



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

The **European Gravity Service for Improved Emergency Management (EGSIEM)** aims at using satellite-based gravity field data to forecast and map hydrological extremes such as large-scale droughts and flood events. The project is funded for three years, from 2015 to 2017, by the Horizon2020 Framework Program for Research and Innovation of the European Union under grant agreement No. 637010.

European Gravity Service for Improved Emergency Management



Consortium

- Universität Bern, Switzerland
- Université du Luxembourg, Luxembourg
- Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum, Germany
- Technische Universität Graz, Austria
- Leibniz Universität Hannover, Germany
- Centre National d'Études Spatiales, France
- Deutsches Zentrum für Luft- und Raumfahrt e.V., Germany
- Géode & Cie, France

Coordinator

Prof. Dr. Adrian Jäggi
Astronomisches Institut
Universität Bern
Sidlerstrasse 5
3012 Bern, CH
e-mail: info@egsiem.eu

Keep in touch



www.egsiem.eu



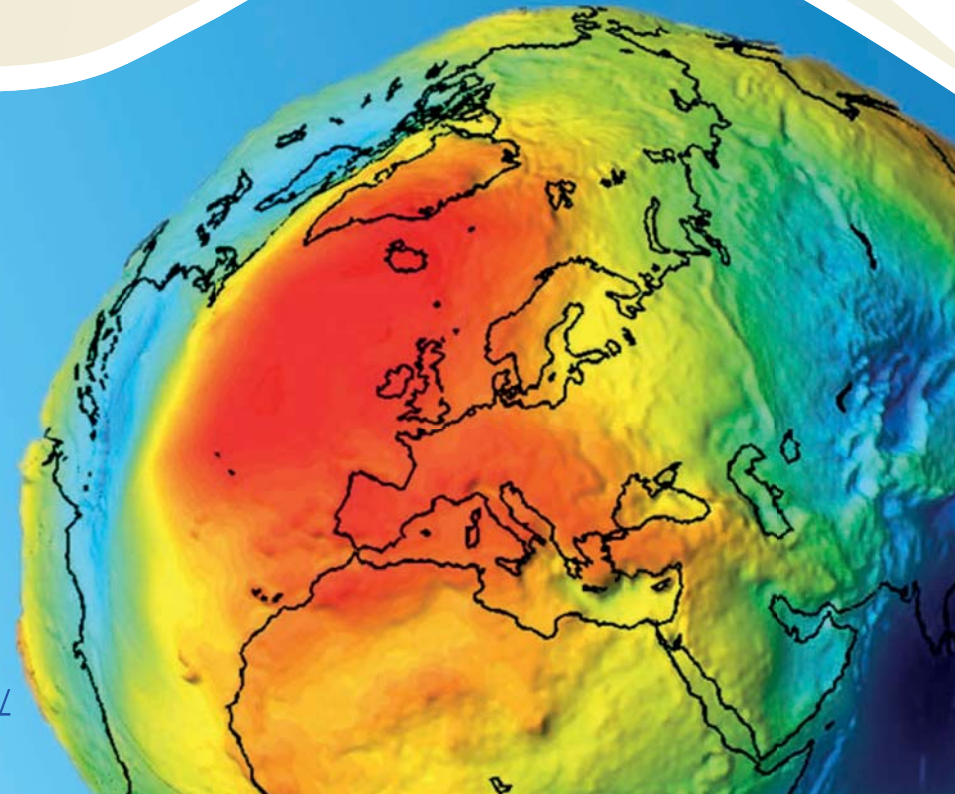
<https://twitter.com/EGSIEM>



www.facebook.com/egsiem



<https://egsiem.wordpress.com/>





Courtesy: NASA

EGSIEM Objectives

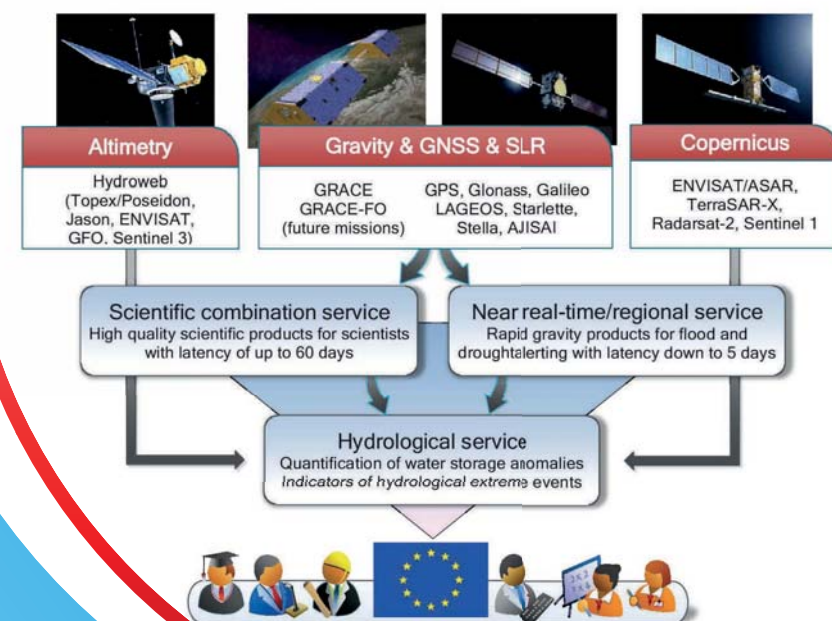
At the heart of the EGSIM project is the idea that *better knowledge yields better decision-making*. To achieve this goal the EGSIM project aims to derive improved products from the **Gravity Recovery and Climate Experiment** (GRACE) and the future GRACE Follow-On satellite missions. GRACE is a dual satellite mission of NASA and DLR, which has been making detailed measurements of Earth's gravity field variations since March 2002. The GRACE mission delivers fundamental insights into the global water cycle. Changes in continental water storage affect the regional water budget and can, in extreme cases, result in floods and droughts that often claim a high toll on infrastructure, the economy and lives.

EGSIEM aims to

- ❖ deliver the best gravity products for applications in Earth and environmental science research
- ❖ reduce the latency and increase the temporal resolution of the gravity and therefore mass redistribution products
