Climate Scenarios for Scientist: the MED-Cordex solution

www.medcordex.eu

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with contributions from
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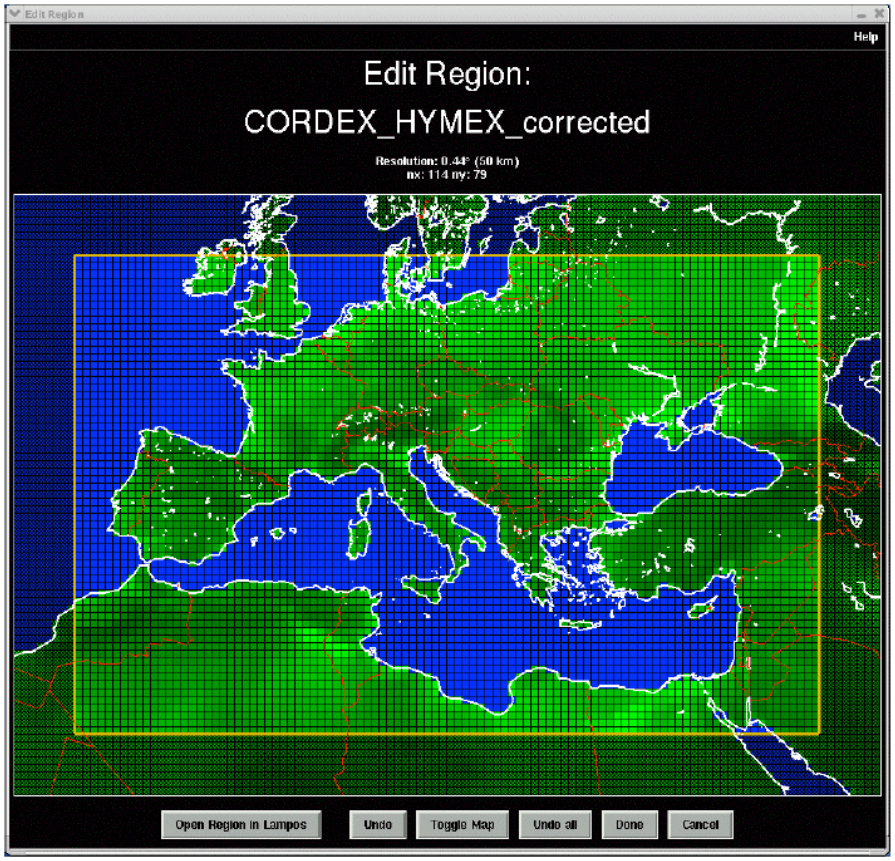
What is Med-CORDEX

- *Med-CORDEX is a coordinated contribution to the Coordinated Regional Downscaling EXperiment (CORDEX)*

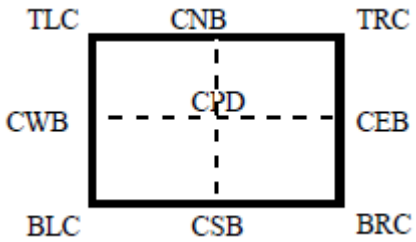
- *Med-CORDEX is supported by HyMeX and MedCLIVAR international programs.*

- *Med-CORDEX takes advantage of fully coupled ocean-atmosphere* ***Regional Climate System Models (RCSMs)****.*

Med44-CORDEX domain



Domain definition



TLC (339.79; 50.65)
CNB (15.0; 56.66)
TRC (50.85; 52.34)
CWB (348.12; 38.35)
CPD (15.75; 43.02)
CEB (43.41; 39.70)
BLC (353.96; 25.63)
CSB (16.22; 29.39)
BRC (38.33; 26.73)

From the *CORDEX domain document* (*http://www.medcordex.eu/cordex_domains_250610.pdf*)

