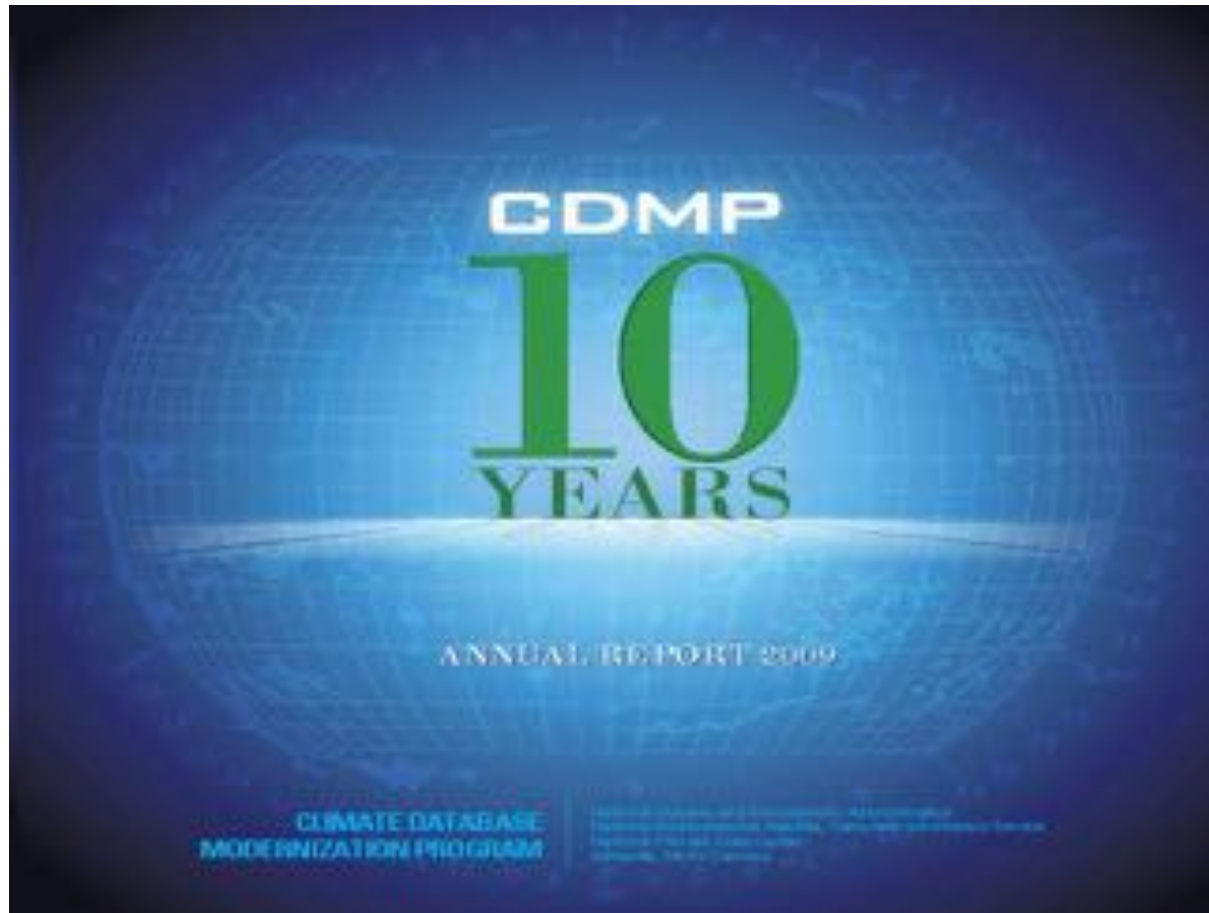




# NOAA's Climate Database Modernization Program- More than 10 Years of Data Rescue Activities

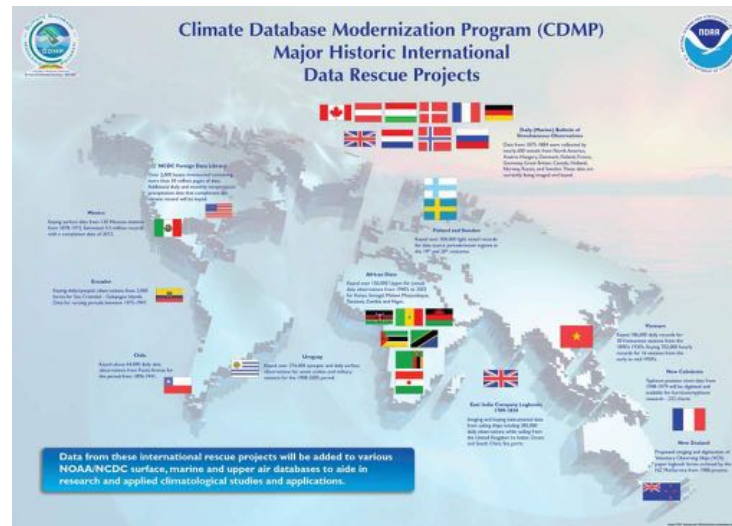
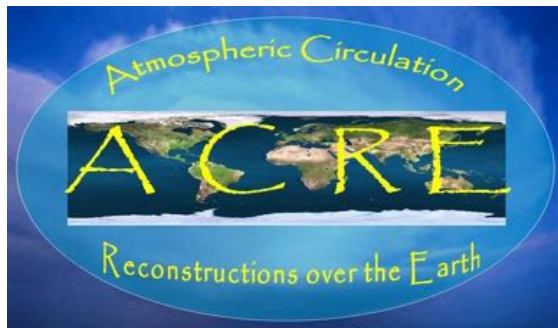
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***ACRE Meeting 3-5 November 2010 -- Tom Ross, CDMP Program Manager***

