The Use of GNSS in Sweden and the National CORS Network SWEPOS

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How it started

1991 SWEPOS was designed and established as a collaboration between

- Lantmäteriet
- Onsala Space Observatory
- Swedish National Research and Testing Institute

1992

1994

1995

1995-99

2000-

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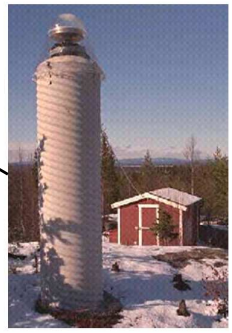
1st generation SWEPOS network

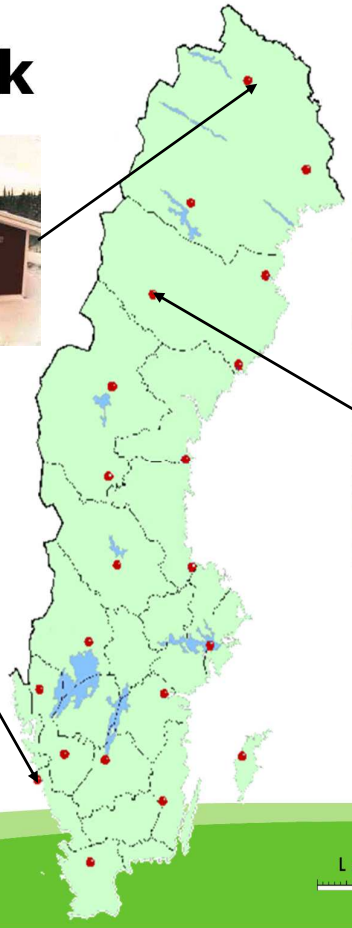
The 21 stations are mounted on bedrock and have redundant equipment for GNSS-observations, communications, power supply etc.

Kiruna



Vilhelmina

Onsala



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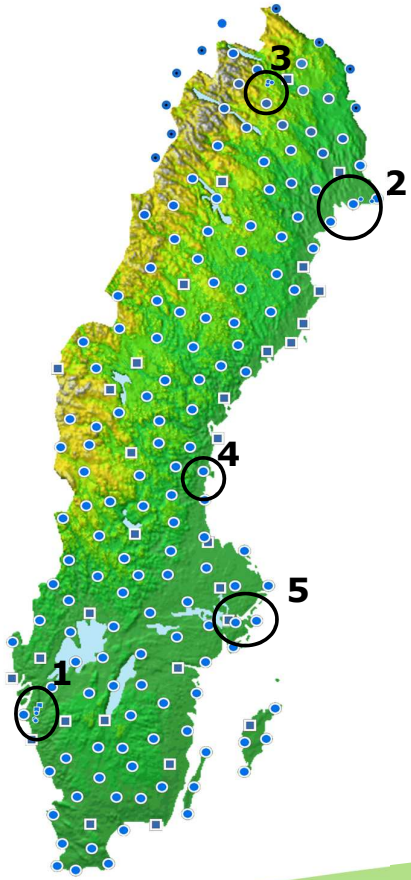

2nd generation SWEPOS network

The **2nd generation** network consist of a densification (baselines ~70 km), established between the years 2002-2009

The 2nd generation network also includes a densification (15-30 km), at a number of larger construction projects as new transportation infrastructure and new city location

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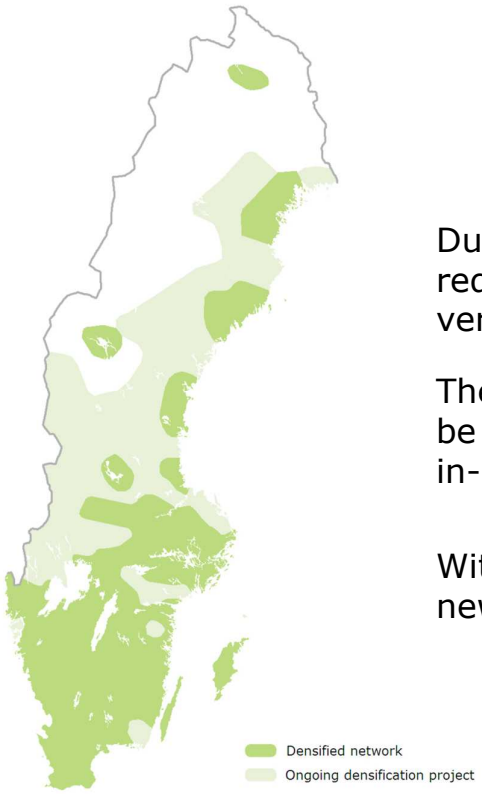

3rd generation SWEPOS 2011 -

During recent years many users have requested improvements especially in the vertical position uncertainty

The **3rd generation** SWEPOS network will be an almost nation-wide densification with in-between distances of **~35 km**

Within 4-5 years further improvements with new satellite signals and systems.

