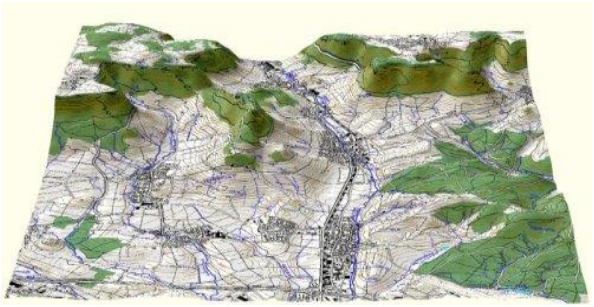
# GeoIT am Institut für Geodäsie und Geoinformation

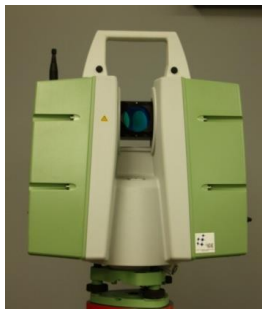
**Prof. Dr.-Ing. Jan-Henrik Haunert**

**16.2.2021**


UNIVERSITÄT BONN

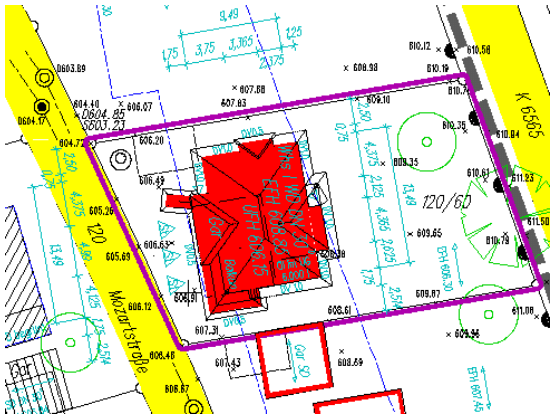
# Three Tasks of Geodesy





Measure → Represent

Utilize and Design



# Inst. Geodesy & Geoinf.

## Working Groups

- Astronomical, Physical and Mathematical Geodesy (APMG)
- Remote Sensing
- Geodesy
- Geoinformation
- Geodetic Earth System Science
- Photogrammetry & Robotics
- Urban Planning and Land Management
- Theoretical Geodesy
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Prof. J. Kusche

