



DYNAMO Convective System Structure During Active and Suppressed Phases of the MJO

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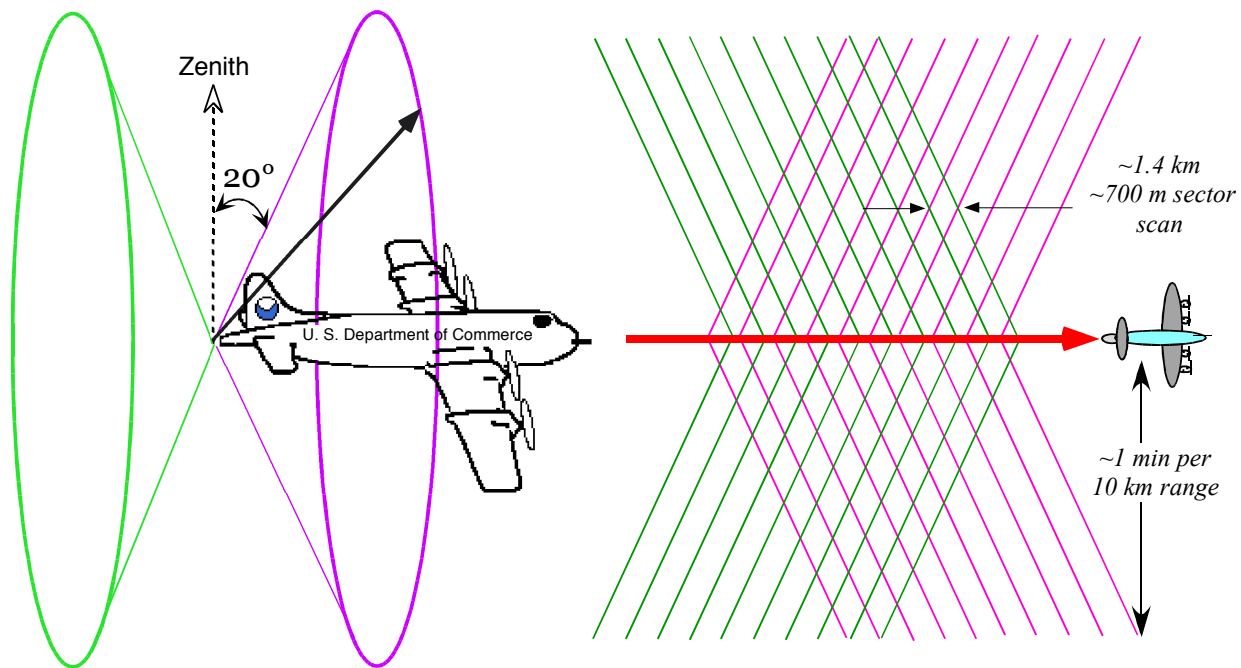
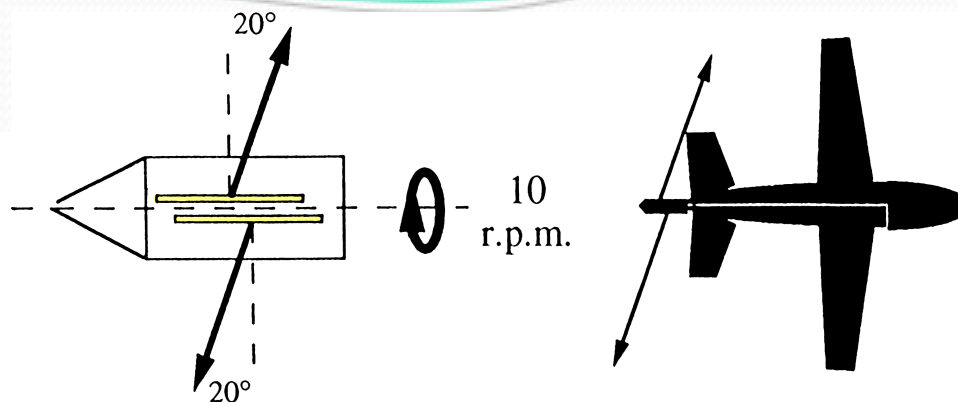
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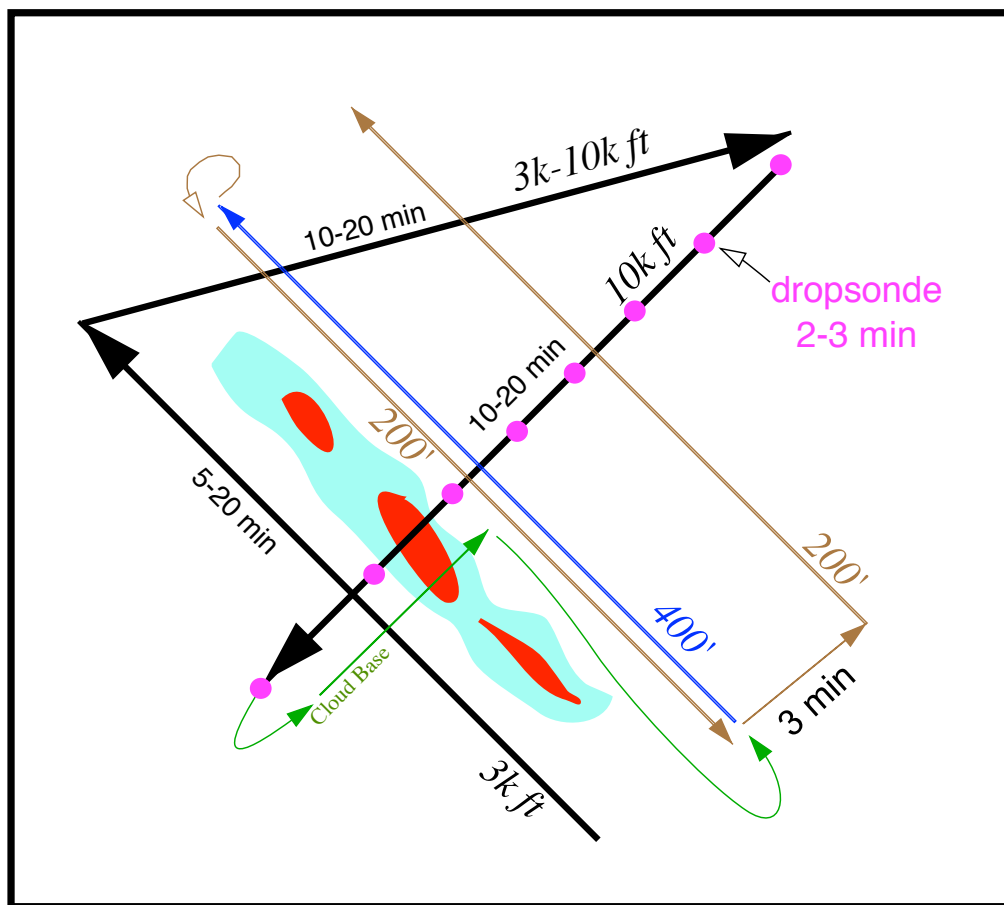


NOAA P-3 Airborne Doppler Radar

wavelength	3.12 cm (X-band)
PRF	3200/2400 s ⁻¹
R _{max}	38 km
V _{max}	±51 m s ⁻¹
H beamwidth	1.35°
V beamwidth	1.90°