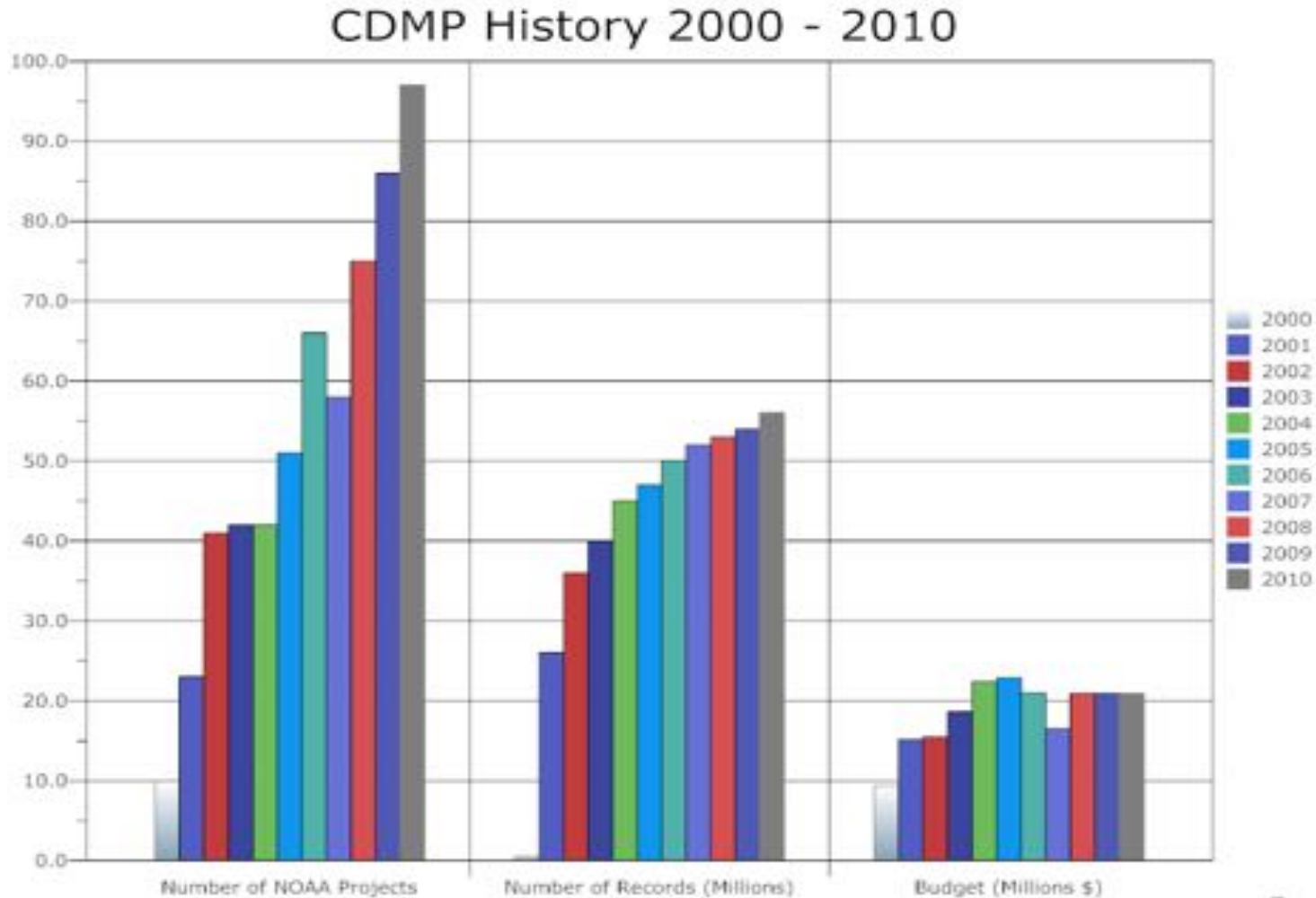


# International Partners





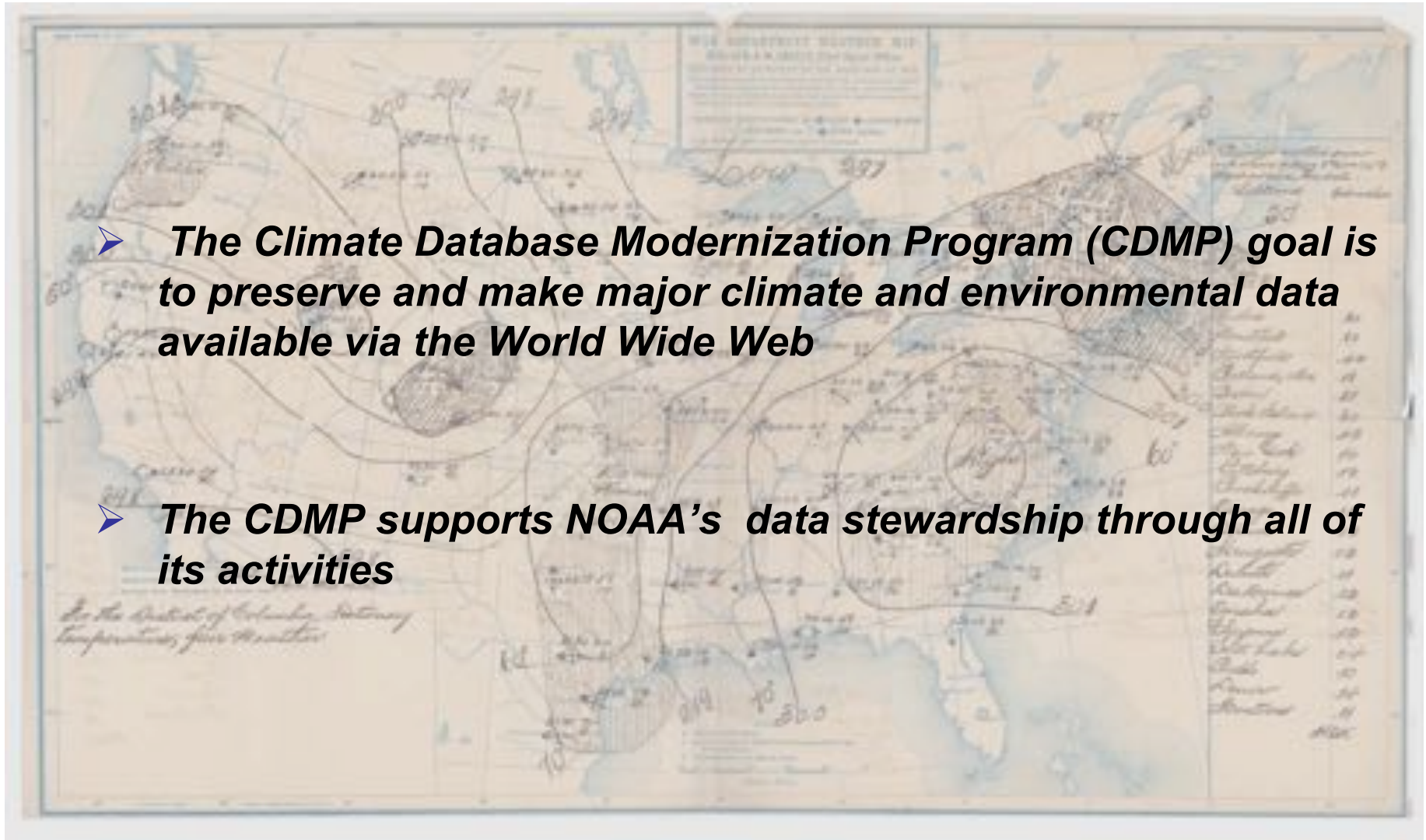
# Climate Database Modernization Program