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Jun.-Prof. R. Roscher

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Prof. H. Kuhlmann

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Jun.-Prof. Schindelegger

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Prof. C. Stachniss

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Prof. T. Kötter

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Prof. W.-D. Schuh

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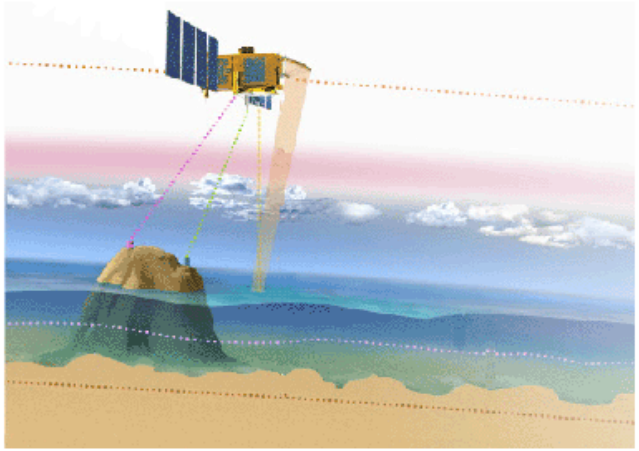
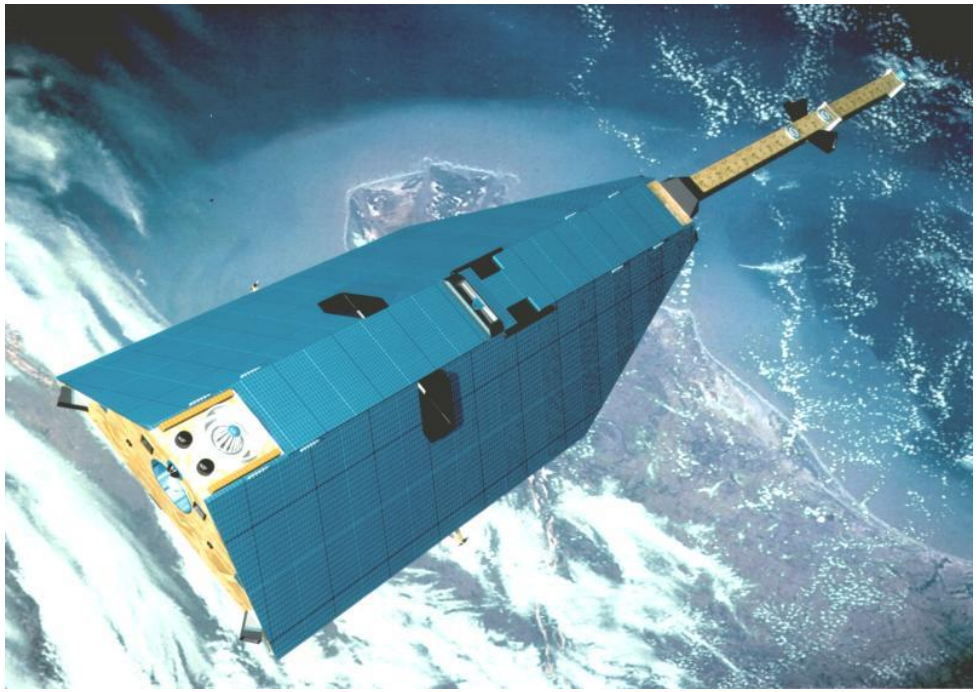
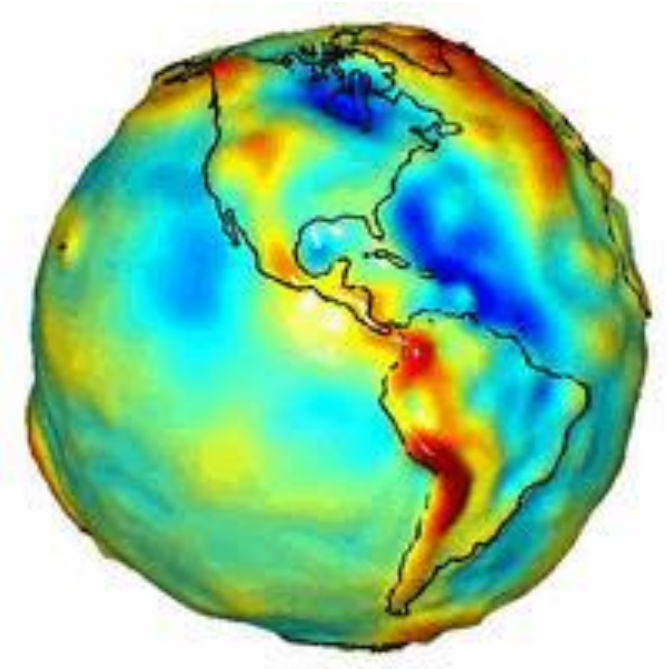
Prof. J. Fluck

# Astron., Physical & Math. Geodesy

Measure the Earth's shape and its change by satellites







# Photogrammetry


- Agricultural robotics
- Autonomous sensor platforms
- 4D crop reconstruction using modern machine learning approaches

