# The CIMME data repository

**A Cyprus Institute Initiative**

**Strategy and objectives**

2nd MEDARE Workshop

Nicosia – 8 May 2010

Email: meryem.tanarhte@mpic.de

THE CYPRUS INSTITUTE

MAX-PLANCK-GESELLSCHAFT

# Outline

- Introduction of the web site and the web server

- Description of the CIMME dataset

# Major Goals

- Improve the availability 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 about the state of the climate system

# The domain: Mediterranean and Middle East (22N-45N/20W-57E)

# List of Countries

| Europe | North Africa | Middle East/SW Asia |
|---|---|---|
| - Spain<br>- France<br>- Italy<br>- Monaco<br>- Slovenia<br>- Croatia<br>- Serbia<br>- Montenegro<br>- Bosnia-Herzegovina<br>- Malta<br>- Albania<br>- Greece | - Morocco<br>- Algeria<br>- Tunisia<br>- Libya<br>- Egypt | - Cyprus<br>- Lebanon<br>- Syria<br>- Israel<br>- Jordan<br>- Iraq<br>- Iran<br>- United Arab Emirates<br>- Qatar<br>- Georgia<br>- Azerbaidjan<br>- Kuwait |

# Data Organization

- By data type: gridded, station, country
- By discipline: atmospheric, oceanic, terrestrial, socio-economic
- By time coverage: non-static, fixed time, climatology, paleo, forecast

# Gridded and station data

- Organized by category: In-situ observations, satellite/remote observations, model results, reanalysis products

- By geographical distribution: global, regional or station data

# The Live Access Server

- Product  (web server) developed by the Pacific Marine Environmental Laboratory (NOAA)

- Is a webserver designed to provide access to scientific data referenced by latitude, longitude, and time

- Can show visualizations (color plots and graphs) of the data as requested

- provide subsets of the specific parameters in a choice of file formats

- present the numerical data collected

- unify access to multiple types of data in a single interface

# Example of LAS

- You choose the type of data you would like to explore by topic area

- For example, Atmosphere

# How to access data

After selecting the variable you want to explore, you choose your output options:

- View (Map or Time series)
- Region (Global or specific region)
- Time (date)
- Depth (when available)

- For example, we choose *Latitude-Longitude map*, *Full Region*, *January*
- Click *Update Plot*

