

Notes of the COCCON EM27/SUN meeting at April 24th 2024

Here are some notes of the discussions and ideas of the telecon.

Please note that these notes are not a complete record. Rather it tries to sum up the most important points of the discussion. Furthermore, no liability is taken in case of any misunderstandings.

However, if you think an important point is missing please email to benedikt.herkommer@kit.edu.

List of participants:

Luis Alejandro Hernandez Gutierrez (Universidad Nacional Autónoma de México), Jia Chen (TU Munich), Sean Crowell (University of Oklahoma), Annmarie Eldering (NIST), Lawson Gillespie (University of Toronto), Elaine Gottlieb (University of Harvard), Frank Hase (KIT), Katharina Heimerl (Vrije Universiteit Amsterdam), Benedikt Herkommer (KIT), Tomi Karppinen (Finnish Meteorological Institute), Matthaeus Kiel (JPL), Mahesh Kumar Sha (Belgian Institute for Space Aeronomy), Josh Laughner (JPL), Moritz Makowski (Technical University of Munich), Aaron Meyer (LANL), Chris O'Dell (Colorado State University), Nasrin Pak (KIT), Thomas Panou (Aristotle University of Thessaloniki), Eliezer Sepulveda (AEMET), William Simpson (University of Alaska, Fairbanks), Elisabeth Spicer (University of Oklahoma), Jason St. Clair (University of Maryland), Wolfgang Stremme (Universidad Nacional Autónoma de México)

1) Introductory Presentations by Frank Hase (FH) and Benedikt Herkommer (BH):

- We need traceable remote sensing GHG measurements.
- Development of a reference code is difficult (as history teaches),
- A good approach are consistency checks between different codes (as planned by Annmarie and Elizabeth)
- Another approach is a crosscheck of codes on different platforms and on different compilers. This was checked by Benedikt for PROFFAST and shows very good results.
- For more details see the slides of BH and FH.

2) Presentation and discussion by Annmarie Eldering (AE) and Elisabeth Spicer (ES)

- Presentation and discussion based on a survey filled out by users beforehand about the usage of the EM27/SUN.
- The discussion was split in 3 parts:
 1. What should be included in the comparison paper of GGG and PROFFAST?
 - How to deal with different update speeds of GGG and PROFFAST? We need to make clear, what changes from version to version. Especially for satellite validation.
 - There will be a GGG2020.1 version which will include a new Xluft correction in the post-processing and a tracking variable of which a-prioris were used.
 2. Analysis plan of the data: What is the community thinking about this? What is missing in the plan?
 - It would be interesting to check for instrument-to-instrument biases.
 - FH: This can be derived from Carlos Albertis paper.
 - It would be good to check if on different places on earth the instruments behave different.
 - FH: It is known that at e.g. high latitude the correction factors play a larger role and hence introduce an uncertainty.
 - However, from the instrumental point of view, no deviations should appear.

- It is important that for a proper data analysis also low SZA measurements must be collected → Early in the morning and late in the evening.
 - A possibility to quantify the aerosol load would be good when using data for satellite data.
3. Any other key topics missing in the paper?
- FH: Comment on the slide: There is an established ILS measurement procedure described by Alberti, 2022.