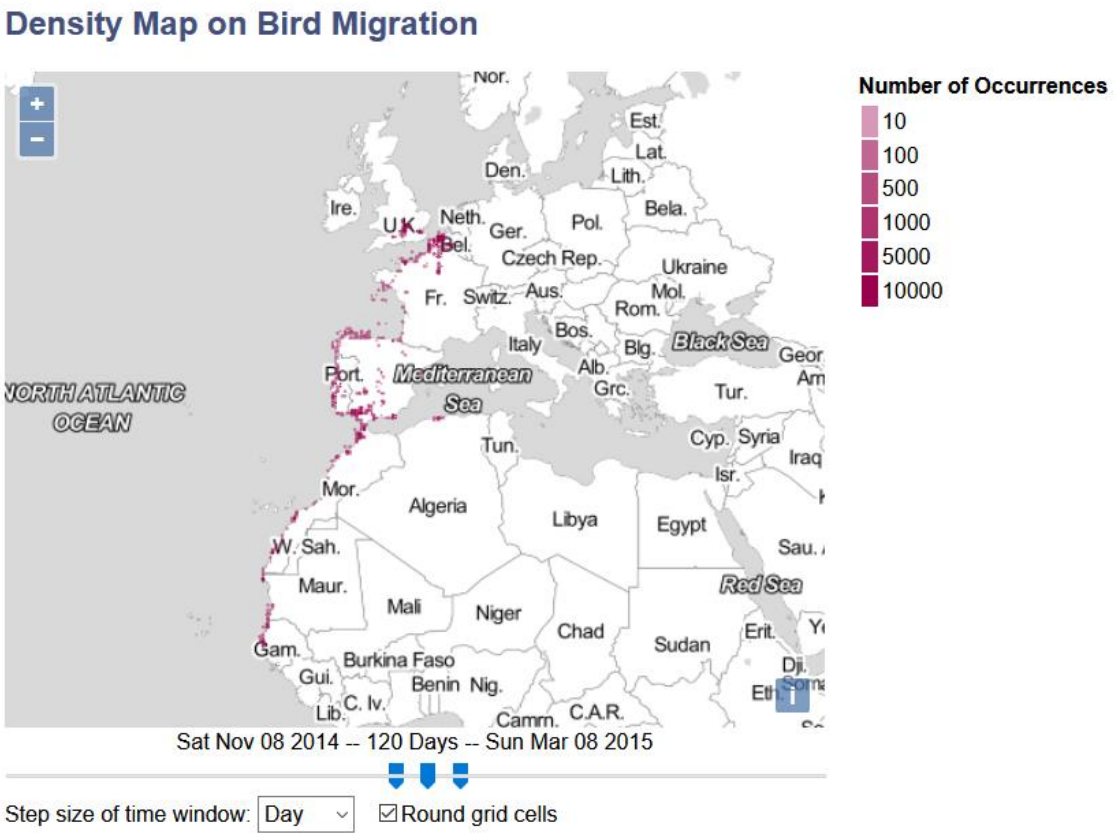
# Geoinformation

- PhenoRob: Interactive Exploration of Large Volumes of Data
- DFG Project “Zoomless Maps”
- DFG Priority Program VGIScience

# PhenoRob: Interactive Exploration of Large Volumes of Data

- Develop efficient data structures for event data.
- Query type:

  Time window -> cartographic representation



# DFG Priority Program "VGIScience"

**VGI** = Volunteered Geographic Information

- **Extraction of spatial information**, **visual analysis**, and **knowledge presentation** taking into account the **social context** while collecting and using VGI.
- Challenge: **heterogeneity** and **limited semantic structure** of VGI.
- **15 Projects** in the 2nd funding phase, dealing with **Transport**, **Health**, **Epidemiology**, **Social Science**, **Climate & Environment**, **Disaster Management**

