GEWEX Aerosol Assessment

A critical review of the efficacy of commonly used aerosol optical depth retrieval

GEWEX panel … of 7non remote sensing scientists

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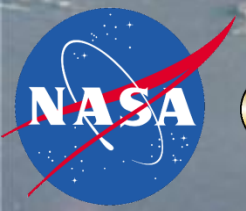

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the aerosol problem

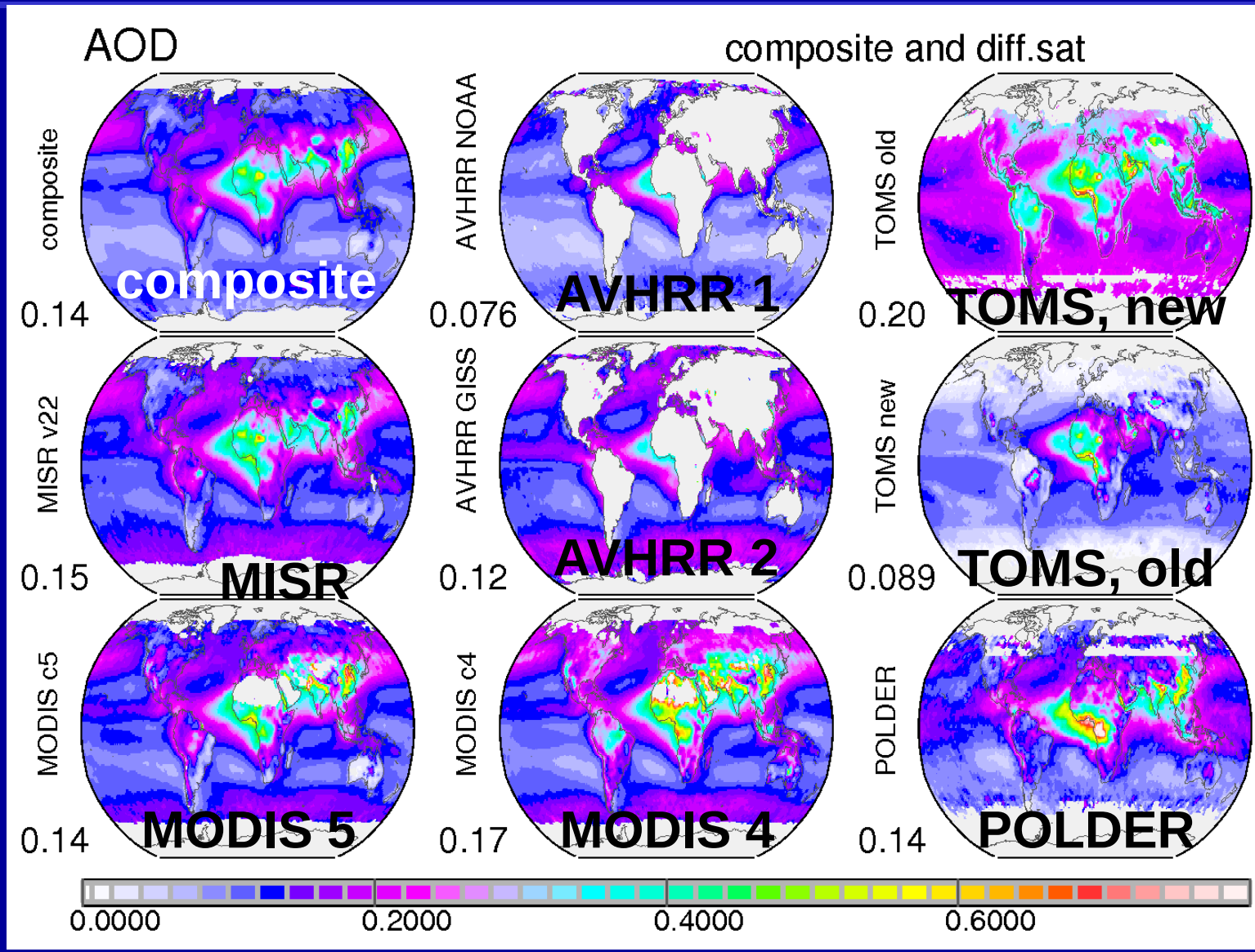
- 'data on aerosol' field has recently grown exponentially, with **many different products** for **different applications**
- most products are in the **twilight zone** of "research," "development" and "production"
- this is partially reinforced by the funding $$ situation … more money for product development, but **less money for maintenance and verification**. developers spend more time "using" than "supporting" their products
- by the time the wider community figures out how a product is doing, a new version is released → **confusion**
- → 'independent' product assessment by GEWEX panel

the panel activities

- **phase 1**
  - **examine available 1x1 level3 products, focus in AOD**
  - **focus on the 7 most used AOD data-sets**
    - AVHRR (GACP and NOAA), MISR, MODIS (Standard & Deep Blue), OMI, POLDER
  - **do a comprehensive literature review and evaluation**
  - **report on associated science and data applications**
  - **make recommendations for new developments and evaluation strategies**
    - now at the end of phase 1 (fine-tuning of the report is taking time)
- **phase 2**
  - **based on Phase1 examine specific retrieval issues … and address / intercompare level 2 data products**

