

Universität Bern
Astronomisches
Institut

Universität Bern Astronomisches Institut

Satellitengeodäsie

Optische Astronomie

Observatorium



The Zimmerwald Observatory



- ✂ **Optical Observations** (CCD)
Space Debris, Asteroids, Comets
- ✂ **Satellite Laser Ranging** to
dedicated satellites
- ✂ **GNSS-Receiver** (GPS-,
GLONASS- and Galileo-signals;
swisstopo)

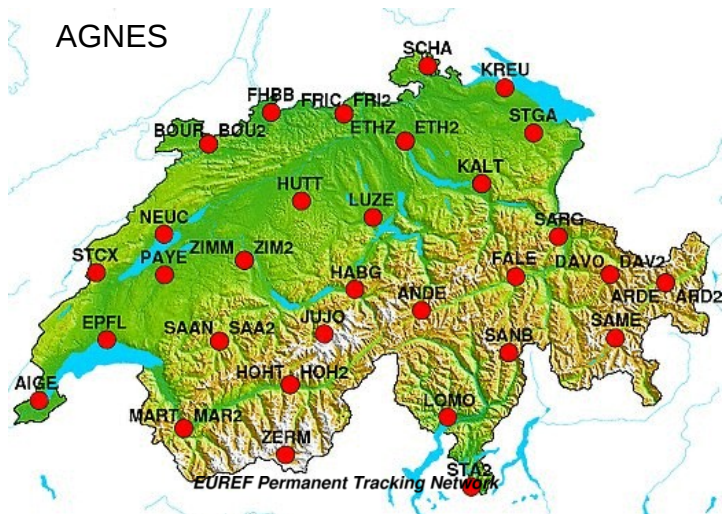


Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

- ✂ **Earth Tide Gravimeter**
Institute for Geodesy and
Photogrammetry ETH Zürich
- ✂ **Various microwave
instruments for atmospheric
research** Institute of Applied
Physics Bern

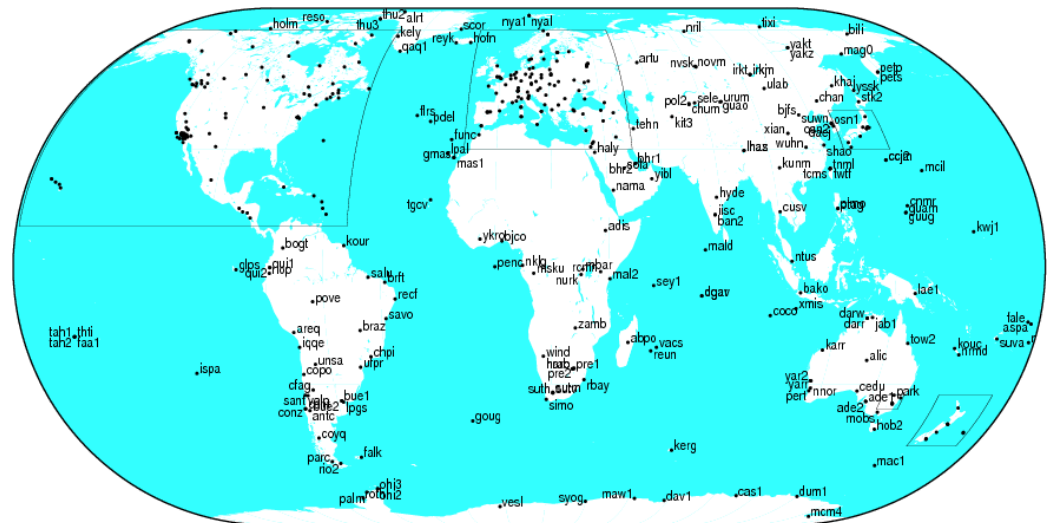


Zimmerwald GNSS Reference Station



Zimmerwald contributes

- **Automatisches GNSS-Netz Schweiz**
- **European Permanent Network**
- **International GNSS Service**



