

Comments from Program Managers and Advisory Committee Members
(Scribe – HJS Fernando)

Josh Cossuth: (Program manager)

1. Really interesting work
2. Still feel like siloed, although people are working together more and more
3. Integrate models and data more organically, although signs are that there is increasing collaboration between two groups
4. Spatial and temporal integration of data is further encouraged, especially temporal sequencing
5. Data repository – make sure adequate meta data and explanations on data. Curate and quality control data to the extent possible, share and use for knowledge
6. Can we synthesize between past studies conducted at different locations and times with Fatima? Or mention in the data repository where past (other) data can be found
7. I still find that this is an overly ambitious project although the PIs managed to get the first two [most-difficult] studies completed.

Dan Eleuterio: (Program Manager)

1. It has been a great couple of days. Heavily complex work, but streamlined
2. Most appealing is the availability of testable hypothesis. PIs followed the testing carefully
3. The project was awarded to this group because of the soundness of the proposal but not the track record
4. C-Fog was a great precursor to Fatima, gelled the group and integrated their disparate expertise
5. This project is a great example of Multidisciplinarity expected (MURI does not mean multi-university, but Multidisciplinary University....) – they have brought forth specialties such bioaerosols, chemistry, anthropogenic factors, numerics (LCM, LES, ERF, COAMPS), instrumentation. I could not be more pleased with the multidisciplinary nature of the project.
6. Dialog between PIs and collaborators are great.
7. The project is focused, inspired by DOD applications, basic research based, amalgamate ONR with other DOD agencies (ARL, AFIT) as well as NSF and DOE
8. Looks like generating more ideas for future projects

Andrew Heymsfield (Advisory Committee Member)

Provided by Andy Heymsfield

NSF/NCAR MMM

Boulder, Colorado

1. Vertical distribution of PSD needs to be characterized
2. Diurnal variability of marine fog microphysics
3. Seasonal variability of the microphysics
4. Ultra giant CCN may be causing the PSD bimodality see 1982 study by Johnson and a more recent 2022 article
5. Phytoplankton may be an important aerosol and needs to be studied
6. Fully examine the Doppler W band radar measurements (full Doppler spectrum if available) and Doppler LIDAR data
7. David Richters talk. Calculate radar reflectivity and compare to observed,

add in ultra-giant nuclei

8. Radar chaff released in future field experiments Ice Fog
9. Sample volume uncertainty for the particle probes BCP probe and collection efficiency and the hot wire probe
10. Vertical motions in the marine fog-compare models and observations
11. Large drop fallout inhibits new drop formation in downstream areas (distance downwind from initial fog formation)
12. Ice fog. Temperatures? Nucleate particles and measure ice crystal growth rates with tethered balloon. This would be a unique opportunity because the measurements would be made in-cloud in a natural setting rather than in a vertical wind tunnel. These measurements could be used to evaluate/improve models such as WRF.

Jim Doyle (Advisory Committee Member)

1. Great meeting/excellent talks/year 4 has been very productive/deep analysis/
2. synergy between the groups has been excellent
3. A few challenges are apparent; How to better integrate different components (observations, LES, single column models, diverse observations, across the platforms) – now is the time as the program has been greatly matured
4. Identified ingredients that can be better integrated, have a google document that can link various researchers within Fatima, for example, radiative fluxes and their interactions with fog, role of turbulence
5. In (4), new modeling paradigms can be advanced. Complexity of the problem behooves [calibrated] sophistication of investigation platforms.
6. Simplified descriptions and parameterizations are encouraged. Operational partners do not like extra levels of complexity and burning of computational resources unless absolutely needed.
7. Pay attention to scale continuum. Look into more generic interactions between scales, identify and tackle key problems that are at the crux of poor predictability.

Matt Wilbanks (Advisory Committee Member)

1. I am impressed with the work presented and the progress of the project so far
2. Make sure that the completed data sets are available to wider community
3. Inform about and disseminate the data sets; improve the communications to the community, and provide meta data on the contact points for different aspects of the project
4. Pay attention to seasonal and diurnal variations, and the former is lacking from the shorter (~1 month) duration of the campaign
5. In ice fog, address mixed phase processes, improving modeling of them as they are poorly modeled so far
6. EM spectrum extinctions are very useful for DOD applications, improve modeling of it. Good to see some modeling and observations going on in the project with regard to EM/EO.
7. Think about the metrics for gauging different models and processes at work, look at the underlying criteria for appearance of disparate processes