European Gravity Service for Improved Emergency Management

Objectives
EGSIEM is a project of the Earth Observation Space Calls of the Horizon 2020 Framework Programme for Research and Innovation of the European Commission.

The three main objectives of EGSIEM are:
- delivering the best gravity products for applications in Earth and environmental science research,
- reducing the latency and increasing the temporal resolution of the gravity and thereof derived mass redistribution products,
- developing gravity-based indicators for extreme hydrological events and demonstrating their value for flood and drought forecasting and monitoring services.

Project Partners

Scientific Combination Service
In the frame of EGSIEM different groups generate gravity field solutions based on independent processing strategies:
- GFZ: direct approach
- ITSG: short-arc approach
- University of Luxembourg: acceleration approach (may be more in future)

Adopting rigorous and independent processing approaches, each analysis center (AC) delivers consistent gravity field solutions. For the first time, a meaningful combination of gravity field solutions is possible.

Near Real-Time / Regional Service
Daily updated solutions (near real-time with max. 5 days delay)
- ITSG: Kalman filtered solutions
- GFZ: Alternative representations (e.g., radial basis functions)

Hydrological Service
Gravity-based flood and drought indicators as descriptors of the integral wetness status of river basins will be developed for early warning of hydrological extreme events at different lead times (several months to near real-time):
- via assimilation into flood forecasting models
- in statistical forecasting approaches

Services are tailored to the needs of governments, scientists, decision makers, stakeholders and engineers. Special visualisation tools are used to inform, update, and attract also the large public.

Dissemination and Exploitation
A central component of the EGSIEM dissemination activities is the EGSIEM plotter, which allows easy data access and visualization (examples on the right hand side). EGSIEM has an open data policy with respect to all data generated within the project. Accessibility to all levels is given via the EGSIEM website: http://www.egsiem.eu

Summary
- EGSIEM started on 1 January 2015.
- EGSIEM will run for three years (2015-2017).
- Future integration into the services of the International Association of Geodesy (IAG), e.g., under the umbrella of the International Gravity Field Service (IGFS), and into the Copernicus emergency service is envisaged.
- EGSIEM has an open data policy and is open for collaborations with further partners.
- Collaborations/associating projects with other partners are very welcome. Service Level Agreements can be signed anytime during project duration.

In collaboration with and supported by

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EGSIEM project partners:
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- German Research Center for Geosciences (GFZ), Potsdam, Germany
- Geophysical Laboratory, University of Luxembourg, Luxembourg
- Institute of Theoretical Geodesy and Satellite Geodesy, Technological University of Graz, Austria
- Deutsches Zentrum für Luft- und Raumfahrt (DLR), Germany
- Groupe de Recherche de Géodésie Spatiale, Toulouse, France
- Institute of Geodesy, University of Hanover, Germany
- Géode & Cie, Toulouse, France

For a detailed list of project partners, visit the EGSIEM website:
http://www.egsiem.eu

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