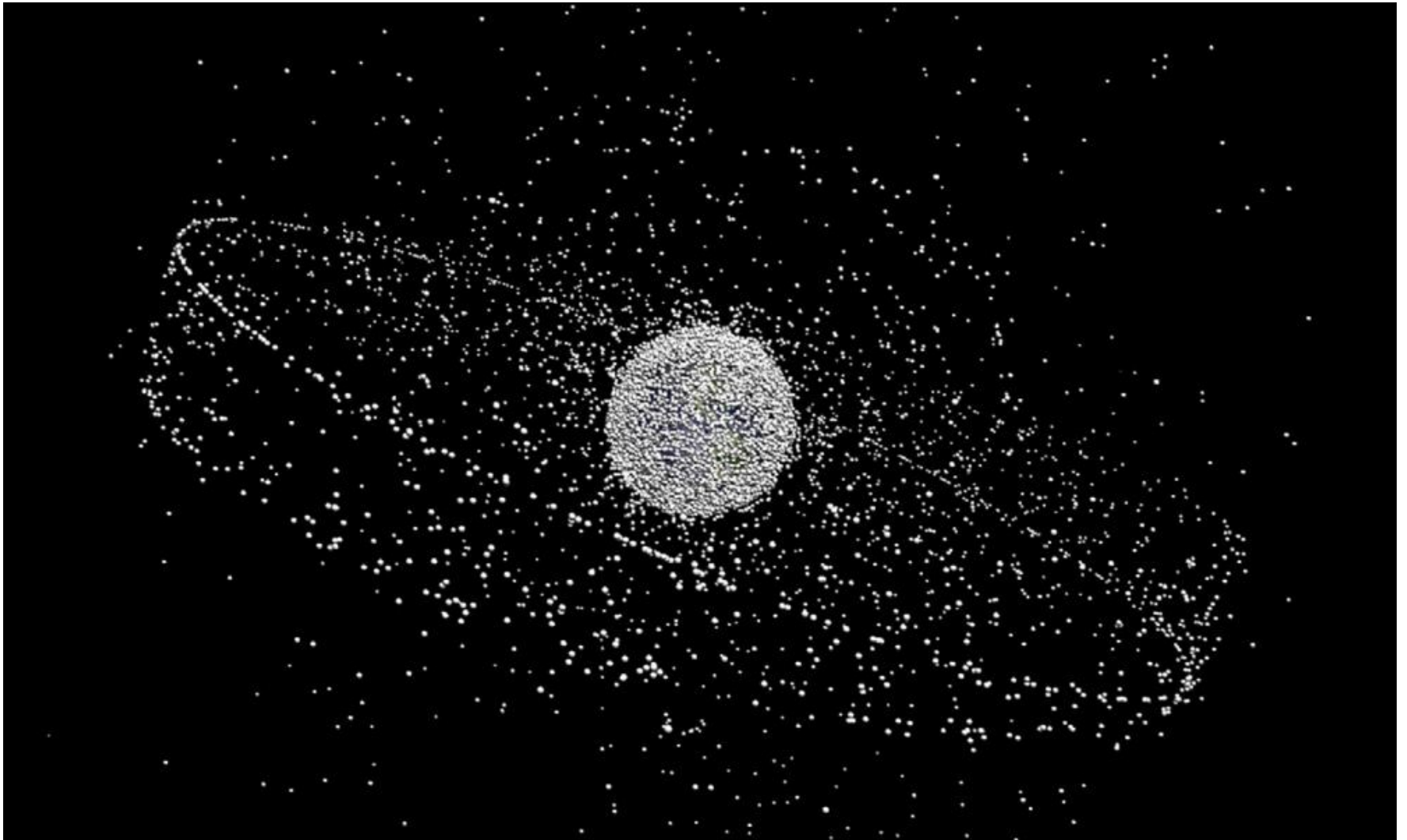
Universität Bern Astronomisches Institut