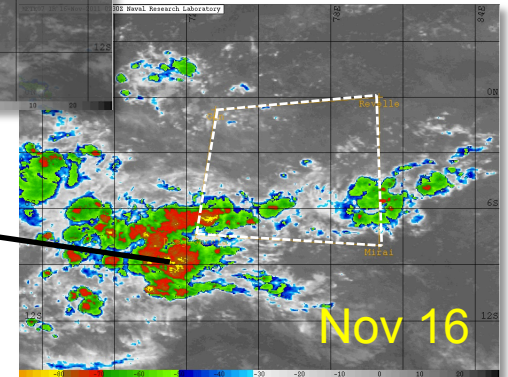
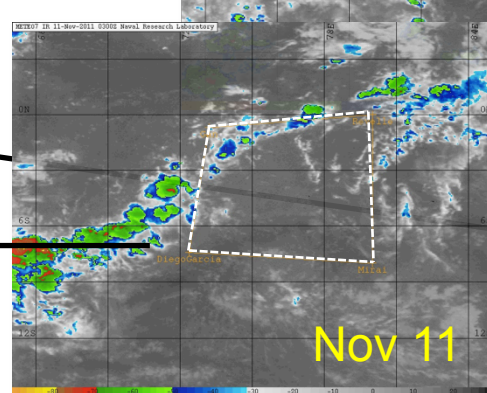
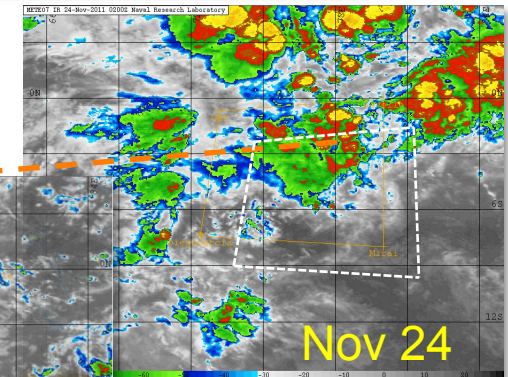
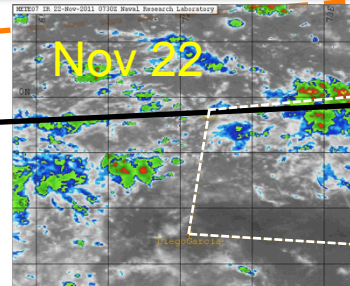
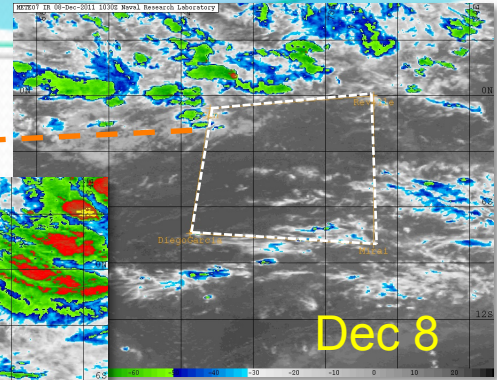
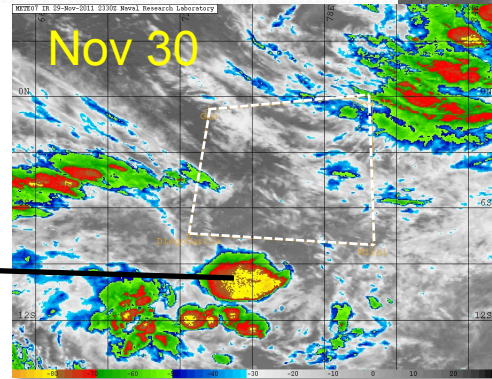
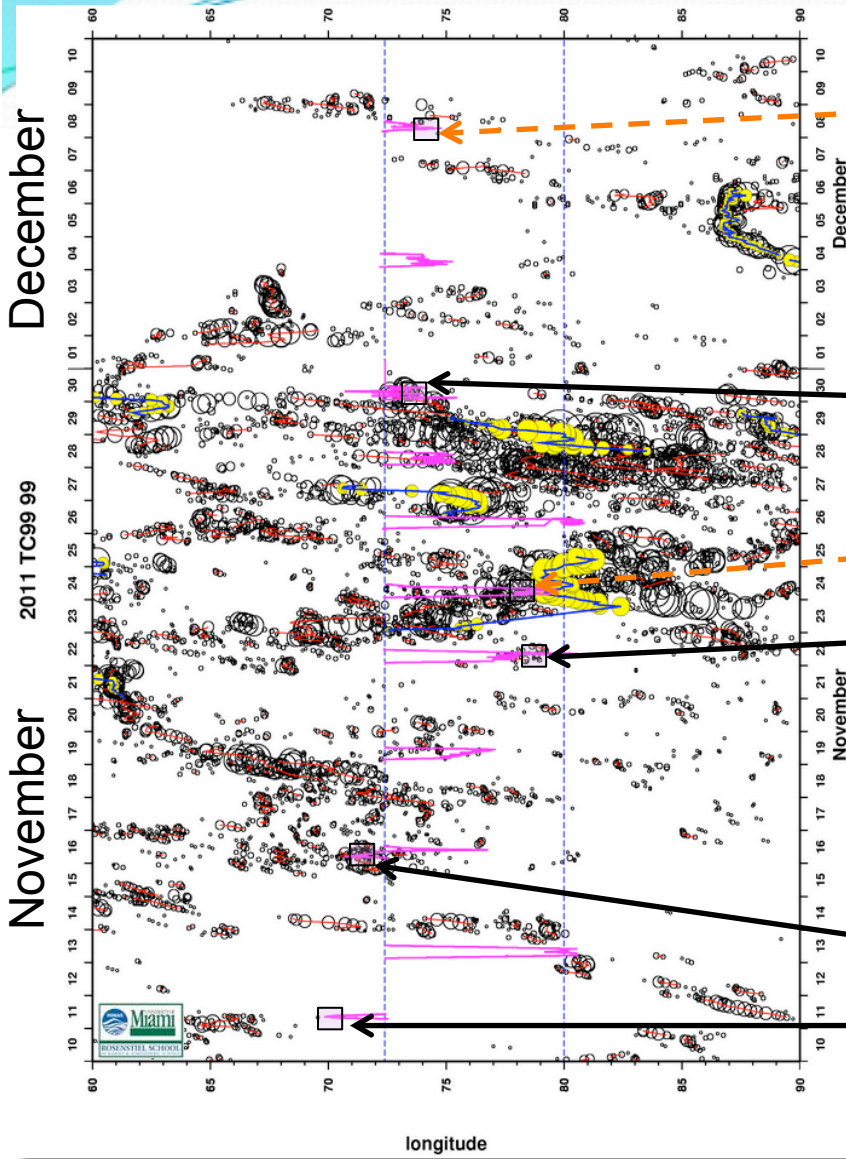


