

Land Subsidence Monitoring in Semarang and Demak Coastal Area Using Persistent Scatterer Interferometric Synthetic Aperture Radar

Authors : Reyhan Azeriansyah, Yudo Prasetyo, Bambang Darmo Yuwono

Abstract : Land subsidence is one of the problems that occur in the coastal areas of Java Island, one of which is the Semarang and Demak areas located in the northern region of Central Java. The impact of sea erosion, rising sea levels, soil structure vulnerable and economic development activities led to both these areas often occurs on land subsidence. To know how much land subsidence that occurred in the region needs to do the monitoring carried out by remote sensing methods such as PS-InSAR method. PS-InSAR is a remote sensing technique that is the development of the DInSAR method that can monitor the movement of the ground surface that allows users to perform regular measurements and monitoring of fixed objects on the surface of the earth. PS InSAR processing is done using Standford Method of Persistent Scatterers (StaMPS). Same as the recent analysis technique, Persistent Scatterer (PS) InSAR addresses both the decorrelation and atmospheric problems of conventional InSAR. StaMPS identify and extract the deformation signal even in the absence of bright scatterers. StaMPS is also applicable in areas undergoing non-steady deformation, with no prior knowledge of the variations in deformation rate. In addition, this method can also cover a large area so that the decline in the face of the land can cover all coastal areas of Semarang and Demak. From the PS-InSAR method can be known the impact on the existing area in Semarang and Demak region per year. The PS-InSAR results will also be compared with the GPS monitoring data to determine the difference in land decline that occurs between the two methods. By utilizing remote sensing methods such as PS-InSAR method, it is hoped that the PS-InSAR method can be utilized in monitoring the land subsidence and can assist other survey methods such as GPS surveys and the results can be used in policy determination in the affected coastal areas of Semarang and Demak.

Keywords : coastal area, Demak, land subsidence, PS-InSAR, Semarang, StaMPS

Conference Title : ICGPRS 2018 : International Conference on Geomatics, Photogrammetry and Remote Sensing

Conference Location : Bali, Indonesia

Conference Dates : October 22-23, 2018