Review of current and near-future levelling technology

Since the beginning of the eighty's, the Nordic countries have carried out thousands of km of precise levelling. Even though the instruments have changed and the way you move the instrument and rods along the lines have been different, the basic principles have remained the same.

A project in the working group of geoide and height systems

A detailed description, on the practical level, on how the levelling have been carried out in the Nordic countries.

..carried out by bike, railway handcars, feet or by cars...

... different instruments have been used....

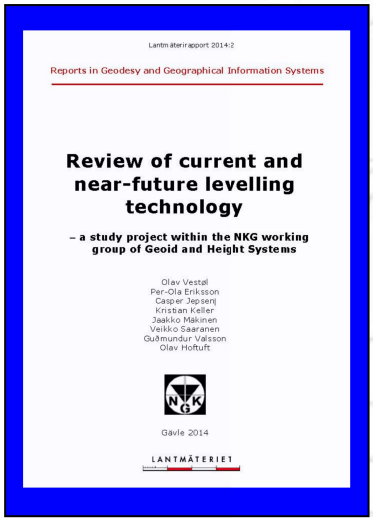
Figure 11: Trigonometric water crossing over Öresund between Kronborg and Pålsjö klint in 1981, using Wild N3, a joint project between KMS and LM.

Figure 1: A Norwegian benchmark in bedrock.

Figure 14: Adjustment of Wild N3 in 1996. The record keeper notes the rod readings on a Husky Hunter computer. As a part of the table there are temperature sensors 0.5 and 2.5 m above the ground.

Figure 12: "MTL" using ATV vehicles in the Swedish mountains near the Norwegian border in 1990.

We should focus on the accurate observations and the consistent net of observations covering the whole Fennoscandian area with connection to Europe and Russia. And we should focus on all the thousands of benchmarks to which these observations are connected. The measurements and the benchmarks, those are the important results of 20–30 years of work and what should be taken care of for the future.



The motivation for the project has been to secure that the knowledge of the current methods in precise levelling, on the practical level, is documented for the future.

The review mainly deals with the practical work regarding the latest precise levellings in the Nordic countries, resulting in a common calculation of the networks in Denmark, Finland, Norway and Sweden.