Proposed SAMOS on the RV Apalachee

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Introduction

In fall 2014, the Center for Ocean-Atmospheric Prediction Studies (COAPS) at the Florida State University (FSU) proposed to purchase and install an automated meteorological instrument suite that would meet SAMOS accuracy requirements on the RV Apalachee.

• The RV Apalachee is a 65’ vessel operated by the Coastal and Marine Laboratory at FSU.
• The proposed instrumentation will be interfaced with a PC running NOAA’s Scientific Computer System data acquisition software.
• Instrument suite is representative of an automated weather system that is capable of providing observations at the sampling rates and accuracies desired by the SAMOS user community.
• The proposed system will provide FSU with an operational vessel on which new SAMOS data protocols can be developed and tested.

SAMOS Accuracy Targets

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Accuracy Requirements</th>
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</thead>
<tbody>
<tr>
<td>Air Temperature &amp; Humidity</td>
<td>±0.01°C</td>
</tr>
<tr>
<td>Atmospheric Pressure</td>
<td>±0.01 kPa</td>
</tr>
<tr>
<td>Wind Speed and Direction</td>
<td>±5%</td>
</tr>
<tr>
<td>Precipitation</td>
<td>±5%</td>
</tr>
<tr>
<td>Shortwave (SPP) and Longwave Radiation (PIR)</td>
<td>±2%</td>
</tr>
<tr>
<td>Photosynthetically Active Radiation (PAR)</td>
<td>±5%</td>
</tr>
</tbody>
</table>

For more information on the RV Apalachee, visit: http://www.marinelab.fsu.edu/marineops/rvapalachee
Or contact: Jon Schneiderman
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Acknowledgments

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Proposed Instrumentation

Atmospheric Radiation

• Shortwave (SPP) and Longwave Radiation (PIR) will be interfaced using an RMRCo RAD interface (http://www.rmrco.com/prod/rdai/).
• Photosynthetically Active Radiation (PAR) will be from a Licor quantum sensor.
• SAMOS plans to work with RMRCo to interface the PAR with the RAD.

Other Suggested Sensors

• Wind Speed and Direction: Sonic – RM Young 85000 (2-D), 81000 (3-D), Mechanical – RM Young Marine Wind Monitor (05106)
• Air temperature and Humidity – Meeting T and RH targets is hard!
• Atmospheric Pressure – Paroscientific (very accurate, but expensive)
• Precipitation – Optical Rain Gauge (limited experience)
• SW and LW Radiation – Kipp & Zonen SMP3 Pyranometer, CGR4 Pyrgeometer
• PAR – Biospherical makes similar sensors

Instrumentation Costs

The estimated cost of the proposed sensor suite (without redundancy) in U. S. dollars is $14,450.

• Rain Gauge – $1,100
• Sonic Anemometer – $1,500
• Thermometer/Hygrometer w/ shield – $500
• Barometer w/ Gill port – $700
• RAD (including SPP and PIR) – $10,000
• PAR – $650