

The Cyprus Institute Live Access Server

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LAS

A user-friendly web-server designed to:

- Provide data referenced by longitude, latitude, time
- Show color plots and graphs of requested data
- Download and store subsets of requested variables in a choice of formats
- Analyse datasets (eg. compute average values of temperature over time or area)
- Compare values of a selected parameter for different time periods (plots)
- Compare values of the same parameter coming from different type of datasets (eg. MODEL simulations output and observational datasets)

Objectives

- Provide a regional resource and service to climate researchers, policy makers, stakeholders and the general public
- Improve the accessibility of data relevant to climate change assessments for the Mediterranean region and the Middle East
- Obtaining the data from different sources
- Ensuring the availability of continued and quality controlled data relevant to climate system

Data

MODEL DATA

PRECIS (Hadley Centre Regional climate model simulation A1B scenario:

Daily maximum, minimum, mean temperature, precipitation rate for time periods:

1950- 1979, 1980-2009, 2010-2039, 2040-2069, 2070-2099

OBSERVATIONS

APHRO_ME daily Precipitation V9.02

CRU TS2.1 and TS3.1 in 0.5 deg

CPC Monthly Global Analysis in 0.5 deg

ENSEMBLES E-OBS daily dataset V3.0

GPCC precipitation in 0.5 deg

University of Delaware, monthly temperature and precipitation V1.02 in 0.5 deg (1900-2008)

REANALYSIS DATA

ERA40 and NCEP DOE 2, daily

OCEAN DATA

Sea surface and air temperature, wind speed, specific humidity, zonal speed, mer. wind, sea level pressure

SATELLITE DATA

GPCP merged monthly and daily precipitation for 1996-2008,

CPC monthly merged analysis of precipitation V5.11 in 2.5deg V9.02, for 1979-2009

Using LAS interface

The screenshot shows a Mozilla Firefox browser window displaying the 'The Cyprus Institute LAS' website. The browser's address bar shows the URL eewrc-las.cyi.ac.cy/las/getUI.do. The website header includes 'Live Access Server', 'About LAS', and 'Help'. Below the header, there is a navigation bar with buttons for 'Choose dataset', 'Update Plot', 'Set plot options', 'Animate', 'Compare', 'Google Earth', 'Show Values', 'Export to Desktop Application', 'Save As ...', 'Link To ...', and 'Print'. The main content area features a world map on the left and a central text area that reads: 'Welcome to *Live Access Server*. To begin, click the "**Choose dataset**" button.' To the right of this text is the LAS logo, which is a globe with the text 'LAS NOAA PMEL' overlaid. A large orange box in the center of the page contains the URL <http://eewrc-las.cyi.ac.cy/las/getUI.do> and the login credentials: 'Username: **guest**' and 'Password: **cyi**'. At the bottom of the page, there is a footer with the text: 'US Department of Commerce NOAA | OAR | PMEL | Contacts | Privacy Policy | Disclaimer | mailto: ops@cyi.ac.cy'.

Technical information

- Created in 1994, by **NOAA-PML** (National Oceanic and Atmospheric Administration - Pacific Marine Environmental Laboratory) of US Dep. Of Commerce
- Employs **OPeNDAP** (Open-source Project for a Network Data Access Protocol) to access/retrieve data stored on remote servers
- Uses **Ferret** software for data visualization, though other applications (Matlab, IDL, GrADS, ...) can also be used

Ongoing activities

- **Import on LAS climate data collected till now:**

MODEL: PRECIS simulation output 1961-1990, 2070-2100 (IPCC Emission scenarios A2, B1)

OBSERVATIONS: 40 Medit. stations , Monthly temperature & precipitation, 1955-2011

- **Convert to a uniform format and add to LAS, daily observational climate data focusing on EMME region:**

Data that are freely available on the web, deriving from different sources: Jeddah Regional Climate Centre (JRCC), Israel Space Agency (ISA), National Climate Data Centre/US Dep. of Commerce (NCDC)

- **Contacting national/regional Institutions with aim to collect more datasets relevant to climate and water & energy too**

Through DARECLIMED and CLIMRUN EU-projects of Cyl

Impact

- Contribute to progress of climate and environmental research in EMME
- Enhance future cooperation among regional climate science communities

References

CLIMRUN

<http://www.climrun.eu/>

DARECLIMED

<http://www.cyi.ac.cy/index.php/dareclimed-welcome.html>

ISA

<http://nasa.proj.ac.il/>

JRCC

<http://jrcc.sa/>

LAS tutorial/Installation info.

<http://ferret.pmel.noaa.gov/LAS/home/documentation/introduction/using-the-las-user-interface/>

NCDC

<http://www.ncdc.noaa.gov/oa/ncdc.html>

<http://www.ncdc.noaa.gov/oa/dataaccesstools.html>

Thank You!

Contact

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Back up slide

Hardware LAS

- 2 IBM x3650 M3 SERVERS/3.46GHz (Intel Xeon 5690/ 2nodes x 6cores)
- 96 GB ECC DDR3 RAM
- 10 TB usable storage

Data access protocol OpenDAP

LAS employs the OpenDAP networking so as to provide transparent access to remote data and to present distributed data sets as a shared virtual data base. OpenDAP comprises a data transport architecture and protocol which gives a way to researchers to access scientific data anywhere on the Internet from a wide variety of new and existing programs. The OpenDAP protocol is particularly suited to accesses by a client computer to data stored on remote (server) computers which are networked to the client computer (Cornillon et. al., 2003). The protocol was originally developed and has been used by the Distributed Oceanographic Data System since 1995 (Gallagher and Milkowski, 1995). Later on it was adopted by a number of meteorological and climate groups and nowadays it is extensively used in all three communities, climate, oceanography and meteorology. The OpenDAP architecture consists of a client and various servers, with the client sending requests for data out onto the network to some server that answers with the requested data. The OpenDAP servers, local or remote, deliver real data directly to the client program in the format needed by that client. The proposed Live Access Server uses Ferret data visualization software as a client, while, as it is already written, data can be saved in NetCDF, ASCII and arcGrid formats.

