Climate Data Archive

This data archive is slowly being migrated to the Center for Science in the Earth System (CSES). A good way to find a data set on this and the CSES pages is to google "jisao keyword," where keyword could be SST, or the name of a particular data set.

NOTE: All links to external websites will open in a new window. Close these windows when you are finished with the resource.

The data archive consists of

- **Gridded data sets**: document spatial and temporal variability
- **Key climate time series**: North Atlantic Oscillation, northeast Brazil rainfall, etc.
- **Links to WWW data sites**: a good starting place for data sets that we don't provide
- **Links to WWW sites which provide software to analyze data**.

Gridded Data Sets

Go to: precipitation | surface temperature | sea-level pressure | surface vector wind & stress | miscellaneous

The gridded data sets are written in network common data form (netCDF) conforming to the Cooperative Ocean-Atmosphere Research Data Service (COARDS) standard. (Description of COARDS netCDF standard.) A superset of the COARDS standard, called the NetCDF climate and forecast (CF) metadata convention, includes the possibility to store time series for multiple stations, along with their names and coordinates.

- MATLAB scripts for reading and writing data in netCDF.
- MATLAB scripts for reading FITS-format files.
- MATLAB distributed oceanographic data system (DODS) code for reading files at other institutions.
- MATLAB code for reading data written in hierarchical data format (HDF).
- NOAA ESRL provides both FORTRAN and IDL routines to read netCDF files.
- netCDF (command line) operators (NCOs) to manipulate netCDF and HDF files
- ASCII dumps of netCDF files (how to read them).
- GrADS command lines for reading a netCDF file.
  GrADS users:The older files were written with time specified as yyyymmddhhmmss (year, month, ...), and GrADS does not recognize this time convention. If you run into a file like this, please let me know, and I will update the time specification in the file

If you need the data in ASCII format, let me know, and time permitting, I will see what I can do.

Precipitation

Name	Temporal Resolution	Spatial Resolution	Range of Years	Comments
Rain gauge:				
DoE (Eischeid et al.)	seasonal	4x5°	1851-1989	anomalies
NCDC GHCN	monthly	5°	1900-present	anomalies
NASA GISS	monthly	2.5°	1850-1996	anomalies
University of East Anglia	monthly	2.5x3.75°	1900-98	totals &
GPCC	monthly	2.5, 1°	1986-98	climatology
GPCP	monthly	2.5°	1979-Jan2005	totals &
University of Delaware	monthly	0.5, 1.0°	1900-2008	climatology
University of Washington	daily	"50" km	1949-94	totals
NCEP CPC	daily, monthly	0.25, 1°	1948-98	totals & climatology Pacific Northwest Pacific Northwest/US

Satellite, gauge, model:				
CMAP monthly	monthly	2.5°	1979-Sep2004	
CMAP pentad	pentad	2.5°	1979-Mar2009	
Satellite & gauge:				
Legates/MSU	monthly	2.5°	climatology	
CAMS-OPI	monthly	2.5°	1979-Jan 2009	
GPCP monthly	monthly	2.5°	1979-Aug 2009	
GPCP pentad	pentad	2.5, 1°	1979-Apr 2008	
GPCP daily	daily	1°	1996-Apr 2009	
CMAP monthly	monthly	2.5°	1979-Sep 2004	
CMAP pentad	pentad	2.5°	1979-Mar2009	
Satellite:				
MSU	monthly	2.5°	1979-July1997	oceans only
GPI	monthly/pentad/daily	2.5°	1987-May1996	
SSM/I (NESDIS)	monthly	2.5°	1987-Oct1996	
SSM/I (RSS)	monthly	0.25, 0.5°	1987-July2002	totals &
OLR	monthly	2.5°	1974-Nov1998	climatology