Radar Convective Element (RCE) Flight Modules



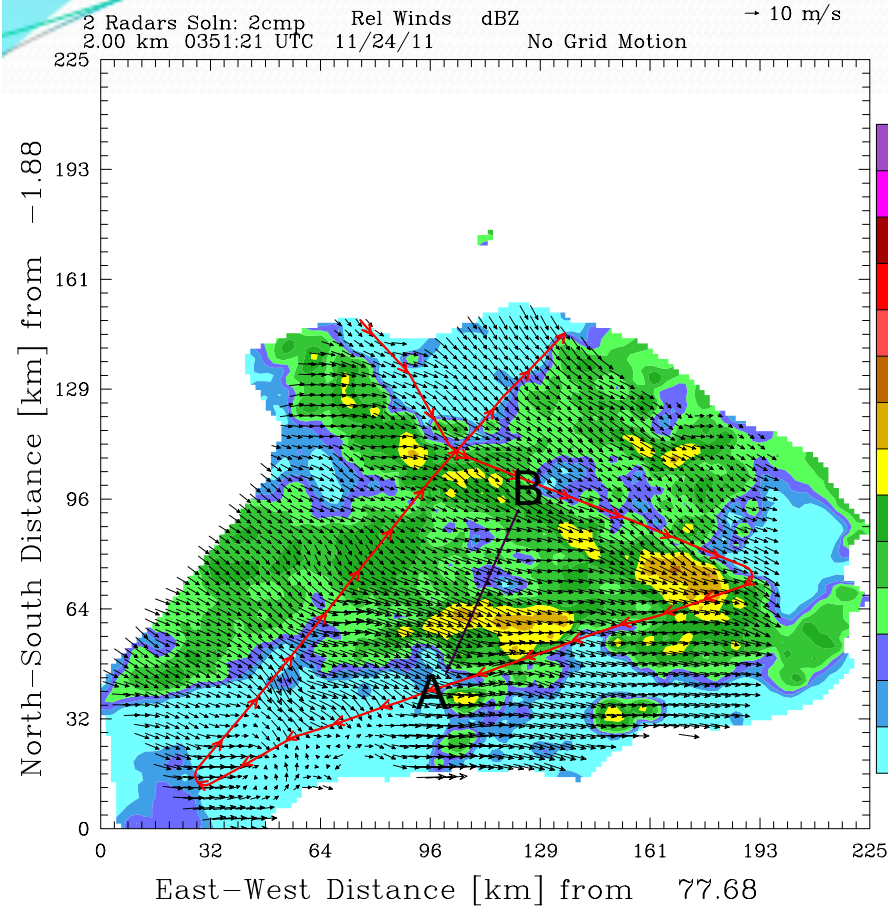


RCE Cases

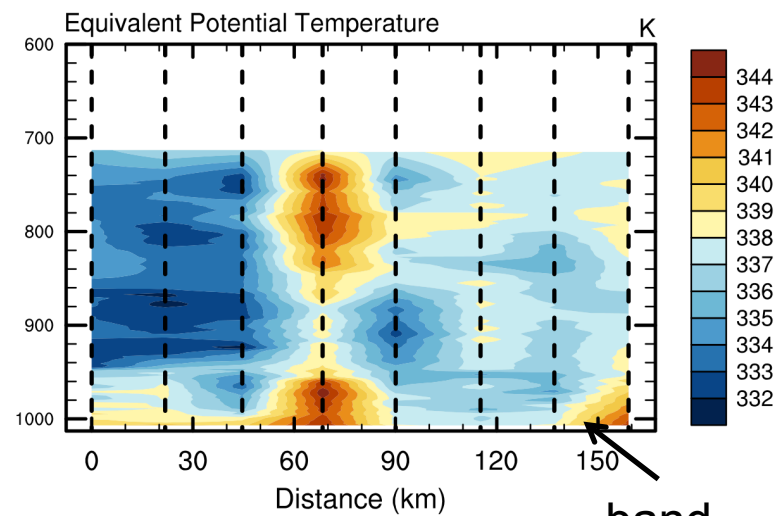
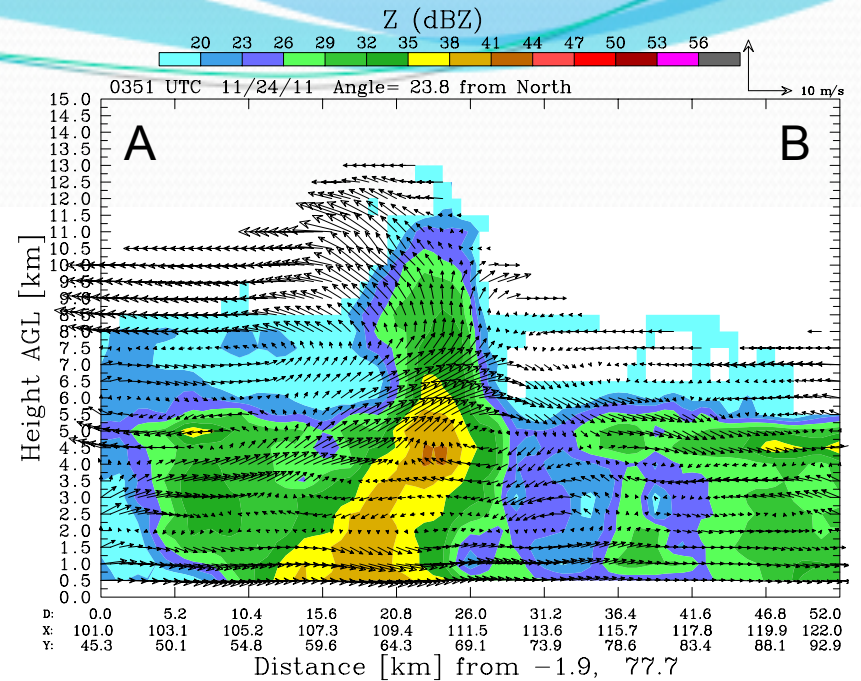




