论文

基于目标函数分布特征的散射计海面风场反演方法

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摘要：

本文以SeaWinds散射计为例，针对圆锥扫描散射计星下点附近区域容易产生风向模糊问题，在分析其目标函数分布特征的基础上，对传统的最大似然风矢量反演算法和圆中数滤波算法进行了改进，提出了一种适合于圆锥扫描散射计的海面风场反演方法。该方法通过在目标函数分布较平坦的区域设置风向扩展区间，并使扩展后的更多风向解参与模糊去除来提高风向选择的准确性。利用200条轨道的SeaWinds散射计L2A数据和相应浮标数据，对本文给出的风场反演方法进行了验证。结果表明，该方法在无需外部辅助风场数据作为参考的条件下，能够使星下点附近区域的风向模糊性得到明显改善，从而证明了该方法的可行性。

关键词： SeaWinds散射计　目标函数　风矢量反演　风向扩展区间　模糊去除

A Wind Field Retrieval Method for Scatterometer Based on the Distribution Characteristic of its Objective Function

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Abstract:

Aiming at the problem of high directional ambiguity in the nadir region of conically scanning scatterometer, taking SeaWinds as an example and in consideration of its objective function distribution characteristic, a modified wind field retrieval method suitable for this kind of scatterometer is presented in this paper, which is designed based on the traditional maximum likelihood wind vector retrieval algorithm and circle median filter algorithm. This method attempts to enhance the accuracy in selecting the true wind direction by extending the possible range of wind direction and allowing them to be taken into account in the ambiguity removal. Two hundred of SeaWinds Level 2A data files and some corresponding co located buoy data are used to validate this retrieval method. The experimental results indicate that the retrieval method is feasible due to its capability of effectively improving the directional ambiguity existing in the nadir region without any external reference data to aid in wind field initialization.

Keywords: SeaWinds scatterometer　objective function　wind vector retrieval　extension interval of wind direction　ambiguity removal

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