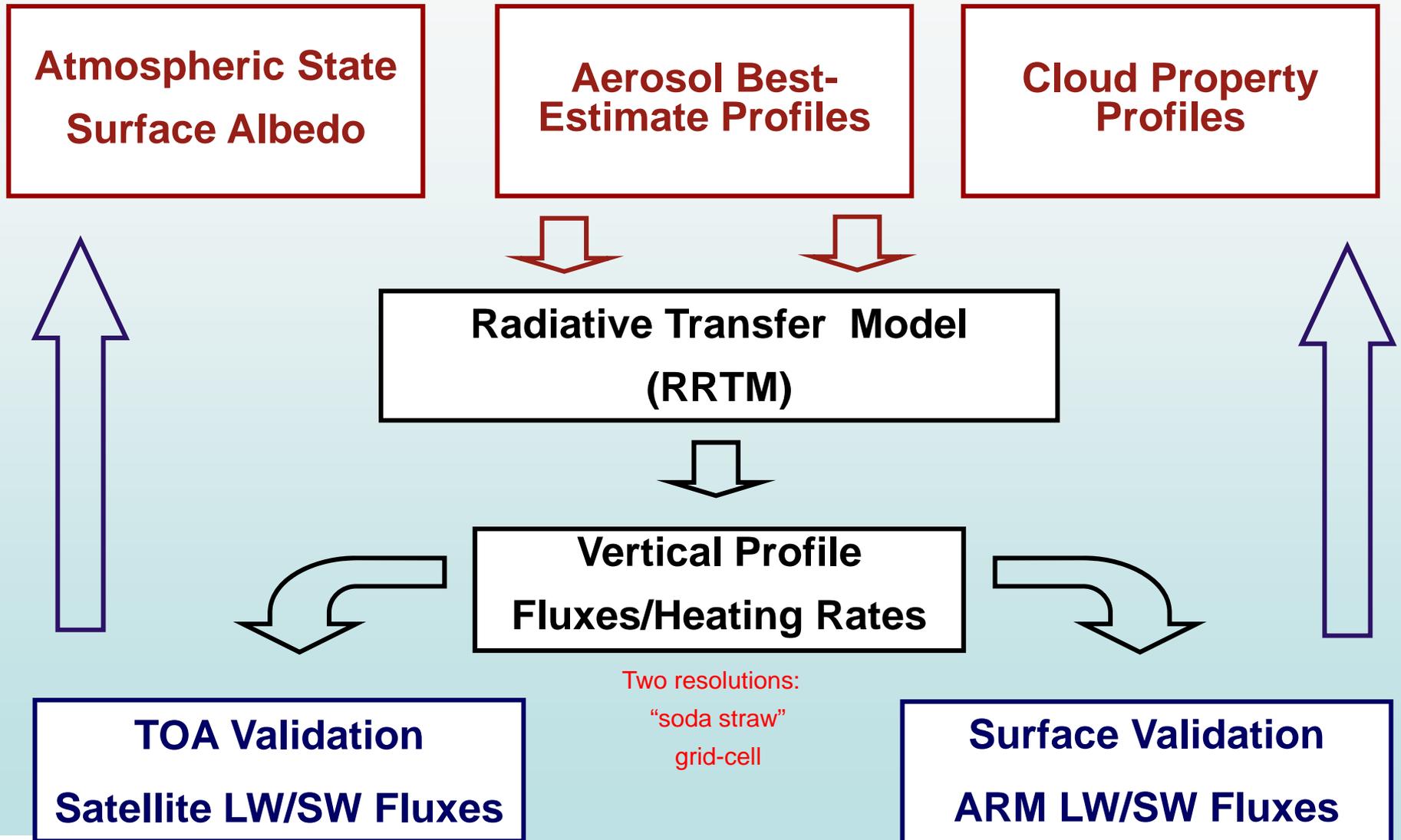


Status and Future Plans of BBHRP Related to Aerosols

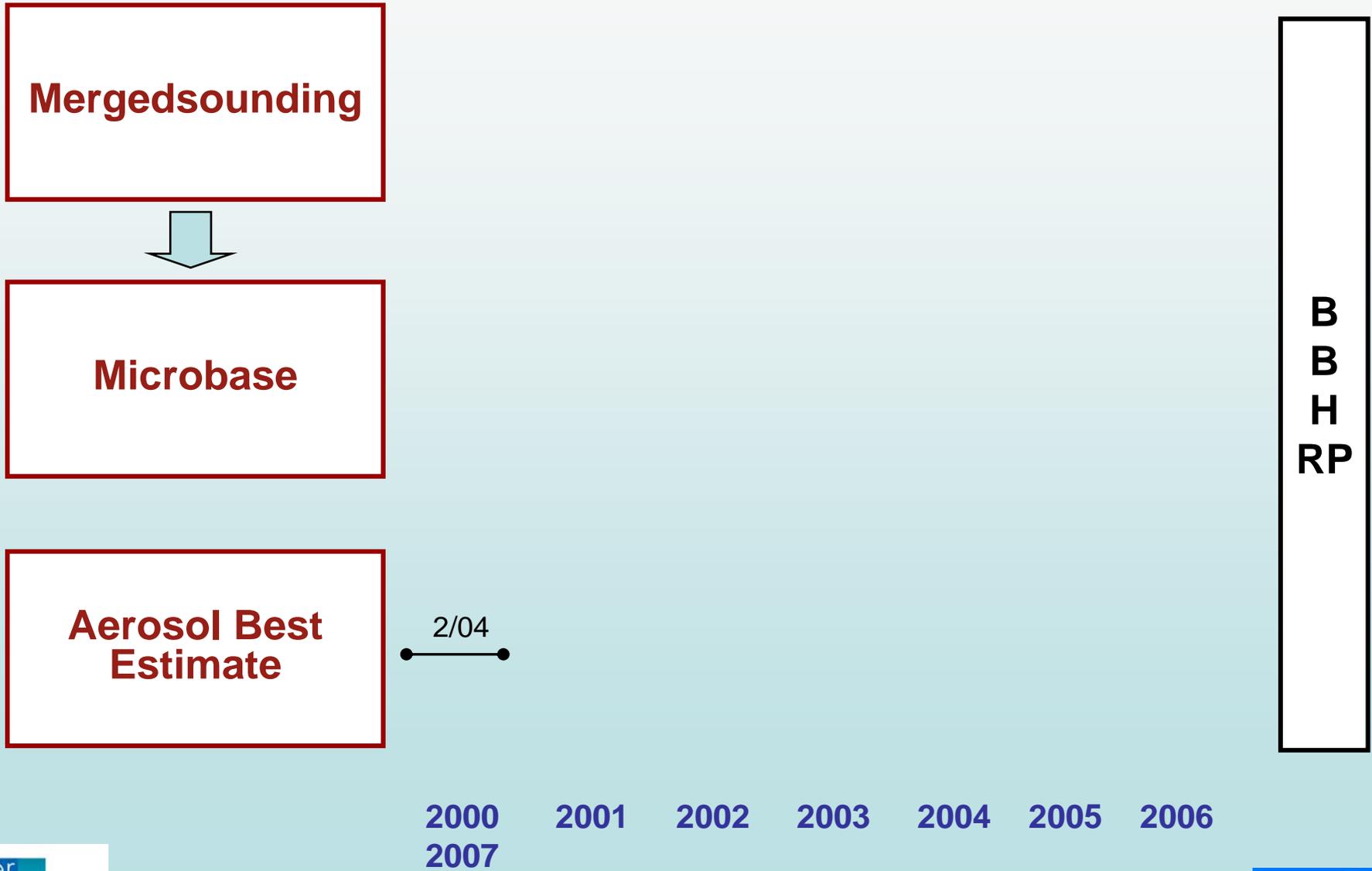


General BBHRP Outline



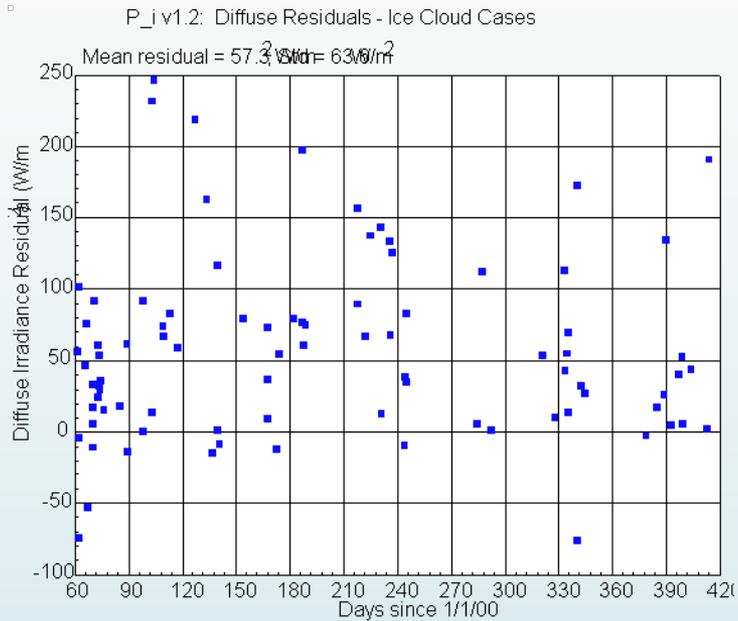
Two resolutions:
"soda straw"
grid-cell

SGP Status



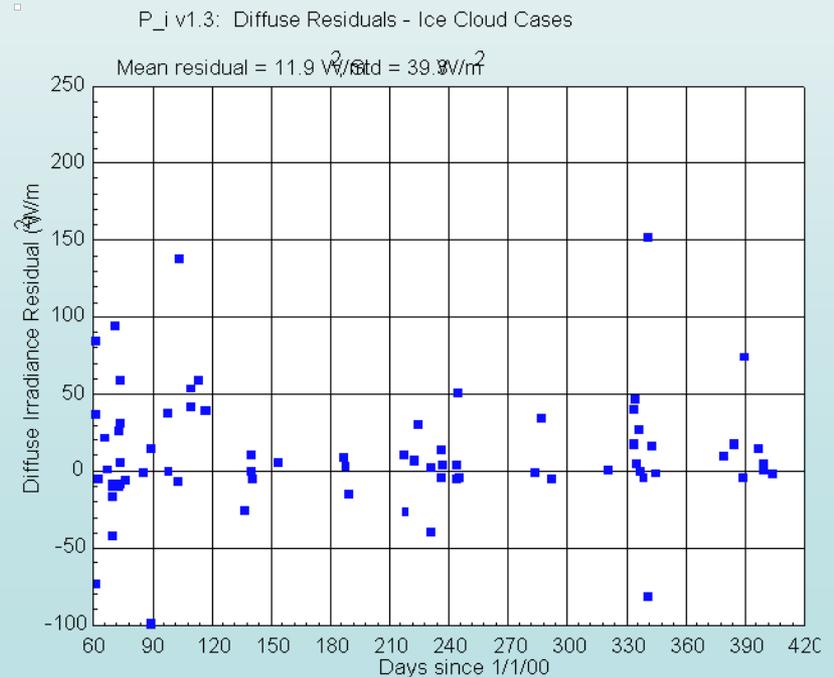
SGP ABE Version 1

- Objective: to provide profiles of aerosol extinction, single scatter albedo, and asymmetry parameter for all times and heights above the SGP site
- Goal: to use as few data streams as possible to provide 'background' fields that are always available
- Aerosol optical depths (most critical input from a radiative flux point of view) from MFRSR, RL, or derived from surface observations (order of priority)
- Single scatter albedo and asymmetry parameter derived from surface observations assuming that the dry submicron particle properties are constant with altitude above the site
- Future versions will incorporate conditional retrievals to improve accuracy of the product