# The resulting plot



Subset of World Ocean Atlas monthly 1994

# The resulting plot
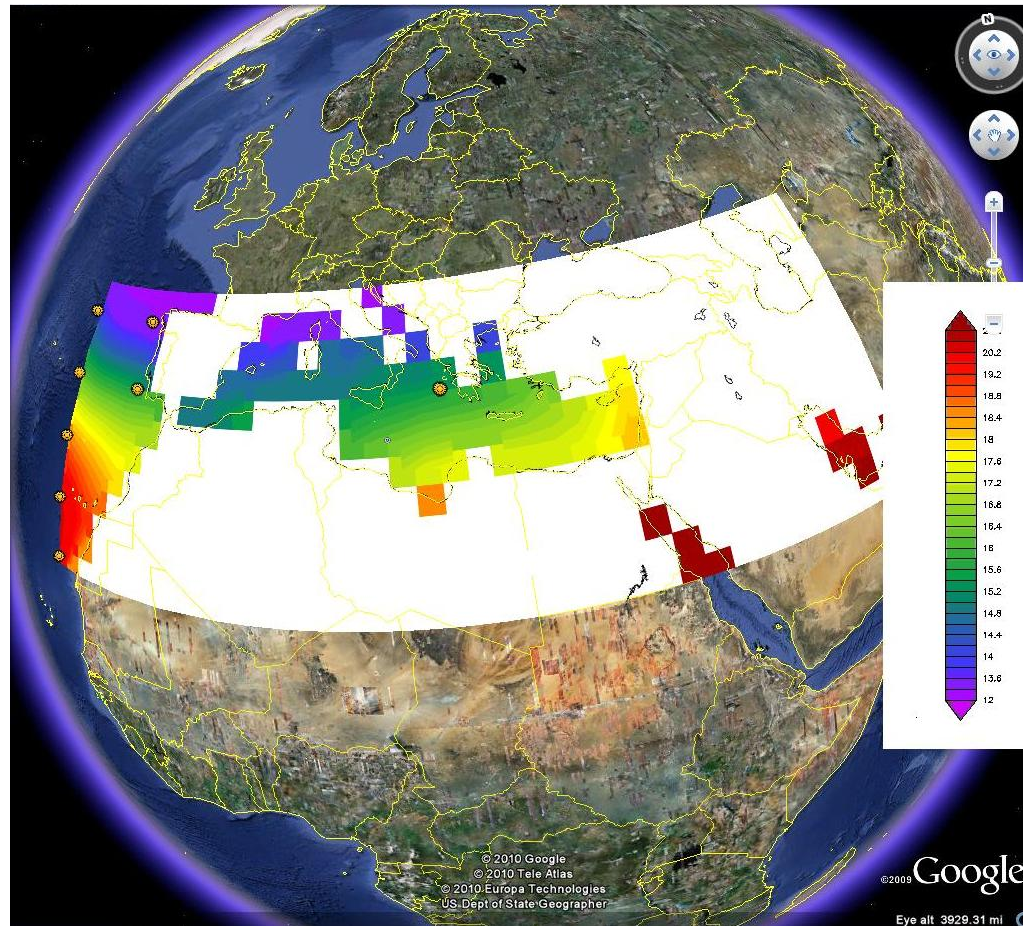


exported to Google Earth

# Plot examples
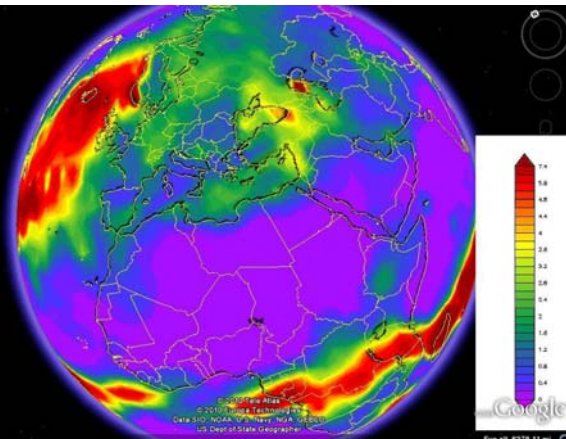