Participating models

9 Atmosphere-only 50-25 km RCM

RegCM3, RegCM4, ALADIN, REMO, LMDZ, EBU, WRF, COSMO-CLM, PROMES

4 Atmosphere-only 10-20 km RCM

RegCM4, ALADIN, WRF, COSMO-CLM

8 Ocean-only regional models

MITgcm, NEMOMED8, MPIOM, NEMOMED12, MOSLEF, POM, INSTM-MED, NEMO-MFS

12 Fully coupled RCSM (at least ocean-atmosphere)

ENEA, MPI, CNRM, LMD, Univ. Belgrade, MORCE-MED, UCLM/UPM, INSTM, COSMO-CLM, UAH, IC3, CMCC

6 GCMs used for the scenario runs

CNRM-CM5, IPSL-CM5, HadGEM, MPI, CMCC, EC-Earth

Core Simulations

- Atmosphere-Land only
- 50 km over the MED-44 CORDEX domain
- Evaluation run (ERA-Interim driven runs, 1989-2008 minimum)
- Historical runs (1981-2005 minimum, 1950-2005 advised, GCM driver)
- Scenario runs (RCP8.5, RCP4.5, 2011-2040 or 2041-2070 minimum, 2006-2100 advised)

Usage statistics (March 2, 2015)

- The archive contains **113.964** data files for a total of **3.118 GB**

- have been downloaded **118.069** data files for a total of **5.375 GB**

- **63** Med-CORDEX users (scientists)

Med-CORDEX flow

Data providers upload their netcdf files

Automatic procedure ingests uploaded netcdf files: move them into their proper path, adds their info into the database, updates info on the web site

Data users browse the web site to discover the files they are interested in and download them

Med-CORDEX users

Data providers ask by mail for the role and for the credentials

Data users:

Registered users receive their credential upon request on the web site

HyMeX users use their own HyMeX mistrals credentials (any HyMeX user can get/use Med-CORDEX files without any permission)

uploading files

Data providers upload data using ANY ftp client

ftp	**ftp://user:passw@www.medcordex.eu**	
cd	**/incoming_MEDCORDEX/$INST**	
mput	***.nc**	(all files into the same flat dir)
put	**PLEASEgo.txt**	(any size, also empty)

where $INST is the code of their institution (eg: ENEA)

Then they wait for the automatic daily procedure to start

ingesting files

Every day at 20:00 (Rome) the "ingesting procedure" starts

- **For each dir /incoming_MEDCORDEX/$INST with PLEASEgo.txt:**
  - **for each other file in the dir, the procedure:**
    1. **verifies it's a netcdf file** — ncdump -h works properly
    2. **splits filenames in tokens and checks their compliance to CORDEX standard**
    3. **checks validity of variable name** — it is already known
    4. **creates the right $PATH in /**
    5. **moves the file into its $PATH**
    6. **inserts/updates the file's record in the db** — also ncdump –h

ingesting files

When data provider's files are all processed a mail is sent to him/her with the log of what happened ingesting his/her data

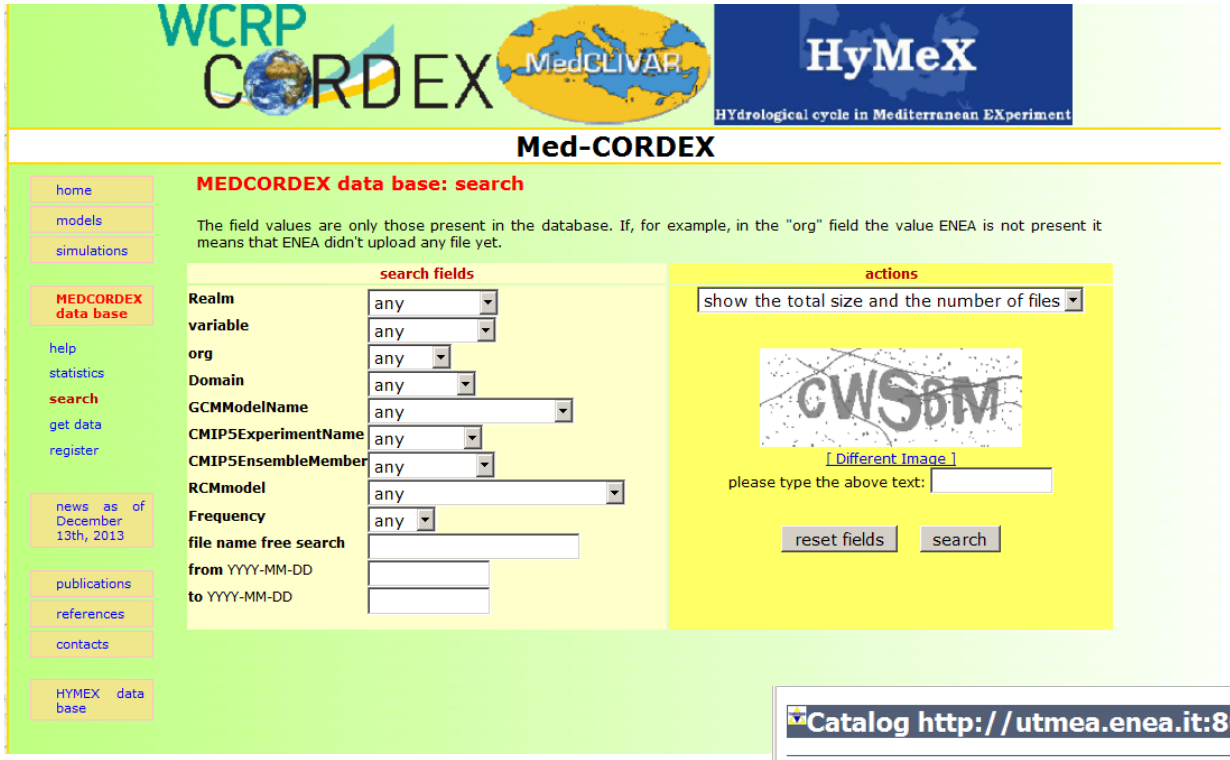
After ingesting all files of all data providers, the procedure computes some statistics and publishes them on the web site taking figures from db & ftp logs

