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USING SHORT TIME BASELINE INSAR FOR MONITORING COASTAL ZONE STATUS

Abstract

Radar remote sensing is a new earth observation technology with promising results and future. InSAR is a sophisticated radar remote sensing technique for combining synthetic aperture radar (SAR) single look complex images to form interferogram and utilizing its phase contribution to land topography, surface movement and target velocity. In recent years considerable applications of Interferometric SAR technique have been developed. It is an established technique for precise assessment of land surface movements, and generating high quality digital elevation models (DEM) from space-borne and airborne data. InSAR is able to produce DEMs with the precision of a couple of ten meters whereas its movement map results have sub-centimeter precision. The technique has many applications in the context of earth sciences such as topographic mapping, environmental modelling, rainfall-runoff studies, landslide hazard zonation, and seismic source modelling. Nevertheless new developments are taking place in the application of InSAR for aquatic bodies. We have observed that using SAR Interferometry technique for aquatic bodies with the maximum temporal baseline of 16 seconds for image pairs shows considerable results enabling us to determine the direction of sea surface motion in a large area, estimate the sea surface fluctuations in the direction of sensor line-of-the-sight, detect wave pattern and the sea surface disturbance and in all the sea surface status. This paper presents our experience and achievements on this new topic through discussing the facts and conditions for the use of InSAR technique. The method has been examined for Haiti, Dominican Republic, Western Chile and Western Turkey coast areas and inland lakes however empirical validation is still waiting to be carried out. This technique scheduled to be applied in some other sites for which the proper data is available.