Satellitengeodäsie

Optische Astronomie

Observatorium

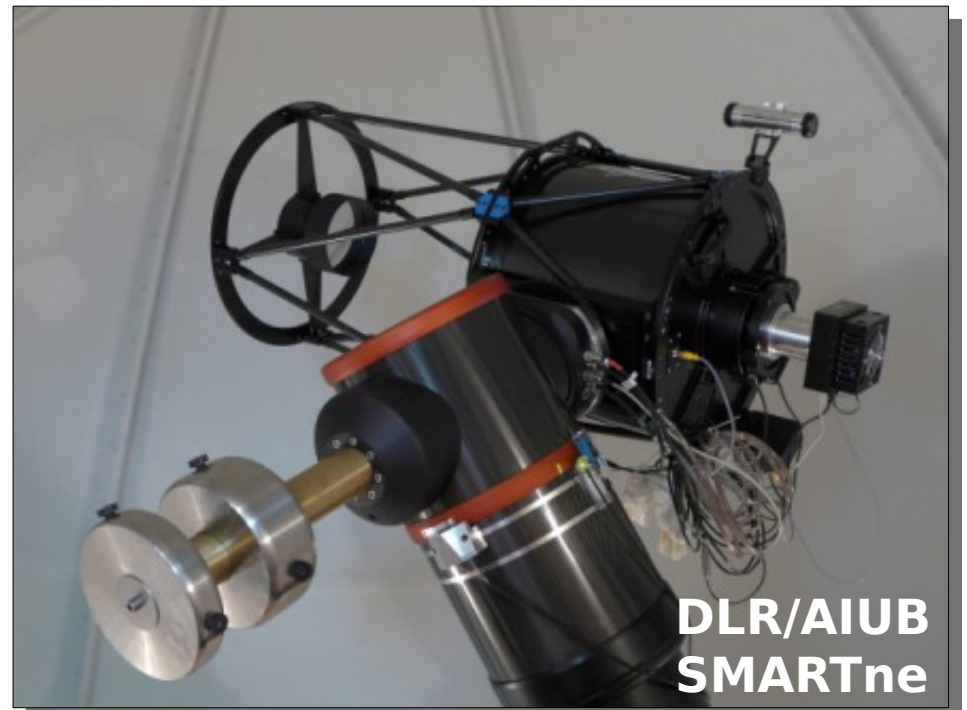
Space Debris



Optical Sensors



Optical Sensors



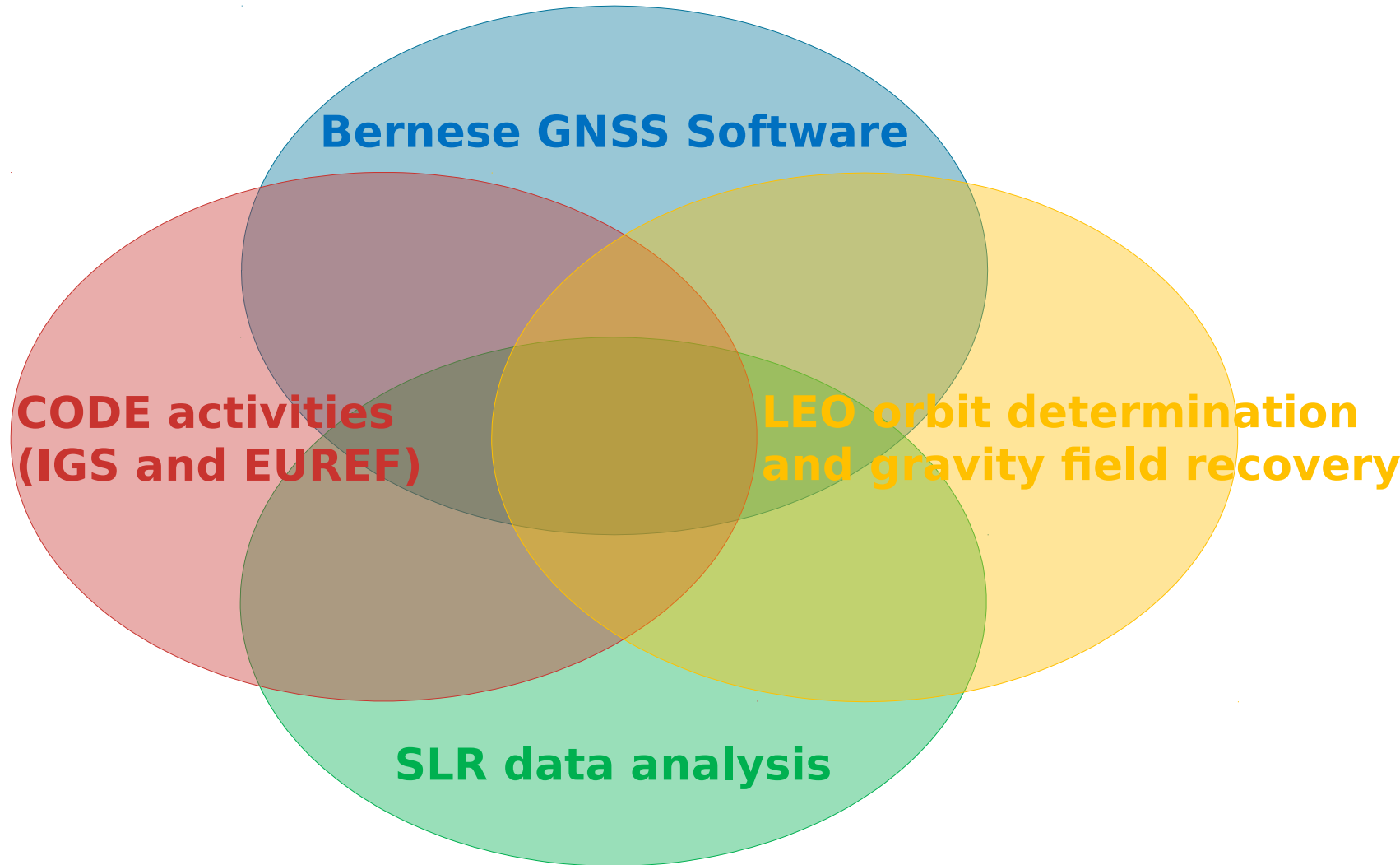
Universität Bern Astronomisches Institut