downloading files

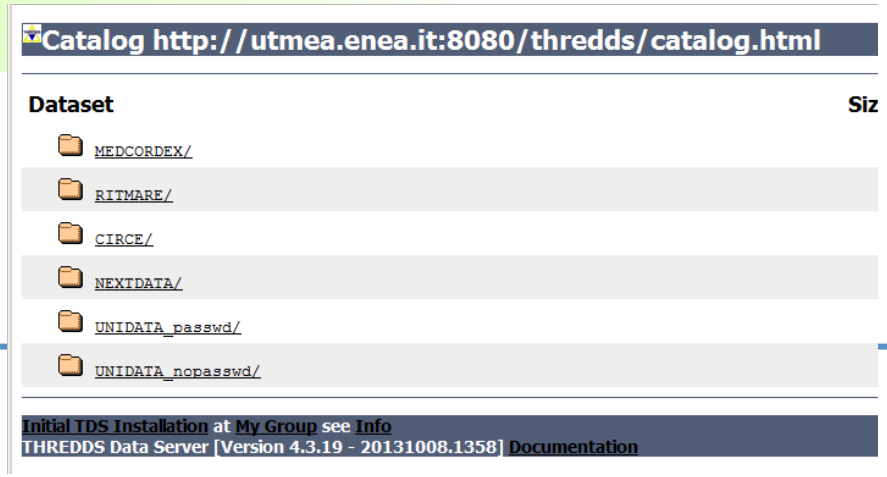
- **FTP Server** can be accessed by any ftp client as wget)
- **TDS Thredds Data Server** www.medcordex.eu/tds
- **Interactively** www.medcordex.eu

	Upload	Download	ftp	TDS	Interact.
data providers	U		X		
		D	X	X	X
authorized users		D	X	X	X
HyMeX users		D	X	X	X

