The GEOWOW Project: Providing Access to the TIGGE Archive Through the Global Earth Observation System of Systems Common Infrastructure

Baudouin Raoult, David Richardson
European Centre for Medium-Range Weather Forecasts (ECMWF)
The Group on Earth Observations (GEO) initiated the Global Earth Observation System of Systems (GEOSS)

GEOWOW, short for “GEOSS interoperability for Weather, Ocean and Water” supports this objective

GEOWOW is an EU-funded FP7 project that began in September 2011

Partners: ESA, Terradue, EC-JRC, CNR, ECMWF, BfG, UNESCO, University Bonn, 52°North, KISTERS, UK MetOffice, MeteoFrance, KIT, INPE, University of Tokyo
GEOWOW

- Covers three of the GEO Societal Benefit Areas (SBA)
  - Weather, Ocean and Water

- Propose and validate a distributed architectural model federating Earth observation and other Earth Science data holdings

- Put this model forward as the European contribution to the GEOSS Common Infrastructure (GCI) and its evolution toward a wider GEOSS architecture

- A particular focus on supporting inter-disciplinary interoperability
Multi-disciplinary interoperability:

- Multi-disciplinary framework for data exploration, access and use
- Semantic framework for discovery and evaluation
- Integration of multi-scale and multi-environmental and social models
GEOWOW Weather component

- Task 1: Enhance the Content of the TIGGE archive
  - Addition of European limited areas ensemble system (EPS-LAMs), to the ECMWF archive
  - Creation of time-series datasets at selected locations (e.g. SYNOP or TEMP stations)
  - Provision of TIGGE data in NetCDF format, in order to reach a wider community
## TIGGE-LAM in Europe

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<th>LAM EPS System</th>
<th>Institute - Consortium</th>
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GEOWOW Weather component (cont.)

- Task 2: TIGGE data quality and integration, with focus on the most important weather parameters for high-impact weather features such as heavy rain and strong winds.
  - Bias, Calibration
  - Combination techniques
  - Reduce forecast errors
GEOWOW Weather component (cont.)

- Task 3: Development and evaluation of applications for high-impact weather
  - Focus on hazards and extreme meteorological events, including tropical and extra-tropical cyclones and extreme precipitations
  - Development and testing of new algorithms that process TIGGE data to provide user-friendly products
  - Within the framework of the WMO Severe Weather Forecast Demonstration Project (SWFDP)
  - Where feasible multidisciplinary use across different GEO Societal Benefit Areas
  - Provide education and training
GEOWOW Weather component (cont.)

Integration in the Common GEO Infrastructure, a Web Oriented Approach (WOA):

- Loosely coupled web services
- Use of OGC standard, i.e. WMS for maps, CSW for cataloguing
GEOWOW Weather - Water multi-disciplinary application

- Modelling of river discharge using weather predictions and validation based on river discharge observations
- Platform for the investigation of river discharge combining:
  - Modeled river discharge using the global weather forecast information from the TIGGE archive
  - Observational data collected by the Global Runoff Data Centre (GRDC)
- Both observational and prediction studies will be possible and the combination of the different datasets will allow important verification and calibration to be done
Summary

- Since October 2006, the TIGGE archive has been accumulating regular ensemble forecasts from leading global NWP centres.

- TIGGE provides the basis for research and development projects targeted at specific applications of severe weather forecasts (health, energy, flood warning, wind storms, fire weather, etc…).

  TIGGE website: http://tigge.ecmwf.int

- GEOWOW will improve access to TIGGE data to wider user community

- GEOWOW will develop EPS based products for early warnings of severe weather, in collaboration with WMO SWFDP

  GEOWOW website: http://www.geowow.eu