Satellitengeodäsie

Optische Astronomie

Observatorium

Satellite Geodesy



Bernese GNSS Software

Bernese GNSS Software Version 5.2

The Bernese GNSS Software, Version 5.2, continues in the tradition of its predecessors as a high performance, high accuracy, and highly flexible reference GPS/GLONASS (GNSS) post-processing package. State-of-the-art modeling, detailed control over all relevant processing options, powerful tools for automatization, the adherence to up-to-date, internationally adopted standards, and the inherent flexibility due to a highly modular design are characteristics of the Bernese GNSS Software.

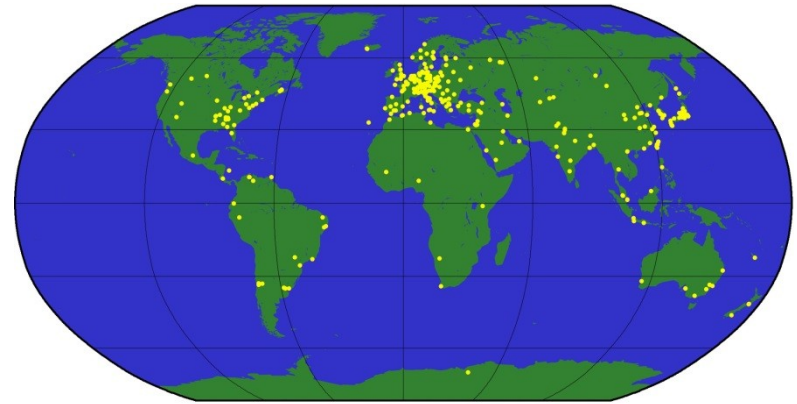
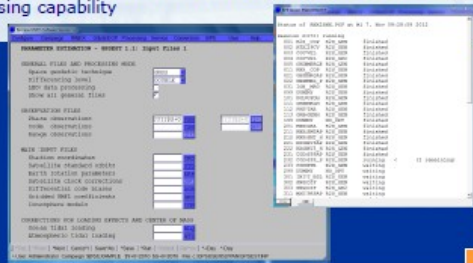
Features and Highlights