Nov 24-Active Phase Band 1st RCE

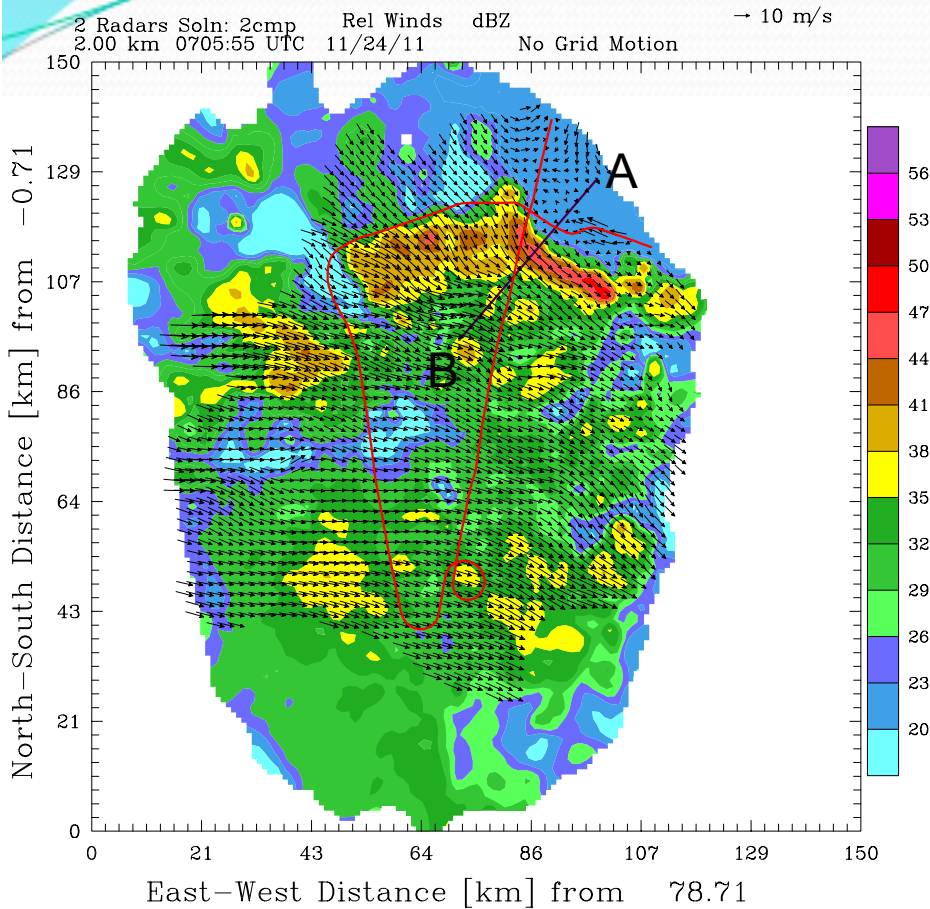


Red line: Aircraft track
Black line: Vertical cross section

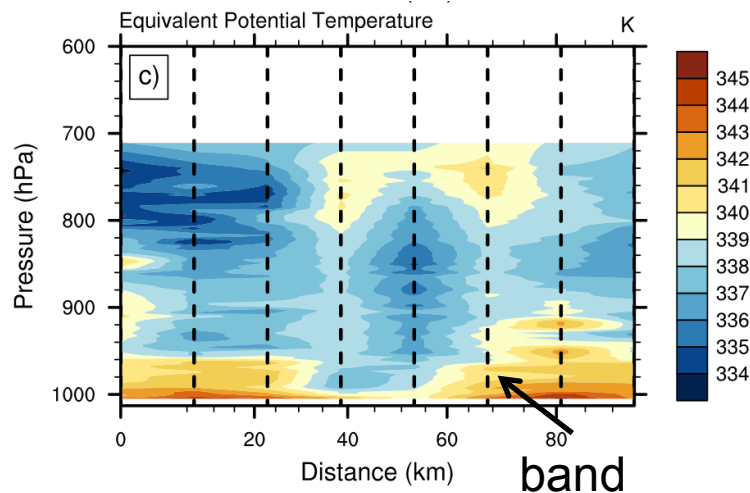
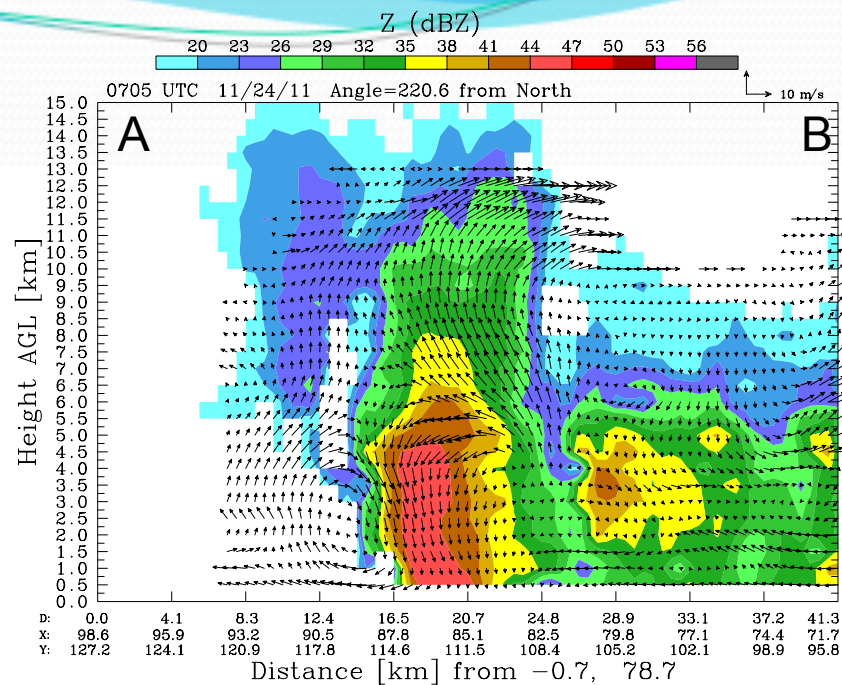




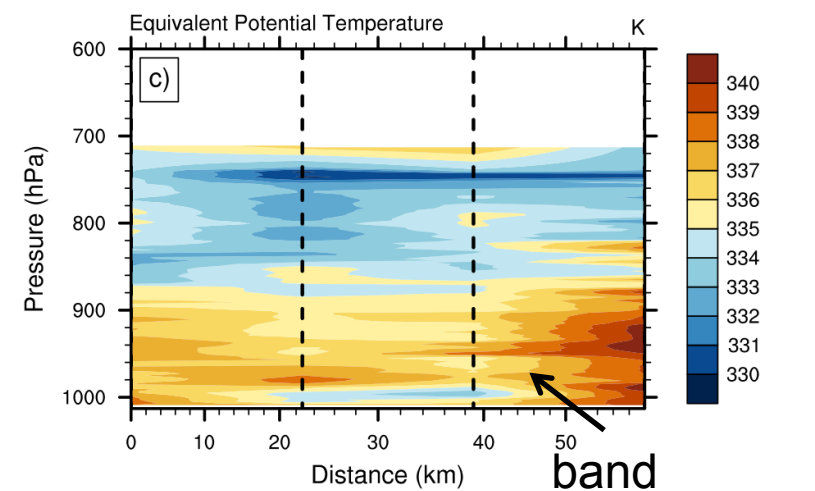
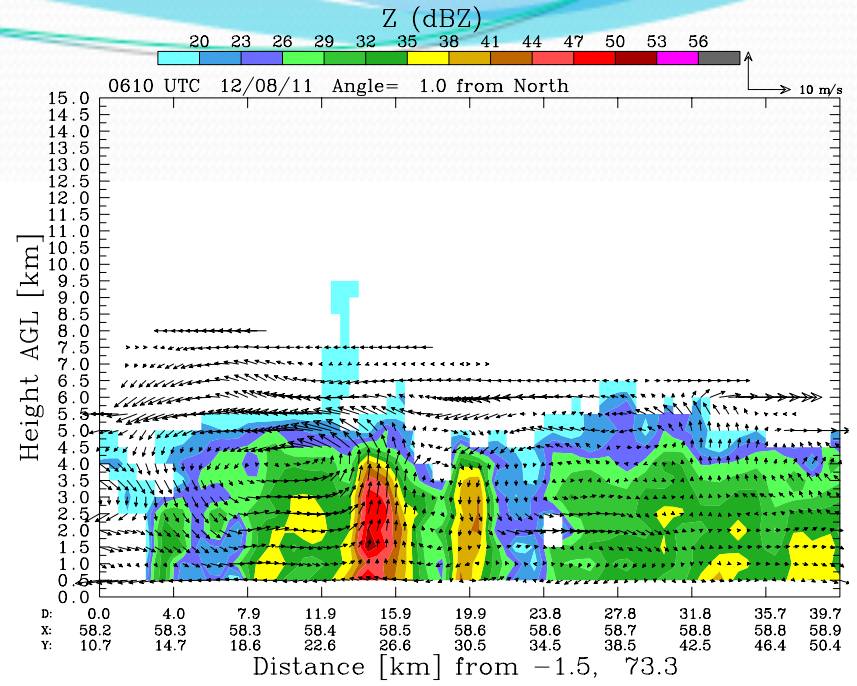
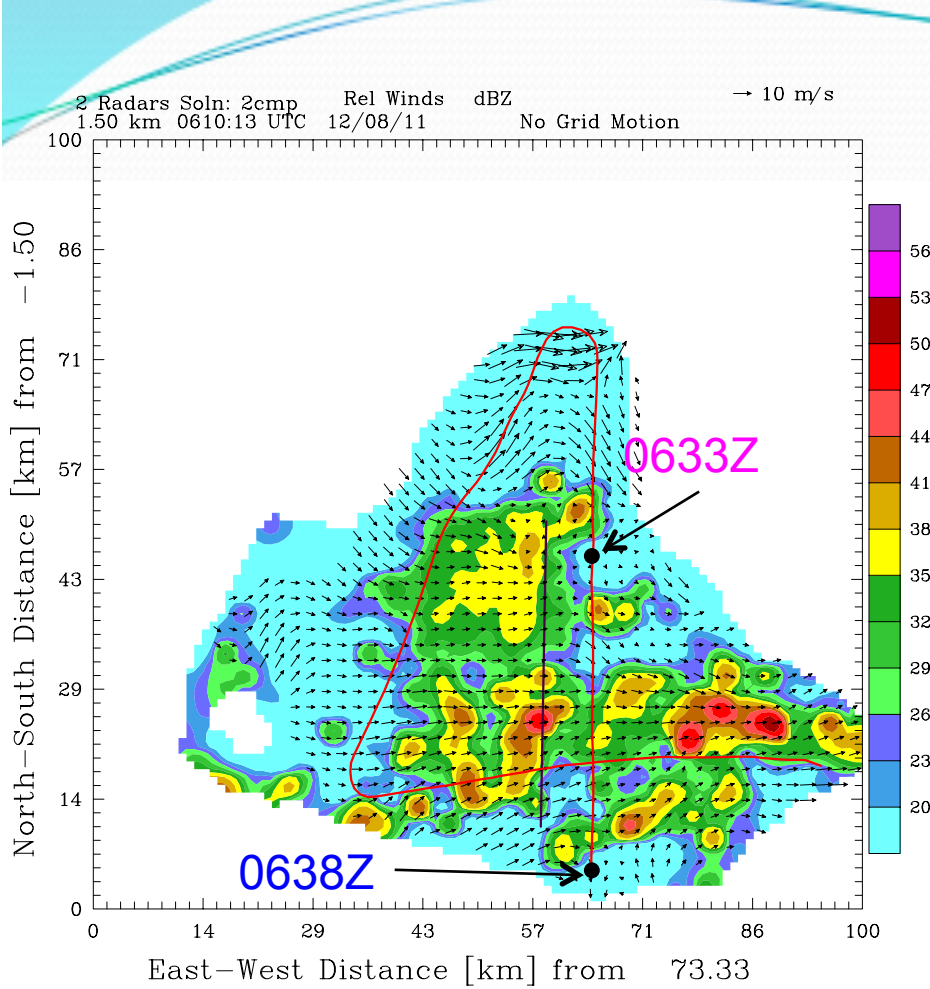
Nov 24-Active Phase Band 2nd RCE



