SCOPE-CM Project
"Advancing the status of the AVHRR FCDR"

Purpose:

- Improve existing homogenization and inter-calibration of historic AVHRR data

- Both visible and infrared channels (although upgrades occurring independently and at different times – 2-3 upgrades planned within the next 5 years)

- Includes also attempts to improve geolocation (older satellites)

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Partners:

- EUMETSAT Climate Monitoring SAF project
  (K.-G. Karlsson, Martin Raspaud)

- NOAA/NESDIS/STAR (Andy Heidinger)

- ESA-SST-CCI project (Chris Merchant, Jon Mittaz)

- Updated visible calibration corrections delivered by Andy Heidinger 7 October 2014

- Slightly updated method compared to description in Heidinger et al., 2010, Int. J. R. S.
(MODIS Collection 6, Greenland target added, Dome C-removed)

- Covers all satellites from NOAA-6 (1979) to METOP-B (2014)

- Implemented in the CMSAF (and ESA-CLOUD-CCI) project in pyGAC module (standalone AVHRR pre-processing module)
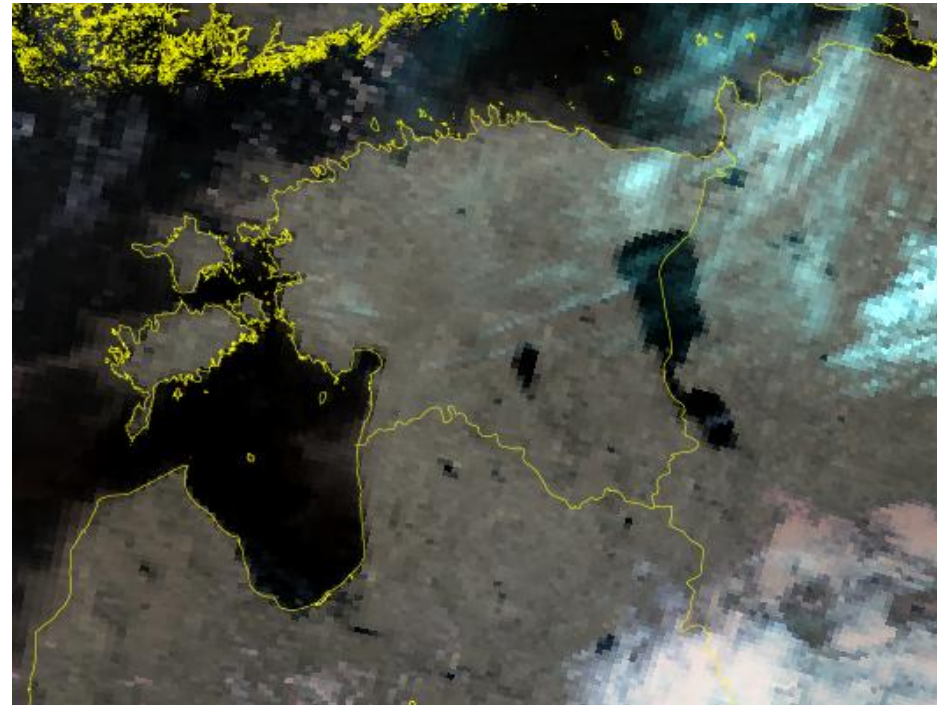
noaa-17 : 1.60 μm
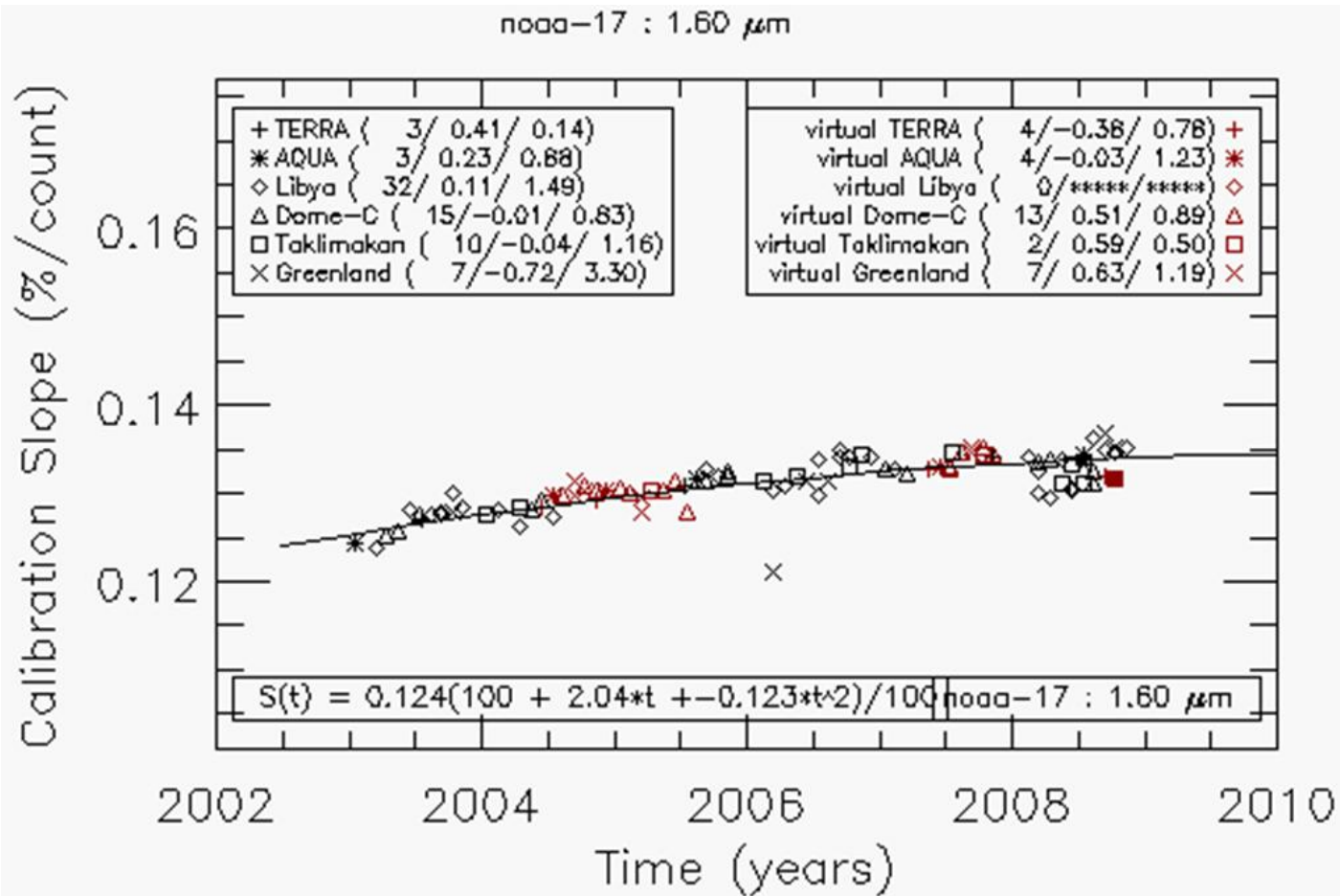
Example for NOAA-17 channel 3a. Most significant improvements for morning satellites (with TERRA-MODIS as reference).

