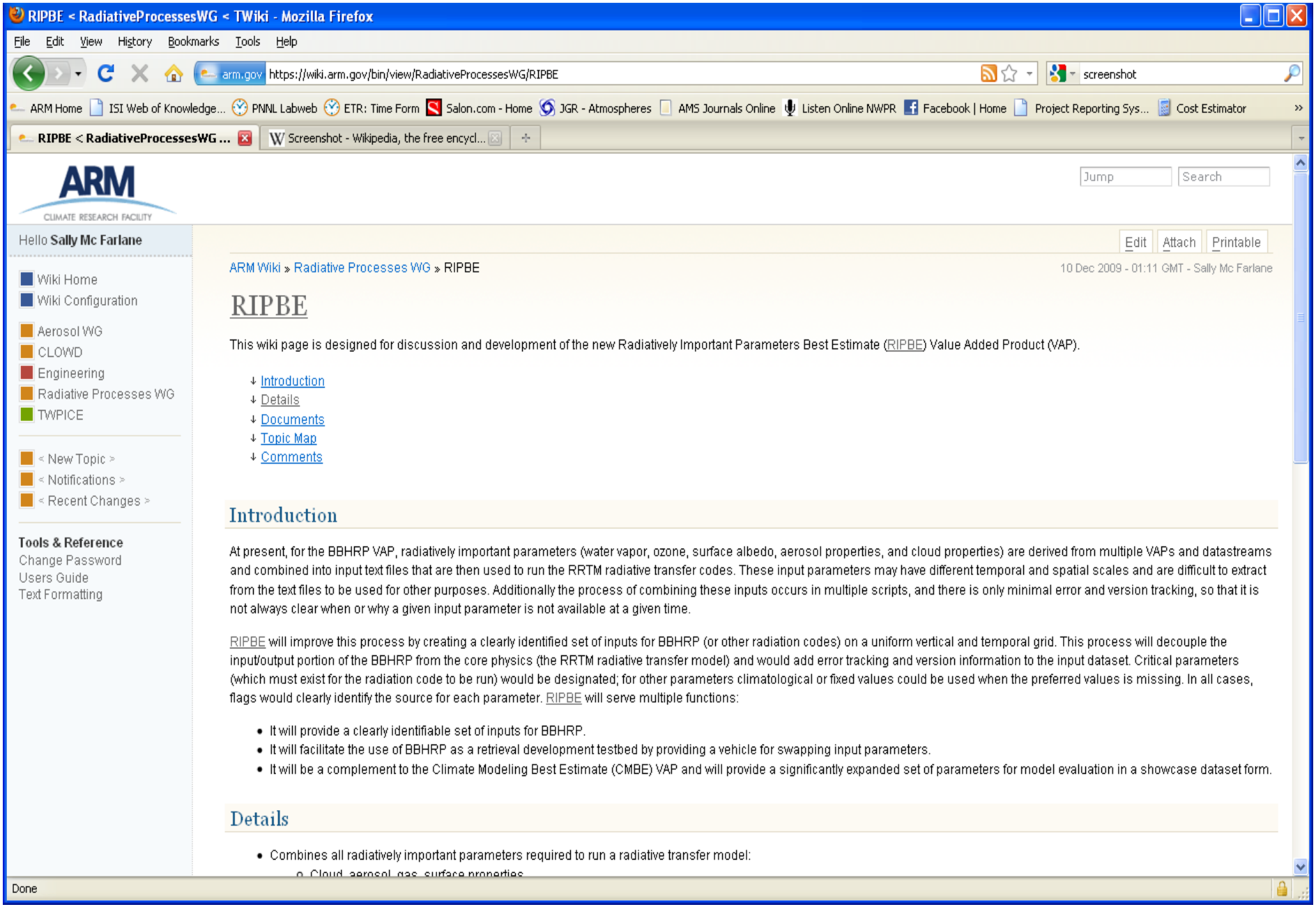
RIPBE Breakout Session

- Current Status
- Immediate Plans
- Future Plans
- Discussion

RIPBE Current Status

- Wiki page with example files and documentation https://wiki.arm.gov/bin/view/RadiativeProcessesWG/RIPBE
  - Contact me if you need access
- Generic gridding, interpolation tool developed
- Produced RIPBE files for one year at SGP
  - Initial implementation of detailed bit-packed QC
  - Global set of QC attributes for all variables indicate issues such as data interpolated (indeterminant); data filled with climatology (indeterminant); data outside min/max (bad)
  - Users will have to go to original data sources for more detailed QC information on why data is bad/missing
  - Need feedback on QC flags
- Initial RIPBE/BBHRP interface developed; needs analysis and qc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< Recent Changes >
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Change Password
Users Guide
Text Formatting
Edit
Attach
Printable
ARM Wiki » Radiative Processes WG » RIPBE
10 Dec 2009 - 01:11 GMT - Sally Mc Farlane
RIPBE
This wiki page is designed for discussion and development of the new Radiatively Important Parameters Best Estimate (RIPBE) Value Added Product (VAP).
Introduction
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Introduction
At present, for the BBHRP VAP, radiatively important parameters (water vapor, ozone, surface albedo, aerosol properties, and cloud properties) are derived from multiple VAPs and datastreams and combined into input text files that are then used to run the RRTM radiative transfer codes. These input parameters may have different temporal and spatial scales and