

USE OF SATELLITE DATA IN OCEAN WAVE MODELLING

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The microwave sensor system of ERS-1 has provided wave modellers for the first time with continuous, global data on wave heights (from the Radar Altimeter) and two-dimensional wave spectra (from the SAR wave mode). In addition, the satellite is providing improved ocean surface winds (Scatterometer wind speeds and direction, Altimeter wind speeds). The analysis of 18 months of global wind and wave data has demonstrated that all instruments are operating satisfactorily and provide excellent quantitative data. In particular, calibrated two-dimensional wave spectra could be retrieved from the SAR wave mode image spectra using first-guess wave spectra provided by the ECMWF operational wave model WAM. An optimal interpolation scheme for assimilating altimeter wave height data in the WAM model is already operational at ECMWF. The impacts of the assimilation on the enhancement of the wave forecast skill is statistically significant. Work is in progress to extend this scheme to include the full two-dimensional wave spectra information obtained from the SAR wave mode. The ultimate goal is the implementation of an integrated wind and wave data assimilation scheme, in which the information from both wind and wave sensors is used to update simultaneously both the wave field and the wind field which drives the waves.