Marine ARM GPCI* Investigation of Clouds (MAGIC)
Overview of MAGIC Radiosondes to Date
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• ~210 Radiosondes, during 2012, over 14 one-way legs
• Launched approximately every 6 hours

High Success Rate!!

*GPCI = GCSS Pacific Cross-section Intercomparison, a working group of GCSS
Convective Available Potential Energy (CAPE) and Convective Inhibition (CIN)

**CAPE:** positive buoyancy of an air parcel. It is an indicator of atmospheric instability

\[
\text{CAPE} = \left( \sum_{\text{LFC}}^{\text{EL}} \left[ \frac{(\Theta_p - \Theta_v)}{(\Theta_v)} \right] g \right) \Delta Z
\]

**CIN:** negative buoyancy of an air parcel

\[
\text{CIN} = \left( \sum_{\text{Sfc}}^{\text{LFC}} \left[ \frac{(\Theta_p - \Theta_v)}{(\Theta_v)} \right] g \right) \Delta Z
\]

Ours is a surface-based CAPE: the surface is defined as the maximum virtual temperature within the first km.

**Skew-T Plot From Leg 07B**

- EL: 356.06 mb, 8.35 km
- LFC: 569.32 mb, 4.80 km
- LCL: 902.39 mb, 0.99 km
- *SFC: 1011.80 mb, 0.00 km, 26.33 C
- MLH: 855.50 mb, 1.44 km
- Liu-Liang: 985.47 mb, 0.23 km, Neutral

Environmental
Dewpoint
Parcel Path

CAPE: 231.30 J/kg
CIN: -303.73 J/kg

* surface from which to raise parcel
Convective Available Potential Energy (CAPE) and Convective Inhibition (CIN)
For now, using a simple method: $\theta_{700\text{mb}} - \theta_{\text{surface}}$
Method is based on potential temperature lapse rate.
Thank you!!

Soundings: MAG 2012 Leg 05B
Generated: Fri Feb 8 20:01:47 2013

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