# Abstracts

## Wide-band radiometry for remote sensing of oil films on water

*E.R. Brown, O.B. McMahon, T.J. Murphy, G.G. Hogan, G.D. Daniels and G. Hover. "Wide-band radiometry for remote sensing of oil films on water." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 1989-1996.*

Total-power radiometry is applied over a wide-frequency band (26-40 GHz) to measure homogeneous and emulsified (40%:60% oil:water composition) oil films on water. The resulting brightness-temperature (T/sub B/) spectra contain substantially more information about the film than the spot-frequency measurements of previous work. In thin homogeneous films (/spl sim/3 mm or less), the T/sub B/ spectra have the same monotonically increasing frequency dependence as the bare-water spectrum, but are distinguishable from the water by a positive T/sub B/ offset. For thicker homogeneous films, oscillations in the T/sub B/ spectra occur that have a period inversely related to the thickness of the film. For emulsified films, the T/sub B/ offset is greater than that of a homogeneous film of the same thickness, and oscillations in T/sub B/ occur, even for the thinnest (1 mm) emulsion tested. However, the amplitude of these oscillations is much smaller than for homogeneous films because of losses in the emulsion. Hence, the key result of this paper is that wide-band radiometry enables both the unambiguous determination of the thickness of homogeneous oil and the discrimination of homogeneous oil from emulsified films, at least in the range of thickness >1 mm.

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