Red line: Aircraft track
Black line: Vertical cross section

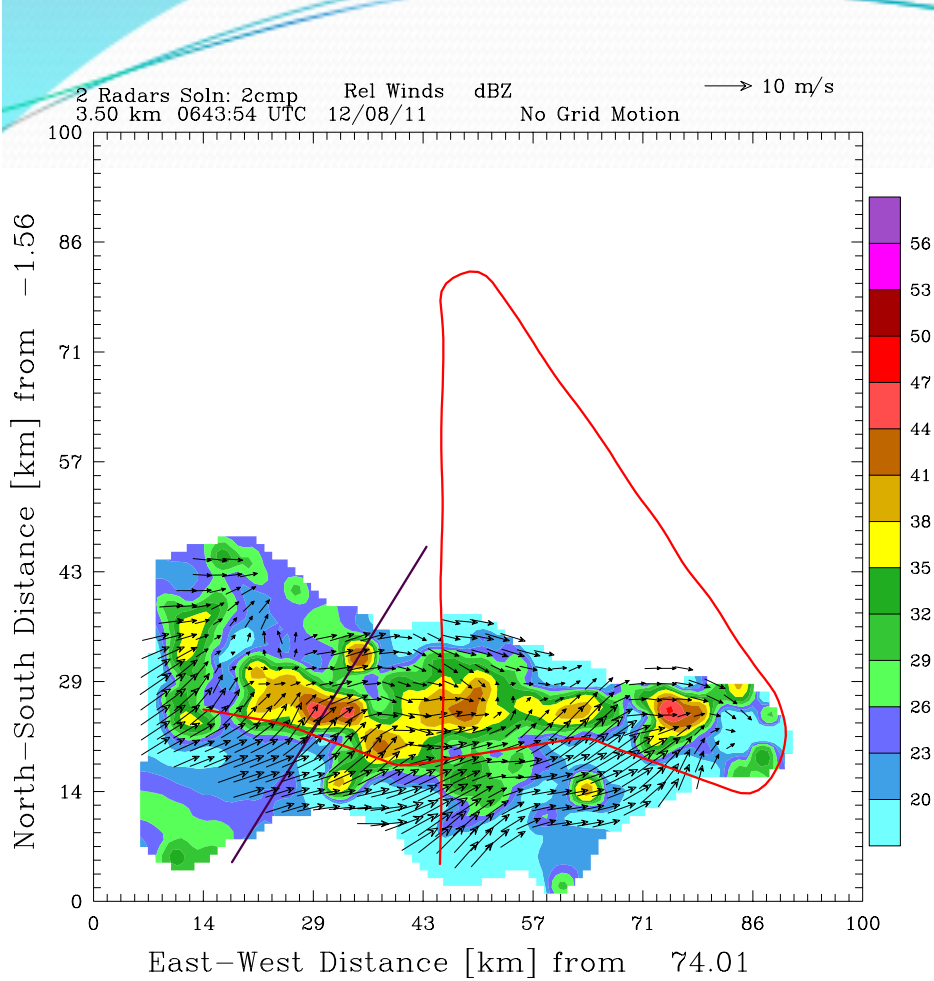


Dec 8–Isolated Band 1st RCE

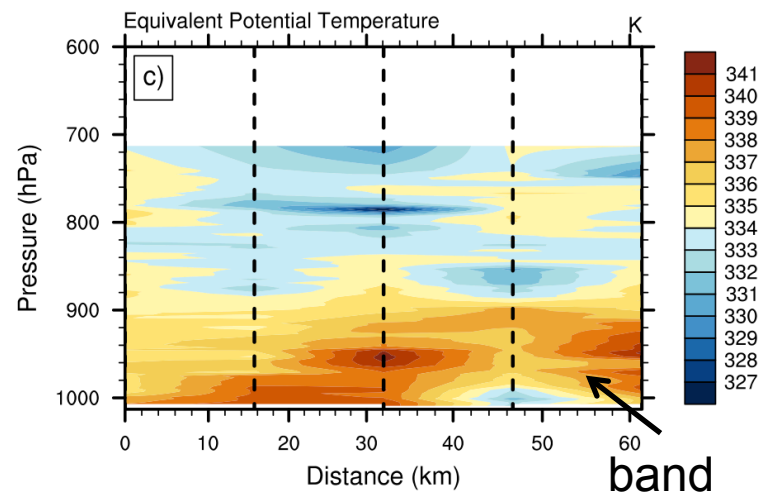
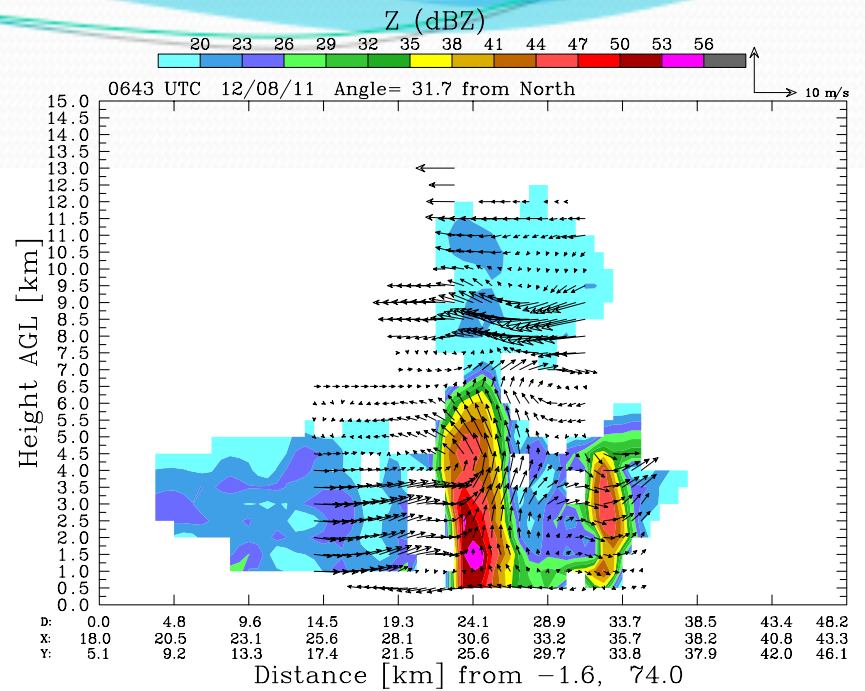