- Available on UNIX/Linux, Mac, and Windows platforms
 - **User-friendly GUI**
 - Built-in HTML-based **help system**
 - Multi-session parallel processing for **reprocessing** activities
 - **Ready-to-use BPE** examples for different applications:
 - PPP (basic and advanced versions)
 - RINEX-to-SINEX (double-difference network processing)
 - Clock determination (zero-difference network processing)
 - LEO precise orbit determination based on GPS-data
 - SLR validation of GNSS or LEO orbits
- All examples are designed for **combined GPS/GLONASS** processing. Some of them are prepared for an **hourly processing scheme**.
- Program for automated coordinate **time series analysis** (FODITS)
 - **Ambiguity resolution** also for GLONASS
 - Improved troposphere and ionosphere modeling
 - Estimation of **scaling factors** for crustal deformation models (grids)
 - Real kinematic analysis capability
 - **IERS 2010** conventions compliance
 - Support of GNSS-specific receiver antenna models
 - Full verification of serial number for individually calibrated antennas
 - Galileo processing capability

Contact

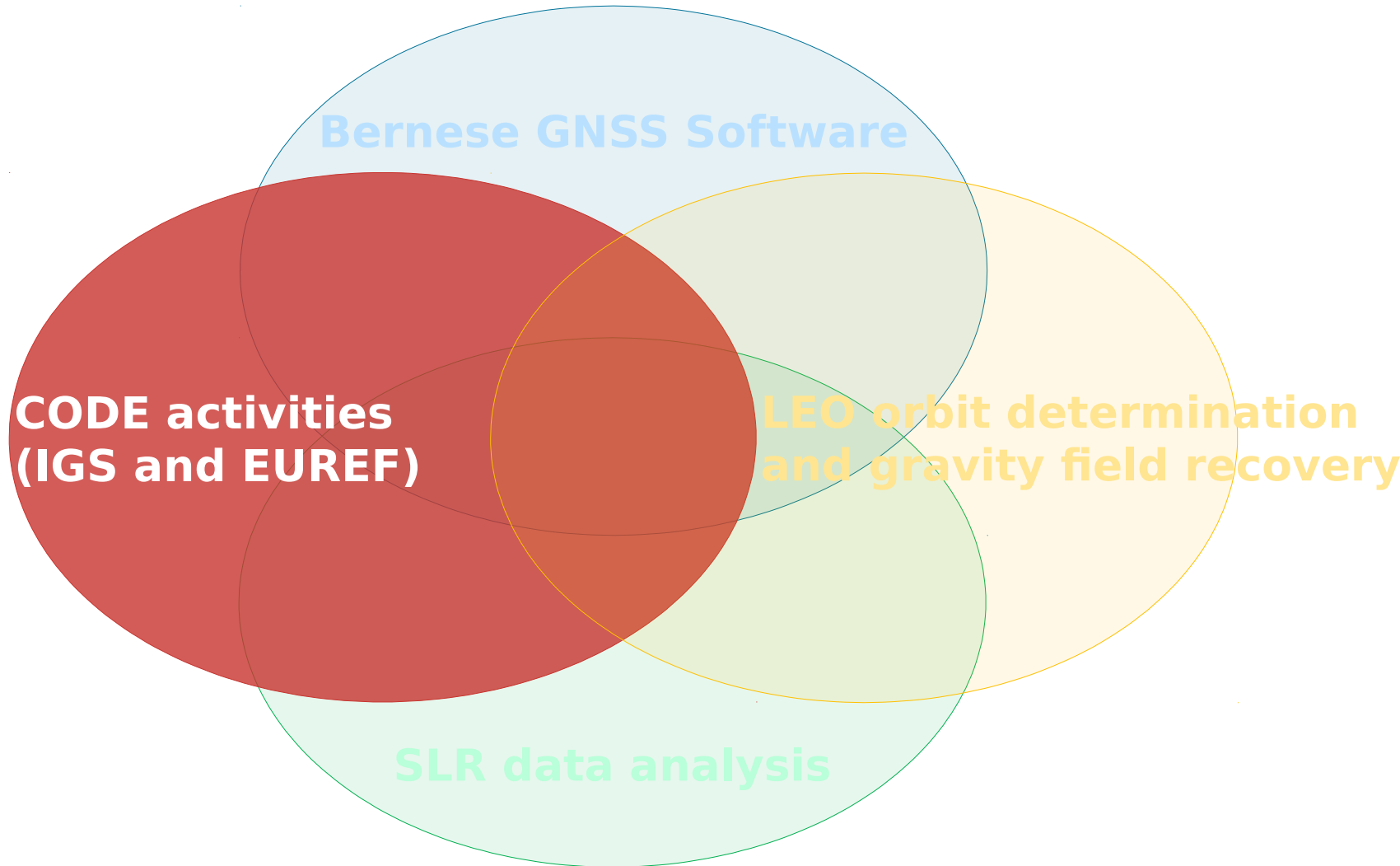
Astronomical Institute
University of Bern
Sidlerstrasse 5
CH-3012 Bern
Switzerland
Fax +41-31-631-3869
bernese@aiub.unibe.ch

