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SENSITIVITY TO FOREST RIOMASS BASED ON ANALYSIS OF SCATTERING MECHANISM

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The estimation of forest biomass on a global scale is an important input to global climate and carbon cycle models. Remote sensing using synthetic aperture radar offers a means to obtain such a data set. Although it has been clear for some time that radar signals penetrate forest canopies, *only* recently has it been demonstrated that these signals arc indeed sensitive to biomass. inasmuch as the majority of a forest's biomass is in the trunks, it is important that the radar is sensing the trunk biomass as opposed to the branch or leaf biomass,

In this study wc usc polarimetric AIRSAR P- and L-band data from a variety of forests to determine if the radar penetrates to the trunk by examining the scattering mechanism as dctcrmincd using van Zyl's scattering interaction model, and the levels at which saturation occurs with respect to sensitivity of radar backscatter to total biomass, In particular, the added sensitivity of P-band relative to L-band is addressed. Results using data from the Duke Forest in North Carolina, the Bonanza Creek Experimental Forest in Alaska, the Shasta Forest in California, the Black Forest in Germany, the tcn~pcratc/boreal transition forests in northern Michigan, and coastal forests along the Oregon Transect will be presented.

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