7.19 ARM AERIAL FACILITY AND RADAR CLOUD OBSERVATIONS FROM THE ACE-ENA FIELD CAMPAIGN

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The ARM Aerosol and Cloud Experiments in the Eastern North Atlantic (ACE-ENA) campaign occurred June July, 2017 and January February, 2018 to study low clouds that are poorly represented in global climate models. The ARM Aerial Facility Gulfstream-1 (AAF G1) was deployed during ACE-ENA and flew over the Azores ARM ENA fixed site to provide details on the vertical structures and variabilities in and around these low clouds. This deployment provided an opportunity to compare ground and aircraft based observations. For this study, the KAZR zenith pointing millimeter radar and XSAPR2 scanning X-band precipitation radar located at the ENA site as well as the Two-Dimensional Stereo Probe (2DS) flown on the AAF G1 were used to analyze the clouds and drizzle. PyDSD, an open-source python software, was used to calculate radar reflectivity values based on the drop size distributions observed by the 2DS so that the aircraft data may be directly compared to the KAZR and XSAPR2 data. The AAF G1 flew over the radar site multiple times during the four-hour flights at various altitudes, allowing for comparisons below, in, and above the clouds. Patterns flown directly over the site also allow for validation of the scattering method used, so that analysis may be trusted at points further from the radar. This study will analyze the radar and cloud probe data from drizzle cases during the summer and early spring periods and discuss results for inter-cloud, event, and seasonal variability.