Preventing for the Operational Copernicus Climate Change Service

- Produce European regional meteorological reanalyses of Essential Climate Variables for several decades with data services and uncertainty estimation;
- At higher resolution than before and multimodel and ensemble data assimilation;
- Provide observations for reanalyses;
- User interaction and user driven archives and visualisation services

*Building and running pre-operational pan-European multi-model ensemble reanalysis systems*

Operational archiving and data services of Upper model, pressure and height level parameters

Surface parameters and diagnostic parameters

**REGIONAL REANALYSES**

- User driven archives and visualisation services
- Observations for reanalyses
- At higher resolution than before and multimodel and ensemble data assimilation
- Emphasis on the user's perspective
- Investigate spatio-temporal scales and trends
- Exploring different methods
- Use standardized uncertainty measures for all data sets

**REGIONAL REANALYSES**

- Observations for reanalyses
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**ARCHIVING IN MARS**

- The common UERRA archive is MARS at ECMWF
- Data services from MARS and ESGF interface
- Web Map Servers
- Visualisation through Metview and WMS

**DATA ASSIMILATION**

Standard Deviation of ALADIN-ALARO Physics Parameters

SMHI HARMONIE

Ensembles: HARMONIE

+ Regional reanalyses driven by global forcing and upper-air and surface observations using: HARMONIE physics techniques ensembles of reanalyses
+ Surface and upper-air parameters

**UNCERTAINTY ESTIMATION**

- Use standardized uncertainty measures for all data sets
- Exploring different methods
- Investigate spatio-temporal scales and trends
- Emphasis on the user's perspective

5 precursor FP7 projects

Among 5 precorperational Copernicus Projects (SPACE 9.1 call)

- ERA-CLIM2
- European Reanalysis of the Global Climate System
- UERRA
- Uncertainties in Ensembles of Regional ReAnalyses
- QA4ECV
- Quality Assurance for Essential Climate Variables
- CLIPC
- A Climate Information Portal for Copernicus
- EUCLEIA
- European Climate and weather events: interpretation and attribution

UERRA: Grant Agreement 607193 EU FP7 SPACE 2013-1