Red line: Aircraft track
Black line: Vertical cross section

Dec 8—Isolated Band 2nd RCE



Red line: Aircraft track
 Black line: Vertical cross section



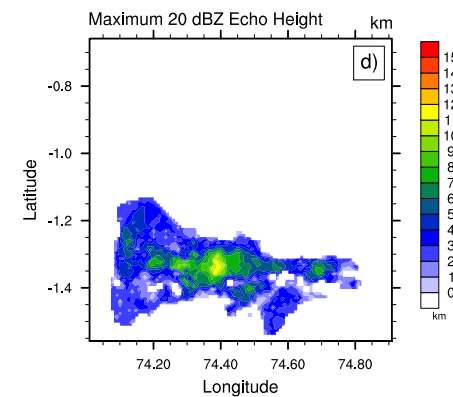
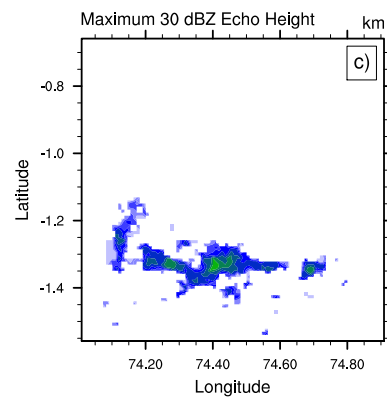
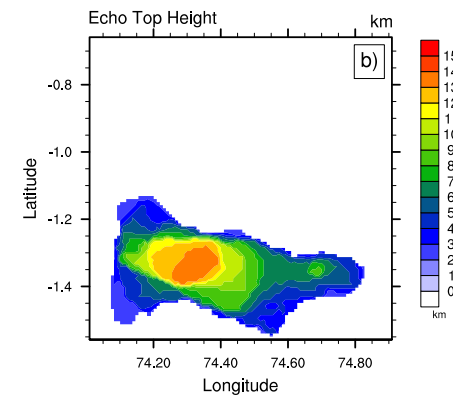
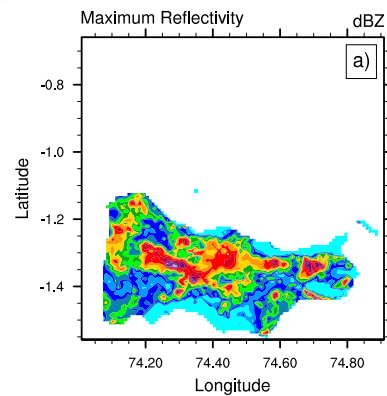
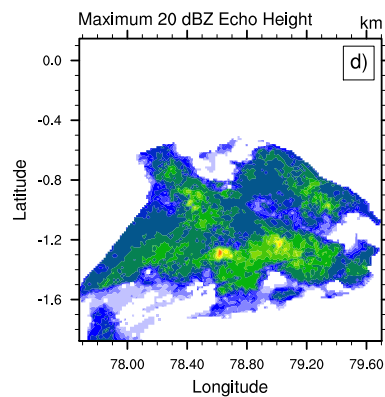
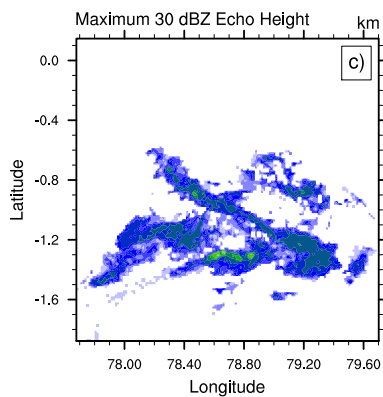
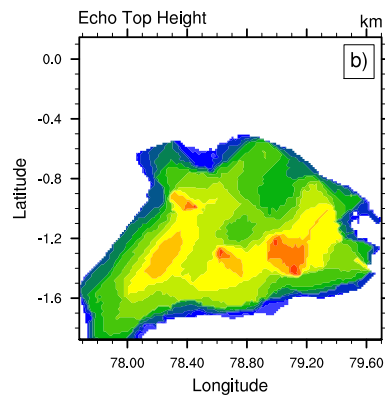
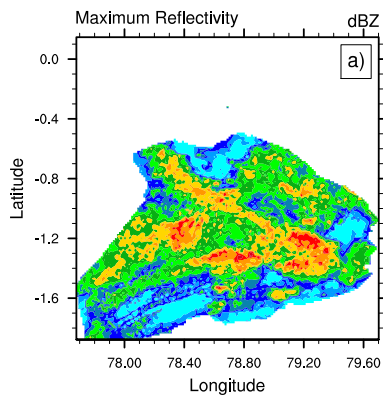
Echo Characteristics