## Climate Database Modernization Program

- ***The Climate Database Modernization Program (CDMP) goal is to preserve and make major climate and environmental data available via the World Wide Web***
- ***The CDMP supports NOAA's data stewardship through all of its activities***





# Data Received from Many Sources



Forecast Warning Analysis

Voluntary U.S. Observers

Global Weather Reports

NCEP Weather Charts & Models



Ship, Buoy Reports

Rocketsonde

Weather Balloons

Storm Data

Doppler Radar

(GOES, POES, NPOESS, and many other Satellites

Aircraft Observations

Wind Profiler

Airport Weather Reports (ASOS)

U.S. Climate Reference Network

Climate Models



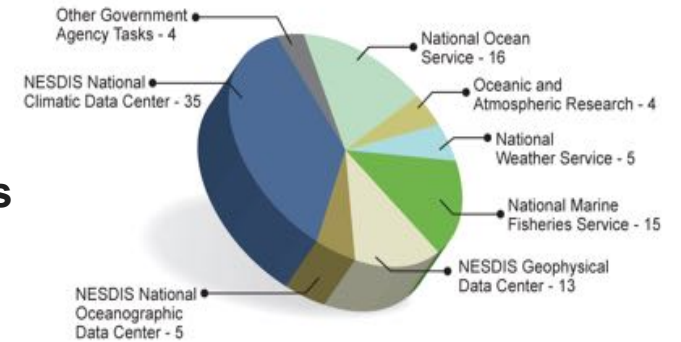
# Climate Database Modernization Program: 2000-2010



## Over 14 terabytes of climate data now digitized

- ▶ 54 million weather and environmental images online
- ▶ Hundreds of millions of records digitized now online
- ▶ International data access and rescue activities
- ▶ 97 current NOAA climate/environmental rescue projects

2010 Climate Data Modernization Tasks Across NOAA



Handwritten weather record from July 1st, 1842, showing various weather observations and measurements.

July 1<sup>st</sup>, 1842 hourly weather data from Washington, DC, imaged and digitized through the CDMP Program



Imaged Records Example: Glacial Pairs – Muir Glacier, Alaska



1941



2004



# Climate Database Modernization Program

## Highlights/Past Successes

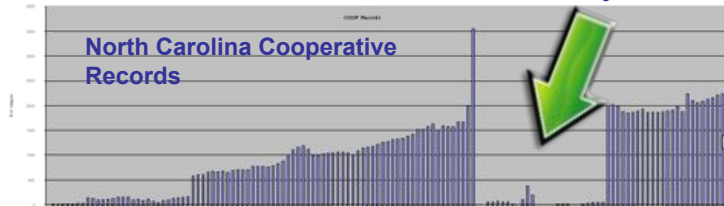
### 2010 Major NOAA CDMP Data Recovery Tasks

35 NCDC Tasks



Over 410 million surface observations will be added to NCDC's historic synoptic database by the end of 2010

67,022 missing images 1950-1980 are now on-line on the IPS system



Working with the NC state climatologist office to add 43,000 additional monthly cooperative station data



- Rescue collections of surface, upper air data, cooperative station data, and historical diaries and journals. Additional projects include "Forts" (mid 19th century) data, NCDC historic publications, various national and international daily and monthly data for inclusion into research datasets (GHCN, IGRA, ICOADS, etc.)

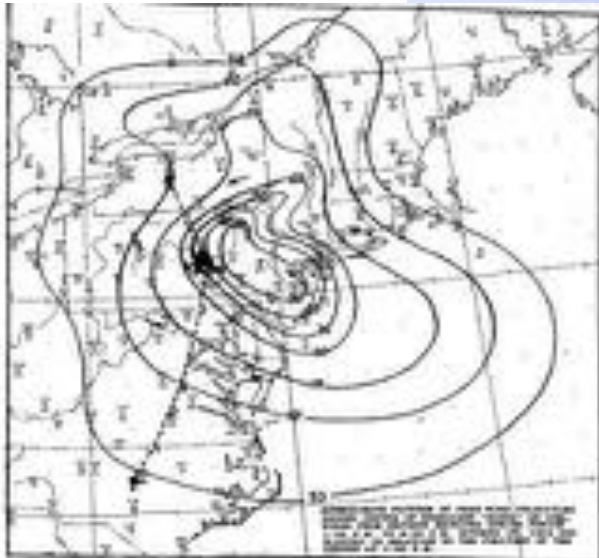


# Climate Database Modernization Program

## *Highlights/Past Successes*

### **2010 Major NOAA CDMP Data Recovery Tasks**

#### 5 NODC Tasks



- Rescue collections of ecosystem surveys along California coast
  - Beach Watch Program
  - Common Murre Restoration Project
  - California Kelp Resources Project
- Scan ~110K survey slides and log sheets

Highlighted tasks include: California marine ecosystem surveys, NODC metadata, World Ocean Database project, NOAA library and film transfer tasks.





# Climate Database Modernization Program

## Highlights/Past Successes

### 2010 Major NOAA CDMP Data Recovery Tasks

16 NOS tasks



High-altitude aerial photography, Hudson River, NY.



Highlighted tasks: Image nautical charts & historical coast pilots, vectorize and geo-reference shoreline charts and photographs, image and key water level gauge and tidal benchmark records, environmental sensitivity maps, water and tide level data, fishery management and catch tracking tasks

Same area on a NOAA nautical chart. Comparing these sources, created at different times, provides information on the rate of change in the coastal zone, which aids in the design of coastal zone mapping projects.



