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EGSIEM

European Gravity Service for Improved Emergency Management

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Objectives

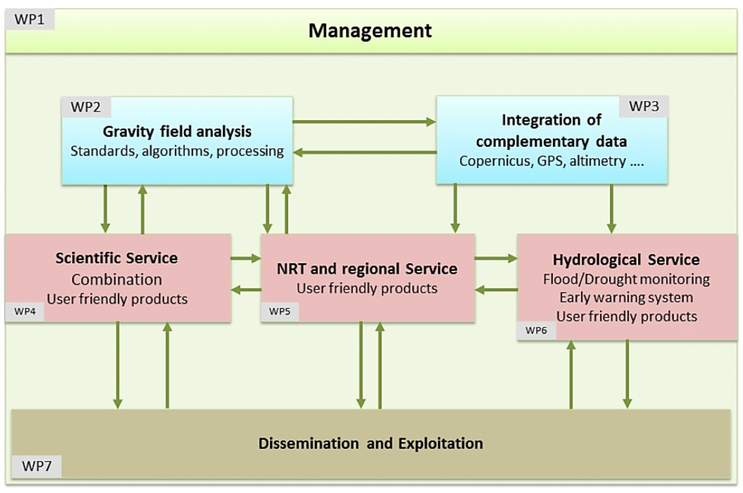
EGSIEM is a project of the Earth Observation Space Calls of the Horizon 2020 Framework Programme for Research and Innovation of the European Commission.

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.

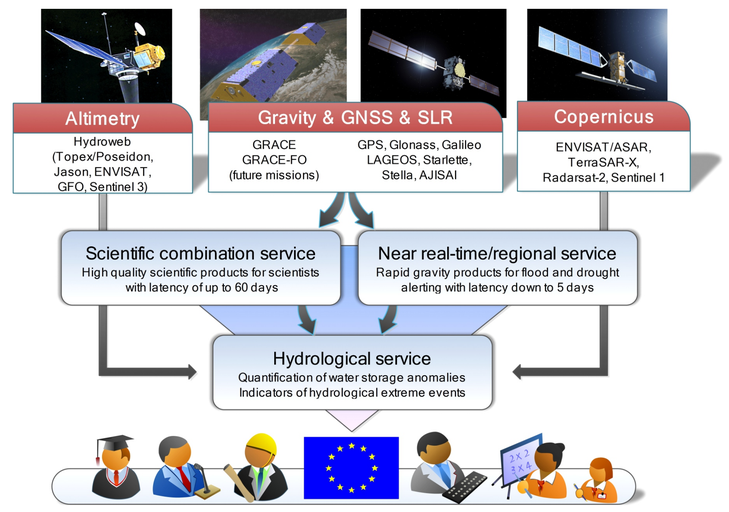
Project Partners

Project Structure



The used input data sources and the anticipated services that are currently being established (see right hand side) are reflected in the EGSIEM work package (WP) structure.

Upcoming Services

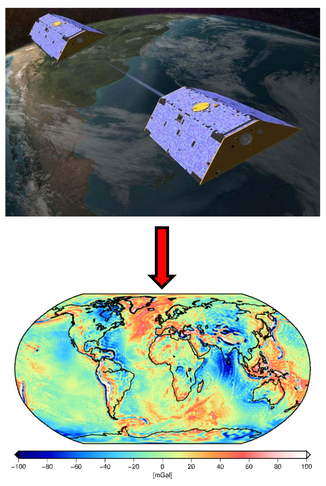


Services are tailored to the needs of governments, scientists, decision makers, stakeholders and engineers. Special visualisation tools are used to inform, update, and attract also the large public.

