



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
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Summary of current and future aerosol retrieval activities in Helsinki (FMI& UHEL)

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AEROSAT constitution meeting
Hamburg
27 September 2013

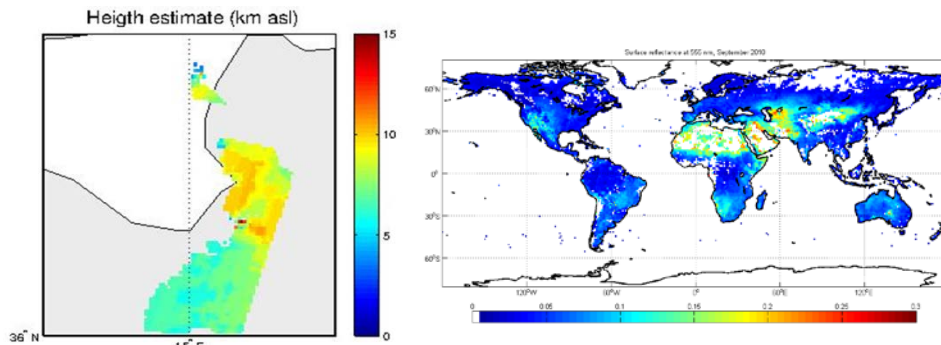
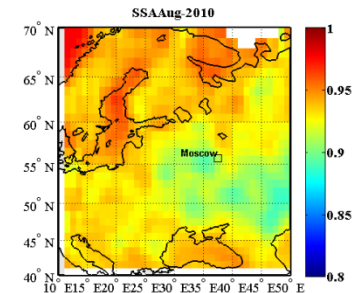
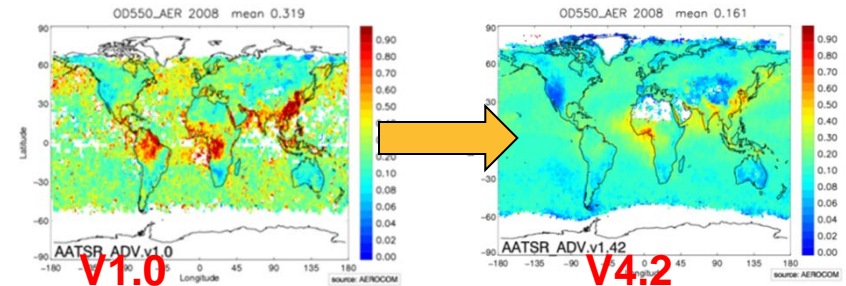


Current activities

Algorithm development

AATSR

- Dual view over land
- Single view over ocean
- Algorithm improvement (Aerosol-cci!)
- **Aerosol properties:**
 - $AOD(\lambda) > \text{\AA}$ ngström exp.
 - Mixing ratio
 - SSA
- **Emissions**
- **Volcanic Ash**
- **Surface reflectance**
- **Cloud properties (SACURA)**

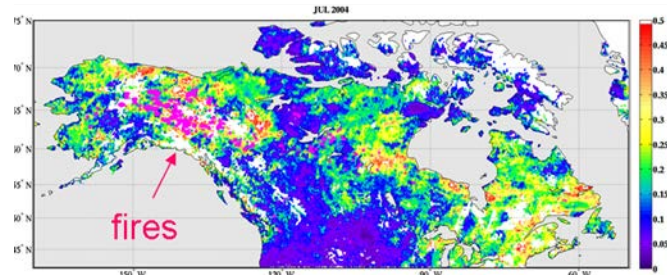
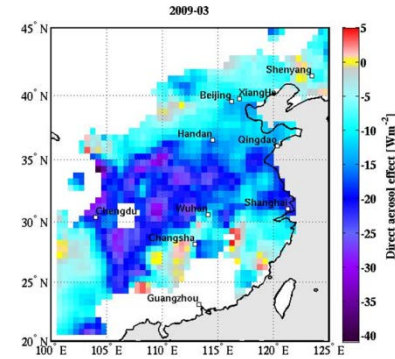
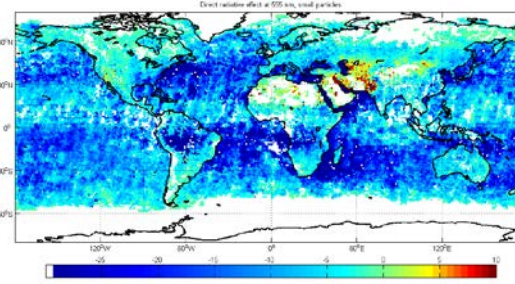




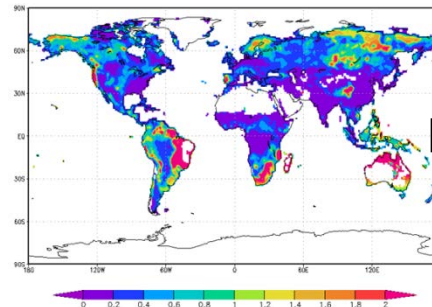
Current activities

Applications

- **Aerosol direct radiative effect:**
 - AATSR only (+ RTM)
 - MODIS & CERES
 - Limitations and assumptions
- **Aerosol & clouds over Boreal & Arctic**
 - Forest fires occurrence and effects
 - Arctic Haze
 - Transport & deposition
- **Proxies**



JJA



Improved sat prod
SO₂, NO₂, AOD
& understanding
CS vs AOD



Applications (2)

• EU (FP7)

