

Name of research institute or organization:

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**Bundesamt für Landestopografie / Swiss Federal Office of  
Topography (swisstopo)**

Title of project:

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Automated GPS Network Switzerland (AGNES)

Project leader and team:

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Dr. Elmar Brockmann,  
Dominique Andrey, Daniel Ineichen, Christian Misslin, Dr. Stefan Schaer,  
Dr. Urs Wild

Project description:

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The permanently observing GPS (Global Positioning System) station at Jungfrauoch has been operating since autumn 1998. The station is part of the Automated GNSS Network of Switzerland (AGNES) consisting presently of 31 sites, partly equipped with GPS and GPS-GLONASS (the Russian equivalent of GPS) combined receivers and antennas. Global Navigation Satellite Systems (GNSS) is the abbreviation for all existing and future satellite navigation systems and therefore include also the planned European Satellite System Galileo. Station JUJO is equipped with a GNSS receiver since summer 2007, but due to the extreme weather conditions the GPS-only antenna was not upgraded to GPS-GLONASS, yet.

AGNES is a multipurpose network which serves as reference for surveying, real-time positioning (positioning service swipos GIS/GEO) and for scientific applications (geotectonics and GNSS-meteorology). The GPS station JUJO is mainly contributing to scientific applications.

In 2010 all operations and all products were continuously generated as in the previous years. Further details were given in the previous annual reports.

An important result from the swisstopo-processing of the GPS data of JUJO, the troposphere path delays, is also sent to the Institute of Applied Physics (IAP) of the University of Berne where the data contribute to the STARTWAVE database.

Key words:

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GPS, GLONASS, GNSS, Meteorology, Positioning, Integrated Water Vapour, Zenith Path Delay, GPS Tomography, Geotectonics

Internet data bases:

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<http://www.swisstopo.ch/pnac>; <http://egvap.dmi.dk/>;  
<http://www.iapmw.unibe.ch/research/projects/STARTWAVE/>

Collaborating partners/networks:

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Astronomical Institute (AIUB), University of Berne  
MeteoSwiss, Zurich and Payerne  
Institute of Applied Physics (IAP), University of Berne  
Institute of Geodesy and Photogrammetry, ETH Zürich  
E-GVAP II (EUMETNET GPS Water Vapor Programme)

Scientific publications and public outreach 2010:

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**Conference papers**

Brockmann E., D. Ineichen, M. Kistler, U. Marti, S. Schaer, A. Schlatter, B. Vogel, A. Wiget, U. Wild (2010): Geodetic activities at swisstopo presented to the EUREF2010 Symposium. In: Ihde, J. and H. Hornik (Eds): Subcommission for the European Reference Frame (EUREF), Gaevele, June 2-4, 2010 (in prep.).

Brockmann E., D. Ineichen, S. Schaer, A. Schlatter (2010): Use of double stations in the Swiss Permanent GNSS Network AGNES. In: Ihde, J. and H. Hornik (Eds): Subcommission for the European Reference Frame (EUREF), Gaevele, June 2-4, 2010 (in prep.).

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