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Surface Temperature

Name	Temporal Resolution	Spatial Resolution	Range of Years	Comments
Land only:				
University of East Anglia	monthly	5°	1850-present	sampling
University of Delaware	monthly	0.5, 1.0°	1900-2008	totals
NCDC GHCN	monthly	5°	1880-present	anomalies
Land and ocean:				
UEA / UKMO	monthly	5°	1850-present	sampling
NOAA (ERSST and GHCN)	monthly	5°	1880-present	
NASA GISS	monthly	2.5°	1979-97	
Legates and Willmott climatology	monthly	0.5, 2.5°		
IABP / POLES	monthly	other, 1°	1979-present	Arctic
merged Arctic	monthly	1°	1950-99	
sea surface temp. (SST):				
LDEO	monthly	5°	1856-1991	anomalies
extended reconstructed	monthly	2°	1854-present	
NCEP EOF-filtered	monthly	2°	1950-2000	
NCEP optimal interpolation	monthly,weekly	1°	Nov1981-present	
Merged NCEP EOF / OI	monthly	2°	1950-May99	
Sadler climatology	monthly	2°		tropics
COADS climatology	monthly	1, 2°		
ICOADS SST & air temp.	monthly	4x6°	1800-present	anomalies

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Sea-Level Pressure (SLP)

Name	Temporal Resolution	Spatial Resolution	Range of Years	Comments
NCAR (Trenberth and Paolino)	monthly	5°	1899-Apr2009	90-12.5N
Reduced resolution COADS	monthly	4x6°	1800-Feb2006	anomalies
Sadler (COADS) climatology	monthly	2°		tropics only
COADS climatology	monthly	2°		global

LDEO	monthly	4°	Apr1854-1992	
selected NCEP / NCAR reanalysis fields	pentads monthly	2.5° 2.5°	1948-2002 1950-79 climatology	

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Surface or 10-m Vector Wind & Surface Vector Stress

Name	Temporal Resolution	Spatial Resolution	Range of Years	Comments
COADS Vector Sfc. Wind	monthly	2°	climatology	global, marine
Reduced resolution COADS vector sfc. wind anomalies	monthly	4x6°	1800-Feb2006	
Sadler Vector Sfc. Wind	monthly	2°	climatology	tropical, marine
Sadler Vector Sfc. Stress	monthly	2°	climatology	tropical, marine
ERS-1 10-m Vector Wind	monthly	1°	1992-95	
SSM/I (RSS) 10-m wind speed	monthly	0.25, 0.5°	1987 - July 2002	

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Miscellaneous

Name	Temporal Resolution	Spatial Resolution	Range of Years	Comments
oceanic low-clouds	seasonal	2.5°	climatology	
COADS cloudiness	monthly	2°	climatology	global, marine
Reduced resolution COADS cloudiness anomalies	monthly	4x6°	1800-Feb2006	
Outgoing Longwave Radiation (OLR)	monthly	2.5°	1974-Nov98	
Planetary albedo	monthly	2°	climatology	
MSU stratosphere and troposphere temperatures	monthly	2.5°	1979-April 2003	anomalies
Elevation data sets (land and sea)		various°		global
Tropical cyclone positions and number	daily		historical	global
NOAA percentage sea ice	monthly,weekly	1°	November1981-Feb2005	version 2
selected NCEP / NCAR reanalysis fields	pentads monthly	2.5° 2.5°	1948-2002 1950-79 climatology	
SSM/I (RSS) water vapor and cloud water	monthly	0.25, 0.5°	1987 - July 2002	
Land vegetation (NDVI)	monthly	1°	1981-2001	
SeaWiFS marine chlorophyll and aerosol	monthly, pentad	0.5,1,2.5°	1997-2002	
UW Variable Infiltration Capacity (VIC) hydrological model data	monthly, daily, 3-hourly	1/8°	1950-July2000	

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Key Climate Time Series

Go to: precipitation | surface temperature | sea-level pressure | surface wind | miscellaneous

