

BOS #3: Identifying the unique benefits of mmPAR observations for Boundary Layer, Fire, Mesoscale Meteorology Studies, and other potential applications.

Moderators: David Bodine and Scott Salesky
Place: Plains Classroom

Discussion on suggested topics and questions (55 min)

This breakout session is dedicated to uncovering the unparalleled advantages of millimeter-wave imaging phased radars for a wide array of applications, including Boundary Layer studies, Fire research, Mesoscale Meteorology, and other potential areas. One of the crucial aspects of atmospheric science using mmWave PARs is the high spatial and temporal resolution data for better understanding of ice cloud processes, which play a pivotal role in modeling radiative and microphysical processes, as well as quantifying snowfall rate variability.

The scope of the break-out session is for the attendees to explore how mmWave PAR's observations can elucidate the formation of drizzle, a longstanding puzzle in cloud physics. Condensation alone cannot explain drizzle formation on short time scales, necessitating mechanisms that broaden drop size distributions to enable collision-coalescence. Additionally, the session will highlight some discussion of how mmWave PARs can provide crucial 3-D wind observations, enabling the derivation of vertical velocity data that is essential for understanding ice clouds. Through engaging discussions and presentations, participants will gain valuable insights into how mmWave PAR technology can revolutionize Boundary Layer studies, Fire research, Mesoscale Meteorology, and other scientific endeavors. This session is ideal for researchers, scientists, and professionals seeking to leverage mmWave PAR observations for groundbreaking discoveries and advancements in remote sensing.

1. What is the most desirable radar platform (ground fix, ground mobile, airborne, etc.), and what are the important features and capabilities (pencil e-scanning, 1D or 2D imaging, ect) needed for Boundary Layer, Fire, and Mesoscale Meteorology Studies?
2. What are the radar characteristics and desirable radar features needed for e-scanning and imaging?
3. Can this be done with conventional mechanically dish radars? If not, why?
4. What are the most important features of PAR that can enhance observations for Boundary Layer, Fire, and Mesoscale Meteorology Studies?
5. How important are observations of 3-D winds for enabling vertical velocity data to provide key qualitative and quantitative information about ice clouds?

Summarize discussion on Jamboard (30 min)

Use Jamboard for summaries key answers and followed priority items selection.