

Notes of the COCCON EM27/SUN telephone conference at March 31st 2022

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:

Greg Osterman (JPL), Dave Pollard (NIWA), Joshua Laughner (Caltech), Astrid Müller (NIES), Katharina Heimerl (Vrije University Amsterdam), Nick Deutscher (University of Wollongong), Felix Vogel (University of Toronto), Bruno Grouiez (GSMA-Reims), Abdelhamid Hamdouni (GSMA-Reims), Tomi Karpinnen (FMI), Wolfgang Stremme (UNAM), Pascal Jeseck (Sorbonne University), Yao Te (Sorbonne University), Morgan Lopez (LSCE France), Neil Humpage (University of Leicester), Minqiang Zhou (Institute of Atmospheric Physics, China), Patrick Aigner (TU Munich), Qiansi Tu (Tongji University, Shanghai), Andreas Luther (TU Munich), Luis Alejandro Hernandez Gutierrez (UNAM), Pablo Schmid (KIT), Carlos Alberti (KIT), Lena Feld (KIT), Thomas Blumenstock (KIT), Frank Hase (KIT), Benedikt Herkommer (KIT)

Presentation of Neil Humpage and Discussion

- **Suggestion** to new HARWEL TCCON container: If an additional COCCON Instrument is wanted, it is a good idea to do low resolution measurements.
- **Question:** What material is the dome made of? Which Thickness?
 - Boro Silicat Glass, 5 mm
 - Price: 10.000 pounds for one, gets cheaper if more are ordered
- **Question:** Is the Jinja data available at the COCCON data side?
 - It is planned. They are working on it.
 - Comes maybe in the next month
- **Question:** Is there any experience if a dome or a rotating cover is better for sites with a lot of snow?
 - The Munich enclosure has been operated in Kiruna by KIT for some time.
 - Dome is maybe difficult to melt the snow
- **Question:** Why was the Instrument in Jinja was not leveled even?
 - This is due to the low solar zenith angle. The angle can be set in the CamTracker settings.
- **Suggestion:**
 - If working with mobile internet: A industrial LTE router gives better connections.
- **Question:** Why are there so many different enclosures. Is it not better to have one solution for all groups?
 - Main Problem: No commercial solution is available. Universities do not have the capability to produce large numbers.
 - However, Bruker and as well a group in Spain is thinking/working on a commercial solution. May come up in the future.
 - Furthermore some of the groups need a special enclosure.
- **Question:** How is the power of the solar panels feed into the enclosure?
 - The solar panels charge the battery. The voltage of the battery is converted up to line voltage.

- **Question:** What is the temperature in the enclosure? Are the measurements affected by the temperature?
 - Temperature was not too high.
 - So far there where no effects observed on the measurements.
 - A good and simple solution to cool down the instruments is to use a shadow building construction, colored in white.
- **Question:** Where large amount of data where transferred using the mobile network?
 - No, only transferred a small amount of data for test purposes.
 - For large data, a USB – hard drive is used. For a good sunny day there are approx. 3 GB or data.
- **Comment** by Patrick Aigner via chat:

“ Hi Patrick from TU Munich here. Adding to the question about shared effort. I'm currently working on a new version of the software automation that will allow to operate with different enclosures or without an enclosure and gives options to interact with the automation with a command-line interface (CLI) on top of a UI interface. But as we are upgrading to Python 3.10 and doing quite some base work in the code it is still a while to come.”