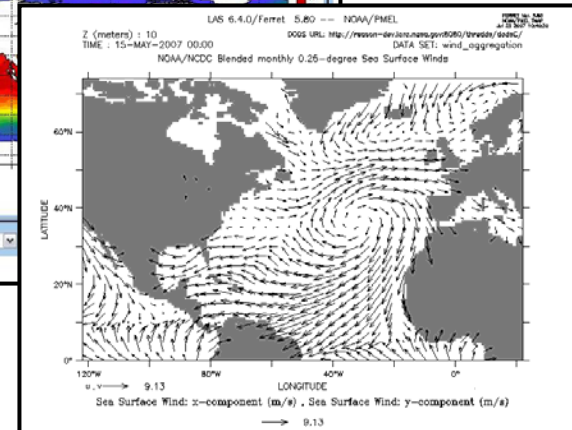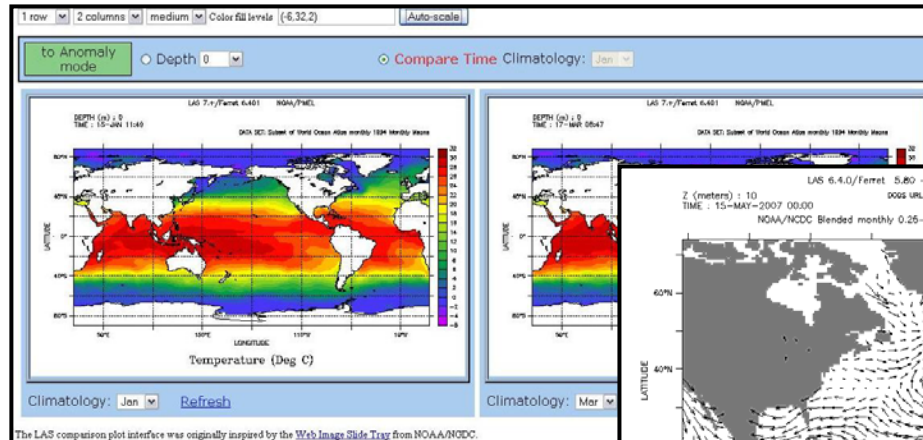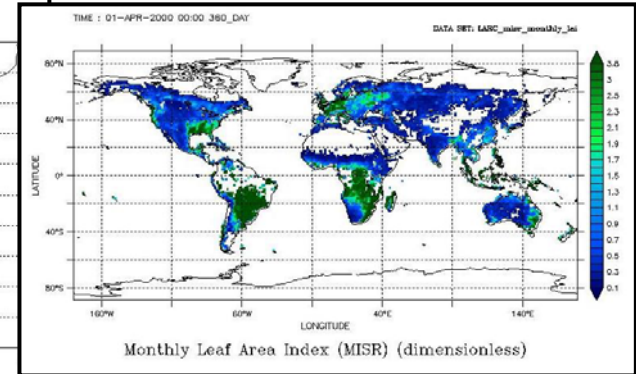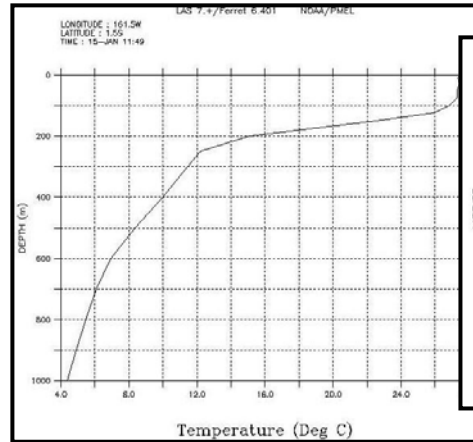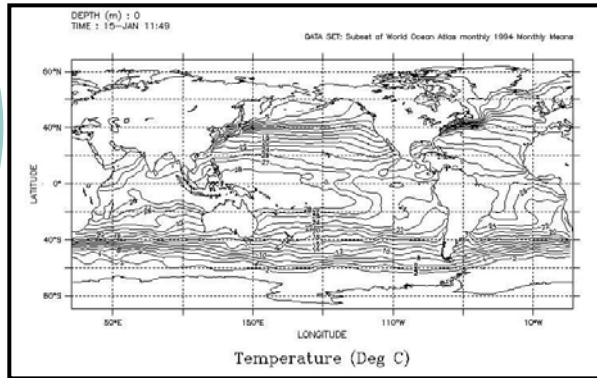