User experience

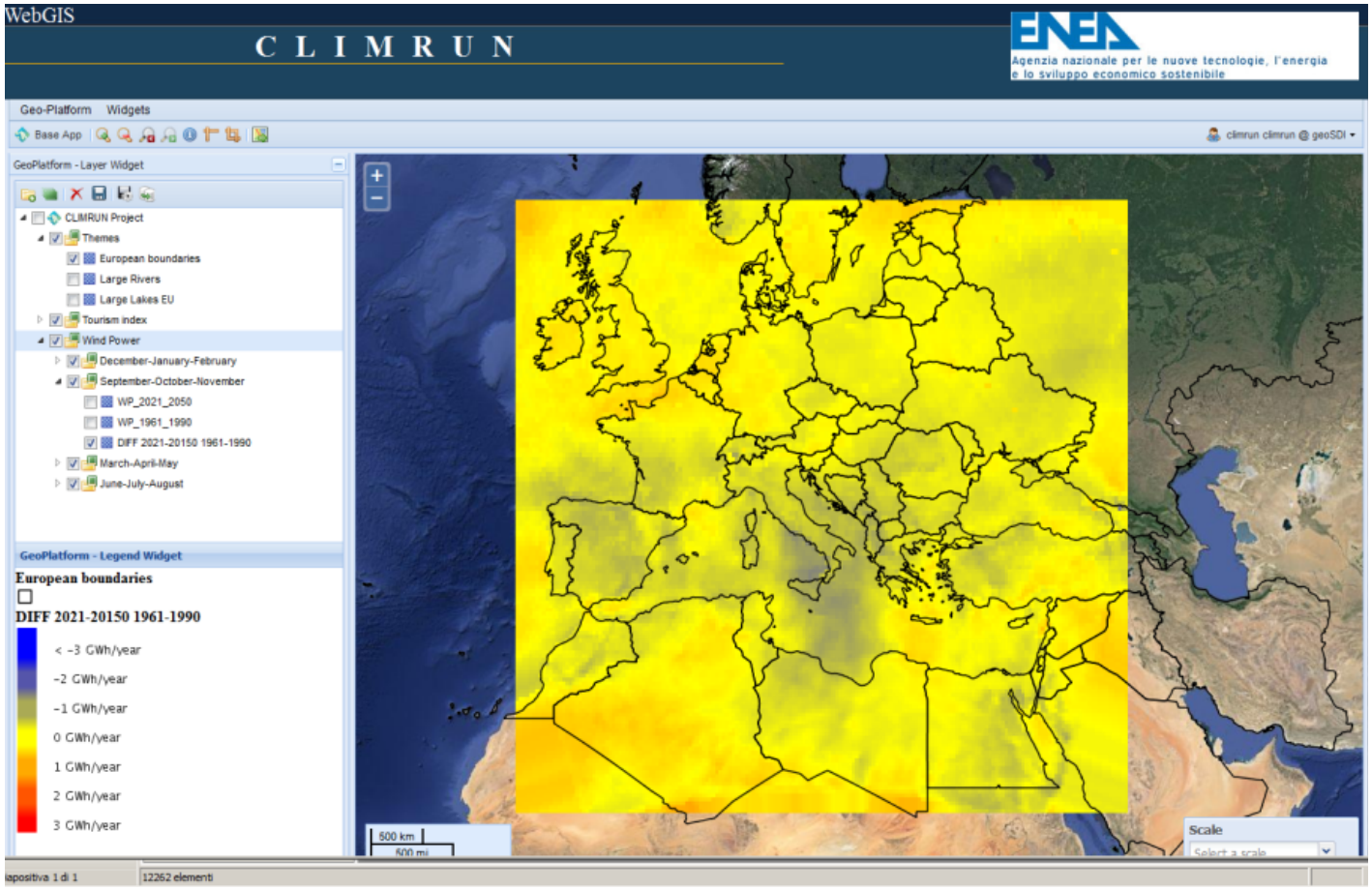


institution	Med-CORDEX contact point
ENEA	Alessandro Dell'Aquila
CNRM	Samuel Somot
IPSL	Sophie Bastin
UCLM	Miguel Gaertner
BSC	Maria Gonçalves Ageitos
GUF	Bodo Ahrens
ICTP	Erika Coppola
INSTM	Ali Harzallah
MERCATOR	Jonathan Beuvier
Puertos de l'Estado	Roland Aznar Lecocq
Univ of Athens	Vasilis Vervatis
LMD	Laurent Li
MPI	Alberto Elizalde
Univ. of Belgrade	Vladimir Djurdjevic
UPM	Pedro Galan
ENSTA	Thomas Arsouze
UAH	Giovanni Liguori
CMCC	Dario Conte, Piero Lionello
ITU	Baris Onol
Eotvos Lorand U	Judit Bartholy



Server thredds for NEXTDATA portal (*ENEA, CNR, CMCC,ICTP*)

