

Estimation of scattering coefficient of saline soil for slightly rough surface
and undulating surface at microwave frequencies

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Microwave remote sensing of soil requires the study of electrical parameters of the soil like (permittivity, emissivity and scattering coefficient) along with its physical parameters like surface roughness and undulation. Out of these the dielectric constant can be used for estimating emissivity and scattering coefficient. Microwave backscattering from soil depends on its dielectric constant. In this paper the scattering coefficient has been estimated for a slightly rough surface and undulating surface for saline soil, using the Perturbation Model and Geometric Optics Model. The database of the estimated scattering coefficient at X-band (8-10 GHz) for saline soil with different moisture content for both horizontal and vertical polarization and different look angles and two types of surfaces has been generated. The result shows that as the salinity increases, the scattering coefficient decreases. Also scattering coefficient increases with the increase in the moisture content. For active microwave remote sensing the scattering coefficient data for saline soil for different moisture content and for different types of surfaces are useful for image analysis and its applications. By using this database it is possible to design an active microwave sensor used for remote sensing of soil, which is largely useful in the field of agriculture.