The major advantage of OpenDAP protocol, compared to ordinary file transfer protocols (e.g. FTP), is the ability to retrieve subsets of files and to aggregate data from several files in one transfer operation. The combination of the OpenDAP network communication model (client and servers) and the data translation facility make OpenDAP a powerful tool for the retrieval, sampling, and display of large distributed datasets.

Data Information

- **CRUTS2.1**

The Climate Research Unit has created a 0.5° by 0.5° resolution dataset of monthly ground-based climate variables for 1901-2002. Monthly gridded data of temperature precipitation over land are generated from station observations.

- **CRU TS3.0**

Dataset for the period 1901-2006 has been released through the British Atmospheric Data Center (<http://badc.nerc.ac.uk>). The major difference between the CRU TS2.1 and CRU TS3.0 is that no new homogenization is explicitly performed in the latter. Existing homogenizations in the underlying datasets, and homogenizations performed by national meteorological agencies prior to releasing their station data, are incorporated.

- **CPC Precipitation/Temperature**

The monthly gridded (0.5° x 0.5°) Precipitation Reconstruction over Land (PREC/L) precipitation data . The dataset is derived from gauge observations collected in the Global Historical Climatology Network (GHCN), version 2, and the Climate Anomaly Monitoring System (CAMS) datasets.

- **GPCC**

The GPCC hosted at the German Weather Service (Deutscher Wetterdienst, Offenbach, Germany) is the official precipitation data center of the World Meteorological Organization (WMO).

- **University of Delaware (Air Temperature and Precipitation)**

The UDel dataset is a monthly global gridded high resolution station (land) dataset for air temperature and precipitation from 1950-2008. This dataset is based on a large number of stations, both from the GHCN-2 (Global Historical Climate Network. For the station data monthly precipitation, several other sources of data including GSOD (Global Summary of the Day) were used (see documentation: (<http://climate.geog.udel.edu>)). The gridded fields were estimated from monthly weather-station averages using a combination of spatial interpolation methods

Data Information

- **E-OBS**

This dataset is a European land daily high-resolution gridded data set for precipitation 147 and minimum, maximum, and mean surface temperature for the period 1950-2009. The E-OBS gridded data set was derived through interpolation of the ECA&D (European Climate Assessment and Data) station data.

- **APHRODITE (Aphro)**

The APHRODITE dataset is a daily gridded precipitation that is the only long-term (1951 onward) continental-scale daily product that contains a dense network of daily rain gauge data for Asia including the Himalayas, South and Southeast Asia and mountainous areas in the Middle-East. The datasets for each region are available at both resolutions: (0.5° x 0.5°) and (0.25° x 0.25°).

- **ERA-40**

The European Centre for Medium-Range Weather Forecasts (ECMWF) Re-Analysis (ERA40) project is a global atmospheric analysis of many conventional observations and satellite data streams for the period September 1957 - August 2002.

- **LEVITUS**

Climatological Atlas of the World Ocean Grid: global, 1° x 1° degree; 19 levels from surface to 1000 m, monthly climatology. Author: Sydney Levitus. This data set is the monthly climatology prepared by Sydney Levitus and published in 1982, of world ocean temperature. (http://eewrc-las.cyi.ac.cy/las/docs/levitus_monthly.html)

- **COADS (marine data)**

The International Comprehensive Ocean-Atmosphere Data Set (ICOADS) offers surface marine data spanning the past three centuries, and simple gridded monthly summary products for 2° latitude x 2° longitude boxes back to 1800 (and 1°x1° boxes since 1960) (<http://icoads.noaa.gov/>)

Data Information

- **GPCP satellite data**

The Global Precipitation Climatology Project (GPCP) was established by the World Climate Research Programme to quantify the distribution of precipitation around the globe over many years. In support of this work an international group of precipitation experts developed and produces the GPCP Version 2 monthly Satellite-Gauge (SG), Pentad, and One-Degree Daily (1DD) combined precipitation data sets. (<http://www.ncdc.noaa.gov/oa/wmo/wdcamet-ncdc.html>)

- **CPC Monthly Analysis of Global Land Precipitation in 0.5x0.5 Boxes /OBSERVATIONS**

Global Land Precipitation based on rain gauge data in 0.5x0.5 deg. boxes. Global Land Precipitation based on rain gauge data starting in 1948 till recent on 0.5x0.5 lat./lon. grid. The rainfall is given as monthly average rain rate per day. In addition, number of rain gauges within a lat./lon. box is provided.

(<http://www.cpc.ncep.noaa.gov/>)

- **CPC Monthly Analysis of Global Land Temperature in 0.5x0.5 Boxes /OBSERVATIONS**

A station observations based global land monthly mean surface air temperature dataset at 0.5 x 0.5 degrees resolution for the period from 1948 to present. References: Fan, Y., and H. van den Dool (2008), A global monthly land surface air temperature analysis for 1948-present.

(ftp://ftp.cpc.ncep.noaa.gov/wd51yf/GHCN_CAMS/)