Precipitation

Name	Range of Years	Comments
Global EOFs	1900-88	
Equatorial Pacific MSU Index	1979-92	
Tropical Pacific and non-Pacific indices from gauge data	1892-1996, 1850-96	
South America northeast Brazil Piura Perú rainfall and river runoff	 1849-2002 1932-97, 1925-96	
Africa Sahel, Soudan, Guinea Coast (Nicholson) Sahel (Univ. Washington) Gulf of Guinea (Univ. Washington)	 1901-94 1900-Oct2010 1899-June2001	
All-India Indian Institute of Tropical Meteorology (What is presumably is the same data is offered in easy-to-ingest formats at the COLA: Paolino | monsoondata.org.) Parthasarathy et al. Sontakke et al. **India sub-divisions** Indian Institute of Tropical Meteorology What is presumably is the same data is offered in easy-to-ingest formats by the COLA (Paolino | monsoondata.org) and the IRI	 1871-2001 1870-1997 1844-1992 1871-2001	
Puget Sound Lowland (Washington State)	1931-2009	
Northeastern Washington State	1931-96	
Digital values for numerous stations (WMSSC)	climatology	
Walker and Bliss Southern Oscillation index	1875-1933	

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Surface Temperature

Name	Range of Years	Comments
Equatorial Pacific SSTs: Nino1+2, Nino3, Nino4, Nino3.4	1950-present	
Eastern Eq. Pacific SST Anomalies "Cold Tongue Index" (CTI)	1845-January 2011	
Puerto Chicama Perú SST	1925-2002	
Paita Perú SST	1963-May98	
Global-SST ENSO index	1817 - May 2010	
Walker and Bliss Southern Oscillation index	1875-1933	
Indian Ocean SAT Anomalies	1800-2004	
Tropical Land Temperature Anomalies	1851-June 1997	
Global- and hemispheric-averages land, sea, and land+sea National Climatic Data Center	 1880-present	

University of East Anglia	1850-present	
Global-average SST	ICOADS 1845-Sep2006 & EOF-based 1950-2003	
Global-average marine sfc. air temperature anomalies	1854-1997	
Tropical-average SST Anomalies	1854-Oct2007	
"Pacific Decadal Oscillation" (PDO) north Pacific SST anomalies	1900-present	
"G", the leading principal component of SST anomaly "deviations"	1900-2005	
Puget Sound Lowland (Washington State)	1931-2009	
Northeastern Washington State	1931-96	
Climatological temperature and precipitation for numerous stations	climatologies	

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Sea-Level Pressure (SLP)

Name	Range of Years	Comments
Jakarta Indonesia	1841-1999	
Darwin Australia (UEA, NCEP, NCAR)	1866-present	
Tahiti (UEA, NCEP, NCAR)	1855-present	
Southern Oscillation Index (SOI)		
NCAR	1882-present	
NCEP	1866-present	
University of East Anglia	1854-present	
ICOADS-based	1800-present	
Walker and Bliss	1875-1933	
North Atlantic Oscillation (NAO)		
Hurrell	1864-present	
University of East Anglia	1821-present	
NCEP	1950-present	obs. & forecast
Northern Annular Mode (NAM) / Arctic Oscillation (AO)		
Colorado State University	1899-2002	
University of Washington	1948-Mar2010	
NCEP	1950-2003	obs. & forecast
Southern Annular Mode (SAM) / Antarctic Oscillation (AAO)		
University of Washington		
· 850 hPa Z	1948-2002	
· SLP	1948-Sep2010	
NCEP	1979-present	obs. & forecast
British Antarctic Survey (Marshall)	1957-present	
Leibniz Institut für Meereswissenschaften (Visbeck)	1860-2005	

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Surface Wind

Name	Range of Years	Comments
Eq. Pacific zonal wind	1850-Jun2005	

Eq. Pacific meridional wind	1850-Jun2005	

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Miscellaneous

Name	Range of Years	Comments
Quasi-Biennial Oscillation (QBO) index	1953 - present	Freie Universität Berlin
Walker and Bliss Southern Oscillation index Quinn et al. El Niño index	1875-1933 1525-1987	
Pacific/North American (PNA) pattern index Wallace and Gutzler (1981) grid-point definition EOF-definition	 1948-Oct2010 1948-Mar2010	
Madden and Julian Oscillation (MJO)	1979 to mid-2002	
Tropical cyclone positions and number	1886 - present	
CO2 station records (Mauna Loa, South Pole, ...)	1958-2001	PS JPEG PNG GIF

