan – Japan Oceanographic Data Center; WDC-Oceanography, USA – World Data Center-Oceanography, Silver Spring (NODC); SIO, USA – Scripps Institute of Oceanography; AOML, USA – Atlantic Oceanographic and Meteorological Laboratory; NODC, USA – National Oceanographic Data Center, USA; IFREMER, FR – Institut Français de Recherche pour l'Exploitation de la Mer; BODC, UK – British Oceanographic Data Centre; FSU, USA – Florida State University; NGDC, USA – WDC-Marine Geophysics (NGDC).

From book "Ocean Circles & Climate" by Lindstrom and Legler

A remarkably robust data system capable of delivering needed data, information, and products to meet community needs.

3.5.1.2 WOCE data policies and practices
Role of the Data Products Committee
A forum for interaction of the scientific community and data managers was essential for the development of WOCE, as data management was one...

A lot of the WOCE data is on CD-ROMs. Does someone have a list?
-Roy Panda
The World Ocean Circulation Experiment (WOCE)

(Submitted by the SSG Co-chairs and Project Office Director)
Dr William G Large
Dr Peter D Killworth
Dr W John Gould (WOCE IPO)

1. Preamble
This report will be the last made to the JSC by WOCE. It is therefore appropriate that the report should summarise what WOCE has achieved since its inception in 1984, what progress has been made towards attaining the project’s objectives, what still remains to be achieved and what lessons have been learned that might be applicable to present (and future) WCRP projects.

2. WOCE development
WOCE grew from a realisation in the late 1970s that the new generation of earth-observing satellites presented the potential to measure the ocean circulation, windfields and ocean surface properties globally. Thus for the first time the ocean circulation’s role in climate could be addressed from a global perspective. Satellite observations would be only one part of the strategy to investigate this topic. The other elements would be in-situ observations and ocean circulation models, the resolution of which might be expected to improve to a level at which the oceanic mesoscale (that had been explored during the 1970s) could be resolved.

All of the expected developments did indeed take place. The new generation of satellites performed beyond their design expectation both in terms of mission duration and data quality. The highest resolution global ocean circulation models changed from of order 1° in 1990 to 1/12 degree by 2002.

The WOCE in situ observational strategy was founded primarily on techniques that already existed in the late 1980s when WOCE was being planned. The main exception was the use in WOCE of a global network of neutrally buoyant floats designed to provide a subsurface reference level velocity field. These Autonomous Lagrangian Circulation Explorer (ALACE) floats were further developed during WOCE to provide CTD profiles and became the basis of the global Argo float array. WOCE’s observational capability benefited greatly from the introduction of new and improved technologies (e.g. global positioning system, ADCPs).

The observations effectively ended in 1997 and WOCE entered its phase of Analysis, Interpretation, Modelling and Synthesis (AIMS) marked by a number of regional and subject-based workshops and the publication of many papers based on WOCE modeling and observations.

An obvious and unique end-product of WOCE is the unprecedented in-situ data set describing the state of the interior of the global ocean in the 1990s.

WOCE was made up of a number of individual national contributions towards the fulfillment of an internationally-agreed Implementation Plan. Some countries set themselves specific national objectives that were not necessarily identical with the international objectives. WOCE collaboration was conducted largely at an international rather than an intergovernmental level. This provided substantial freedom. An Intergovernmental WOCE Panel was formed following the 1988 WOCE International conference at which national commitments were made. The IWP was instrumental in helping to ensure that these commitments were fulfilled.

3. Progress towards the WOCE scientific objectives

The following are the WOCE objectives as defined in the Science and Implementation plans.
Adrift on the Ice Pack, Researchers Explore Changes in the Arctic Environment

The first data to emerge from a yearlong measurement campaign near the North Pole seem to confirm earlier observations that the ice is thinning and that the Arctic Ocean's salinity distribution is changing.

Millimeter cloud radar is cleared of snow by Jeff Otten of the NOAA Environmental Technology Laboratory. The radar is one of many instruments that were used during the SHEBA mission to study the ocean, ice and atmosphere in the Arctic. (Photo courtesy of University of Washington.)

It was a relatively warm winter in the western Arctic this year; the lows were only -42 °C. That was still chilly enough to sting the fingers and toes of the more than 150 scientists participating in the SHEBA project—a multidecade, yearlong international study of polar environmental conditions whose data-gathering phase ended this October. (SHEBA stands for Surface Heat Budget of the Arctic Ocean.)

The base of operations for the project was a Canadian icebreaker named Des Groseilliers that was intentionally frozen into a region of multiyear ice and set to drift with the ice pack. With the ship serving as a hotel (featuring, we’re told, gourmet meals), power source, communications base and repair facility, researchers fanned out over the ice to deploy radiometers, launch balloons, poke instruments into the ice and even descend in diver’s gear into the frigid ocean waters.

What motivated all these scientists to brave the frigid climate, aggressive polar bears and the threat of unexpected leads, or cracks resembling rivers that can suddenly open in the ice? In part, a sense of urgency: Before SHEBA began, a comparison of current and past data indicated that significant changes have occurred in the waters, ice and atmosphere of the Arctic during the 1990s—altered hydrography, decreasing areas of summer ice, shifting patterns of ice drift and air pressure, more frequent occurrence of low-pressure cyclonic winds and higher surface-water temperatures. The first report to emerge from SHEBA confirmed this trend: Researchers estimated that the depth of fresh water from melting ice was three times greater than that measured in the same region 22 years ago.

