Name of research institute or organization:
Federal Office of Topography, swisstopo, Wabern

Title of project:
Absolute gravimetric calibration line Interlaken-Jungfraujoch

Project leader and team:
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Project description:
The first gravimetric calibration line Interlaken-Jungfraujoch has been established 1980 and been published in 1982 (Klingelé, E. and H.-G. Kahle, 1982). The aim of these measurements is to provide precise absolute gravity and gravity difference values along the line, thus providing information on drifts and scale factors of relative gravimeters. The calibration line consists of 7 stations with gravity differences not extending the measurable range of relative gravimeters. In comparison with other existing gravimetric calibration lines consisting of two stations located at different altitudes, this matter of fact represents a unique feature.

In 2013, the calibration line has been renewed and re-measured with the absolute gravimeter FG-5 of METAS. At the same time, 3 relative gravimeters of swisstopo, BAdW and DGFI (deutsches Geodätisches Forschungsinstitut, München) have been calibrated (see http://www.hfsjg.ch/wordpress/reports/2013/139_ETHZ_Buerki_cf.pdf ). In October 2016, a first small verification of the measurements of 2013 was performed by the FHNW (Fachhochschule Nordwestschweiz, Muttenz) (see Condamin, 2016). These activities are described in [Marti, 2017].

On four days in August 2017, a complete re-observation of the calibration line took place with 4 relative gravimeters Scintrex CG-5 of swisstopo/ETHZ, the University of Lausanne, the University of Neuchâtel and the private company geo2x SA. These are all the existing CG-5 in Switzerland. In addition, the ZLS Burris instrument of the BAdW (Munich) was used (see figure 1).

A first preliminary comparison of the results of the different instruments showed rather large differences, which are mainly caused by scale factors. This demonstrated again the necessity and the usefulness of this calibration line.

Figure 1. The operators with their instruments on the Sphinx terrace.
Key words:
Gravimetry, gravimetric calibration line

Collaborating partners/networks:
Université de Neuchâtel, Centre d'Hydrogéologie et de Géothermie (CHYN)
Université de Lausanne, Institut des sciences de la Terre
Geo2x SA, Geophysics for Geology, Oulens-sous-Echallens

Scientific publications and public outreach 2017:

Conference papers

Theses

Data books and reports
Klingelé, E., and H.-G. Kahle, The Swiss gravimetric calibration line from Interlaken to Jungfraujoch (Switzerland), Institute of Geodesy and Photogrammetry, ETH Zurich, Separate, Nr. 120, 1982.

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