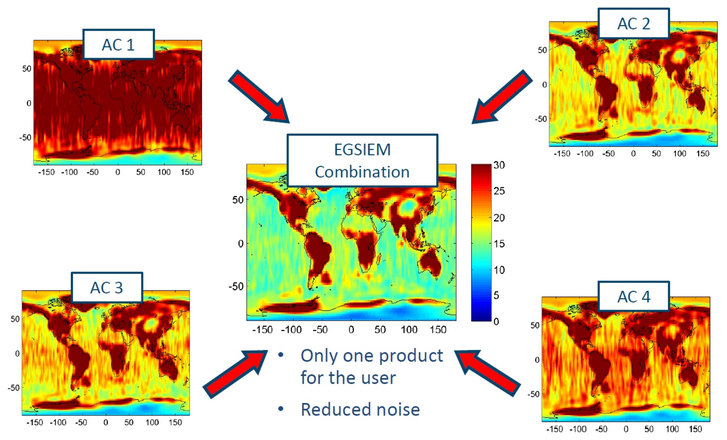
Scientific Combination Service

In the frame of EGSIEM different groups generate gravity field solutions based on independent processing strategies:

GFZ
direct approach
CNES
direct approach
AIUB
celestial machanics approach
ITSG
short-arc approach
University of Luxembourg
acceleration approach
(may be more in future)
...

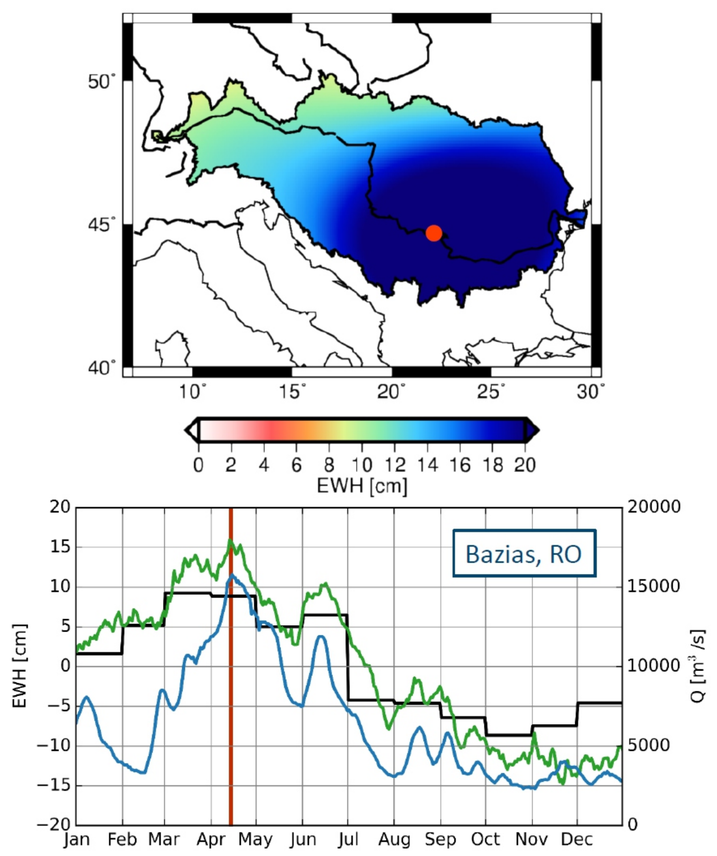


Adopting rigorous and independent processing approaches, each analysis center (AC) delivers consistent gravity field solutions. For the first time, a meaningful combination of gravity field solutions is possible.



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)

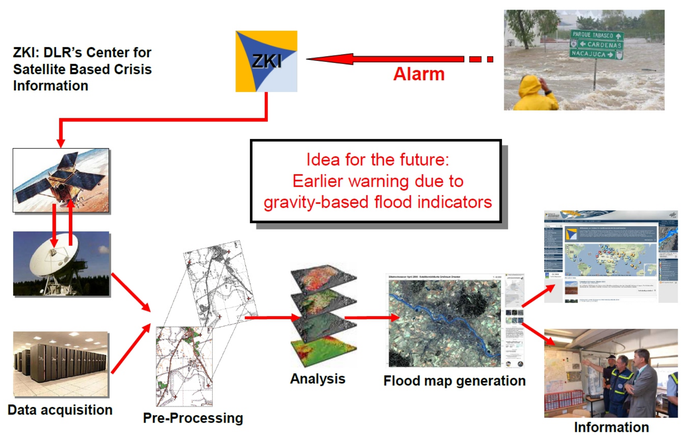


Daily Kalman filtered solutions (green) agree well with river discharge data (blue) provided by the Global Runoff Data Center (example for Bazias, Danube basin).

