

Comparison with L-, C-, and X-band real SAR images and simulation of spilled oil on sea surface

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At a recent research, the oil spill detection and similar oil material filtration is a current theme. For the comparison, a Gaussian random rough sea surface was generated based on the wind speed data of Korea Meteorological Administration. The roughness of the sea surface is approximated by two-dimension model, and the scattering from oil spills is computed using a two-layered inhomogeneous dielectric medium. And bistatic coherent reflectivity of the Gaussian random rough sea surface was calculated using Moment Method simulation and PO for a given surface roughness, oil-layer thickness, frequency, polarization and incidence angle. Then, the SAR images are generated from the given surface roughness and bistatic coherent reflectivity. Finally, the dependency of the scattering coefficient on the target parameters, such as surface roughness, oil-layer thickness, and radar parameters, such as frequency, polarization and incidence angle, has been examined using the numerical results, compared with L-, C-, and X-band Synthetic Aperture Radar (SAR) images.