are difficult to extract from the text files to be used for other purposes. Additionally the process of combining these inputs occurs in multiple scripts, and there is only minimal error and version tracking, so that it is not always clear when or why a given input parameter is not available at a given time.
RIPBE will improve this process by creating a clearly identified set of inputs for BBHRP (or other radiation codes) on a uniform vertical and temporal grid. This process will decouple the input/output portion of the BBHRP from the core physics (the RRTM radiative transfer model) and would add error tracking and version information to the input dataset. Critical parameters (which must exist for the radiation code to be run) would be designated; for other parameters climatological or fixed values could be used when the preferred values is missing. In all cases, flags would clearly identify the source for each parameter. RIPBE will serve multiple functions:
It will provide a clearly identifiable set of inputs for BBHRP.
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 form.
Details
Combines all radiatively important parameters required to run a radiative transfer model:
Done

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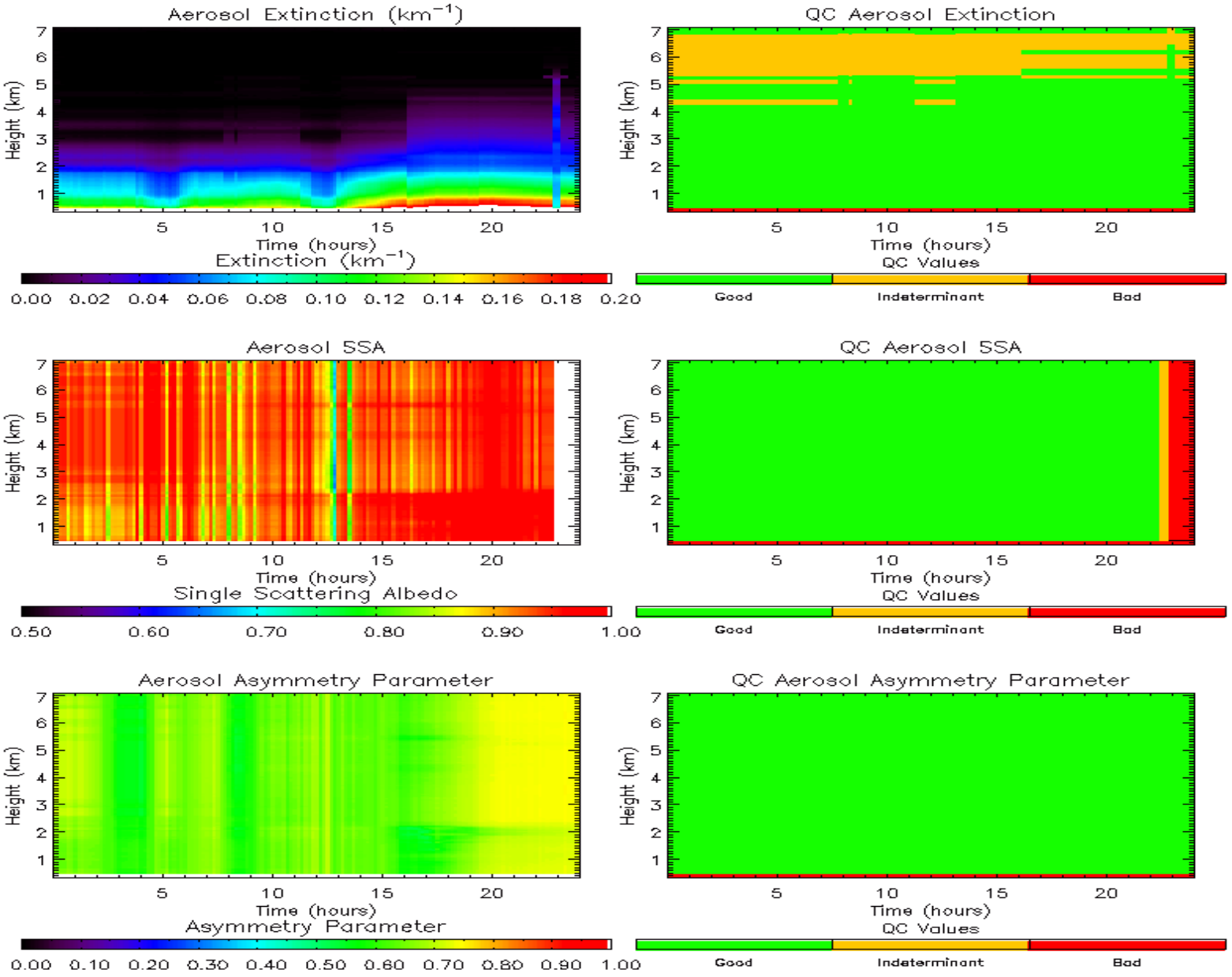
Aerosol Extinction (km^{-1})
Height (km)
Time (hours)
Extinction (km^{-1})
0.00 0.02 0.04 0.06 0.08 0.10 0.12 0.14 0.16 0.18 0.20
QC Aerosol Extinction
QC Values
Good
Indeterminant
Bad
Aerosol SSA
Single Scattering Albedo
0.50 0.60 0.70 0.80 0.90 1.00
QC Aerosol SSA
Aerosol Asymmetry Parameter
Asymmetry Parameter
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00
QC Aerosol Asymmetry Parameter

