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MICROWAVE REMOTE SENSING IN SOIL QUALITY ASSESSMENT

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Abstract. Information of spatial and temporal variations of *soil quality* (soil properties) is required for various purposes sustainable agriculture development and management. Traditionally, soil quality characterization is done by in situ soil sampling and subsequent laboratory analysis. Such methodology has limitation for assessing the spatial variability of soil quality. Various researchers in recent past showed the potential utility of hyperspectral remote sensing techniques for spatial estimation of soil properties. However, limited research studies have been carried out showing the potential utility of microwave remote sensing data for spatial estimation of various soil properties except soil moisture. This paper reviews the status of microwave remote sensing techniques (active and passive) for spatial assessment of soil quality parameters such as *soil salinity, soil erosion, soil physical properties (soil texture & hydraulic properties; drainage conditions and soil surface roughness)*. Past and recent research studies showed that both active and passive microwave remote sensing techniques have great potentials for assessment of these soil qualities (soil properties). However, more research studies on use of multi-frequency and full polarimetric microwave remote sensing data and modelling of interaction of multi-frequency and full polarimetric microwave remote sensing data with soil are very much needed for operational use of satellite microwave remote sensing data in soil quality assessment.

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