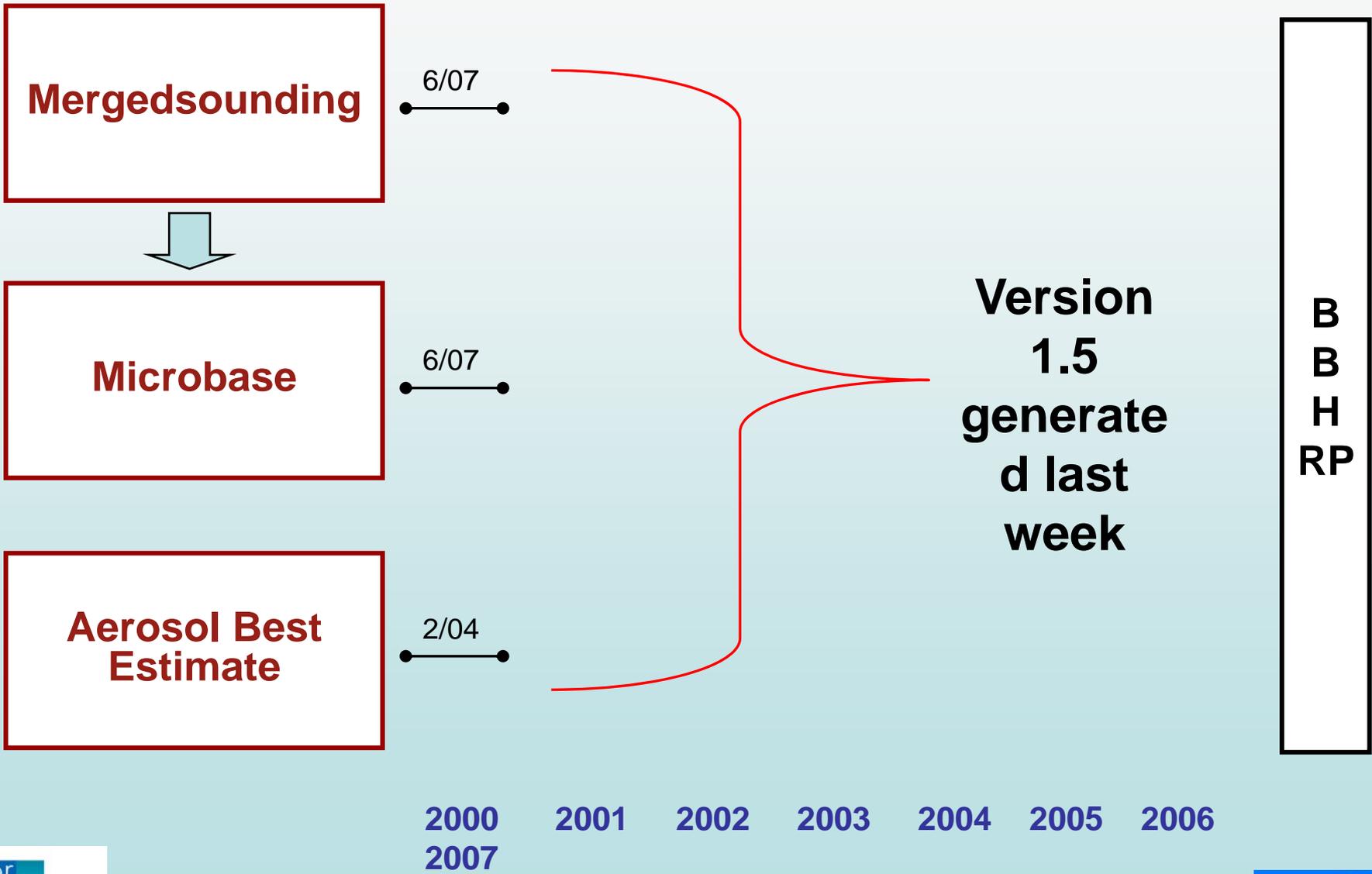


Anybody remember this slide?