AOD timely, coverage, bias, error

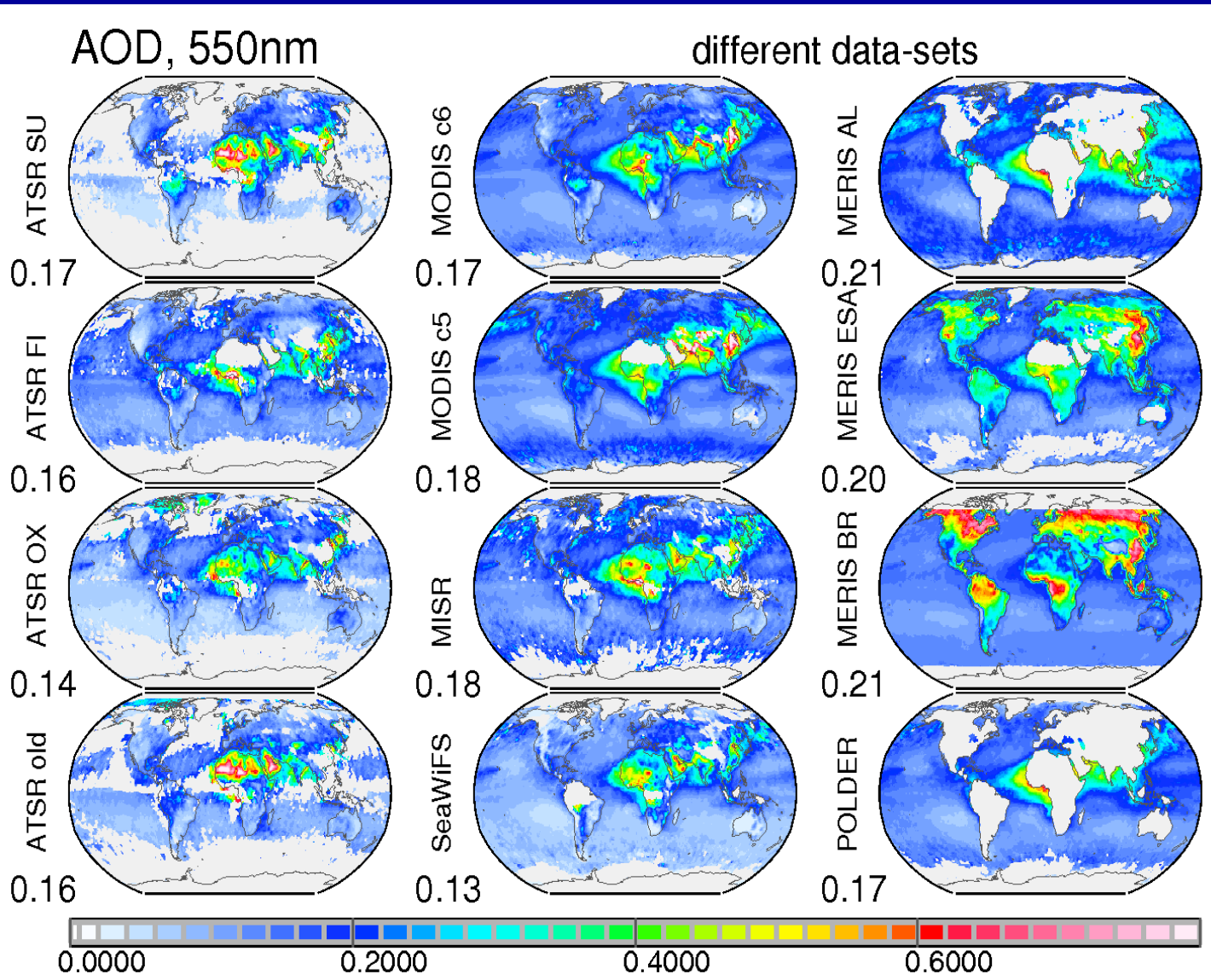
AOD data examined under the GEWEX aerosol assessm.