- PEGASOS (Zeppelin campaigns): support & interpretation; validation & algo improvement
- MACC-II: NRT, input for data assimilation
- BACCHUS: aerosol / cloud interaction studies
- Marco Polo: emission China

• National projects

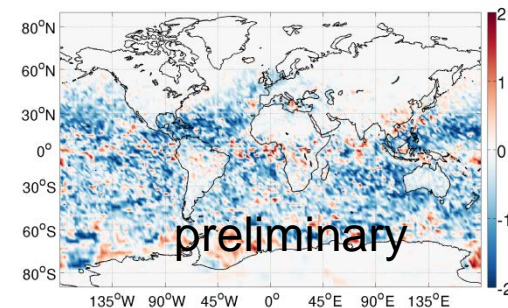
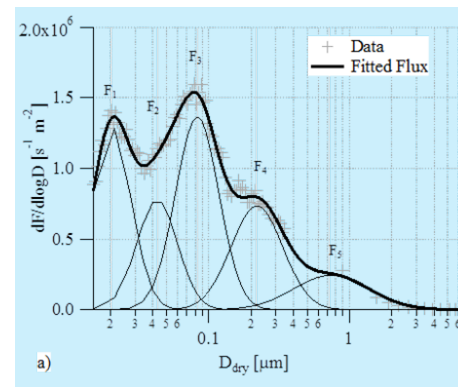
- Effects of BC on snow properties: reflectance, melt
- Aerosol-cloud interactions
- Antarctic research (ground-based)

• Nordic

- Cryosphere: aerosols, clouds, snow,

• ESA

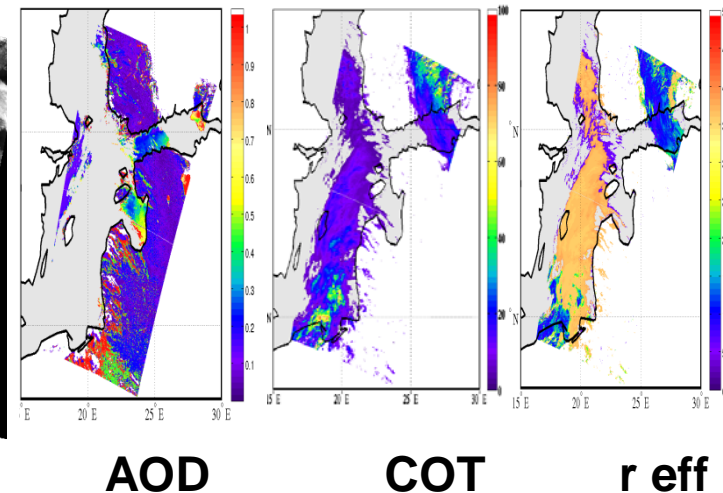
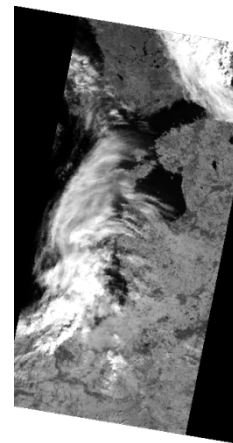
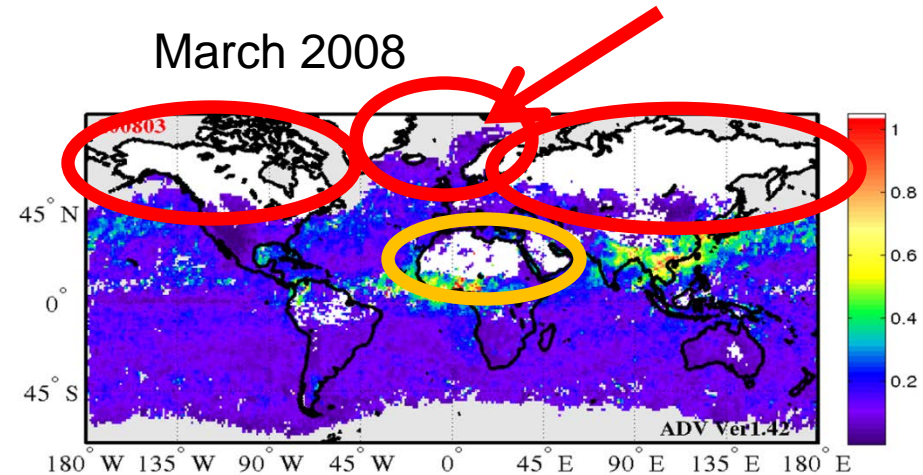
- Aerosol-cci phase 2: case studies
- Globemissions (ESA-DUE)
- OSSA Oceanflux Sea Spray Aeoros: source function development and application to direct and indirect effects)
- VAST: Volcanic Ash





Future priorities

- **Extended coverage**
- **bright surfaces:**
 - Desert
 - Snow / ice
 - Cloud detection over bright surfaces and discrimination cloud / aerosol
- **Cloud detection**
 - Cloud mask
 - Cloud properties
- **Combination with both models and other satellite products:**
 - aerosol / cloud
 - Model constraints and evaluation
- **Instruments:**
 - SLSTR and others
- **Applications**
 - Climate effects
 - Trends
 - Processes





AEROSAT

- Cooperation within Aerosol-cci (EU & external experts) stimulated a giant leap forward
- Open interaction, exchange of information and even code, open evaluation pros and cons
- But we're not there yet ...
- New instruments come up
- User communities, different requirements, evolution
- We can learn from each other in a regular and open discussion
- Future needs
- Nomenclature: use same name for same thing



AEROSAT ToR draft

- Thomas: 'your comments are consistent' ...
before distribution