Visit our website: www.bernese.unibe.ch



The **Bernese GNSS Software** developed at AIUB is the fundamental analysis tool for all GNSS-related activities. The software is continuously further developed and meanwhile used by more than **600 institutions worldwide**.

Satellite Geodesy



CODE Analysis Center located at AIUB

- **CODE** = Center for Orbit Determination in Europe
- Joint venture between
 - Astronomisches Institut der Universität Bern
 - Bundesamt für Landestopographie, swisstopo, Wabern
 - Bundesamt für Kartographie und Geodäsie, Frankfurt a.M.
 - Institut für Astronomische und Physikalische Geodäsie
Technische Universität München

AIUB



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

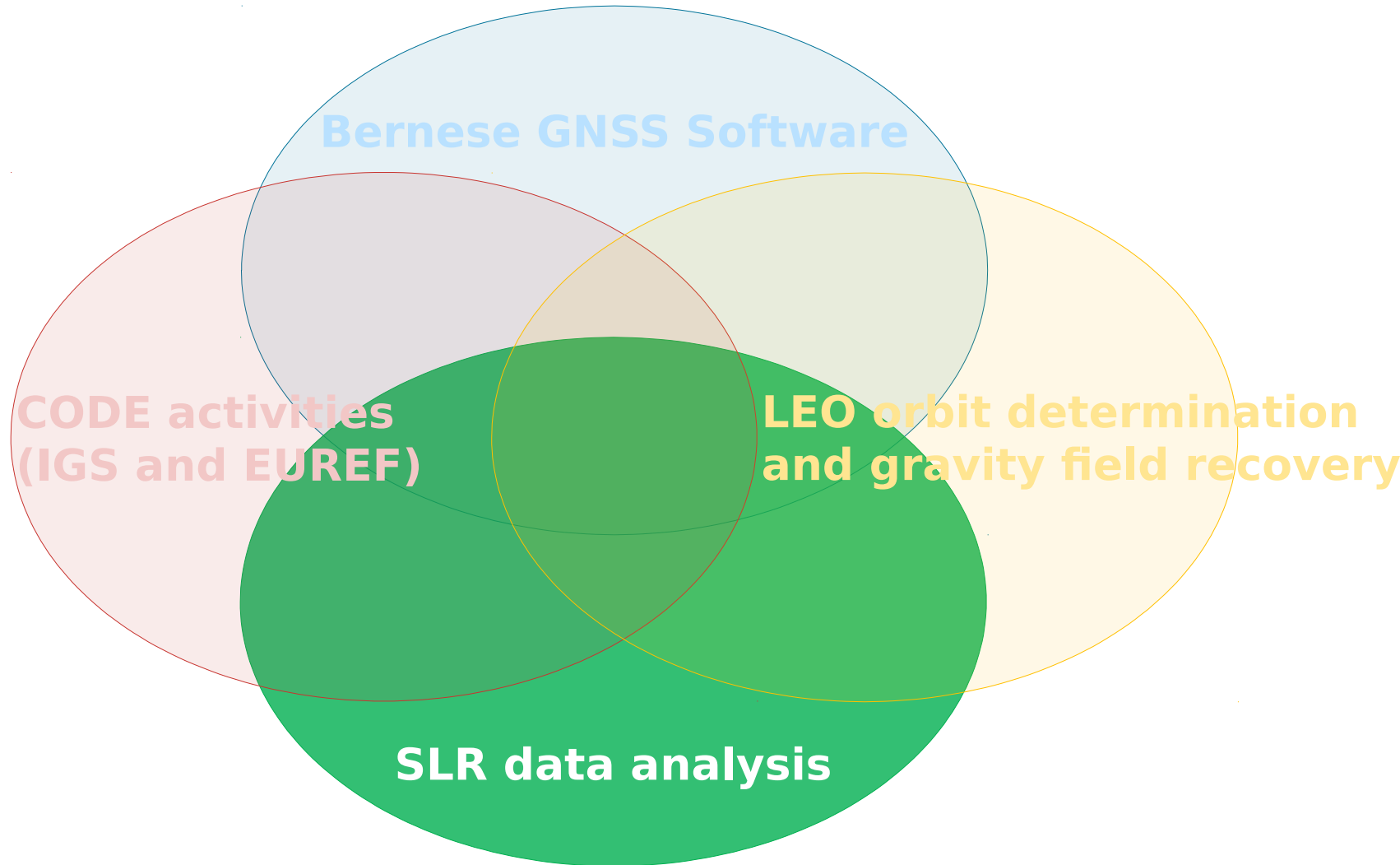


Bundesamt für
Kartographie und Geodäsie

TUM

Technische Universität München

Satellite Geodesy



Three Pillars of Satellite Geodesy

Geometry

Determination of geometrical three-dimensional **positions and velocities** (in global, regional, and local **reference frames**),

