

Monitoring Ground Settlement in Hong Kong with Satellite SAR Interferometry

G.X. LIU, Y.Q. CHEN, X.L. DING, Z.L. LI, and Z.W. LI, China

Key words: Synthetic aperture radar (SAR), interferometry, ground settlement.

ABSTRACT

Due to the scarcity of useable land in Hong Kong, it is a common practice to reclaim land from the sea. The reclaimed land usually undergoes a long period of settlement that may affect building structures and underground facilities such as water supply and sewage systems built on the land. Measurements of land settlement can provide valuable data for assessing the impacts of land settlement and for improving designs of future land reclamation projects.

Research has been conducted to use satellite synthetic aperture radar interferometry (InSAR) to monitor ground settlement of some reclaimed land areas in Hong Kong. This paper examines the sensitivity of the technology in such applications, addresses the data processing issues and limiting factors of the technology, and presents some initial test results obtained with the repeat pass ERS-1/2 satellite radar images, including settlement measurement results over the new Check Lap Kok Airport that was built on reclaimed land.

CONTACT

Dr. Xiaoli Ding, Associate Professor
Department of Land Surveying and Geo-Informatics
Hong Kong Polytechnic University
Hung Hom, KLN
HONG KONG, CHINA
Tel. + 852 2766 5965
Fax + 852 2330 2994
E-mail: lsxlding@polyu.edu.hk
Web site: <http://www.polyu.edu.hk>