Infrared calibration unchanged (waiting for ESA-SST-CCI work!)

AVHRR FCDR – navigation improvements

SMHI

Example of clock-error adjusted AVHRR GAC scene
NOAA-14 15 July 1997 at 00:42 UTC.
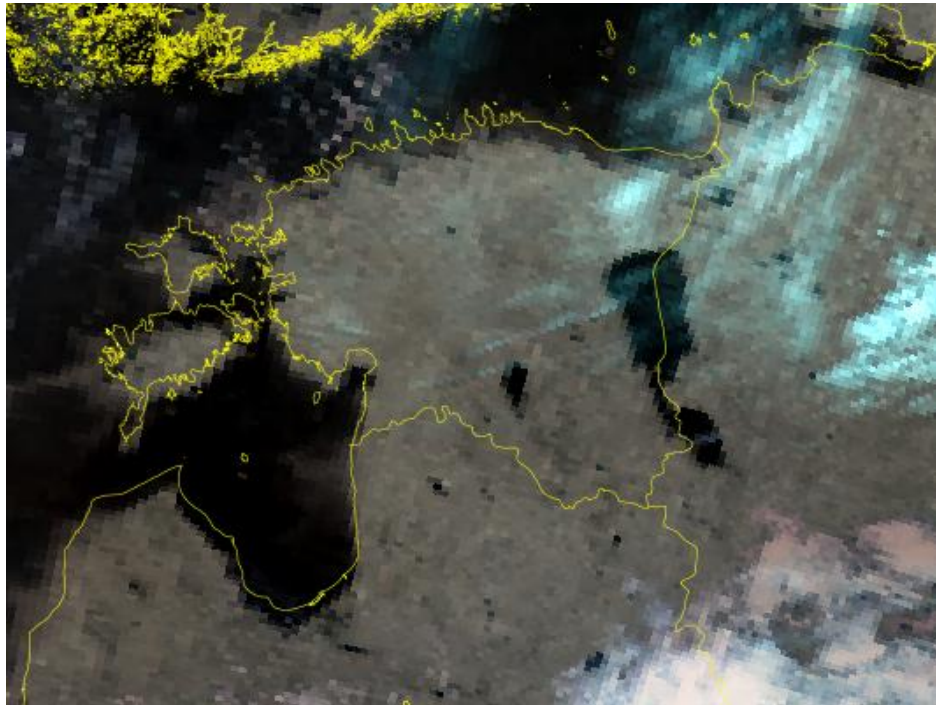