Active Phase Nov 24 1st RCE

Suppressed Phase Dec 8 1st RCE

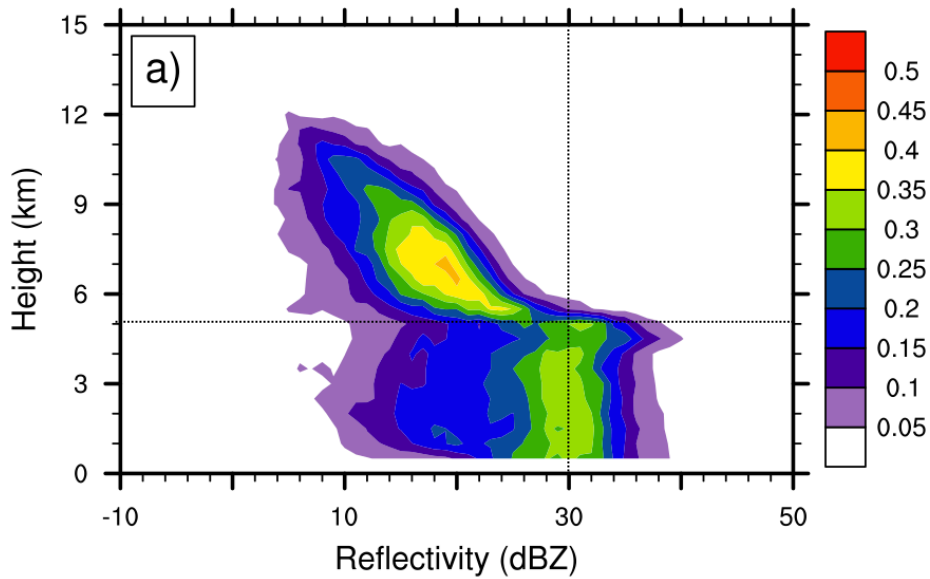
11/24/2011 0351-0456 UTC

12/08/2011 0643-0716 UTC

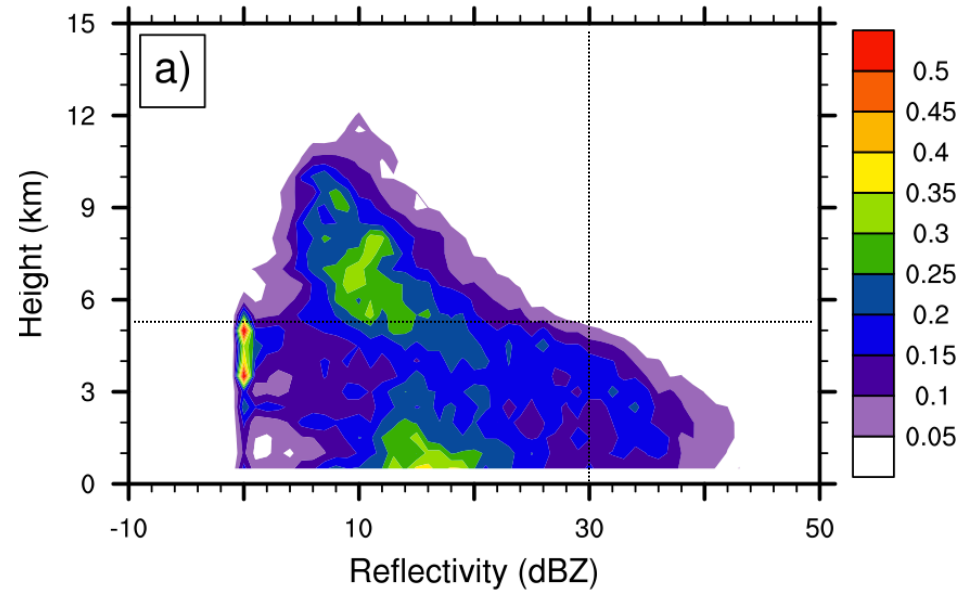


PDFs (freq of occurrence)

Active Phase Nov 24 1st RCE



Suppressed Phase Dec 8 1st RCE





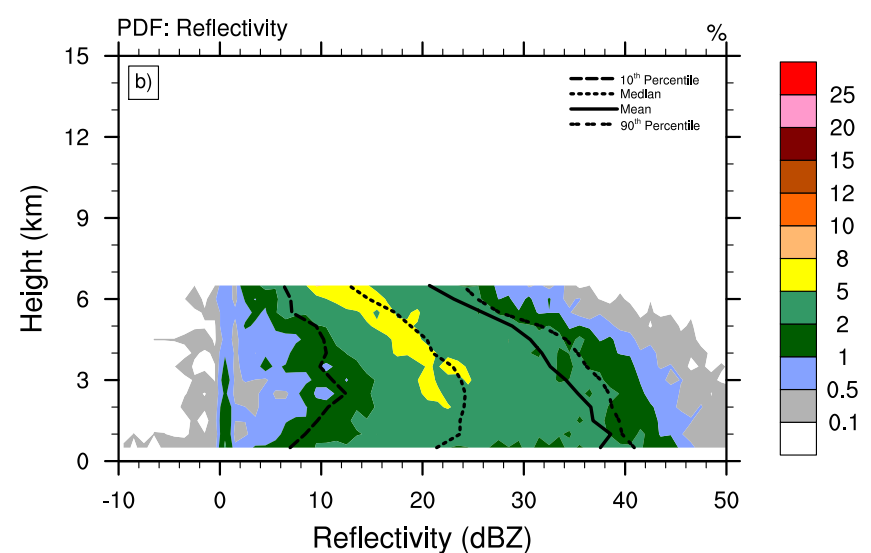
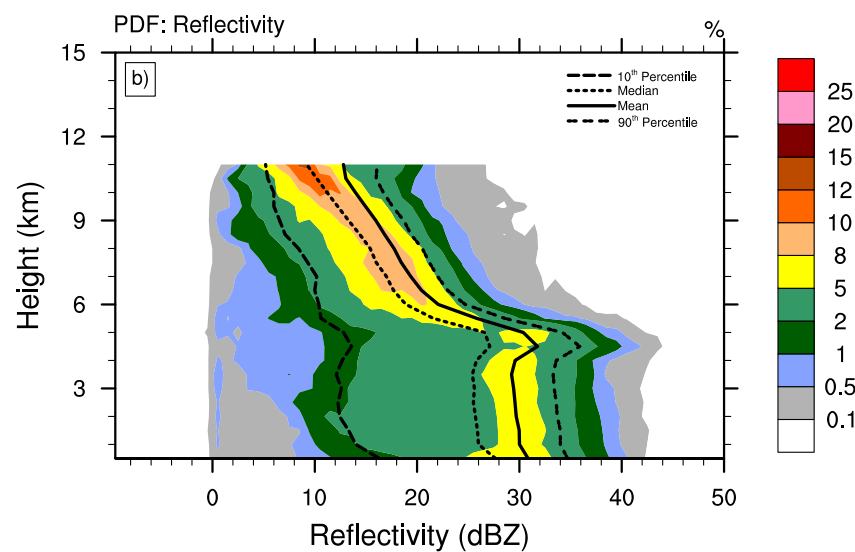
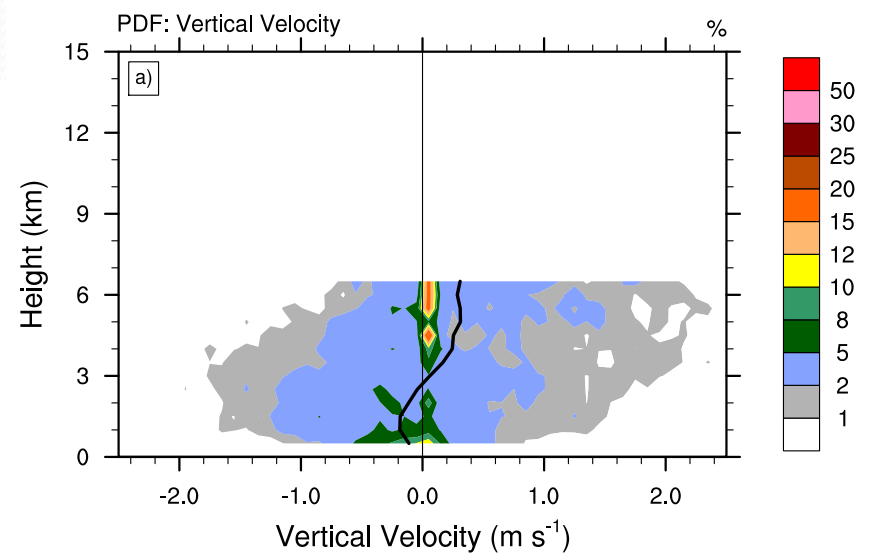
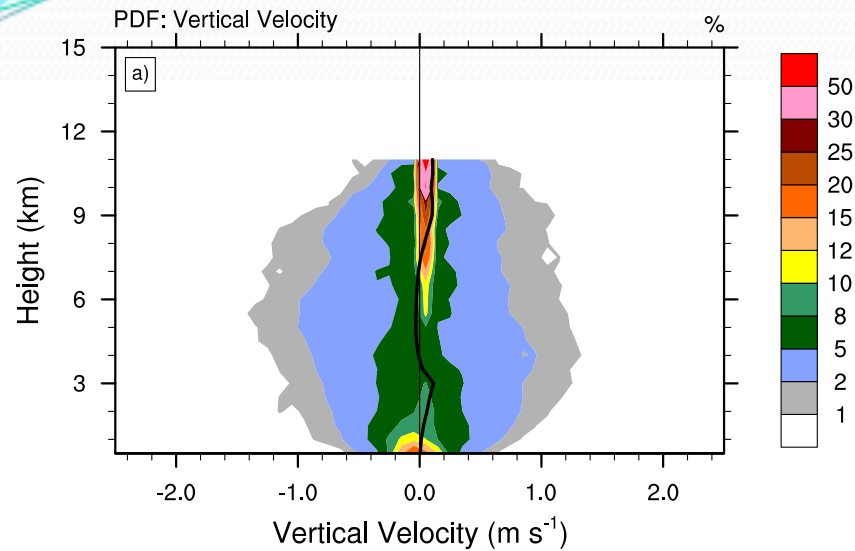
CFADs

