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## MULTIDIMENSIONAL ROUGHNESS CHARACTERIZATION FOR MICROWAVE REMOTE SENSING APPLICATIONS USING A SIMPLE PHOTOGRAMMETRIC ACQUISITION SYSTEM

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**Abstract.** Soil surface roughness, as investigated in this study, is a critical parameter in microwave remote sensing. As soil surface roughness is treated as a stationary single scale isotropic process in most backscattering models, the overall objective of this study was to better understand the role of soil surface roughness in the context of backscattering. Therefore a simple photogrammetric acquisition setup was developed for the characterization of soil surface roughness. In addition several suited SAR images of different sensors (ERS-2 and TerraSAR-X) were acquired to quantify the impact of soil surface roughness on the backscattered signal. Major progress achieved in this work includes the much improved characterization of in-field soil surface roughness. Good progress was also made in the understanding of backscattering from bare surface in the case of directional scattering.

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