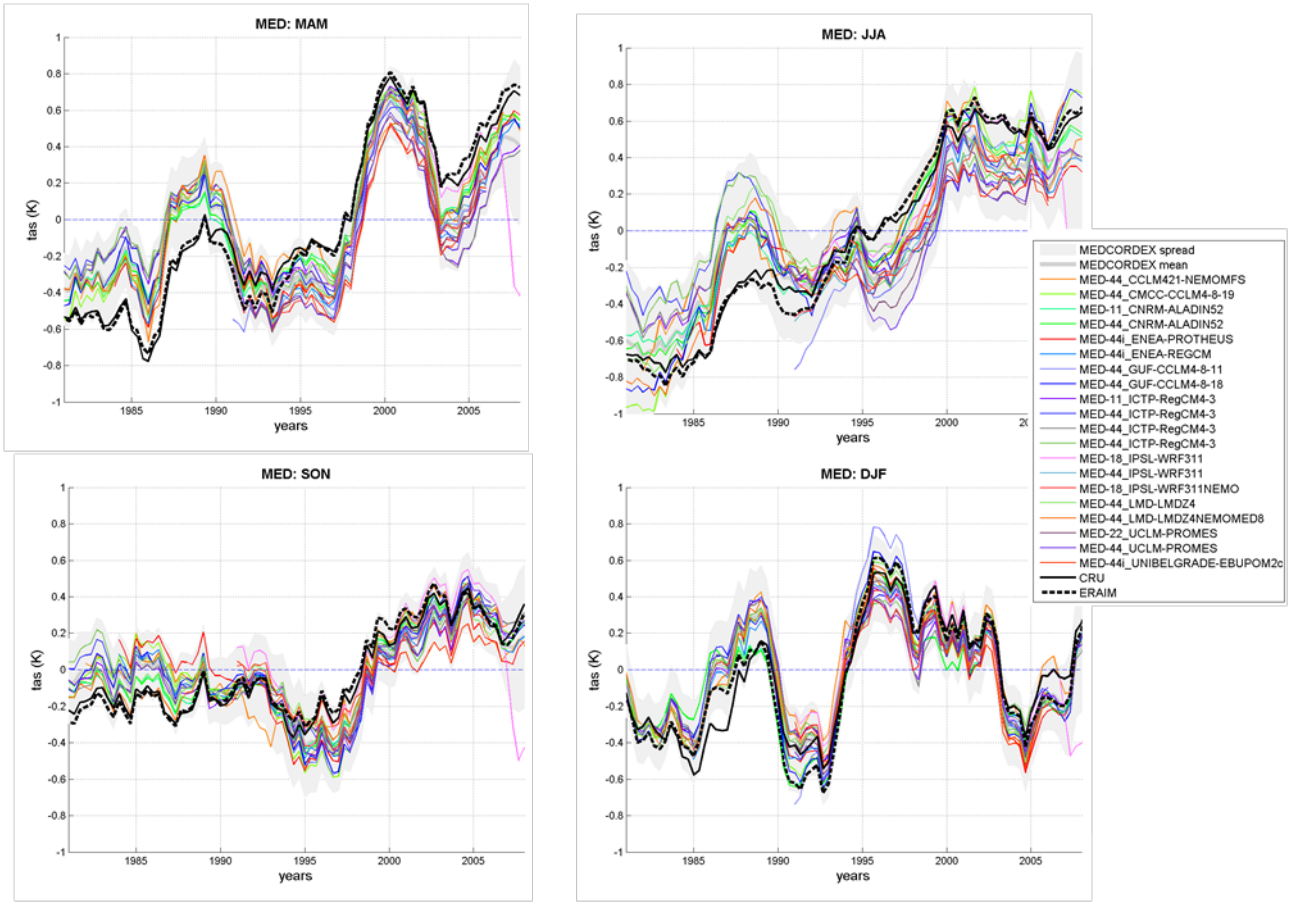
Maps and webgis



Changes in XXI century Wind Power with respect to present climate: Autumn season *(ENEA-PROTHEUS Scenario simulation)*

GIS technology: GIS portal from EU FP7-CLIMRUN project

A portal for the science community



Med-CORDEX validation (*Dell'Aquila et. al, in preparation*)

Potential interest for end-users

- **207** atmosphere-ocean-soil variables including

Total evapotranspiration
Incoming radiation
Specific Humidity
Soil Moisture
Precipitation
Snowfall
Snow area fraction
Temperature
Wind Speed
Oceanic currents
Sea surface height