Active Phase Nov 24 1st RCE

111124 0351-0456 UTC CFADs

Suppressed Phase Dec 8 1st RCE

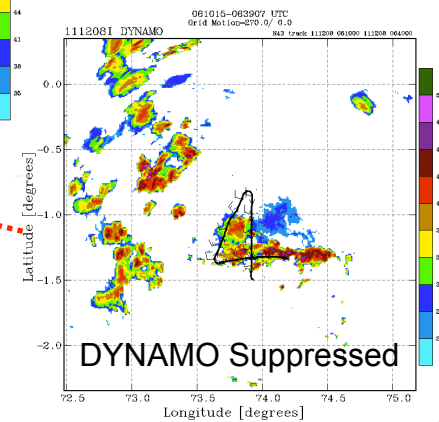
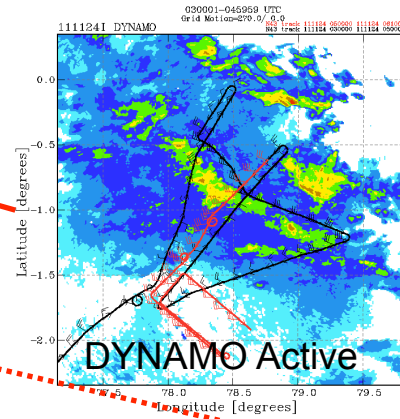
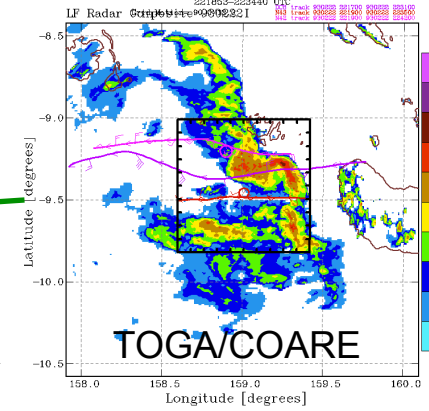
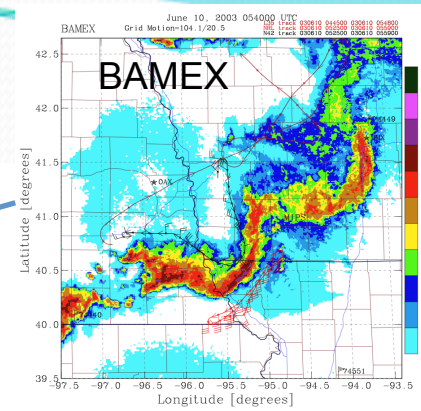
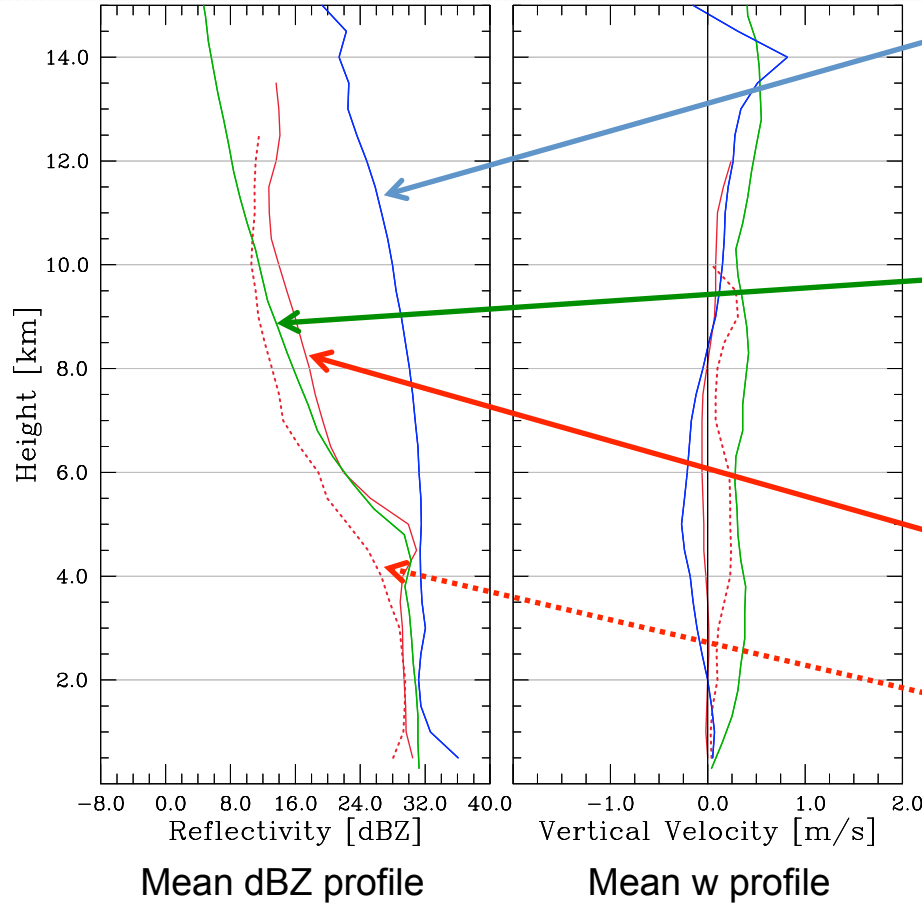
20111208 0643-0716 UTC CFADs





Comparison

BAMEX July 10 2003 0538 UTC
 TOGA Feb. 22 1993 2210 UTC
 DYNAMO Nov 24 2011 0630 UTC





Summary

- NOAA P-3 observations of convective systems during DYNAMO show (preliminary look):
 - Lack of extensive & organized low-level cold pools/strong low-level vertical wind shear (compared to other regions, regardless of MJO phase (i.e., cold pools localized to strong cells))
 - In particular, lack of “squall-line” archetype
 - Lack of mesoscale organization – convective cells go through life cycles ~60 min
 - Degree of stratiform precipitation and depth of convective cells distinguishes active from suppressed phases
- Why lack of strongly organized mesoscale systems?
 - Didn’t sample the overall population? Doubtful
 - Stronger equatorial westerlies usually more convectively suppressed



More Cases/Analysis

- At this afternoons Poster Session, see:
A13A. A13A. Atmospheric and Oceanic
Variability Associated With the MJO in the
Tropical Indian and Western Pacific Oceans III
Posters

1:40 PM - 6:00 PM; Hall A-C (Moscone South)

A13A-0210. Aircraft Measurements of Convective
System Vertical Structure and Cold Pools during the
DYNAMO Project

Nick Guy; David P. Jorgensen; Shuyi S. Chen; Qing
Wang