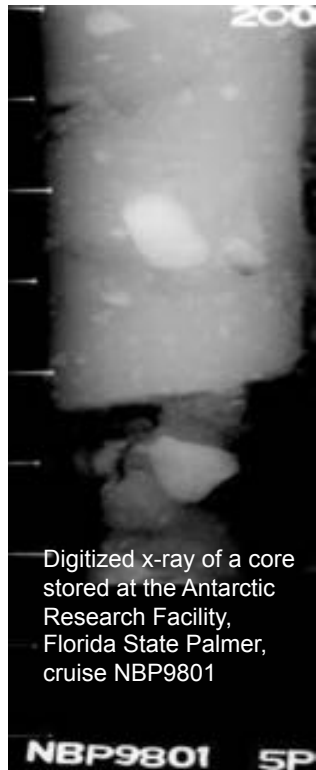


# Climate Database Modernization Program

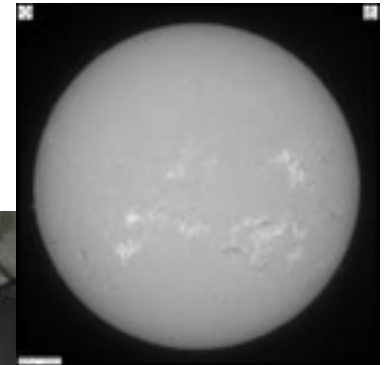
*Highlights/Past Successes*

## 2010 Major NOAA CDMP Data Recovery Tasks

### 13 NGDC Tasks



Digitized x-ray of a core stored at the Antarctic Research Facility, Florida State Palmer, cruise NBP9801



- Rescue collections of ionospheric data, various marine geophysical rescue datasets, glacier and tsunami tide data, and solar data rescue projects, cosmic ray and DMSP film data rescue projects. Additional tasks include marine and Lacustrine records of Climate change, glass plate data rescue, solar observations.



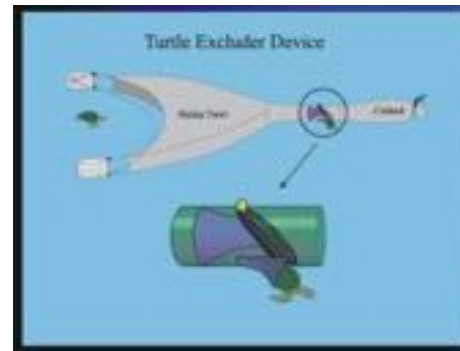
# Climate Database Modernization Program



*Highlights/Past Successes*

## 2010 Major NOAA CDMP Data Recovery Tasks

15 NMFS Tasks



Bycatch Reduction Engineering Program to “provide information and outreach”...that will encourage adoption and use of technologies

Sample tasks include: Imaging and keying data on cetaceans , fish eggs/population, coral reefs, plankton data recovery, ecosystem surveys, and Turtle Exclusion data



# Climate Database Modernization Program



## Highlights/Past Successes

### 2010 Major NOAA CDMP Data Recovery Tasks

#### Government Joint - Sponsored Tasks

**BPP Objective:** Preserve and provide access to a 90-year, North America-wide dataset of bird migrations.

**Nature of the Data:**

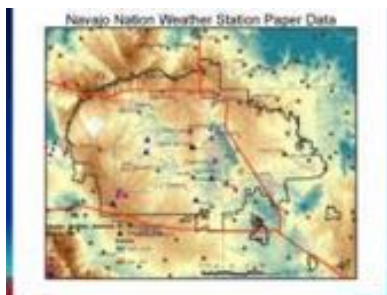
- 3 million (high-value) index cards in 41 filing cabinets
- Over 870 bird species
- Arrival and departure dates between 1880 and 1970
- Stored at the Patuxent Wildlife Research Center in Laurel, MD

**Data rescue process**

**Imaging and Indexing NRCS Snow Survey Records**

Coordinated with the National Water and Climate Center and Regional Data Collection Offices.

Logos for NWS National Weather Service and NRCS National Resource Conservation Service.



- Major rescue projects include: USDA Bird Phenology dataset of 1-3 million cards documenting bird migrations; over 250,000 historic snow survey data records from many U.S. western states; keying data from 23 Automated Weather Stations (varying periods from 2-13 years) in the Navajo Nation in Arizona (Hourly and daily) from 1986-1999 - original computer data were lost; Hawaiian island precipitation data project.



# NCDC Non-Digital Data Archive



## Manuscript / Autograph\*

103 Million Pages stored in 120,000 boxes

\* Located at Asheville; additional paper records located at the Federal Records Center in Georgia that will be inventoried and prioritized for digitization



**Percent digitized**  
(Keyed or imaged)

72%  
(78 million)  
1,500 forms/day



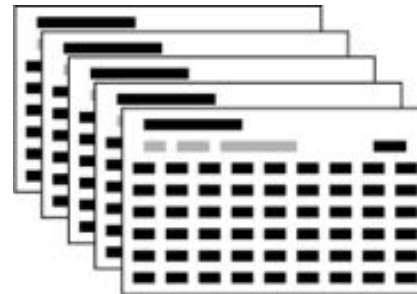
## 35mm & 16mm Film

125,129 Rolls

1.7%  
(2,105 reels)  
sporadic

## Microfiche

860K fiche containing 51 million pages



10.0%  
(86,000 fiche)  
3,372 forms/day



# Long-term Archive Tasks

## Satellite Data

TIROS, NIMBUS, ITOS, ATS, ESSA, GOES, more

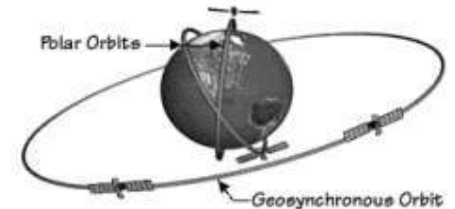
Mainly 1964-1990

± 1,300 boxes of raw images in many film formats

Film ranges 16mm-70mm

Black & white images, negatives

The many formats makes this a challenging conversion task



**Scientists in RSAD need to access these holdings for use**





# Climate Database Modernization Program

## Data Integration Projects




**Climate Database Modernization Program (CDMP) Surface Airways Observations**


542 observations keyed through CDMP and added to NOAA's Integrated Surface Hourly (ISH) database:

**405.6 Million New Observations Keyed and Archived by the end of 2010**


Surface airway meteorological data are being used for engineering design (ice loads for towers, cable wires, wind loads for buildings, heating/cooling requirements, drag/lift/stress estimates), aircraft operations (route design), ship routing and off-rig placement, global re-analysis for climate trends assessment, NADRO operations and studies (e.g. spills, toxic releases), weather risk management, industry insurance investigations and verification, court cases and criminal investigations, aircraft accident investigations, wind-energy studies, commercial innovation and design, and tourism support.