**https://www.vgiscience.org/**

# Inferring Personalized Multi-criteria Routing Models from Sparse Sets of Voluntarily Contributed Trajectories

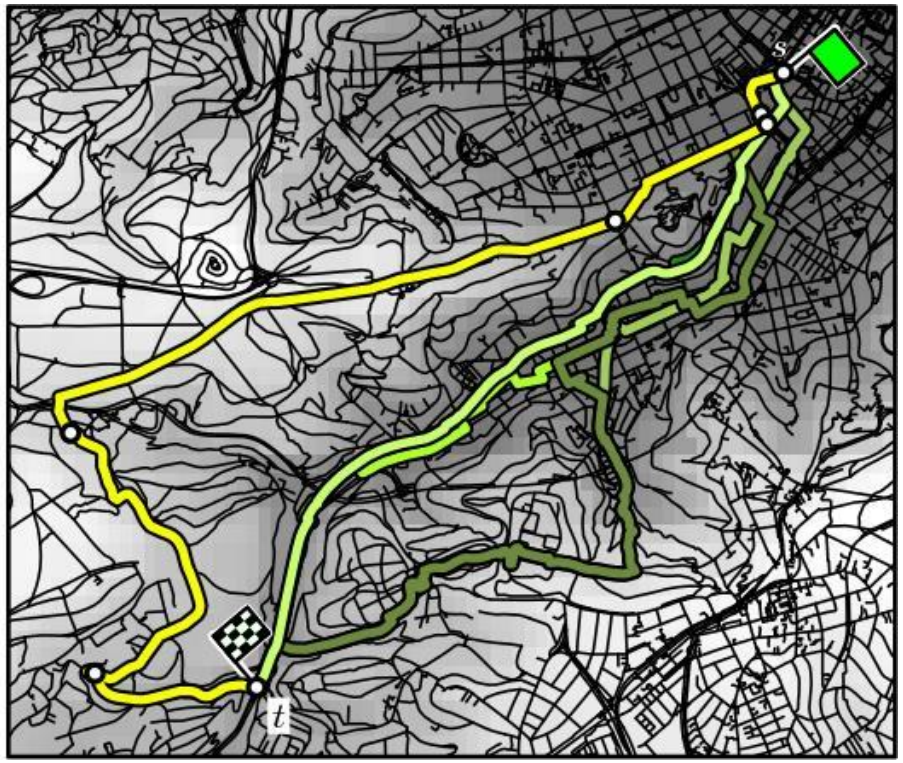
**Yellow:**

Trajectory of a bicyclist

**Green:**

Routes that are optimal with respect to

$$\alpha \cdot \text{length} + (1 - \alpha) \cdot \text{climb\_up}$$



# DFG-Project “Zoomless Maps”

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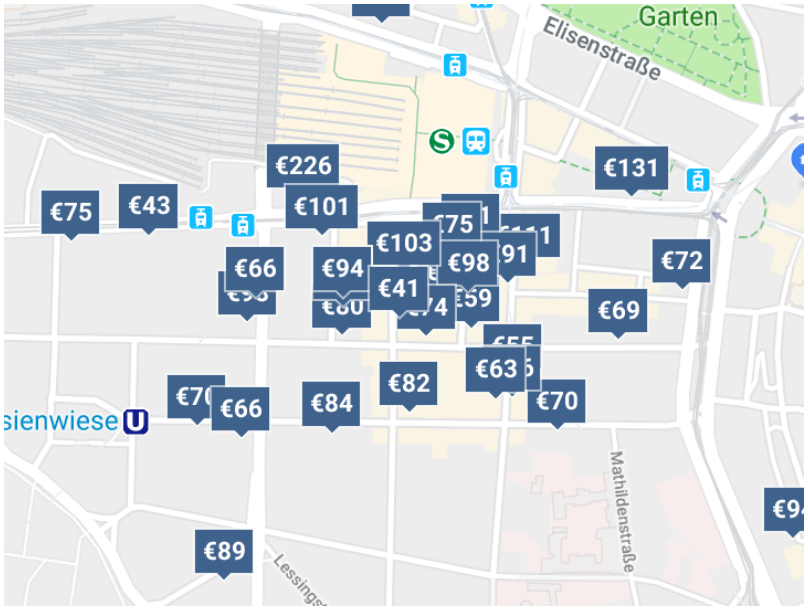
## Models and algorithms for the interactive exploration of dense maps with a fixed scale




- Conflict-free visualization almost always requires zooming in to a very large scale.
- How can we improve the exploration of the map on a fixed (preferably small) scale?

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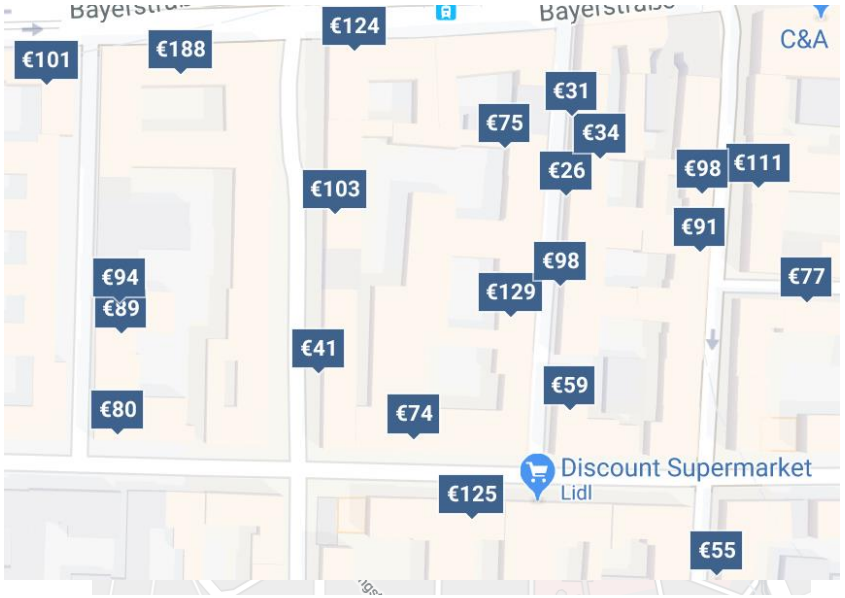


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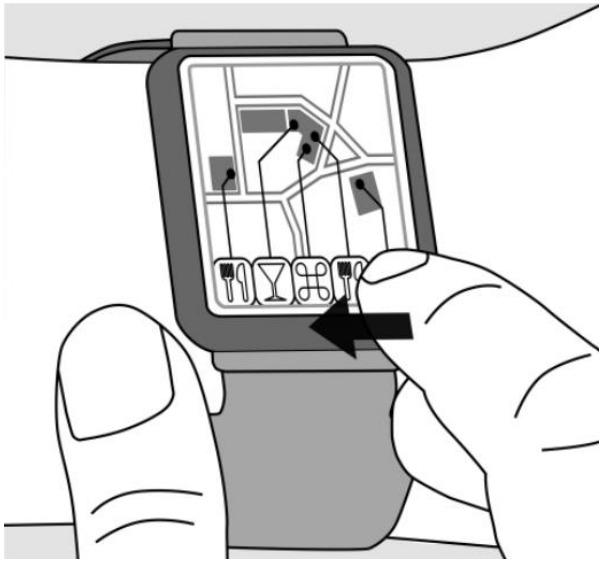

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