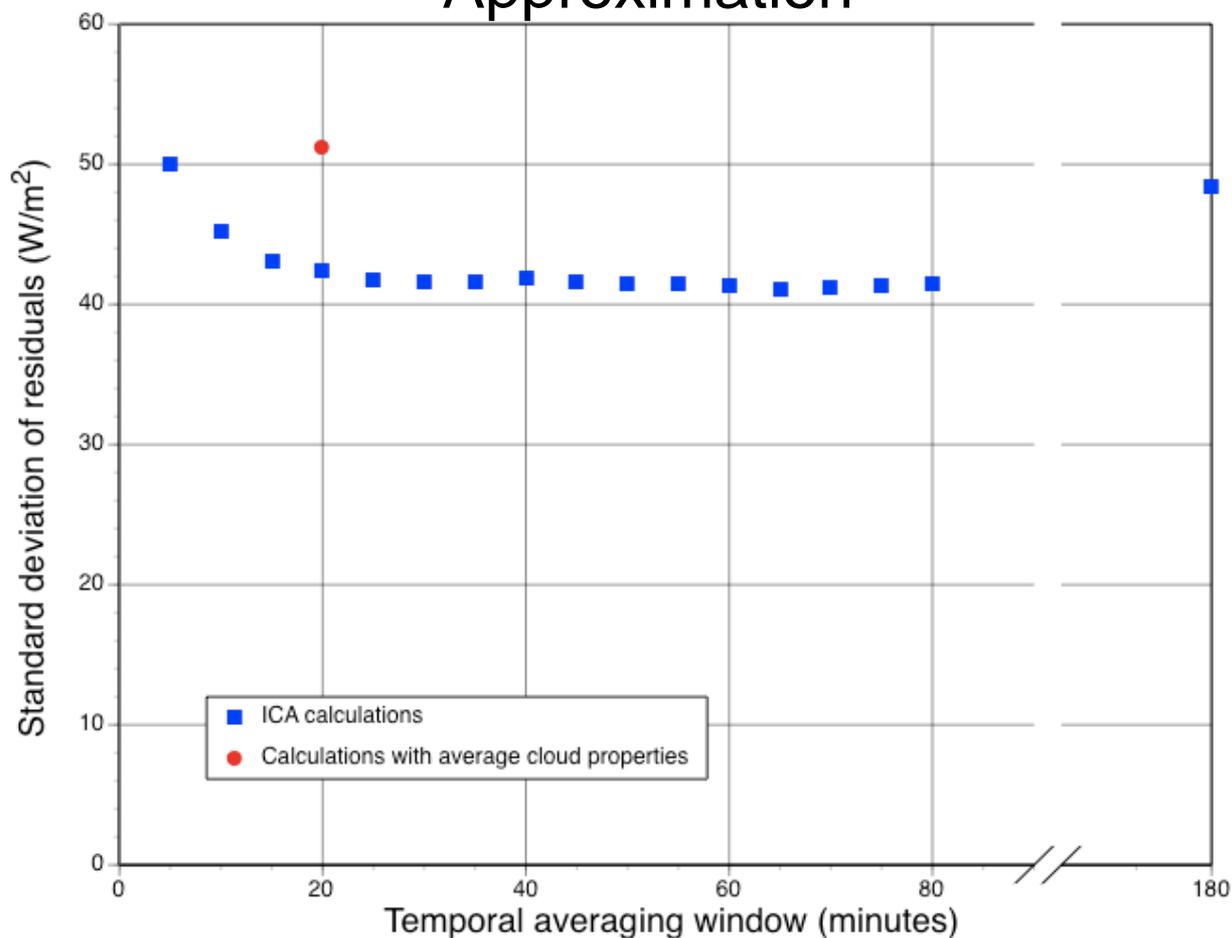
The Cloud Property Working Group thanks the Aerosol Working Group!