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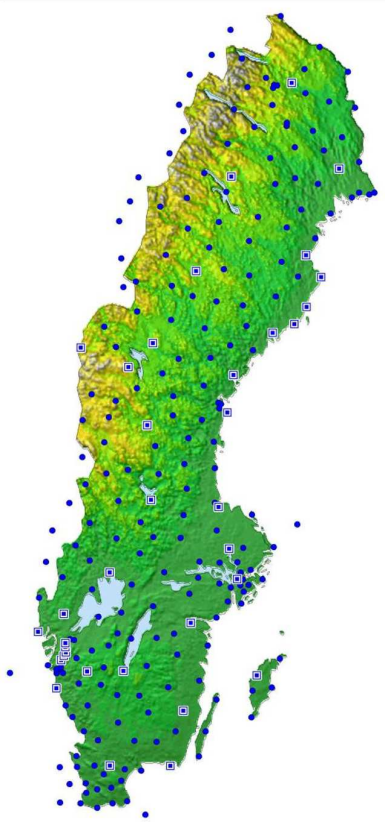

SWEPOS Stations

41 class A stations 260 class B stations

5 are included in the IGS-network
7 are included in the EPN-network (will increase to 27 sites 2014)

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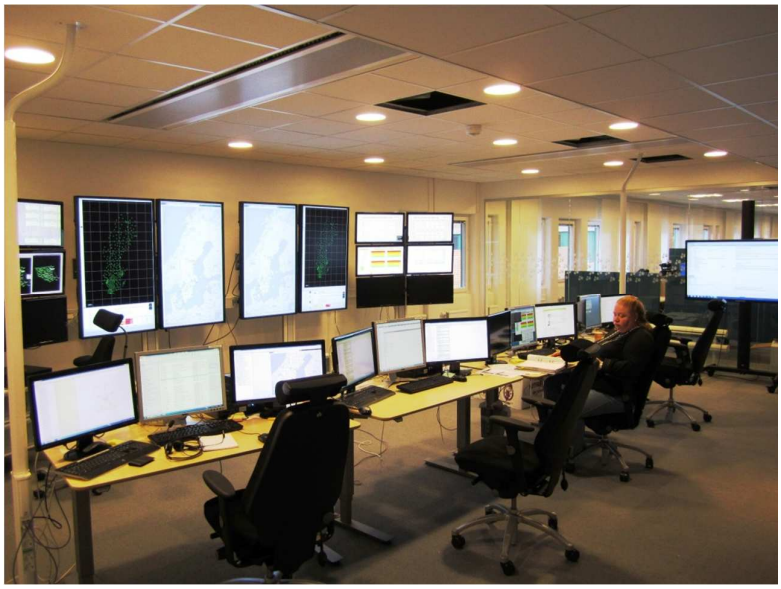
SWEPOS control centre

- Surveillance of CORS /GNSS- stations, data communication, electricity and backup power, temperature.
- Customer support
- Problem solving
- Quality control of data



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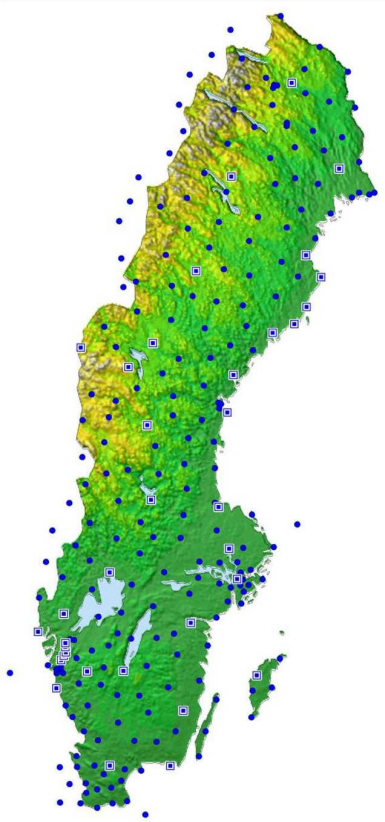

SWEPOS® services

- Post processing data (RINEX-data)
- Virtual RINEX-data
- SWEPOS Automatic calculation service
- Real time services
  - Network-DGNSS–service
  - Network-RTK–service
- SWEPOS-website
  - Coordinate transformation
  - Satellite prediction
  - monitor stations
  - Ionosphere monitor

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SWEPOS Network-DGNSS service

- 3–4 dm accuracy
- Correction data for GPS and GLONASS
- Connection to the service via GSM or Mobile Internet
- Data format RTCM 2.3

Network-DGNSS service, user fees:

- Unlimited data amount:
  €550 /con/year +GSM

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SWEPOS Network-RTK service

- Centimeter accuracy
- Correction data for GPS and GLONASS
- Connection to the service via GSM or Mobile Internet
- Data format RTCM 3.0 (and RTCM 2.3)

Network-RTK service, user fees:

