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USING MORPHOLOGICAL DIFFERENTIAL ATTRIBUTE PROFILES FOR CHANGE CATEGORIZATION IN HIGH RESOLUTION SAR IMAGES

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Abstract. Change detection in urban and suburban areas through remote sensing satellite imagery is an important topic.

Furthermore, it is of special interest to derive information on the category of detected changes is of special interest. In

Boldt et al. (2012), a fully automatic change detection method based on a morphological filtered ratio image was presented. This filter step is accomplished by an alternating sequential filter (ASF), which supports the knowledge-driven analysis of the scene. For example, the focus can be set on small-scaled changes caused by vehicles or smaller construction sites. The change detection itself is performed using the automatic threshold method shown in Sahoo et al.

(2004) considering the entropies of the fore- and background of the filtered ratio image. In contrast, the presented approach makes use of morphological differential attribute profiles (DAPs) to compare changes detected in high resolution (HR) TerraSAR-X (TSX) amplitude images of Greding (Germany). DAPs are the derivatives of morphological attribute profiles (APs). APs are calculated by applying iteratively attribute openings and/or closings to an input image. Attribute openings (resp. closings) themselves are a combination of connected openings (closings) and trivial openings (closings). DAPs provide the opportunity to derive typical signatures for each pixel of the entire image (Dalla Mura et al., 2010), and, as a consequence, for each detected change segment. Aiming on the categorization of changes, it is shown in this paper that the DAPs represent a promising method for detecting changes with similar semantics automatically.

[Conference Paper](#) (PDF, 1154 KB)

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