Geophysical Research Abstracts
Vol. 19, EGU2017-7561, 2017
EGU General Assembly 2017

TEODOOR, a blueprint for distributed terrestrial observation data infrastructures

Ralf Kunkel (1), Jürgen Sorg (1), Martin Abbrent (2), Erik Borg (3), Rainer Gasche (4), Olaf Kolditz (2), Frank Neidl (4), Eckart Priesack (5), and Vivien Stender (6)

(1) Research Centre Juelich, IBG-3, Juelich, Germany (r.kunkel@fz-juelich.de), (2) Helmholtz Centre for Environmental Research, Leipzig, Germany, (3) German Aerospace Center, Earth Observation Center, Neustrelitz, Germany, (4) Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research, Garmisch-Partenkirchen, Germany, (5) German Center for Environmental Health, BIOP, Oberschleißheim, Germany, (6) GFZ German Research Centre for Geosciences, Centre for Geoinformation Technology, Potsdam, Germany

TERENO (TERrestrial ENvironmental Observatories) is an initiative funded by the large research infrastructure program of the Helmholtz Association of Germany. Four observation platforms to facilitate the investigation of consequences of global change for terrestrial ecosys-tems and the socioeconomic implications of these have been implemented and equipped from 2007 until 2013. Data collection, however, is planned to be performed for at least 30 years. TERENO provides series of system variables (e.g. precipitation, runoff, groundwater level, soil moisture, water vapor and trace gases fluxes) for the analysis and prognosis of global change consequences using integrated model systems, which will be used to derive efficient prevention, mitigation and adaptation strategies.
Each platform is operated by a different Helmholtz-Institution, which maintains its local data infrastructure. Within the individual observatories, areas with intensive measurement programs have been implemented. Different sensors provide information on various physical parameters like soil moisture, temperatures, ground water levels or gas fluxes. Sensor data from more than 900 stations are collected automatically with a frequency of 20 s-1 up to 2 h-1, summing up to about 2,500,000 data values per day. In addition, three weather radar devices create raster data with a frequency of 12 to 60 h-1. The data are automatically imported into local relational database systems using a common data quality assessment framework, used to handle processing and assessment of heterogeneous environmental observation data. Starting with the way data are imported into the data infrastructure, custom workflows are developed. Data levels implying the underlying data processing, stages of quality assessment and data ac-cessibility are defined.
In order to facilitate the acquisition, provision, integration, management and exchange of heterogeneous geospatial resources within a scientific and non-scientific environment the dis-tributed spatial data infrastructure TEODOOR (TEreno Online Data RepOsitORry) has been build-up. The individual observatories are connected via OGC-compliant web-services, while the TERENO Data Discovery Portal (DDP) enables data discovery, visualization and data ac-cess. Currently, free access to data from more than 900 monitoring stations is provided.