Retrieval of oceanic and atmospheric geophysical parameters from passive microwave polarimeter

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Microwave polarimeter is a sensor of measuring the third and/or the forth Stokes parameters, as well as the vertical- and horizontal-polarization. Passive polarimetric microwave remote sensing of oceanic wind vector is a new field of satellite oceanography and has attracted more interests in and attention on short-term weather forecasts , long-term climate forecasts, and naval maneuvers. Wind direction retrieval is one of the initial motivations of the polarimeter development.

In the paper, simulated retrievals of ocean wind vector and other oceanic and atmospheric geophysical parameters, such as sea surface temperature, volume water vapor content and cloud liquid water content, are conducted using simulated brightness temperatures of full Stokes parameters. The performances of the algorithms are evaluated and the results are validated by ECMWF re-analysis data.