SGP Status

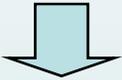


Averaging Cloud Properties vs. Averaging Calculations With Independent Column Approximation



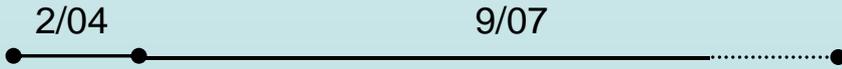
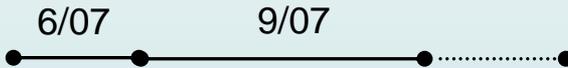
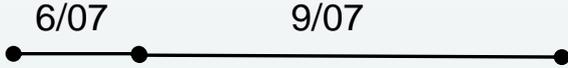
SGP Status

Merged sounding



Microbase

Aerosol Best Estimate



**B
B
H
RP**

2000 2001 2002 2003 2004 2005 2006
2007

NSA Status

Merged sounding



Microbase

Aerosol Best Estimate

**B
B
H
RP**

2/06



2004 2005 2006 2007

NSA Aerosol Best-Estimate VAP

- Aerosol OD at 500 nm, a key output field, is estimated from one of 4 sources:
 - NIMFR
 - MFRSR
 - Regression Analysis
 - Interpolation
- Angstrom exponent (**Used in BBHRP SW**)
- Single-scattering albedo and asymmetry parameter
 - Derived from surface measurement (**AOS system**)
 - Humidification of aerosol accounted for in vertical profile
- Key issue: **Missing Data**
 - For March 1, 2004 - October 31, 2004: **61%**

Summary:

The first version of the NSA ABE VAP has provided vertical profiles of aerosol extinction, single scatter albedo, asymmetry parameter, and aerosol optical depth at 500 nm. Output from this VAP from March 2004-Feb 2005 is currently being analyzed in the BBHRP framework. We foresee multiple improvements in this VAP in the future, including:

- Using a climatology file to provide the extinction profiles similar to the one used at SGP
- Scaling and flagging the extinction profile.
- Incorporation of better quality checks on mwrp data
- Incorporation of MPL profiles of aerosol extinction
- Investigating the adequacy of surface-derived profiles of ω_0 and g

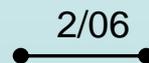
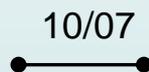
NSA Status

