Radiatively Important Parameters Best Estimate (RIPBE) VAP

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Introduction

The radiatively important parameters best estimate (RIPBE) product will combine all radiatively important parameters (water vapor, ozone, trace gases, surface albedo, aerosol and cloud properties) required to run a radiation code on a uniform vertical and temporal grid.

Each variable will also include quality control (QC) and data source information. Cloud parameters are designated as 'critical' to the radiative transfer; for other parameters missing values will be replaced by interpolated, climatological, or fixed values.

RIPBE will serve multiple functions for the ARM community:

   * It will provide a set of clearly defined, commonly gridded inputs for the Broadband Heating Rate Profile (BBHRP) project.

   * It will facilitate the use of BBHRP as a retrieval development testbed by providing a vehicle for swapping input parameters.

   * It will be a complement to the Climate Modeling Best Estimate (CMBE) VAP and will provide a significantly expanded set of parameters for model evaluation in a showcase dataset.

RIPBE FlowChart
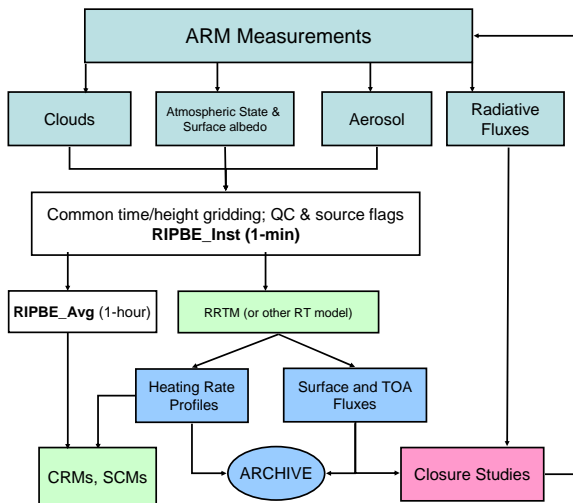
Current Version

• All variables exist in RIPBE file
• Implemented generic gridding and interpolation procedure
• Implemented detailed 2-D bit-packed qc information for all variables
• 1 year (3/2005- 2/2006) run at SGP
• Initial version of BBHRP interface developed

Work in Progress

• Implement new version of MicroBase with enhanced qc flags
• Add 1-D summary qc flags
• Implement v2 of MergedSounding (includes heights up to 60 km)
• Determine appropriate climatological values for aerosol properties
• Develop averaged output file for modelers

Inputs

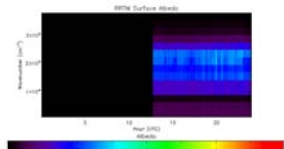All inputs are sampled, interpolated, or averaged onto a common time-height grid

• **Atmospheric state:**
  • Temp/water vapor profiles from Merged Sounding
  • Ozone column from TOMS or OMI; standard profile
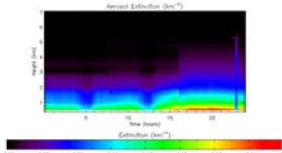 • Column values of trace gases
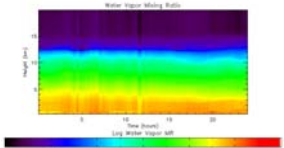
• **Surface Albedo:**
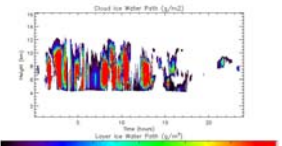 •Band-averaged values of surface albedo from SfcSpecAlbedo

• **Aerosol:**
  • AOD, extinction profile, asymmetry parameter, SSA at 500 nm from AerosolBestEstimate (ABE)
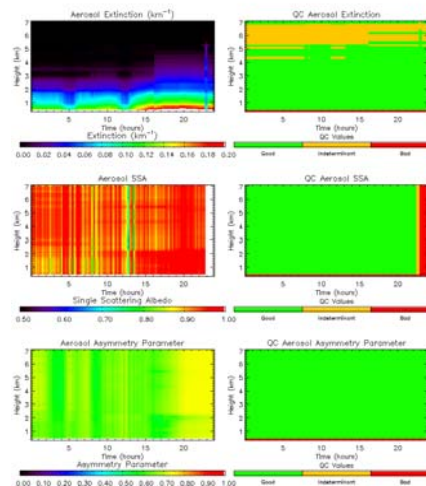 • Spectral values of extinction based on Angstrom parameter

• **Clouds:**
  • Phase, water content, particle size from MicroBase

QC and Source Flags

Quality control and data source flags included for every variable

Example QC flags for aerosol inputs:

•Extinction values less than zero - marked as indeterminant and set to zero

• Missing SSA (gap too long to be interpolated) - marked as bad

   • Currently set to zero

   • Will be set to climatology and source flag changed

• No aerosol values in lowest height bins; currently marked bad – need to redefine QC as not expected

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