**Data Period 1928-1948  
261 New Hourly Stations Added**




**Data Period 1891-1948  
211 New Quasi Hourly Stations Added**



**Data Period 1955-1981  
292 Hourly Stations Updated**



The National Weather Service in London, 1911 (1988)



National Weather Service at Granite, Pennsylvania, 1911

Weather instruments on the roof of the West Chamberlain Park Administration Building around 1960. Courtesy of the Illinois and National Service. Photograph Collection, Lafayette, Ill. Local. Squall-line changing temperature and dew point observed in the white clouds while the sun pokes in for light while clouds are taking off. Right photo: 1960. Common-colour photograph (negative) is copyright of the author. Date the photograph was taken in 1943 about height level is determined by locating weather station.

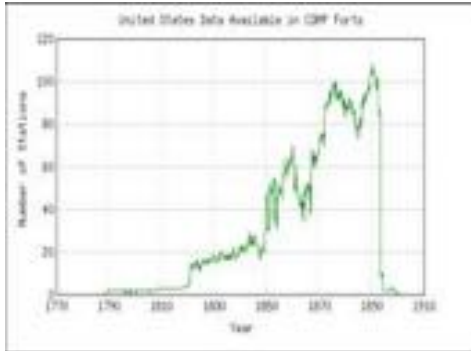
NCDC's digital data for hourly surface observations generally began around 1948. CDMP has imaged over 2 million forms and keyed over 400 million records as part of this keying project. This has added over 50 years of hourly/synoptic data for over 225 stations.





# Climate Database Modernization Program

## Data Integration Projects



The CDMP “Forts” project is extending daily data records from the beginning of the Weather Bureau era (circa 1892) as far back as the 1780’s. Over 390 stations’ data have already been keyed. CDMP’s Forts team will prepare approximately 75 more stations for keying in the upcoming year.

**CDMP “Forts” Program**  
Preserving a National Treasure

Through NOAA’s CDMP, historic signal service, Smithsonian, and other weather observations from the 18th and 19th centuries are being saved.

CDMP has partnered with the Midwestern Regional Climate Center and contractor SourceCorp to key data from images of original forms into a digital format.

Forts will digitize the climate records in NOAA’s digital database to the beginning of our Nation’s history.



Temperature, precipitation and snowfall tests

Keyed data for all the CDMP Forts stations are available online through the Midwestern Regional Climate Center (MRCC). In addition, close to 200 stations’ data have passed Quality Control tests applied at MRCC. Over 175 of these stations are available from NCD and MRCC via an FTP download.

# International Simultaneous Marine Observations- Multi year Task - Start 2011



- Created by the International Meteorological Congress, Vienna 1873
  - Published by the U.S. National Weather Service from 1875-1887
  - At peak ~ 450 US land stations and ~ 600 vessels reported
  - ~ 30 countries included, from Algeria to the U.S.
  - ~ 5,000,000 daily *land and marine* obs.
- Maritime Observations **POR 1/1877-6/1884**
  - Beginning with a few Naval reports to ending with over 600 vessels reporting, average of 75/day
  - ~ 205,000 daily observations
- Elements
  - Locations, pressures, temperatures, winds, clouds, precipitation, sea and weather conditions.
- Caveats
  - Various types of elements, corrections, reductions, scales, etc.

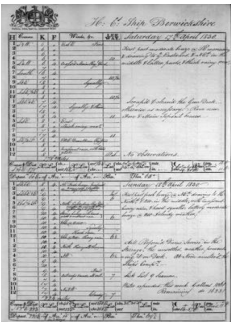
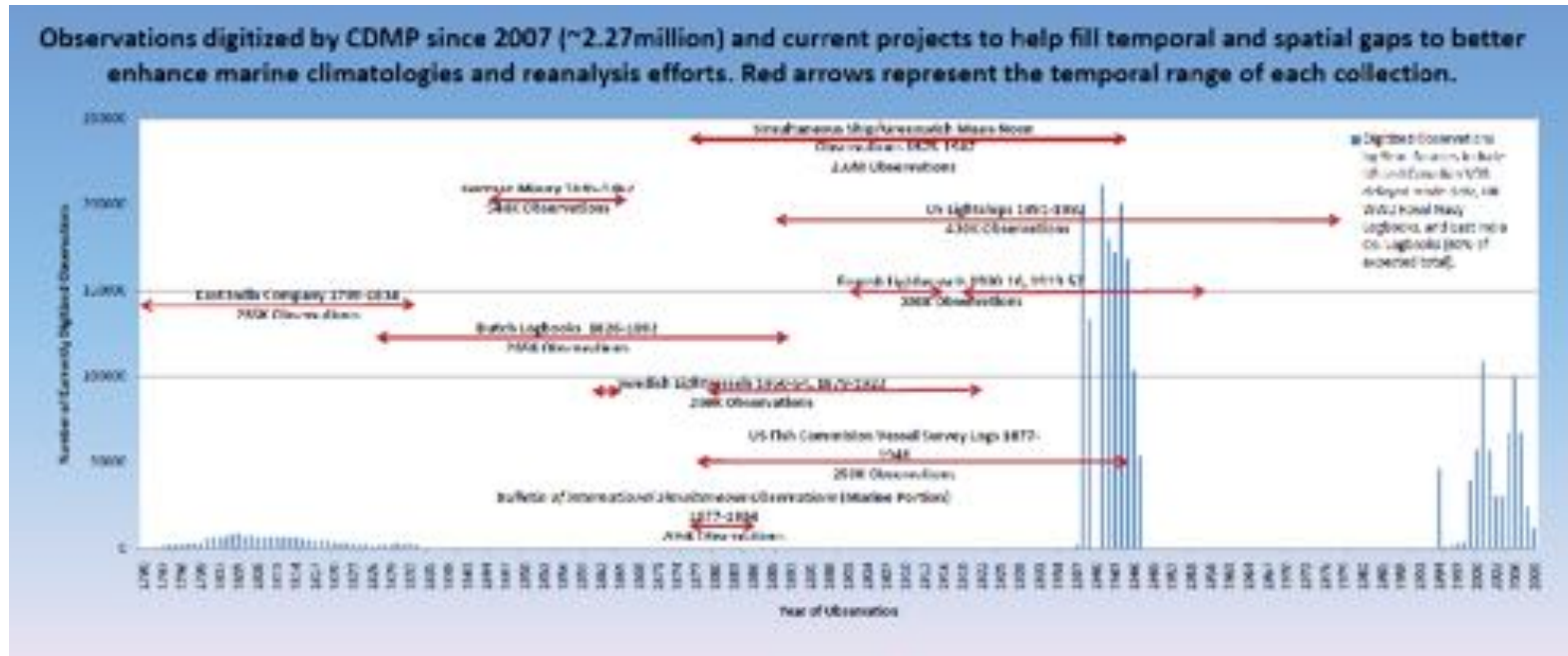