Original

Clock-error adjusted

- Baseline for next release of the CMSAF CLARA-A2 dataset

- Baseline for the ESA-CLOUD-CCI AVHRR-heritage dataset

- Planned baseline also for next PATMOS-X release
  (but some further upgrades still possible here)

- CLARA-A2 release beginning of 2016

AVHRR FCDR – separate release?

- Preliminary CMSAF plans to detach CLARA-A2 AVHRR Level 1C dataset and release it as a separate "product"

- AVHRR Level 1C dataset to contain:
  - *Visible calibration and navigation improvements*
  - *Improved accuracy of infrared calibration*
  - *Optimally "trimmed" GAC orbits (excluding overlaps)*
  - *HDF and netCDF formats*
  - *Cleaned up (compared to Level 1B) – removing duplicated and corrupt files (definition of blacklist)*
  - *Logging and monitoring of quality flags in separate files*

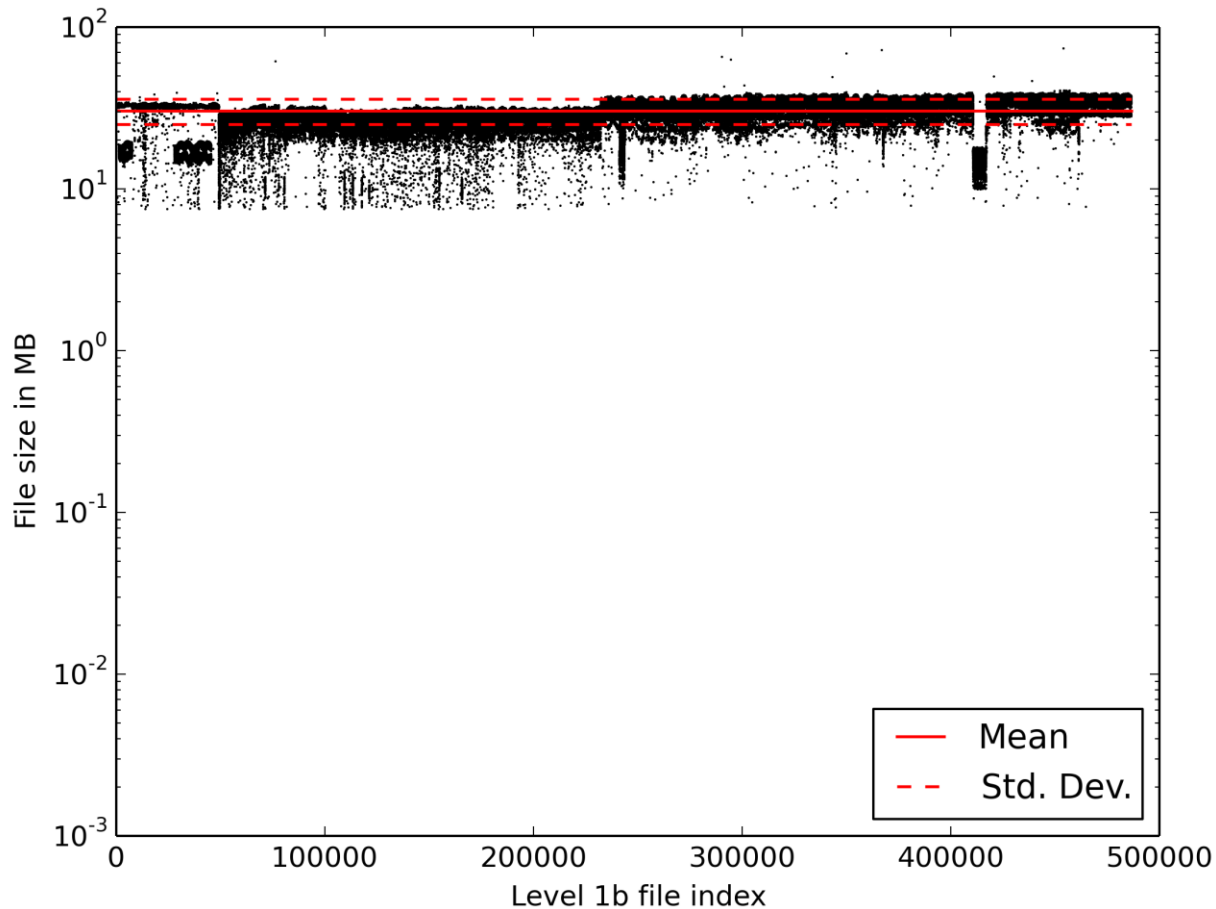 *Main purpose: To enable easier use of original AVHRR radiances (e.g. for AVHRR polar winds reprocessing)*

