

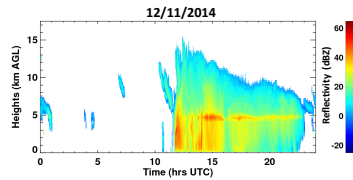
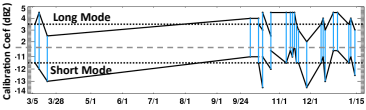
Abstract

The Green Ocean Amazon (GOAmazon) field campaign has recently completed its first year of a two-year deployment in the Amazon Basin to study aerosol and cloud lifecycles as they relate to cloud-aerosol-precipitation interactions. Insights from GOAmazon datasets will fill gaps in our understanding, ultimately improving constraints in tropical rain forest climate model parameterizations.

As part of GOAmazon, the Atmospheric Radiation Measurement (ARM) Mobile Facility (AMF) has been collecting a unique set of observations near Manacapuru, Brazil. The AMF is uniquely equipped to capture the most complete and continuous record of precipitation column properties using the 1290-MHz ARM Radar Wind Profiler (RWP). Here, we present data from RWP, along with ARM Sounding observations and optical Parsivel measurement constraints, to present a first look at a select event, as well as precipitation properties and statistical profile characterization for the first year of the deployment.

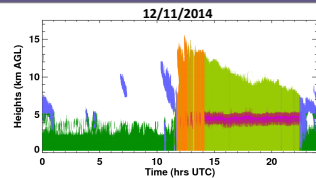
I. December 11, 2014 Event

1. Calibrate Reflectivity: Use Parsivel measurements in stratiform rain to determine fixed calibration coefficients for the entire period



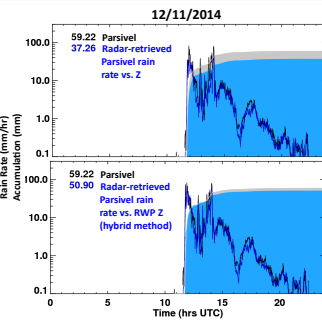
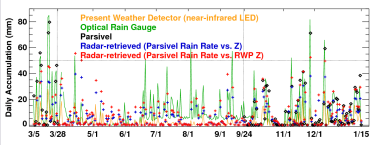
2. Echo Classification

- Stratiform:** well-defined **Bright Band (BB)**
- Convection:** surface $Z > 25$, max $Z > 30$
- Weak Convection:** max $Z > 35$, $|MDV| > 5$
- Transition:** other echo with surface Z
- Cloud:** other echo without surface Z
- Bragg/Insect**

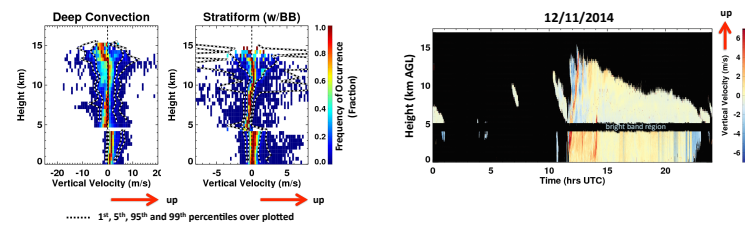


3. Rain Rate Retrieval

Based on climatological empirical relationships:
 • **Parsivel-computed rain rate and reflectivity**
 • **Parsivel-computed rain rate and RWP reflectivity (hybrid method)**

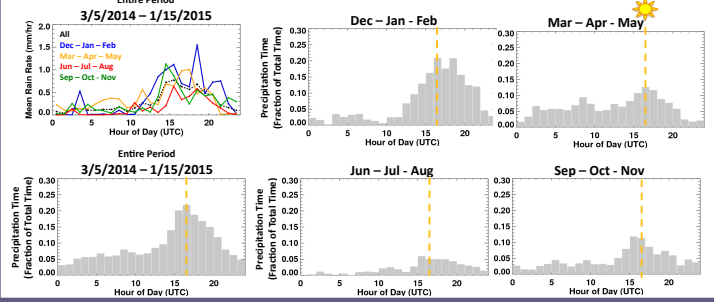


4. Vertical Velocity Estimates: For rain, convective cores, and cloud ice (for a variety of crystal habits)



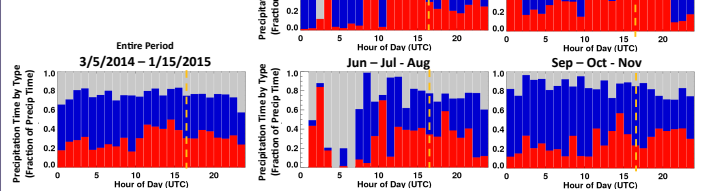
II. Precipitation Properties

1. Timing of Precipitation: Precipitation statistics using echo classification and radar-retrieved rain rate (hybrid method), by hour of day, for the entire period and seasonally



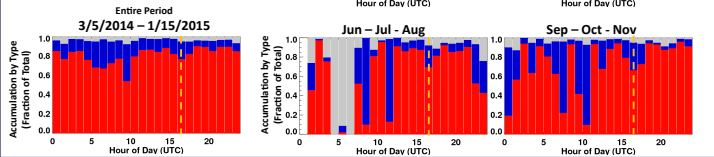
2. Fraction of Precipitating Time:

Partitioning of the amount of time it is precipitating between **convective, stratiform** and **transition** categories



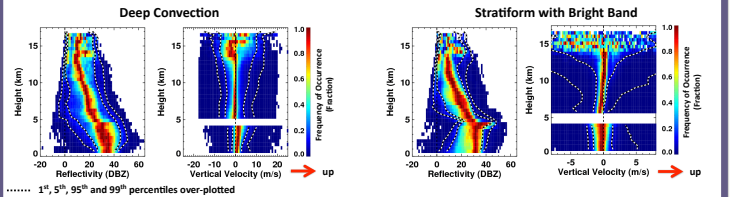
3. Fraction of Total Accumulation:

Partitioning of the amount of total accumulation between **convective, stratiform** and **transition** categories



III. Storm Vertical Structure

Reflectivity and Vertical Velocity CFADS for the entire period: 3/5/2014 – 1/15/2015



References:
 Giangrande, Scott E., Scott Collis, Jerry Straka, Alain Protat, Christopher Williams, Steven Krueger, 2013: A Summary of Convective-Core Vertical Velocity Properties Using ARM UHF Wind Profilers in Oklahoma. *J. Appl. Meteor. Climatol.*, 52,2278–2295.

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