# Climate Database Modernization Program

## Sailing Ahead with Historical Marine Observations

### Data Integration Projects



The East Indiaman *Warley* (1795), as depicted by Robert Salmon. Courtesy of the National Maritime Museum, London.



R.M.S. *Laconia* (1912), courtesy of the Steamship Historical Society of America, Inc.

**English East India Company Logbooks**

- Period of Record: 1790-1834
- 285K Observations
- Digitization goal: 2009



Diamond Shoals Lightship LV 71, US Coast Guard

**US Lightship Observations**

- Period of Record: 1891-1982
- 430K Observations
- Digitization goal: 2009



Pollock Rip Lightship LV 114, US Coast Guard

**Greenwich Mean Noon / Simultaneous Ship Observations**

- Period of Record: 1874-1947
- 2.6 Million Observations
- Digitization goal: 2011



# Climate Database Modernization Program (CDMP)

## Major Historic International Data Rescue Projects



**Daily (Marine) Bulletin of Meteorological Observations**  
 Data from 1875-1884 were collected by nearly 400 vessels from North America, Alaska, Hungary, Denmark, Finland, France, Germany, Great Britain, Canada, Ireland, Norway, Spain, and Sweden. These data are currently being ingested and used.

**NOAA Foreign Press Library**  
 Over 3,000 hours of transcription covering more than 10 million pages of text. Additional daily and monthly temperature precipitation data that corresponds to the climate record will be added.

**Mexico**  
 Being written data from 130 Mexican stations from 1878-1971. Estimated 1.5 million records with a completion date of 2013.



**Finland and Sweden**  
 Report over 300,000 light sensor records for the same period between 1870s to 1970s.

**Africa Data**  
 Report over 150,000 Upper Air (UAT) data observations from 1962 to 2002 for Kenya, Senegal, Ghana, Zimbabwe, Tanzania, Zambia and Niger.



**Equator**  
 Being digitized observations from 1,000 towers for the Central - Galapagos Islands. Data for survey periods between 1875-1981.



**Chile**  
 Report about 44,000 daily sea observations from Punta Arenas for the period from 1876-1944.



**Uruguay**  
 Report over 174,000 temperature and daily weather observations for urban and military stations for the 1900-2000 period.



**Western**  
 Report 18,000 daily records for 10 European stations from the 1880s-1920s. Being 700,000 hourly records for 10 stations from the early to mid 1920s.



**New Zealand**  
 Digitalization of over 100,000 hours from 1948-2007 will be digitized and available for further research - 2013 done.



**East India Company (England) 1800-1834**  
 Being and being reconstructed data from sailing ship including 200,000 daily observations while sailing from the United Kingdom to India, China and South China Sea ports.



**New Zealand**  
 Proposed ingesting and digitization of monthly Cheltenham (New Zealand) Upper air data from collected by the NZ Meteorology from 1980s present.

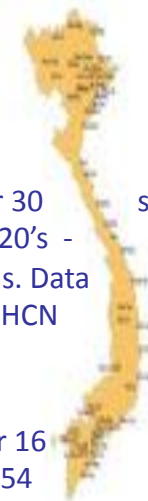


Data from these international rescue projects will be added to various NOAA/NCDC surface, marine and upper air databases to aide in research and applied climatological studies and applications.



# Climate Database Modernization Program

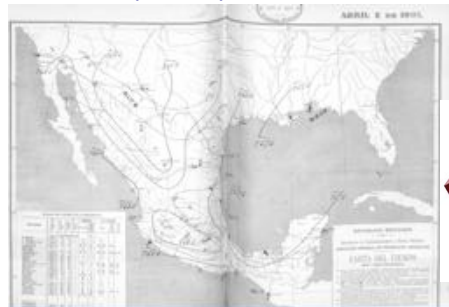
## Data Integration Projects



58 of 95 Observatories keyed (29 different formats)  
 -35 coop stations yet to be keyed. Total keying of 13.1 million daily observations (430,000 forms) should be completed by end of 2012 - Data period roughly 1876-1972  
 - approximately 55% of the data has been keyed. Data will be used in international North American Drought monitoring activities with Canada and Mexico and incorporated into Global Historical Climatological Network (GHCN) at NCDC

Daily data keyed for 30 stations covering 1890's -1920's - total of 6092 station months. Data will be incorporated into GHCN

Hourly data for 16 stations in the 1950-1954 period. Data will be incorporated into the (GHCN) and Integrated Surface Hourly (ISH) database Network at NCDC



