GEODESY

THE GEODESY RESEARCH GROUP AT AALBORG UNIVERSITY
DEPARTMENT OF SUSTAINABILITY AND PLANNING
TECHNICAL FACULTY OF IT AND DESIGN

The group covers research areas related to the theoretical, satellite, and physical geodesy. The Geodesy group also develops signal processing, data-model fusion, and data assimilation techniques.

RESEARCH

KEY RESEARCH AREAS

Our core research is related to accurately measuring and understanding three fundamental properties of the Earth: its geometric shape, its orientation in space, and its gravity field, and their temporal variations.

- Multi-sensor Satellite Geodetic and Earth Observation data assimilation for improving Earth System and atmosphere models.
- GNSS data processing for positioning and atmosphere remote sensing.
- Satellite gravity and altimetry data processing.
- Developing signal processing and Bayesian frameworks.

RESULTS

We improve Earth system models to better reflect the impact of climate change and
reduce the uncertainty of their simulations and predictions.
We provide accurate GNSS solutions for locating objects and satellite orbits.
We produce Earth Observation satellite data from level 1 (raw data) to level 3 (ready to use).

EDUCATION

STUDY RELATED ACTIVITIES

The group teaches all topics related to the surveying engineering, measuring the Earth properties, and mapping objects.
They also teach mathematical topics such as least squares, signal processing, and data-model fusion.

COLLABORATION

WHO BENEFITS FROM OUR RESEARCH

Our research is particularly interesting for hydrological and weather modellers and prediction centres as well as users needing positioning and navigation solutions or spatial maps and databases.

EXTERNAL PARTNERS

Mapping agencies, surveying companies, space agencies, geodetic data providers (surveying, hydrography, navigation), hydrological and weather institutes, local and global NGOs dealing with water and food.

PUBLICATIONS

IMPORTANT PUBLICATIONS

- Separation of large scale water storage patterns over Iran using GRACE...
- Improving drought simulations within the Murray-Darling Basin...
- Understanding the global hydrological droughts of 2003–2016 and their relationships with teleconnections
- Exploring groundwater and soil water storage changes across the CONUS...
- Forecasting global and multi level thermospheric neutral density and ionospheric electron content...

AALBORG UNIVERSITY
DENMARK

KEY PROJECTS

DFF2 PROJECT DANSK-LSM

We develop efficient multi-sensor data assimilation frameworks for integrating Earth Observation satellite data into land surface models.

H2020 DOWN2EARTH

We addresses the multi-faceted challenges of water scarcity under climate change in Horn of Africa Drylands.

VIDEO PRESENTATION

CONTACT

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