

# CHANGE ANALYSIS WITH TERRASAR-X DATA

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## **ABSTRACT:**

Change analyses play an important role for different applications, ranging from small- to large-scale monitoring. To identify changes from SAR images of repeat pass acquisitions different methods are commonly applied, which differ with respect to the parameter which is used to indicate changes. The backscatter intensity is analysed in incoherent change detection methods, whereas in the coherent change detection the complex correlation coefficient is analysed as a change indicator. These methods provide complementary characterisations, since they are sensitive to different measures of a SAR scene. In this paper both detection statistics are used to identify changes and to give an assessment of the change direction. Additionally, further information is integrated into the proposed scheme to separate relevant changes from less relevant ones in order to decrease false alarms. Texture measures provide information on spatial variation of the backscatter and thus information of the local surface characteristics within the scene. This information is used to restrict the search for areas and changes of interest and for the assessment of changes. Since there is not a unique descriptor applicable to various surfaces, different textures and statistics are tested to evaluate their contribution in this context. The method is applied on several repeat-pass TerraSAR-X acquisitions with varying resolutions and acquisition parameters. The goal of our analysis is to support the implementation of an operational change detection process and to define a suitable assessment of changes from TerraSAR-X data regarding different customers' requirements.

**TOPIC:** Change detection and process modelling

**ALTERNATIVE TOPIC:** Remote sensing applications