A global quality−controlled spectral wave database

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Abstract

Spectral wave data are in increasing demand, for example to drive regional or local sea surface wave models, and for advanced applications such as the prediction of motions of vessels. However, until recently, global datasets of spectra wave data were not widely available or too costly, or not fit for use. Recently, a new database of directional sea surface wave spectra covering the entire globe over a 13 year period was produced by ARGOSS. The hindcast was made with the wavewatch−iii wave prediction model from NCEP and involves various quality−control and correction procedures on the input− and output data of the model. Wind fields from NCEP are checked and corrected at each model grid point using wind vector data from several satellite scatterometer missions. Hindcast significant wave height is checked at all gridpoints using satellite SAR and radar altimeter measurements from all missions, and locally corrected when necessary. Also extensive and detailed spectral validation against wave buoys is performed. One of the problems with these datasets is the huge data−volume. A data compression method was developed to reduce the data−set to a manageable size, enabling clients to integrate the complete dataset into their applications.