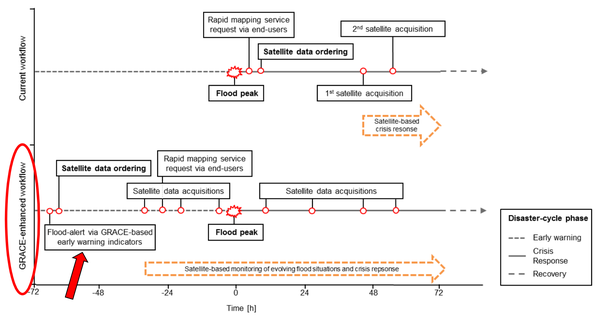
Hydrological Service

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



Integration into automatic flood emergency management services is envisaged. An operational test run of half a year is foreseen in the frame of DLR's Center for Satellite Based Crisis Information.



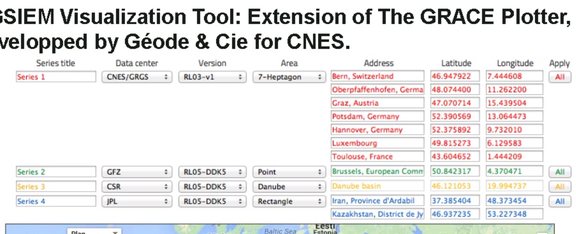
Dissemination and Exploitation

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**

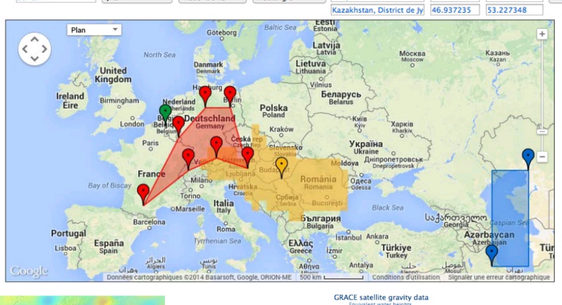
You are kindly invited to subscribe to the quarterly EGSIEM Newsletter on our website.

Data selection

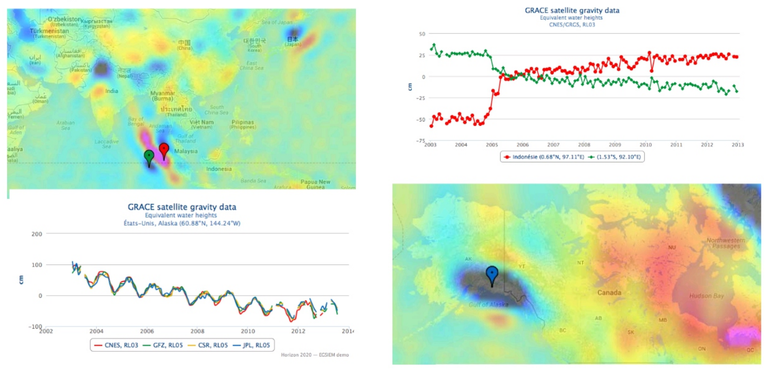
EGSIEM Visualization Tool: Extension of The GRACE Plotter, developped by Géode & Cie for CNES.



Multiple possibilities for extraction areas, custom or predefined



Interactive plots



Summary

- The EGSIEM project 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

Acknowledgement

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