A. Unlimited data amount:
€1600 /con./year +GSM

B. Down-loaded data:
€550 /con/year + €0,5 /min +GSM

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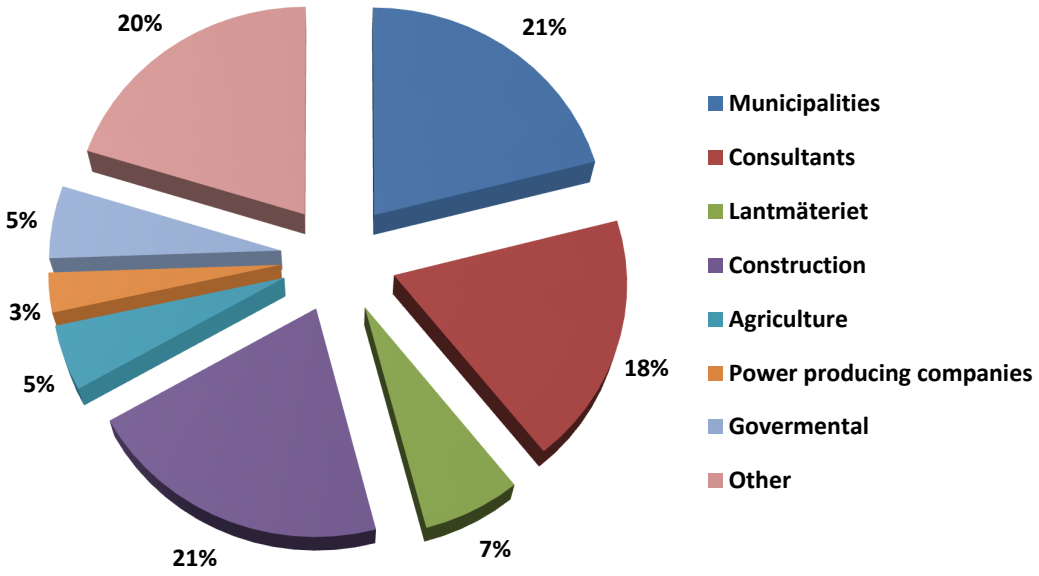
Network RTK users

2916 total subscriptions

2014-06-03



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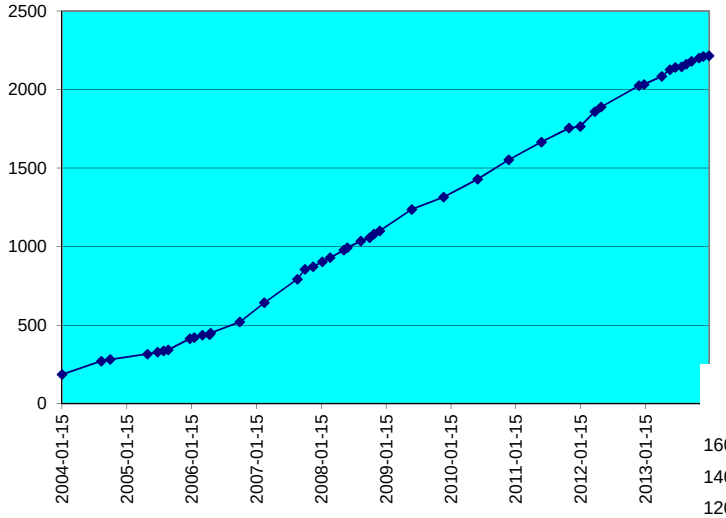
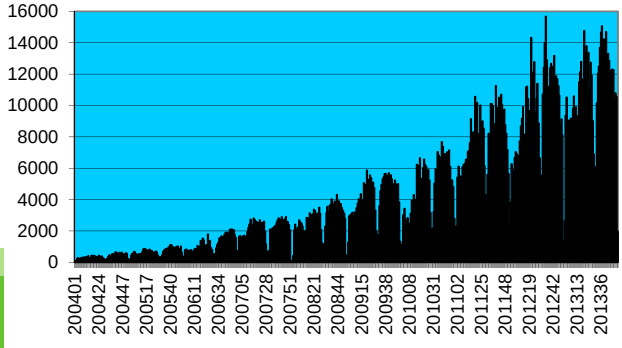
Connectiontime to the service hours/week

Number of subscriptions



Total connection time to service

Antal timmar



RTK applications overview

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RTK applications overview

Machine guidance, Photo; PEAB

Marine applications, Bild; Marin mätteknik

Agriculture

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Partners

SmartNet Sweden powered by Leica Geosystems

Trimble VRS Now

TopNET live

- Cooperation with Trimble VRS now, Leica SmartNet and TopCon TopNet Live to increase the use of GNSS and RTK.
- To find new applications and widen the use of GNSS
- Possibility to make a package, service + GNSS equipment – the user needs only one contact
- Use of one common geodetic infrastructure for GNSS, all users contribute to a common infrastructure. The users do not need to finance several separate geodetic infrastructures.

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Thanks for your attention!

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