

AeroSat

International Satellite Aerosol Science Network

Third Meeting

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Outcomes

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AeroSat-3 (2015) *Major Themes*

- *Satellite-Model* Interaction
- Constraining *Aerosol Type* with satellite data
- Combining *Multiple Data Sources* with models
- Deriving *Pixel-level Uncertainties*
- Producing *Long-term* satellite data records

AeroSat-3 (2015) *Major Themes*

- ***Satellite-Model*** Interaction

- ***Dust retrieval*** comparisons – include 10 micron data
- More satellite-model ***AOD comparisons*** needed
- Need to compare ***retrieval & model assumptions***
- Need better harmony between ***satellite simulators*** & data
- ***Constraining MIPs*** – use data for present,
inform past & future
- Need to highlight ***limitations of AERONET inversion*** data
- Need to make better use of ***Aerosol Precursor*** data
- User desire – ***consistent satellite data*** products
- User desire – ***CCN proxy***, including vertical distribution
- user desire – ***Pixel-level*** uncertainty

AeroSat-3 (2015) *Major Themes*

- Constraining *Aerosol Type* with satellite data
 - ESA's CCI project is working on *Product Harmonization*
 - Recognize *Two Approaches*, in some cases two **steps**:
retrieved optical properties & interpretive types
 - Advantages of integrating data from *Multiple Sources*
 - Need for much more *Validation Data*

AeroSat-3 (2015) *Major Themes*

- Combining *Multiple Data Sources* with models
 - Could *aerosol & cloud data* be combined in transition zone?
 - Combine *MODIS and CALIPSO* data into large data record?
 - Can *TRMM-like precipitation method* be used for aerosols?
 - *Data Assimilation* is one way to combine data

AeroSat-3 (2015) *Major Themes*

- Deriving *Pixel-level Uncertainties*
 - Required for *Aerosol Data Assimilation*
 - Top-down *Validation* & bottom-up *Uncertainty Propagation* are complementary approaches
 - Reported uncertainties themselves need to be *Validated*
 - Possible use of *Satellite + Model* to assess uncertainties

AeroSat-3 (2015) *Major Themes*

- Producing *Long-term* satellite data records
 - *MeteoSat* has data back to 1982
 - *AVHRR* has data back to 1979 (16 satellites)
 - Instrument *time-series overlap* required for cross-cal.
 - Early *Validation* difficult – use available ground-based obs.
 - Pre-AERONET validation ideas: solar dimming/brightening *pyranometers*; *MFRSR*, observatory *solar irradiance* obs.

AeroSat **GOALS** for this Meeting

- Encourage **greater participation** from Asian scientists
 - **Learn** about capabilities and interests
 - Identify possible **areas of coordination** & collaboration
- Characterizing Satellite **retrieval-result uncertainties**
 - **Modeling needs**, especially assimilation
 - **Possible approaches** & their limitations
- Challenges & Possibilities for contributing to **air quality** studies
 - Deriving **near-surface component, speciation**
 - Obtaining adequate **spatial & temporal resolution**
- Progress on **constraining and using aerosol type**
- Issues & advances in deriving **consistent long-term satellite climate data records**
- **Satellite retrieval - modeler interaction**