Bachelor/Master thesis proposals

Each of the here listed topics represents a wider field of possible themes for your thesis. This list will help you to find your contact person at the Institute of Geodesy.

Your own ideas and interests are highly welcome. Please come and discuss with us.

Satellite Geodesy for Earth Science

GNSS reflectometry
Deformation analysis from continuous GNSS networks (regional, global) and/or gravity measurements
Future gravity missions, satellite orbit design
GRACE-derived mass-variations: modeling of temporal changes in water basins, ice-mass variations, sea-level changes, ...

Hydro-Geodesy

Surface water monitoring using geodetic techniques (optical vs radar)
Satellite altimetry for hydrological purposes (Swath altimetry, Cryosat, Sentinel 3, Laser altimetry)
River discharge estimation using satellite altimetry and SAR/optical imagery (Modis, Landsat)
Developing an appropriate retracker for altimetry waveforms to obtain meaningful hydrological estimation

Adjustment, Statistics and Numerical Methods

Geodetic time series analysis: Multi-channel Singular Spectrum Analysis (MSSA), Independent Component Analysis (ICA), Canonical Correlation Analysis (CCA), Seasonal-Trend Decomposition based on Loess (STL)
Total least squares and its application in geodetic data analysis
Least squares prediction and Kalman filtering for discharge estimation
Best linear estimation and optimal regularization for geodetic data analysis

Gravimetry and Gravity Field Modelling

Establishing a vertical gradients data set in Stuttgart and its surrounding area
Local gravity field recovery: boundary value element method, Mascons, Slepian functions, radial base functions
Signal processing on the sphere: filtering, convolution, Allan variances, Radon transformation, wavelets
Bohnenberger pendulum: observation and analysis

Contact

Tourian, Sneeuw
Sneeuw, Engels
Sneeuw, Liu
Sneeuw, Tourian, Vishwakarma, Engels

Sneeuw, Elmi, Tourian, Engels
Tourian, Sneeuw, Roohi, Woisetschläger
Elmi, Tourian, Sneeuw, Engels
Tourian, Sneeuw, Roohi, Elmi, Woisetschläger

Sneeuw, Tourian, Vishwakarma
Cai
Tourian, Sneeuw
Cai

Sneeuw, Schlesinger
Antoni, Keller, Engels
Sneeuw, Keller
Schlesinger