Gravity

Determination of the **Earth's gravity field** and its temporal variations,

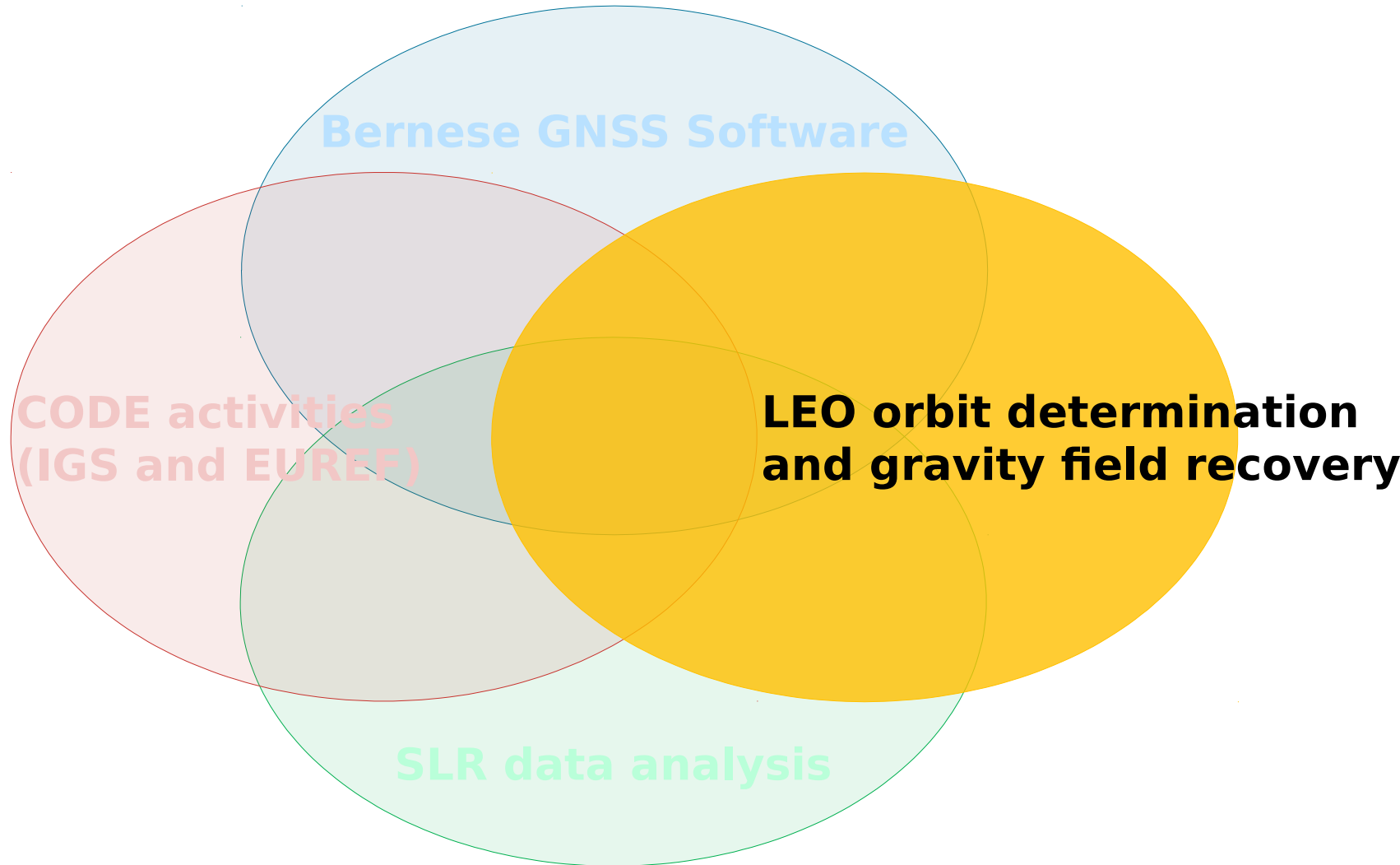
Rotation

Modeling and observing of **geodynamical phenomena** (tectonic plates, loading crustal deformations) including the **rotation and orientation of the Earth** (polar motion, length-of-day, precession and nutation).



