

The 2nd ARM Mobile Facility

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- \$4M to spend
- Workshop in June 06
- Specification to STEC for its Dec06 meeting
- Call for proposals among DOE labs in 2007
- Construction in FY2008 (or earlier)
- (My idea) a preliminary deployment at SGP

Strawman idea: a marine AMF

- Ocean observing systems (Argo floats, ...) undergoing major upgrade — fastest growing
- Oceans vastly undersampled vis a vis clouds & rad'n
- Oceans will take more center stage as peculiarities of global change become more apparent
- Nauru : Island effects have prevented getting a pure marine dataset
- 1st AMF has gotten polar ship proposals already, but they caused apprehension since they inevitably violated the "AMF rules"
- haven't succeeded in doing a marine cloud deployment of the 1st AMF

Marine science/modeling goals

- marine low cloud remains single most poorly understood cloud, and most poorly simulated
- radiation closure in a simpler environment
- sea surface simpler and easier to model than land
- observing dust & pollution plumes over oceans, and their fate
- sea-ice/cloud environment
- cloud models lack good forcing datasets over oceans, esp. far from sonde sites and land radars

Possible new instruments

- Scanning radar (phased array for speed?)
- Scanning microwave with many wavelengths (perhaps co-scanning with radar)
- Scanning passive VIS and IR
- Raman lidar (commercial?)
- High-spectral resolution lidar
- Shortwave spectrometer
- (not enthusiastic about scanning lidar)

How to go marine?

- Cruise ships? (too much deck space?)
- Research vessels
- Icebreakers
- Off-shore platforms
 - oil
 - COVE
- Partially ship, partially island deployments?
- Separate into two parts?
 - (one on ship, other on land or an island)

Major Difficulties — 1

- Salt corrosion
- Extra cost to create robustness of seaintainers, instruments, ...
- ARM can't pay for ship (\$10-20K/day)
- Rocking and rolling platform
- Tight space constraints

Major Difficulties— 2

- Research cruises go to places that are interesting oceanographically
- Biases: fair-weather, standard routes
- No diurnal cycle at any particular place
- A big scanning radar might not fit on ship
 - and storing its data might be a large problem

Summary

- World focus on oceans is growing
- A marine AMF would be scientifically attractive
- It would move us away from our land-only bias
- The “rules” for the 1st AMF wouldn’t apply
- Marine deployment can mean more than just ships
- Creating forcing datasets for models is more problematical
- There are many other difficulties
- ARM has always faced difficulties and surmounted them!