Merged sounding



Microbase

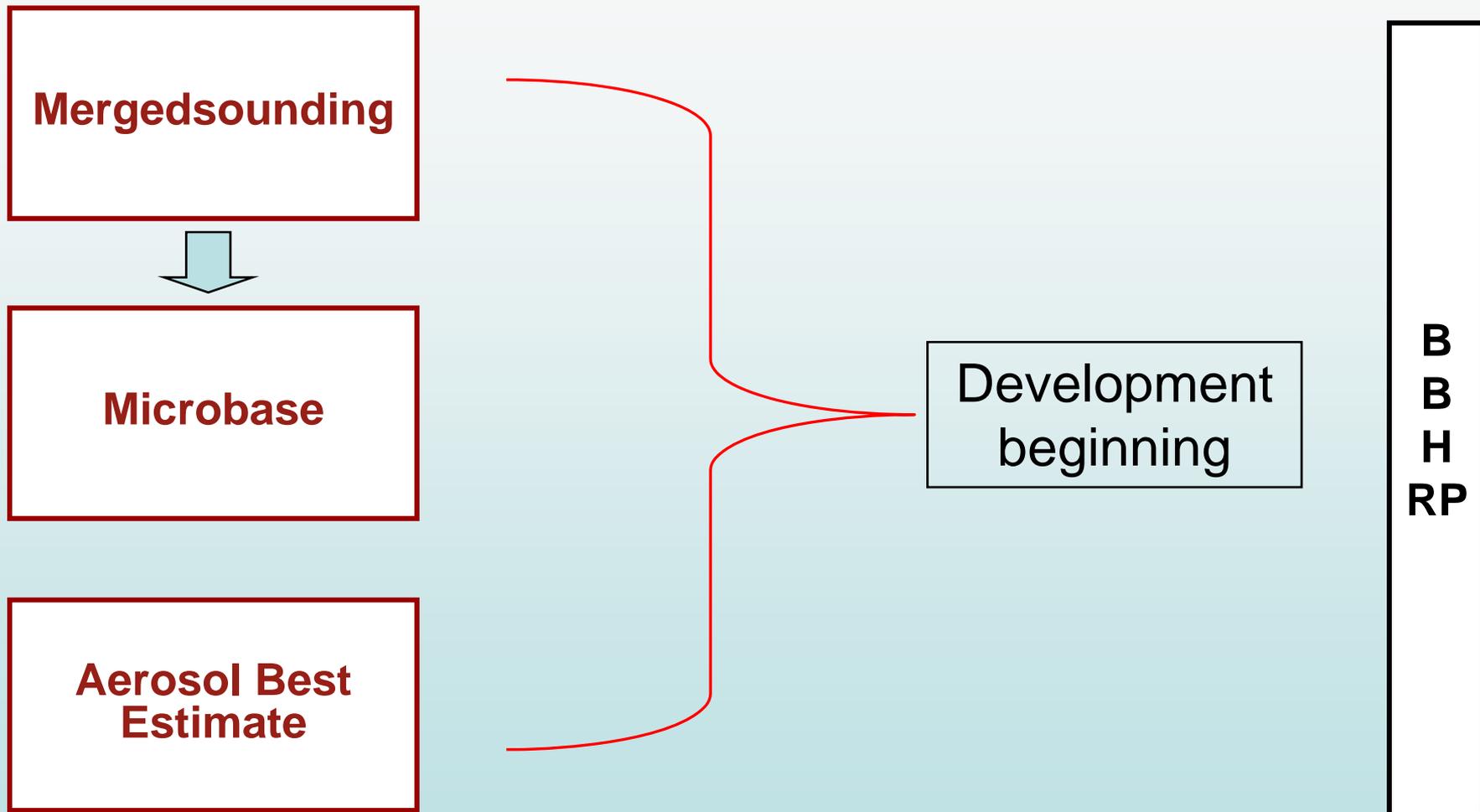
Aerosol Best Estimate



**B
B
H
RP**

2004 2005 2006 2007

TWP Status



2004? 2005 2006 2007

Vertical Profiles of Aerosol Optical Properties at the TWP sites for input to BBHRP

The current Aerosol Best-Estimate (ABE) product at **SGP** provides

- column AOD from MFRSR, RL, or regression from RH, PBL height, surf. aerosol prop.
- aerosol extinction profile from CARL climatology as a function of season and AOD
- SSA and g from humidified vertical profiles of dry aerosol prop. from AOS

The ABE at **NSA** lacks the CARL climatology for the extinction profile so it simply uses the humidified vertical profiles from the AOS to estimate the extinction as well.

At the **TWP**, we lack even the basic measurements of surface aerosol optical properties so we really need to explore alternatives. I'd like start this discussion by first compiling a list of available data sources - modeled or measured - that we can bring to bear on the problem. Here is a quick start. Please add detail or more items!

- * MFRSR AOD
- * MFRSR SSA and g during hemispheric clear skies (Kassianov)
- * MPL extinction profiles, uses MFRSR for calibration, could also use opaque low clouds as cal target.
- * Cimel at Nauru and Darwin an also provide SSA, g, size information
- * Satellite retrievals - anything here beyond AOD and surface albedo?
- * Model output?

This endeavor has the potential to become a quagmire so we need to limit the scope.
What is the minimum sort of data product that would be useful to BBHRP?

Evaluation of CLOWD Retrievals with BBHRP

Objectives

1. Use BBHRP to evaluate CLOWD retrievals
2. Develop BBHRP calculations for CPWG CLOWD simulations

Question:

Should this comparison begin with SGP or Point Reyes?

Location

Advantages

Disadvantages

SGP

VAP infrastructure present

CLOWD cases not common
CLOWD cases unidentified

PYE

Lots of CLOWD cases

No ABE
No Merged sounding
Radar issues/Microbase