

## CROP GROWTH MODELLING IN MALI BASED ON ERS SCATTEROMETER INFORMATION

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### Abstract

The C-band scatterometer flown on board the ERS satellites series constitutes a reliable tool for soil moisture monitoring purposes. Algorithms accounting for the effects of viewing geometry, vegetation and surface roughness on the received signal now allow for more accurate retrieval of the sub-surface water content. Noise removal is performed using the instrument's multiple viewing aptitude. Temporal repetitively and inherent spatialization serve scatterometer data as an unmatched source of information for operational generation of soil moisture maps.

Combined with crop specific information, these remotely sensed measurements are used as an alternative to conventional rainfall – evapotranspiration driven models to predict crop performance, with particular attention to such issues as planting dates, early season crop establishment, growing season stress and yield reduction. A modeling approach for the propagation of humidity through the soil profile provides a soil water index (SWI) representative of the available water content in the rooting zone. The discrepancy between crop water requirements and the SWI eventually yields a crop performance index (CPI).

Results obtained over the [1991-1998] period are discussed, with particular emphasis on validation issues analyzed on the basis of field data gathered during the 1998 growing season.