

An Entrainment Focus Group White Paper?

Mike Jensen (BNL)
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Important Logistical Concerns

- A Focus group needs to be focused
- Need well defined milestones
- Need associated names with work plan
- Need committed leadership
- Need to be able to make measureable progress in 3-5 years

Entrainment Focus Group White Paper **(Initial Draft)**

- Initial focus on shallow boundary layer clouds
- Propose set of AMF Azores data analysis and LES modelling activities
- Plan to propose future entrainment focused field campaign (AMF/AAF)

Scientific Objectives

- Determine the applicability of existing measurement techniques to ARM measurements for the estimation of entrainment rate and evaluate their uncertainty
- Coordinate the development of new retrieval techniques for entrainment parameters with an emphasis on radar Doppler spectra and multi-instrument approaches
- Propose and execute coincident aircraft and surface-based remote sensing field campaigns targeting entrainment processes in shallow cumulus clouds
- Test and evaluate parcel model techniques for the parameterization of entrainment processes using existing and new datasets

Approaches

- 1) Utilize existing long-term ARM measurements to retrieve cloud and environmental parameters relevant to entrainment
- 2) Model (LES/CRM) intercomparison in order to evaluate the robustness of representation of quantities that play important roles, or are impacted by, the entrainment process including the vertical profile of humidity, buoyancy reversal, and CDNC dependencies
- 3) Propose and carry-out a coincident aircraft and surface-based remote sensing IOP targeting entrainment processes in shallow cumulus clouds