GPCP Monthly Precipitation –Feb 1979

# How to manipulate data

- You can select your analysis type (average, min, max, sum, var) that you apply on an axis (time, latitude, longitude, depth)
- You can choose the range
- You can make comparisons of plot for different dates or depths
- You can save the data as file (netcdf, arcGrid, ASCII)
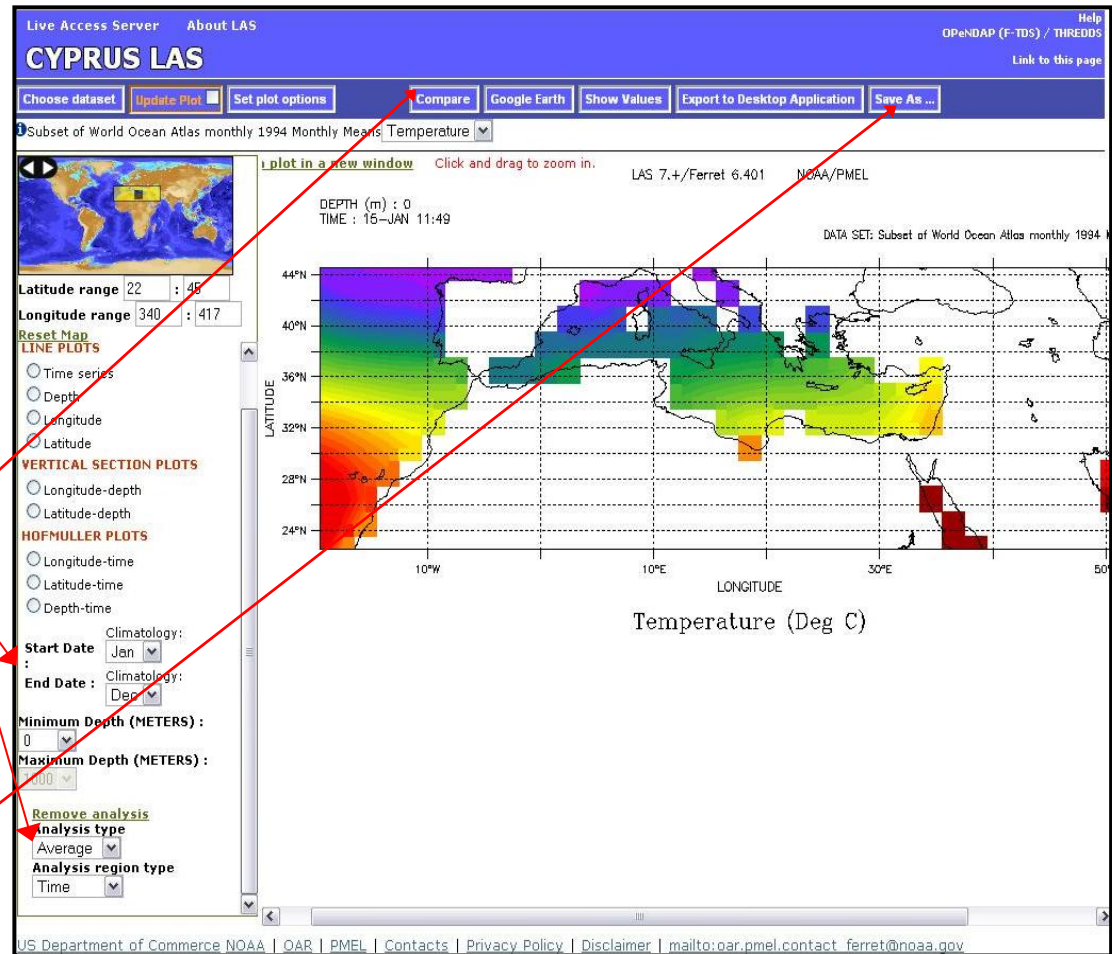
# The OPENDAP server

- A software that simplifies scientific data networking, allowing simple access to remote data

- Local data can be made accessible to remote locations regardless of local storage format by using servers (Netcdf, hdf, Matlab, GrADS..)

- Existing, familiar data analysis and visualization applications (ferret, GrADS, MATLAB and many others) can be transformed into clients  (i.e., applications able to access remote served data).

# Which data?

## Observations

| | |
|---|---|
| Monthly surface temperature | - CRU 3.0: gridded station data, 1901-2006, 0.5°x 0.5°<br><br>- GHCN-CAMS: gridded station data, 1948-present, 0.5°x 0.5°<br><br>- University of Delaware: gridded station data , 1961-2006, 0.5°x 0.5° |
| Daily surface temperature | - E-OBS 3.0: gridded station data, 1950-2010, 0.5°x0.5° and 0.25°x0.25° |
| Monthly precipitation | - VASClimO/GPCC: gridded station data, 1951-2000, 0.5°x0.5° and 1°x1°<br><br>- CRU 3.0: gridded station data, 1901-2006, 0.5°x 0.5°<br><br>- University of Delaware: gridded station data , 1961-2006, 0.5°x 0.5°<br><br>- CPC Monthly Analysis of Global Land Precipitation: gridded station data, 1948-2007, 0.5°x 0.5° |
| Daily precipitation | - E-OBS 3.0: gridded station data, 1950-2010, 0.5°x0.5° and 0.25°x0.25°<br><br>-APHRODITE: gridded station data, 1961-2004, 0.5°x0.5° |

