



GEOSS interoperability for Weather, Ocean and Water

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“Understanding the Earth system — its weather, climate, oceans, atmosphere, water, land, geodynamics, natural resources, ecosystems, and natural and human-induced hazards — is crucial to enhancing human health, safety and welfare, alleviating human suffering including poverty, protecting the global environment, reducing disaster losses, and achieving sustainable development. Observations of the Earth system constitute critical input for advancing this understanding.”

With this in mind, the Group on Earth Observations (GEO) started implementing the Global Earth Observation System of Systems (GEOSS). GEOWOW, short for “GEOSS interoperability for Weather, Ocean and Water”, is supporting this objective. GEOWOW’s main challenge is to improve Earth observation data discovery, accessibility and exploitability, and to evolve GEOSS in terms of interoperability, standardization and functionality.

One of the main goals behind the GEOWOW project is to demonstrate the value of the TIGGE archive in interdisciplinary applications, providing a vast amount of useful and easily accessible information to the users through the GEO Common Infrastructure (GCI). GEOWOW aims at developing functionalities that will allow easy discovery, access and use of TIGGE archive data and of in-situ observations, e.g. from the Global Runoff Data Centre (GRDC), to support applications such as river discharge forecasting. TIGGE (THORPEX Interactive Grand Global Ensemble) is a key component of THORPEX: a World Weather Research Programme to accelerate the improvements in the accuracy of 1-day to 2 week high-impact weather forecasts for the benefit of humanity. The TIGGE archive consists of ensemble weather forecast data from ten global NWP centres, starting from October 2006, which has been made available for scientific research.

The TIGGE archive has been used to analyse hydro-meteorological forecasts of flooding in Europe as well as in China. In general the analysis has been favourable in terms of forecast skill and concluded that the use of a multi-model forecast is beneficial. Long term analysis of individual centres, such as the European Centre for Medium-Range Weather Forecasts (ECMWF), has been conducted in the past. However, no long term and large scale study has been performed so far with inclusion of different global numerical models. Here we present some initial results from such a study.