

# **Recent Ground Deformation in Taiyuan Faulted Basin (China) Carried Out with C-, L-, and X- band SBAS-DInSAR Technique**

Wu ZHU, Qing ZHANG and XiaoLi DING

**KEY WORDS:** Monitoring Concepts for Static and Dynamic Deformations of Engineering and Geotechnical Structures

## **ABSTRACT:**

As a typical Cenozoic fault type basin, Taiyuan basin is located in the middle of Shanxi province, China. Serious geological disasters have been discovered in this region due to the severe tectonic activities and urban construction; especially the land subsidence and ground fissure which seriously restrict local sustainable economic and social development. In order to master the latest temporal and spatial changing regularity of ground deformation in Taiyuan basin, C-, L- and X- band InSAR data are processed by SBAS-InSAR technique and the time series deformation spanning from November 2006 to November 2010 are obtained. The results show that abnormal serious settlement phenomenon is detected in Taiyuan basin and the largest settlement is close to 40cm/a. Meanwhile, seasonal characteristics are present for these subsidence regions. The directions between long axis of land subsidence oval and ground fissure are basically consistent. Based on the CR-InSAR technique, vertical differences on both sides of ground fissures are observed which shows the characteristic of normal fault. Comparing the results of three different bands, inconsistency of settlement magnitude can be thought the result of different maximum deformation monitoring ability.