

SeaWinds Sea Ice modelling and Detection

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Following user requests on the improved screening of water and sea ice surfaces in the SeaWinds products we developed a sea ice model and detection algorithm. The algorithm follows an approach earlier elaborated for the ERS scatterometers. The model has been developed to closely describe the cloud of sea ice points in the 4D SeaWinds measurement space at each WVC and constitutes a sea ice line in this 4D space. Deviations from the sea ice line are estimated over sea ice regions and compared to the radiometric Kp noise. In this way a normalised distance to the sea ice line can be determined for any WVC backscatter quadruplet input and be associated with a sea ice occurrence probability. This follows the approach for wind retrieval, where normalised distances to the wind manifold (GMF) are exploited to compute wind solution probability. From the wind and sea probabilities, associated with a WVC backscatter quadruplet, a Bayesian sea ice and water discrimination algorithm has been developed. Sea ice edges obtained this way are compared to MODIS and SAR pictures and to other sources of ice edge information, including from other SeaWinds methods. The new sea ice discrimination method for SeaWinds is being implemented operationally at KNMI and the ASCAT sea ice detection is being aligned with the updated algorithm.