

Remote sensing of aerosol optical properties and water-leaving radiance based on the optimal estimation approach

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A flexible inversion algorithm is proposed for jointly retrieving aerosol optical properties and water-leaving radiance from multispectral instrument over the ocean. A combined multi-wavelength and multi-pixel constraint approach is used to estimate aerosol and hydrosol over clear and turbid waters, based on the forward simulation from a coupled atmosphere-ocean radiative transfer model. This sort of simultaneous inversion helps to correct the biases induced by the neglect of water-leaving radiance in the traditional aerosol retrieval algorithms, in addition, it can provide more aerosol information than the standard ocean color approach. To investigate the availability of current scheme, we conduct the retrieval in the process of MODIS, GOSAT/CAI and GCOM-C/SGLI instruments.