- ❖ develop gravity-based indicators for extreme hydrological events and demonstrate their value for flood and drought forecasting and monitoring services

General concept of EGSIM

Satellite data from **Altimetry, Gravity, GNSS, SLR** and **Copernicus** missions will be used to create the three EGSIM services, all tailored to the needs of governments, scientists, engineers and other stakeholders. Special visualization tools will be developed to inform, update, and also attract the general public.



The EGSIM objectives will be achieved by setting up three distinct scientific services:

• Scientific combination service

will combine the Earth's gravity field products obtained from different analysis centers of the EGSIM consortium, each of which will perform independent analysis methods but will employ consistent processing standards. The quality, robustness and reliability of these datasets will be significantly increased.

• Near real-time (NRT) / regional service

will improve the temporal resolution from one month to one day and provide full gravity field information within five days, essentially near real-time compared to the current latency of 2 months. This will generate tremendous added value for warning and forecasting the onset of natural hazards. The improvement in flood and drought monitoring will benefit Europe and also other countries. As the data will be made freely available, users are encouraged to examine the data in other applications.

• Hydrological/early warning service

will provide adequate data products and indicators to support operational satellite-based flood information services. The applicability and added value of these indicators will be exploited within the framework of the DLR's Center for Satellite Based Crisis Information (ZKI), and international initiatives such as the Copernicus Emergency Management Service and the International Charter "Space and Major Disasters". Early warning indications derived from these products are expected to improve the timely awareness of potentially evolving hydrological extremes and to help in the scheduling of high-resolution follow-up observations.