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Classification of agricultural fields using time series of dual polarimetry TerraSAR-X images

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Abstract. Due to its special imaging characteristics, Synthetic Aperture Radar (SAR) has become an important source of information for a variety of remote sensing applications dealing with environmental changes. SAR images contain information about both phase and intensity in different polarization modes, making them sensitive to geometrical structure and physical properties of the targets such as dielectric and plant water content. In this study we investigate multi temporal changes occurring to different crop types due to phenological changes using high-resolution TerraSAR-X imagers. The dataset includes 17 dual-polarimetry TSX data acquired from June 2012 to August 2013 in Lorestan province, Iran. Several features are extracted from polarized data and classified using support vector machine (SVM) classifier. Training samples and different features employed in classification are also assessed in the study. Results show a satisfactory accuracy for classification which is about 0.91 in kappa coefficient.

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