OFICINAS	Elevación		Latitud	Longitud	Viento	Temperatura		Clas.	Observaciones
	metros	pies				diurna	nocturna		
Acapulco	75.0	246	16	99	SE	24	20	SI	
C. Lerdo	955.0	3133	22	103					
C. Puerto Ixtla	738.0	2421	18	111				CI, Co	0.4
C. Veracruz	732.0	2400	16	113	W	4	11	CI, SI	0.2
Chihuahua	640.4	2101	25	106	W, S	4	11	CI, SI	0.4 R, W
Durango	703.0	2290	23	103				SI, Co	0.8, R
Progreso	436.0	1429	17	111					
Guaymas	697.0	2284	22	102					
Agua	644.0	2114	14	117					
Mazatlán	707.0	2319	21	101	N, E	4	11	SI, Co	0.2
Mazatlán, Tam.	707.0	2319	14	101	N, E	4	11	SI, Co	0.2
Mérida	584.7	1918	21	88	N, W	4	11	CI, Co	0.1
Monterrey	710.0	2313	21	101	N, W	4	11	CI, Co	0.1
Moscu	409.0	1342	12	112				SI, Co	0.1
Nagles	435.0	1426	14	8					
Oaxaca	435.0	1426	14	8					
Progreso	701.0	2290	24	101	S, E	1.0	10	CI, Co	0.8 N
Salina Cruz	700.0	2283	16	101	S, E	1.0	10		
San Luis Potosí	608.2	1995	21	101					
Tampico	744.0	2440	21	101				SI, Co	0.8, R
Tehuacan	740.0	2428	21	101					
Zacatecas	873.0	2866	21	101					

Another source of data 1903-1978  
 Mexican Daily Weather Maps- Daily pressure data in tables

[http://docs.lib.noaa.gov/rescue/Foreign\\_climate/FCD\\_006\\_025.pdf/Mexico\\_carta\\_del\\_tiempo/](http://docs.lib.noaa.gov/rescue/Foreign_climate/FCD_006_025.pdf/Mexico_carta_del_tiempo/)



# Climate Database Modernization Program

## Data Integration Projects



**Kenya – 5 sites**



**Senegal – 3 sites**



**Malawi – 7 sites**



**Mozambique – 2 sites**



**Tanzania – 2 sites**



**Zambia – 2 sites**



**Niger – 2 sites**

- Over 150,000 images of pibal (upper air wind) records from the 1940's to 2003 received to date from 7 African countries (Kenya, Malawi, Mozambique, Niger, Senegal, Tanzania and Zambia)
- Most data have been keyed and after passing quality control checks will be integrated into NOAA's Integrated Global Radiosonde Archive Database (IGRA)
- Digital data files were provided to the host countries that imaged the data. Keyed data files also hyperlinked to the actual images providing an easy access to the original record
- Ongoing pibal tasks with Tanzania and Mozambique – may expand to surface data in 2011
- NWS and IEDRO (non-profit) provides some technical, administrative and logistical support
- Possible Namibia and ACMAD Microfiche Recovery Project



# Making Data User Friendly and Accessible

The index on the CD-ROM will be the main point for searching for related data.

The index page provides links to all available data types (both images of recorded data and actual keyed data) associated with the CD-ROM



Station Number	Date	Time	Table	Dir/Spd	Raw Data	Image
67423	11/07/1970	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>
67423	12/21/1979	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>
67423	12/22/1979	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>
67423	12/24/1979	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>
67423	12/27/1979	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>
67423	12/29/1979	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>
67423	12/30/1979	0400	<a href="#">Table</a>	<a href="#">Dir/Spd</a>	<a href="#">Raw Data</a>	<a href="#">Image</a>

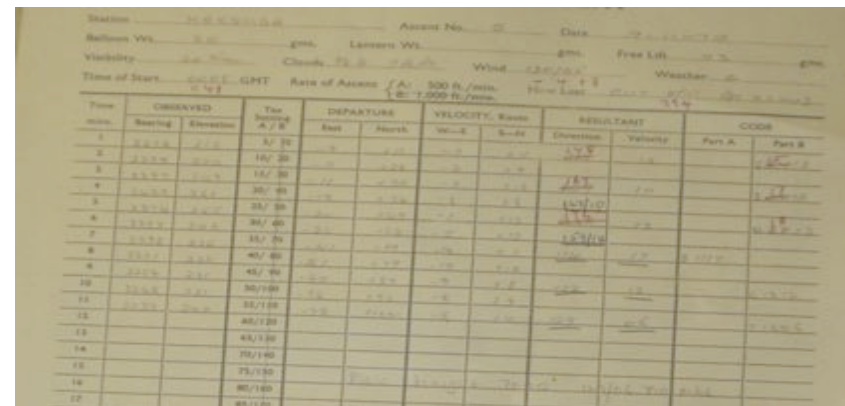
- Station:67423 Day/Mo/Year Time:07/11/1970 04Z
- Keyed Image ID: CDMP06MA\MA0001\0009.jpg
- Source Image ID: .\MA0001\1\IP6160006.jpg

TIME MINS	HGHT FEET	COMPUTED		OBSERVED		DIR DEG	SPD KTS	DIR DEG	SPD KTS
		Azimuth DEG	Elev DEG	DIR DEG	SPD KTS				
> 0	0						130.0	5.0	
1	500	327.2	21.2	147	13		0	0	
2	1000	337.9	22.4	170	12		0	0	
3	1500	239.7	24.9	165	8		0	0	
4	2000	342.7	26.1	174	9		0	0	
5	2500	337.4	25.5	140	12		0	0	

Note: > Marks the Beginning of each Record in the Launch



The highlighted .jpg has a link connecting it to the original image from which the data was keyed



The data above is an upper air pibal, due to the limited wind data available a keying format was developed to key the azimuth/elevation data along with the surface wind data, found in the header section. The wind data, to the middle right of the image, was often determined by the average of multiple levels of wind data.



