



## **Scaling Soil Moisture from Meter to Kilometer Scale Using P-Band Radar**

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Correct evaluation of regional scale soil moisture content remains one of the challenging limitations for reasonable prediction of regional scale carbon fluxes. The airborne P-band radar of the NASA AirMOSS project retrieves relatively high spatial resolution dielectric constant signals over an experimental domain of 100 by 25-km sensitive to a depth of on the order of 75-cm. The continuous (15-min time resolution over multiple years) ground-based monitoring transects over nine experimental sites in North America are on the spatial scale of 100-m horizontal and 1-m vertical in seven depth layers. The efficient data management scheme of the ground-based data and the experimental protocol of the airborne P-band radar flights are described. Correlation of the distinct seasonal soil moisture signals of the grassland, deciduous, evergreen and tropical forest monitoring sites with the P-band radar dielectric retrieval are demonstrated. Derivation of robust soil water hydraulic properties based on the extensive database developed at the monitoring sites is described.