Improvements and Changes to the Merged Sounding VAP

David Troyan and Mike Jensen, BNL
Jim Mather and Sally McFarlane, PNNL
Eli Mlawer and Jennifer Delamere, AER, Inc.

Mark Miller, Rutger University
Dave Turner, University of Wisconsin
Jay Mace, University of Utah

What is Merged Sounding?

Merged Sounding is a Value Added Product that represents the thermodynamic atmospheric profile at one-minute intervals. It incorporates radiosonde, ECMWF, MWR, and surface data to create profiles from ground level to 20 km AGL.

Merged Sounding Data Availability

Two versions of Merged Sounding exist. The original version is continuing to be run for all permanent sites; the second version is in development but has been run for Point Reyes and Niamey. Merged Sounding has been run for each site for the following times:

<table>
<thead>
<tr>
<th>Site</th>
<th>Version I (Original)</th>
<th>Version II (Beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGP</td>
<td>2000 - 2005</td>
<td>PYE: 4/20/05 - 9/15/05</td>
</tr>
<tr>
<td>NSA</td>
<td>2004 - 2007</td>
<td>NIM: 1/10/06 - 1/7/07</td>
</tr>
<tr>
<td>TWP Manus:</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>TWP Nauru:</td>
<td>2004 - 2006</td>
<td></td>
</tr>
<tr>
<td>TWP Darwin:</td>
<td>2002 - 2006</td>
<td></td>
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</tbody>
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New Features of Version II

The following changes to the original version have been incorporated into a beta edition of Version II:

1. Altitude extends to 60 km (instead of 20 km) AGL. This increases the number of height levels from 266 to 315. The basis for this change is that typical ECMWF height exceeds 60 km AGL.
2. ECMWF temperature has been adjusted at altitudes between 100 mb and 1 mb. The basis of this change is DY Wang et al., 2005.
3. Radiosonde Dry-Bias correction has been implemented. This correction applies to the dry-bias adjustments for Vaisala RS-92 Radiosondes. See T Hume and L Miloshevich, 2007 and H. Vomel et al., 2007.

Comparisons between Merged Sounding and Other Thermodynamic Profile PI Products

Mixing Ratio (g/kg) Differences

Temperature (C) Differences

Key: Blue -- Median; Red -- 25th and 75th Percentile; Black -- 10th and 90th Percentile

- **Sondes Daily Launches:** 4 at Darwin, 2 each at Nauru and Manus, 4-6 at SGP.
- **Merged Sounding is Drier:** at low levels compared to Mace and Mather at Nauru.
- **Merged Sounding is Moister:** at low levels compared to Mather at Manus & Darwin.
- **Merged Sounding is Cooler:** at high levels compared to Mather at Nauru & Manus.