Distribution of file sizes (MB) for entire Level 1B dataset
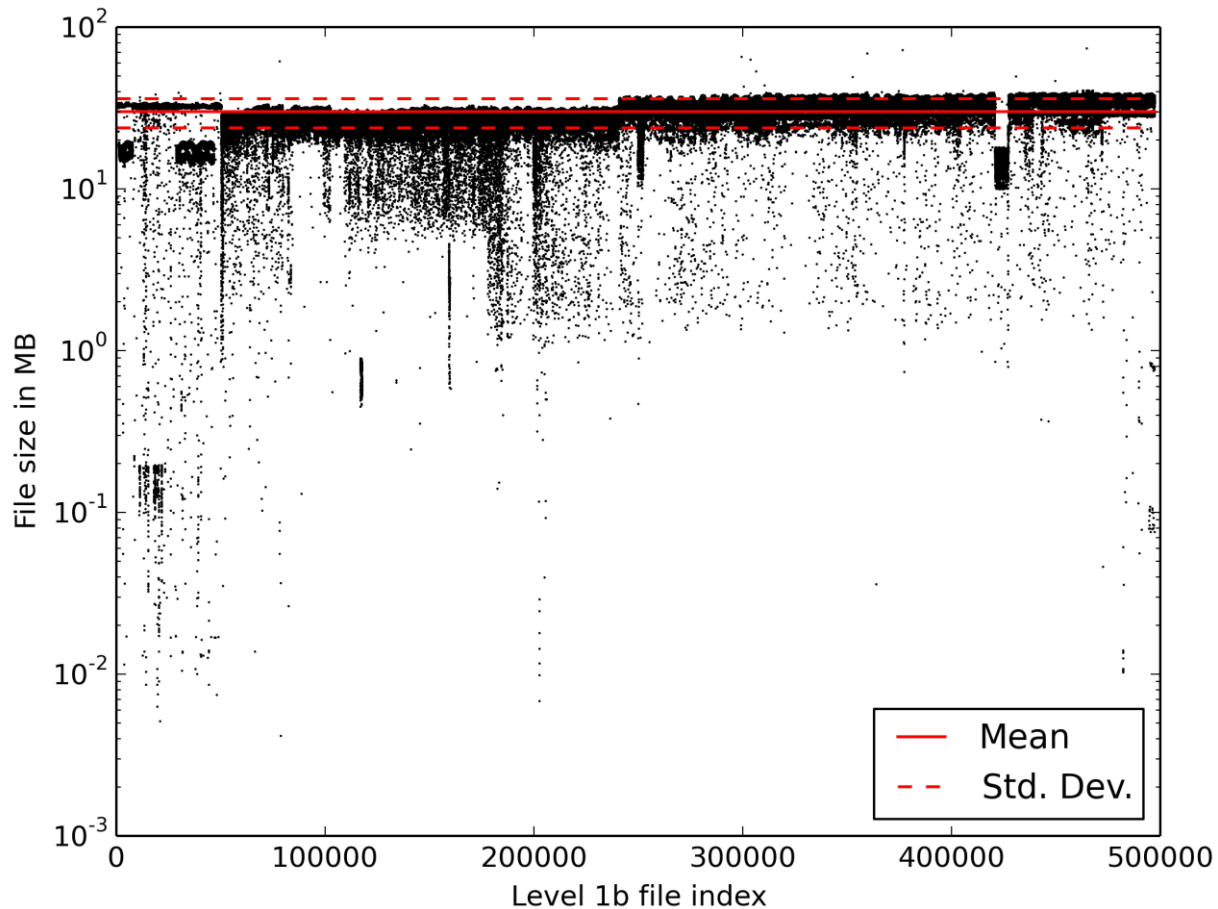
Distribution of file sizes (MB) for cleaned up Level 1B dataset

- Work ongoing for a completely revised infrared calibration (Jon Mittaz, ESA-SST-CCI project).
  Earliest availability second half of 2015

- Work ongoing for navigation corrections for morning orbit satellites (lacking clock error corrections)
  Earliest availability mid-2016

- Major overhaul of infrared calibration in EU Horizon 2020 project FIDUCEO
  Earliest availability 2017-2018

- Open issues:
  - Alternative visible calibration methods (P. Minnis)? Workshop??
  - Hosting of 'official' AVHRR FCDR?