AOD timely, coverage, bias, error

introducing ESA's aerosol CCI efforts in a comparison

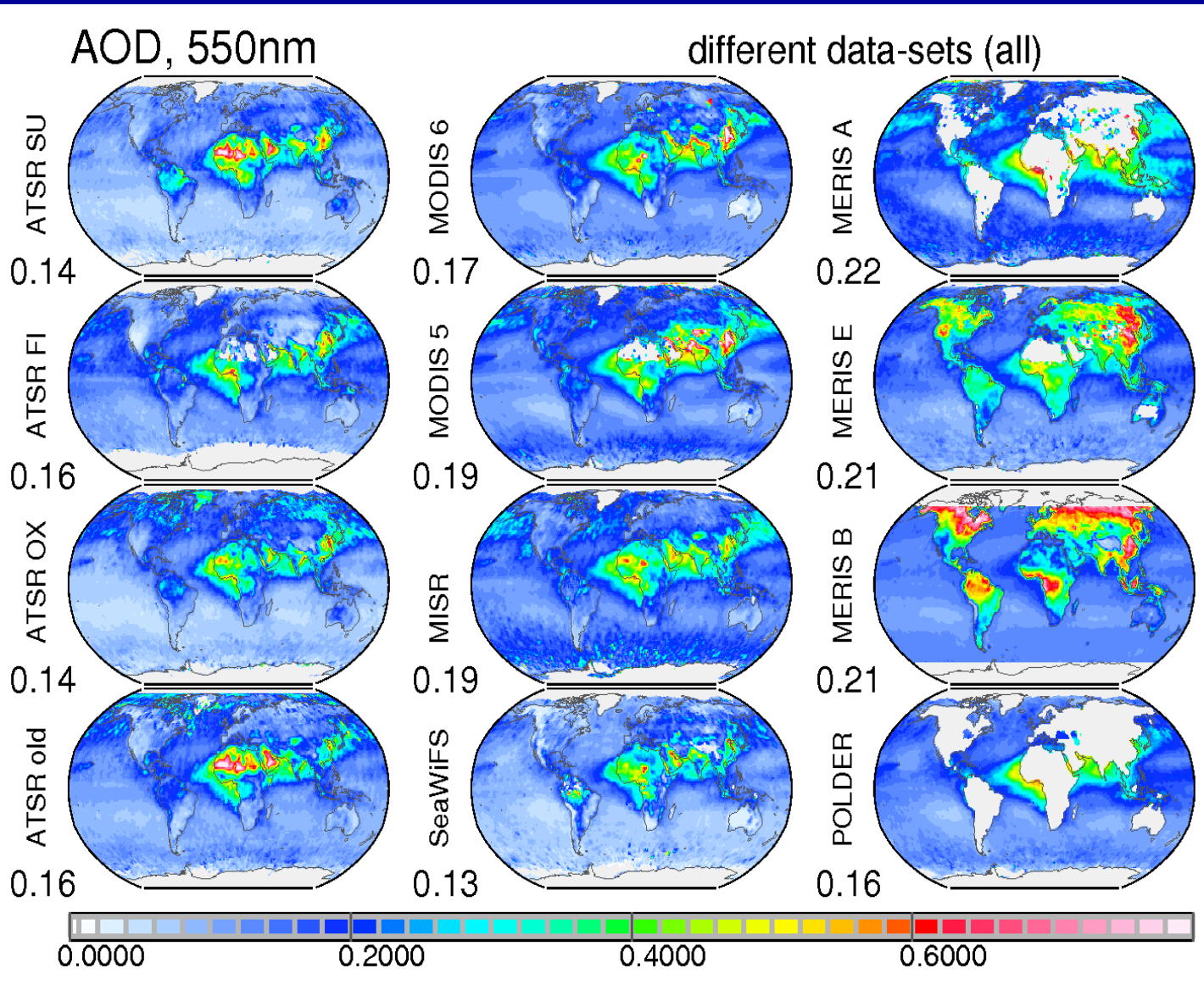
good statistics



AOD timely, coverage, bias, error

introducing ESA's aerosol CCI efforts in a comparison

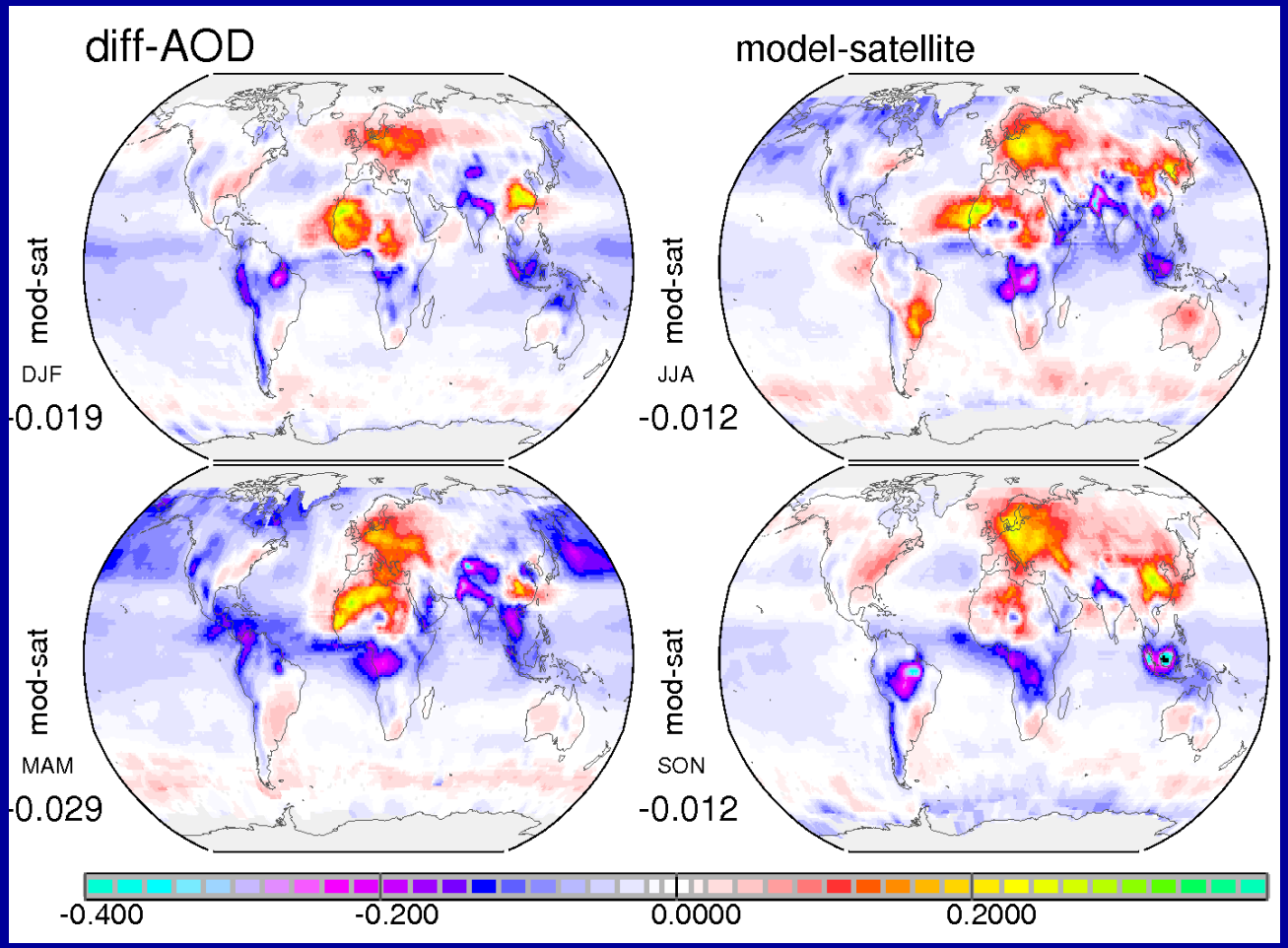
poor statistics and data use of neighbor



focus and status

- there are retrieval capability differences
  - **each retrieval has strengths and weaknesses and so there are differences in terms of**
  - reliable and timely **delivery**
  - **coverage** (spatial and repetitiveness)
  - **bias**
  - **error** (essential for assimilations)
- conveying this detail in a simple way to an uninformed potential use is the goal of the aerosol assessment activity and their report

AOD … differences of the satellite composite to the AeroCom 1 ensemble median



errors in global simulations ? or retrieval errors ?

→ reliable reference data are needed

key recommendations

- algorithms need **better documentation**. The ATBDs are a good start, but they need to be kept current and perhaps even expanded.
- better **strategies for level 3 products** and evaluation need to be devised and supported.
- it should be a (programmatic) requirement of the science teams to develop **prognostic error** models
- **AERONET /MAN**, **MPL-net** are **targeted aircraft observations** are needed for product evaluations
- developers and outside entities (incl. users) to **work more together in evaluation** studies