

# Monitoring soil moisture dynamics using satellite imaging radar in northeastern Jordan

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## Abstract

This paper describes how synthetic aperture radar (SAR) data from the European Environmental Remote Sensing (ERS) satellite series were used to derive estimates of near-surface soil moisture for seasonally vegetated and bare soil surfaces in the area of the Jordan Badia Research and Development Programme (BRDP). Data were acquired between March 1995 and April 1998, covering both wet and dry seasons. A surface scattering model was calibrated using field data: first to understand how soil moisture affects the SAR signal and, secondly, to predict the response of the SAR signal to changes in volumetric soil moisture. Good agreement between predicted and observed estimates was obtained. Model inversion allowed soil moisture predictions to be made that were deemed realistic in terms of soil moisture values.

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