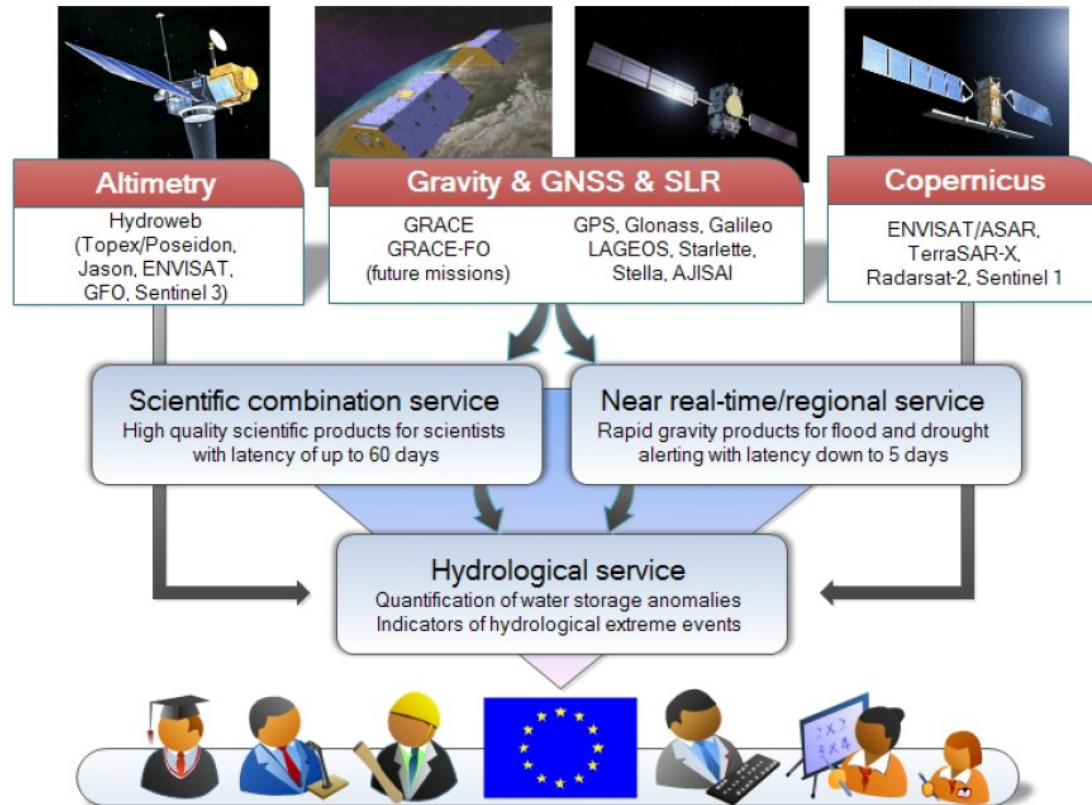
Satellite Geodesy

Satellite Geodesy



H2020 Project EGSIM

- Three dedicated services shall be established



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

**The AIUB team wishes you
a most fruitful meeting in Bern**