# Which data?

## Satellite

| | |
|---|---|
| Monthly temperature | - Microwave Sounding Unit (MSU): lower troposphere, middle stratosphere and lower stratosphere, 1979-2007, 2.5°x 2.5° |
| 12-hourly temperature | - AIRS V5 (Atmospheric Infrared Sounder ): from surface to 1mb, 1 Sept 2002-present, 1°x1° |
| Monthly precipitation | - GPCP (Global Precipitation Climatology Project):, 1951-2000, 0.5°x0.5° and 1°x1°<br>- CMAP: gridded station data, 1901-2006, 0.5°x 0.5° |
| Daily precipitation | - GPCP daily precipitation: Oct 1996 – Aug 2009, 1°x1° |
| Radiation | - ERBE: The NASA Earth Radiation Budget Experiment, Monthly data Nov 1984-Jan 1990, 2.5°x2.5° |
| Clouds | - ISCCP_D2 satellite cloud data: monthly cloud data from Jul 1983-June 2008 2.5°x2.5° |
| Humidity | - AIRS V5 (Atmospheric Infrared Sounder ): from surface to 1mb, 1 Sept 2002-present, 1°x1° |

# Which data?

## Model Results

| ENSEMBLES | - ENSEMBLES RT3 monthly data, 16 RCMs 1961-2000 with ERA-40 boundaries |
| | - ENSEMBLES RT2b monthly data, RCMs 1950-2050/2100 with GCM A1b boundaries |
| PRECIS | - PRECIS with HadAM3P daily data, 1950-2050 at 25 km |

## Reanalysis

| ERA40 | - ECMWF 40-year Reanalysis data: daily/monthly pressure level and surface, Sept 1957- August 2002, 2.5x2.5 |
| NCEP | - NCEP-NCAR Reanalysis daily/monthly average: Jan 1948-present, 2.5°x2.5° |
| | - NCEP-DOE Reanalysis 2 daily/monthly average: Jan 1979 to present, 2.5°x2.5° |

# Which data?

## Atmospheric composition

| WMO/GAW | - GAW Global Atmospheric CO2 and CH4 |
| | - GAW Global Baseline Total Ozone Network |
| | - GAW Global Baseline Profile Ozone Network |
| | - GAW Aerosol Network |

## Ocean

| MEDAR/ MEDATLAS II | - MEDATLAS Hydrographic and Bio-Chemical Data of the Mediterranean and Black Sea |
| ARGO | - Global array of 3,000 free-drifting profiling floats that measure the temperature and salinity of the upper 2000 m of the ocean, May 1998 - present |

# Timeline

- Live Access Server operational with the datasets mentioned: September 2010
- Add country profiles related to agriculture, energy: end 2010
- Have a website operational with the metadata, LAS and country profiles: January 2011
- Add new datasets on needs and request: 2011

# The CIMME Dataset

- Objective: build a dataset for temperature and precipitation for the region North Africa- Middle East

- Collect data from the WMO Global Telecommunication System available through the Global Summary of the Day (NOAA)

- Digitization of data scanned by NOAA and the Met Office

- Apply quality checks and homogenization

# The CIMME Dataset

- GSOD: more than 500 stations for MENA, spanning from 1957 to present (mostly complete from 1973 to present), not quality checked and not homogenized

- ECA-D dataset: about 220 stations from southern Europe and MENA, spanning mainly from 1950s to present, quality checked and homogenized

- Digitized data for stations from the Daily Weather reports (Austrian, French, British, Italian) from 1860-1870s in Egypt, Lebanon, Algeria, Malta, Croatia

# Outlook

- Coordinate activities with other Mediterranean projects: DARECLIMED, CLIMRUN, CIRCE (EU funded), ACRE and WMO-MEDARE

- Organize workshops same style as the „Expert Team on Climate Change Detection, Monitoring and Indices (ETCCDMI)" (Middle East climate extreme indices, Zhang et al., JGR, 2005)

- Hire a person (or two) for the digitization effort

# Thank you

Contact:
Meryem Tanarhte
meryem.tanarhte@mpic.de