

SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Tools and Technology in support of Integrated Applications (2)

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DEVELOPING AN INTEGRATED SAR INTERFEROMETRY AND GNSS SERVICE FOR
PRECISION SURVEY AS AN OPERATIONAL INTEGRATED APPLICATION

Abstract

This paper presents the results of the EU Framework Programme Seven project I2GPS and identifies the further evolutions that would be required to translate successful field trials into an operational service. I2GPS developed a unit for co-registering continuous GNSS measurements, with a Septentrio AsteRx2 receiver, and InSAR scattering response, from an SEA Compact Active Transponder and tying these to a local geodetic reference. Two field trials were conducted. The first trial validated the unit at a calibration site close to Technical University of Delft confirming measurement accuracy against ground levelling to 4mm (double difference). The second identified significant displacement over 6 months at a landslide site near Koroska Bela of concern to the Geological Survey of Slovenia and confirmed the utility of the results. The second trial, at a remote site, also highlighted three needs to assure reliability and render a service operationally viable: Careful planning and installation of equipment to assure that targets are visible to the satellite and representative of landslide displacement; reliable access to affordable InSAR data, such as is planned to be available from GMES Sentinel-1; remote communicate of telemetry and GNSS data from the units to minimise personnel access and reduce operations costs. Users are typically interested in reliable data provision for decision making and less concerned about the sources from which the results are derived. For operational integrated operations it is important to integrate the optimum data and services, rather than artificially insisting upon the exclusive use of multiple space assets as is the case in some quasi-operational development programmes. For example, the Koroska Bela site has access to reliable GSM signals which will prove more cost effective than modems communicating via satellite constellations. It is argued that integrating terrestrial and space based measurements (for the landslide

example likely to include humidity and inclinometer measurements with space based measurements of displacements) is equally valid as an integrated application than the need to include at least two discreet space assets.