A natural question to ask is whether the changes herald a long-term trend, possibly attributable to elevated concentrations of carbon dioxide or particulates, or whether they are part of a natural cycle. The polar regions may be the first to manifest any climatic change produced by anthropogenic injections of greenhouse gases into the atmosphere: The poles have the potential to amplify any changes in climate because of the feedback interactions among sea ice, snow cover, ocean, radiation and arctic clouds. For example, if abnormal warming melts more sea ice, the albedo will drop, because the sea surface is at least six times less reflective than ice, and the warming will accelerate. At the same time, abnormal melting might produce more clouds, possibly offsetting the decreased albedo.

The SHEBA project

SHEBA offered a unique opportunity not only to gather data on many aspects of the Arctic environment—such as sea ice thickness, ocean temperatures, atmospheric temperatures and pressures, radiation fluxes—but to do so as part of a coordinated project that would enable researchers to integrate the data from various individual measurements. SHEBA's particular thrust is to learn more about the physical processes that affect the feedbacks between sea ice and the albedo and between the clouds and radiation. By collecting a large range of data, on varying temporal and size scales, SHEBA sponsors are aiming to improve existing climate models and thus enhance our ability to use the models to predict polar responses (and polar–global interactions) to climate change.

The ice station SHEBA began operation when Des Groseilliers forged its way into the middle of an ice floe and stopped there on 2 October 1997. Instrument huts were established around the ship. (See the photo on this page.) During the next year, the ice pack and the SHEBA station meandered 2700 miles, drifting with the ice pack from 75° 17' N, 144° 42' W to 80° 15' N, 166° 1' W. Its net displacement was nearly 800 km.

More than 50 principal investigators from over 20 institutions and corporations received funding to participate in SHEBA. With 25 to 30 people at a time living at the station, the researchers engaged in such activities as studying physical properties and geometries of clouds with radar and Lidar; launching radiosonde balloons to measure temperature, humidity and wind speeds at altitudes up to 10 km; recording fluxes and radiation spectra with radiometers located on the ground and aboard aircraft; and hauling amphibious sleds up to 20 km around the site to explore the springtime changes in ice thickness, heat conduction and ice salinity, and the radiative properties of the ice and snow.

SHEBA's project director is Richard Moritz of the University of Washington, and its chief scientist is Don Perovich, of the US Army's Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire. Perovich feels that the interdisciplinary nature of the mission was one of its most exciting aspects. At dinner,
Data for the GAME project

- April - Oct of 1998
- Held in Asia

ClibPDF - www.fastio.com

January 5, 2001

Dear Sir/Madam,

We are pleased to publish the GAME Reanalysis Ver.1.1 CD-ROM. The intensive observations of the GAME/GEWEX project were conducted in the summer of 1998. Using collected observation data, MRI, JMA/NWPD and NASDA/EORC conducted the re-analysis for April-October 1998 based on the JMA analysis system.

The re-analysis produced the global analyzed field data and 2-dimensional physical monitor data with 1.25 and 2.5 degree horizontal resolution and the Asian regional analyzed field data with 0.5 degree. This CD-ROM contains only 2.5 degree products.

Please read readme.txt in the CD-ROM and pay attention to some notes in using these data. To get more information, please see the web page, http://gain-hub.mri-jma.go.jp/GAME_reanal.html

We hope that these data will be useful for your research.

Sincerely yours,

Nobuo Yamazaki

5th research laboratory
Climate research department
Meteorological Research Institute/JMA

Acknowledgement:

This CD set is distributed by support of the Grant-in-Aid for Scientific Research from the Japanese Ministry of Education, Science, Sports and Culture (No.11201209), led by Prof. T. Oki, IIS, University of Tokyo.
GAME-IOP Reanalysis Data Ver.1.1

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Meteorological Research Institute/Japan Meteorological Agency
November 2000

This CD-ROM contains the first part of Reanalysis Data ver.1.1 for the GAME IOP (April-October 1998). Data are composed of analysis data with 2.5 and 1.25 degree horizontal resolutions for the globe and 0.5 degree for the Asian-Pacific region and 2-dimensional forecast fields data with 2.5 and 1.25 degree resolution for the globe. Please see "readme.txt" in the CD-ROM for more information.

This CD-ROM is published by support of the Grant-in-Aid for Scientific Research from the Japanese Ministry of Education, Science, Sports and Culture (No.11201209).

GAME-IOP Reanalysis Data Ver.1.1
Part 2 (August-October 1998)

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November 2000

This CD-ROM contains the latter part of Reanalysis Data ver.1.1 for the GAME IOP (April-October 1998). Data are composed of analysis data with 2.5 and 1.25 degree horizontal resolutions for the globe and 0.5 degree for the Asian-Pacific region and 2-dimensional forecast fields data with 2.5 and 1.25 degree resolution for the globe. Please see "readme.txt" in the CD-ROM for more information.

This CD-ROM is published by support of the Grant-in-Aid for Scientific Research from the Japanese Ministry of Education, Science, Sports and Culture (No.11201209).