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Useful WWW Data Sites

Go to: Monthly-means | pentad-means | daily- and hourly means | other

Monthly-means:

Indian Monsoon data: vegetation and precipitation departures served by the Center for Ocean-Land-Atmosphere Studies (COLA)

NOAA National Climatic Data Center

Selected fields from the Japan Meteorological Agency

"WaterWeb" search engine for hydrological data. Let me know if this is useful!

The British Atmospheric Data Centre (BADC) provides global, gridded, historical data sets of sea surface temperatures, sea-level pressure, marine air temperature (nighttime) for academic use.

NASA Goddard Institute for Space Studies (GISS) provides several global, gridded data sets: surface temperature, precipitation, clouds, aerosols, and other fields.

The IRI/LDEO (International Research Institute for Climate Prediction / Lamont-Doherty Earth Observatory) data library contains a broad selection of climate data sets.

Pacific Island Rainfall provided by the Oklahoma Climatological Survey.

University of East Anglia Climatic Research Unit: historical, gridded, global precipitation, SLP, surface temperature, minimum-, maximum-temperature, vapor pressure, and many other fields.

Western Region Climate Center: digital values of climatological mean precipitation and surface temperature for the National Weather Service cooperative network stations in the western United States.

NCEP Climate Prediction Center:

- El Nino / Southern Oscillation (ENSO) and general atmospheric circulation indices
- reanalysis, precipitation, OLR fields

NASA Jet Propulsion Laboratory provides high spatial resolution sea surface temperatures and other, more oceanographic, fields.

The National Center for Atmospheric Research Research Data Archive and Informed Guide to Climate Data Sets.

NOAA Climate Diagnostics Center: the NMC Reanalysis data and the Comprehensive Ocean-Atmosphere Data Set (COADS) in netCDF format. Also, water vapor temperature is available here.

Carbon Dioxide Information Analysis Center: historical data sets.

FSU Center for Ocean-Atmospheric Prediction Studies: near real-time monthly-mean pseudostress analyses for the tropical Pacific and Indian

Oceans.

Global River Discharge Database Project (RivDIS)
Global Runoff Data Centre (GRDC) river discharge data.

United Kingdom Met Office Hadley Centre

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Pentad-means:

- NOAA National Centers for Environmental Prediction: reanalysis, precipitation, OLR fields

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Daily- or hourly means:

- Indian Monsoon data: meteorological fields and precipitation served by the Center for Ocean-Land-Atmosphere Studies (COLA)
- Pacific Island Rainfall provided by the Oklahoma Climatological Survey (PACRAIN).
- PMEL TAO Project hourly and daily data from moorings in the equatorial Pacific Ocean.
- National Climatic Data Center: daily, hourly, and 15-minute averages. mostly U.S., but some global.
- NASA Jet Propulsion Laboratory provides high spatial resolution sea surface temperatures and other, more oceanographic, fields.
- Western Region Climate Center: digital values of climatological mean precipitation and surface temperature for the National Weather Service cooperative network stations in the western United States.

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Other sites

- Annual whaling statistics for 1910 - present
- United Nations Global Resource Information Database (GRID) various environmental data bases (soil moisture retention, for example).

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Software for analyzing data

Please send me URLs for sites with useful free software for analyzing data.

- "Matlab Tools for Oceanographic Analysis" provided by the Woods Hole Oceanographic Institution and the U.S. Geological Survey
- "Pyclimate" performs SVD, EOFs, filtering, ... using the Python programming language.
- NOAA ESRL provides both FORTRAN and IDL routines to read netCDF files.
- NCAR NCL manipulates netCDF, HDF, and GRIB format files.

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Please report problems or corrections to DATA webmaster: Todd Mitchell <mitchell@atmos.washington.edu>.