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RIPBE List of Variables

- Height, pressure, temperature on layers and levels
- Water vapor mixing ratio, RH (time, levels)
- Cloud LWP, IWP, reff, dge (time, layer)
- Angstrom, AOD_500 (time)
- Aerosol ext, ssa, asym at 500 nm (time,layer)
- Column ozone (time), Ozone mixing ratio (time,level)
- Band-averaged surface albedo (time,band) for RRTM, Fu-Liou, Edwards-Slingo, GCM 2-band
- Column CO2, CH4, N2O, CCl4, CFC11, CFC12 (time) [although only CO2 is currently time-varying]
- Lat, lon, site altitude
- QC and source flags for each variable

RIPBE Immediate Plans

- Determine/add appropriate fixed/climatological values for aerosol properties at SGP – Mar 19
- Implement new version of MicroBase with enhanced qc flags (precipitation min/max values); add density, TOA solar flux variables to file – Mar 26
- Implement & check detailed bit-packed qc information for all variables; implement 1D summary QC - Apr 9
- Implement v2 of MergedSounding (includes heights up to 60 km) - ??
- Provide RIPBE files and updated documentation on RIPBE Wiki site to focus group for comments – Apr 30
- Develop initial averaged output file for climate modelers and provide to focus group for comments – May 14

RIPBE Immediate Plans (Cont.)

- Revised RIPBE files (including climate model average) based on focus group comments; run for all available SGP data; place initial version in archive – July 2
- Complete RIPBE/BBHRP interface – run one year of BBHRP for analysis/problem checking – July 16
- Initial SGP RIPBE/BBHRP runs in archive – Aug 15
- Technical report – Aug 15

RIPBE Future Plans

- Expand to other sites
  - Prioritize?
- Currently no ABE at TWP, AMF sites
  - Do not include aerosol OR
  - AOD from MFRSR; fixed site-dependent aerosol profile/properties (who will provide these?)
- No SfcSpecAlbedo VAP at other sites
  - Extend SfcSpecAlb to NSA site
    - Analysis of effort required underway
  - At Nauru, use fixed oceanic albedo
  - At TWP, AMF sites, use measured broadband albedo
    - no spectral variation OR
    - fixed spectral shape based on surface type

RIPBE Discussion

- Any variables missing?
- QC flags & 1D Summary QC
- Details of average product for modelers
- Prioritization of future efforts
- Input from other WGs (especially aerosol properties)
- Testbed