

Enhancement of directional ambiguity removal skill in scatterometer data processing using planetary boundary layer models

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Planetary boundary layer (PBL) models are utilized to enhance directional ambiguity removal skill in scatterometer data processing. The ambiguity in wind direction retrieved from scatterometer measurements is removed with the aid of physical directional information obtained from PBL models.

This technique is based on the observation that sea level pressure is scalar and its field is more coherent than the corresponding wind. An initial wind field obtained from the scatterometer measurements is used to derive a pressure field with a PBL model. After filtering small-scale noise in the derived pressure field, a wind field is generated with an inverted PBL model. This derived wind information is then used to remove wind vector ambiguities in the scatterometer data.

It is found that the ambiguity removal skill can be improved when the new technique is used properly in conjunction with the median filter being used for scatterometer wind dealiasing at JPL. The new technique is applied to regions of cyclone systems which are important for accurate weather prediction but where the errors of ambiguity removal are often large.

Preferred theme: New Technology (new processing/retrieval techniques)