# The Foreign Data Library (FDL)



The best index we have for our “vast unknown” of foreign data:

Table 16  
Detailed Listing of Unfilmed Foreign Data Publications Archived in ASB for Published Dates  
Prior to Mid-1975 and Costs for Producing Archival Quality Film from These Publications

Main Geographic Area Covered by Publications	Period	Pages	Volume	Cost BSHR & PC	DOC
World	1841-1973	219,000	24.3	10,950	6,570
Tropic	1937-1970	14,400	1.6	720	432
Hemisphere	1743-1974	172,800	19.2	8,640	5,184
Oceans & Water Bodies	1648-1974	563,400	62.6	28,170	16,902
Europe Asia	1797-1973	159,600	17.7	7,980	4,788
British Isles	1845-1975	939,300	101.0	46,965	28,179
Germany	1750-1975	1,382,700	153.6	69,135	41,481
Philippines	1348-1975	924,900	102.8	46,245	27,747
Sunda Islands	1866-1974	117,600	13.1	5,880	3,528
General Australasia	1900-1969	7,200	0.8	360	216
New Zealand	1853-1975	400,200	44.5	20,010	12,006
Australia	1770-1974	351,000	39.0	17,550	10,530
New Guinea	1914-1964	5,700	0.6	285	171
Polynesia/Micronesia	1911-1975	223,500	24.8	11,175	6,705
Polar Regions	1873-1972	194,400	21.6	9,720	5,832
Unprocessed/Noncatalogued	Varies	750,000	83.3	37,500	22,500
<b>TOTALS</b>	<b>1348-1975</b>	<b>25,216,000</b>	<b>2796.7</b>	<b>\$1,280,800</b>	<b>\$756,480</b>

Appendix E - 10/75



2071 boxes of data in the FDL

CDMP multi-year project to inventory data suitable for keying in GHCN daily and monthly, IGRA upper air and ISD surface

Web interface inventory will be developed after inventory is complete





# Climate Database Modernization Program



[http://docs.lib.noaa.gov/rescue/data\\_rescue\\_home.html](http://docs.lib.noaa.gov/rescue/data_rescue_home.html)

## Links to climatological data arranged by Country or Region\*

### Africa

[Algeria](#)  
[Angola](#)  
[Cameroon](#)  
[Djibouti](#)  
[Egypt](#)  
[Guinea-Bissau](#)  
[Kenya](#)  
[Libya](#)  
[Madagascar](#)  
[Mozambique](#)  
[Namibia](#)  
[South Africa](#)  
[Tunisia](#)  
[Uganda](#)

### Asia

[Afghanistan](#)  
[China](#)  
[India](#)  
[Iran](#)  
[Iraq](#)  
[Japan](#)  
[Pakistan](#)  
[Thailand](#)  
[Turkey](#)

### Europe

[Germany](#)  
[Hungary](#)  
[Norway](#)  
[Poland](#)  
[Russia](#)  
[Yugoslavia](#)

### North America

[Canada](#)  
[Costa Rica](#)  
[Cuba](#)  
[Dominican Republic](#)  
[Greenland](#)

## Time Period, Frequency, and Parameters

The time period of coverage ranges from the 1830s through the 1970s with most data from the period prior to 1960. Each series typically includes observations for a number of meteorological and other geophysical parameters. These may include daily and monthly observations, as well as monthly and annual means, for:

- surface temperature
- precipitation
- atmospheric pressure
- wind speed and direction
- soil temperature
- radiation
- sunshine
- cloudiness
- upper air measurements
- geomagnetism

## How to Find the Data

To locate the desired data set, select a country or region from the list on the left, then select a title and year.

## Credit

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*Fiji. Harbour Master.*

*(Annual Meteorological Report) 1910-1930.*

**(METEOROLOGICAL OBSERVATIONS  
TAKEN AT SUVA)**

LIBRARY

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National Oceanic & Atmospheric Administration  
U.S. Dept. of Commerce

1910-1930

(LAT 17° 58' S, LONG. 177° 57' E, BEING 116 1/2 MILES EAST OF GREENWICH  
MEAN TIME)

**CHARLES H. KNOWLES, B.Sc. (LOND.),**  
SUPERINTENDENT OF AGRICULTURE

53843

SUVA: EDWARD JOHN MARSH, GOVERNMENT PRINTER.

1910

## Fiji

### List of publications containing climatological data for Fiji

The publications shown below contain climatological and geophysical data for Fiji. The description under each which images are available

**Meteorological observations taken at Suva during ...**  
Continued by *Annual Meteorological report for the year*  
General Note: Meteorological observations taken at the Office of the Superintendent of Agriculture, Suva  
Subject term: Atmospheric temperature-Fiji  
Subject term: Atmospheric pressure-Fiji  
Subject term: Precipitation (Meteorology)-Fiji  
Subject term: Humidity-Fiji  
Subject term: Winds-Fiji  
Subject term: Earth temperature-Fiji  
Volumes available

- 1910 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1911 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1912 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1913 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1914 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1915 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1916 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1917 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1918 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1919 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1920 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1921 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1922 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1923 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1924 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1925 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1927 [\(PDF format\)](#) [\(TIFF format\)](#)

### Annual Meteorological report for the year ...

Continues: *Meteorological observations taken at Suva during*  
General Note: Meteorological observations taken at the Office of the Harbour Master, Suva  
Subject term: Atmospheric temperature-Fiji  
Subject term: Atmospheric pressure-Fiji  
Subject term: Precipitation (Meteorology)-Fiji  
Subject term: Humidity-Fiji  
Subject term: Winds-Fiji  
Subject term: Cloudiness-Fiji  
Subject term: Sunshine-Fiji  
Volumes available

- 1926 [\(PDF format\)](#) [\(TIFF format\)](#)
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- 1930 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1931 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1932 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1933 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1934 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1935 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1936 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1937 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1938 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1939 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1940 [\(PDF format\)](#) [\(TIFF format\)](#)
- 1945 [\(PDF format\)](#) [\(TIFF format\)](#)

Date	Temperature				Humidity		Wind		Cloud		Sunshine		Weather	
	Max	Min	Mean	Wet Bulb	Rel. Hum.	Dir.	Force	Dir.	Force	Hours	Intensity	Remarks	Remarks	
<b>APRIL</b>														
<b>At 8.00 a.m. Standard Time.</b>														
1	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
2	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
3	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
4	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
5	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
6	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
7	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
8	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
9	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
10	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
11	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
12	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
13	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
14	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
15	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
16	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
17	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
18	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
19	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
20	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
21	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
22	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
23	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
24	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
25	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
26	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
27	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
28	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
29	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
30	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
31	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
Mean	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
<b>At 3.00 p.m. Standard Time.</b>														
1	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
2	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
3	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
4	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
5	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
6	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
7	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
8	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
9	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
10	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
11	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
12	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
13	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
14	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
15	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
16	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
17	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
18	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
19	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
20	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
21	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
22	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
23	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
24	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
25	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
26	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
27	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
28	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
29	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
30	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
31	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear
Mean	28.0	20.0	24.0	80	75	SE	10	0	0	0	0	0	0	Clear



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