

Satellite radar interferometry for operational geodesy: a SWOT analysis

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Abstract:

Satellite radar interferometry (InSAR) has evolved to a frequently used geodetic technique, particularly for measuring and monitoring the kinematic behaviour of its measurement points. Applications first started from analysing geophysical processes (tectonic, volcanic, cryospheric or atmospheric phenomena), but are rapidly expanding to the measurement, monitoring and analysis of the structural health of constructions and other man-made objects. In this presentation, we will perform a SWOT analysis of the state-of-the art in InSAR: Strengths, Weaknesses, Opportunities and Threats. We will discuss issues related to the difficult interpretation of the InSAR data, and provide methods to cast InSAR in a conventional geodetic framework. We will address the reference systems involved, and how we can relate InSAR observations to a conventional datum. Experiences from different experiments in the Netherlands will be shared.

Short bio:

Ramon Hanssen is Antoni van Leeuwenhoek professor in Earth Observation. He studied aerospace engineering and geodetic engineering at TU Delft (M.Sc. 1993). He specialized in the geodetic use of radar interferometry (InSAR) and worked at Stuttgart University (1996), the German Aerospace Center (DLR), (1997) and Stanford University (1997-1998). In 2001 he received the PhD degree (cum laude) of TU Delft. His text book on Satellite Radar Interferometry is well known in the scientific community. He serves as an expert in various ESA panels for new satellite developments. He received a Fulbright Fellowship in 1997, the Innovational Research Award (NWO) and the Bomford Prize of the International Association of Geodesy in 2003. In 2008 he was awarded the Antoni van Leeuwenhoek chair at Delft University of Technology. In 2007 and 2008 he received the SBIR award for founding a spin-off company on radar remote sensing, now known as SkyGeo. Since 2012 he is visiting professor at Wuhan University, China. Hanssen is currently chairing the Department of Geoscience and Remote Sensing and leading a research group on radar interferometry.