The need of a new gravity system for Sweden?

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LANTMÄTERIET

Situation today

- Three reference net
  - Zero order net (RG 82)
  - First order net (RG 82)
  - Second order net (RG 62)

- Two reference systems
  - RG 62 (connected to ECS 1962).
  - RG 82

- Large number of “new” absolute gravity sites

Older system I: RG 62

- The second Swedish fundamental gravity network.
- A First Order network was observed between 1960 and 1966.
- The corresponding gravity system is known as RG 62.
- The network consists of 198 stations.
- Connected to Potsdam by means of the European Calibration System 1962 (ECS 1962). Thus the same gravity value was used for Potsdam as for RG 41 (First gravity system of Sweden) .

Older system II: RG 82

- Following gravity networks are maintained by Lantmäteriet:
  - The Zero Order network
    - Fundamental network.
    - Observed during the period 1981-1982
    - Consists of 25 stations.
    - This network was used to define RG 82.
    - Uses absolute gravity at Sodankylä, Mårtsbo, Göteborg and Copenhagen
    - Epoch 1982
  - The First Order network
    - Densification of the Zero Order network
    - Was observed during 1984-2002.
    - Consists of 149 stations.
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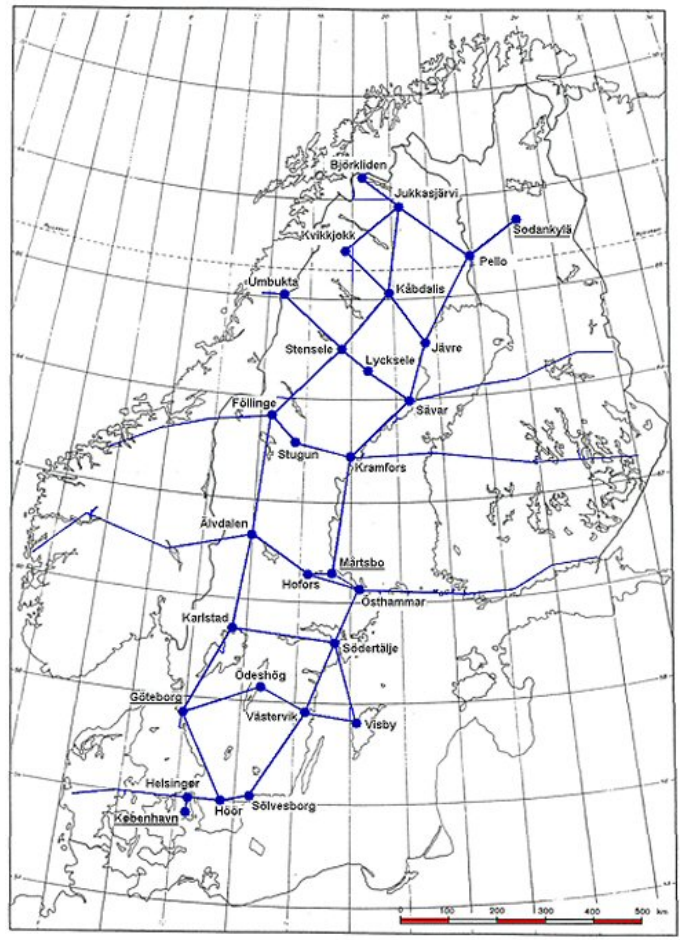
  - The Second Order network
    - also called the Detail Network.
    - The determination of the stations in this network was finished during 2001.
    - Mix with determination directly in RG 62 and RG 82.
    - The accuracy is considerably lower compared to the Zero and First Order networks.
    - Transformation formulae between RG 62 and RG 82 exists and used for the determination of RH 2000.



In discussion I: RG 2000

Need of a new (modern) gravity system because

- A large number of absolute gravity observations that should be used to determine a gravity system.
- A need to verify the quality of older gravity measurements
- A need to verify the quality of our gravity database
- To be able to create the next generation of geoid model
- Harmonize with our other geodetic reference systems that are in epochs close to 2000.

In discussion II: RG 2000

Proposal Reference net:

- New fundamental network based on existing absolute gravity sites.

- First order network
  - Relative gravity observation
  - Levelled heights

- Second order network
  - Compatible with the existing second order network

Proposal reference system
  - Epoch 2000.0 to be compatible with SWEREF 99 and RH 2000.