[2022/02/17 22:16] Golaz, Chris

Is it possible to have all the ECare simulators incorporated in COSP? Most models already have the infrastructure in place. For a modeling center, it would be simpler to update COSP rather than implement a different simulator.

[2022/02/17 22:18] MASUNAGA Hirohiko

Bjorn, I guess independent-pixel plane-parallel RT models (typical of many simulators) would be efficent in parallel computing while 3D simulators (Monte Carlo etc) could be much more computationally demanding.

[2022/02/17 22:54] Bodas-Salcedo, Alejandro

Golaz, Chris that may make sense for some simulators, those conceptually close to COSP and cheap enough to run inline. For others, the technical aspects of the coupling might not be that simple. It could certainly facilitate the use of a wider range of simulators inline.

[2022/02/17 22:57] Dave Donovan
The ECSIM models used in the ESA L2 development are all way too "heavy" to run inline. However work is planned to produce "lighter" modular versions which could be run infile.

[2022/02/17 23:00] Tobias Wehr

Clarification regarding EarthCARE data release:

There are different data release targets for the (1) validation team and (2) the public.

(1) Validation team under non-disclosure agreement:

Target data release dates are:

L1 – 3 months after launch

L2a (single instrument products) and L2b (2 sensor products) – 6 months after launch

L2b (3&4 sensors) – 9 months after launch

HOWEVER, it is ESA's intention to release the ESA products (to the validation teams) as soon as possible after initial verification, namely, once they have no obvious significant problems.

(2) Public team

Target data release dates are:

L1 – 6 months after launch

L2a (single instrument products) and L2b (2 sensor products) – 9 months after launch

L2b (3&4 sensors) – 18 months after launch

However, the actual release data can significantly deviate, depending on the validation status of the respective product. We will be working very hard for the earliest possible date, but we need to assure a minimum quality in order to avoid misinterpretation.

[2022/02/17 23:07] Bjorn Stevens (MPI) (Guest)
If we can get JAXA and ESA to cooperate in the framework of EC-TOOC it would be great; but I don't know how to advance this conversation within the agencies most effectively. Silke Groß who runs the German Earth Care office, would be the best contact for the satellites, Satoh-san and I for the coordinated modelling; creating opportunities for the validation teams (this is not me, so it is only self serving in the sense that it makes EC-TOOC better) to participate in EC-TOOC would be a good way to do this.

[2022/02/17 23:14] Andrew Gettelman (Guest)

Chris and Alejandro: would be good to have a separate and coordinated discussion about simulators. Should include those using J-Sim in Japan and Mark et al at ECMWF. I think there probably are options to pursue regarding complexity and efficiency as noted. Common interfaces are important, and COSP has made sure a lot of that work has already been done in many models.

[2022/02/17 23:16] Anthony Illingworth

The slope of the Doppler below the melting layer in the model - is this evaporation? Does the flux of particle mass fall as you approach the ground?

[2022/02/17 23:16] Bjorn Stevens (MPI) (Guest)
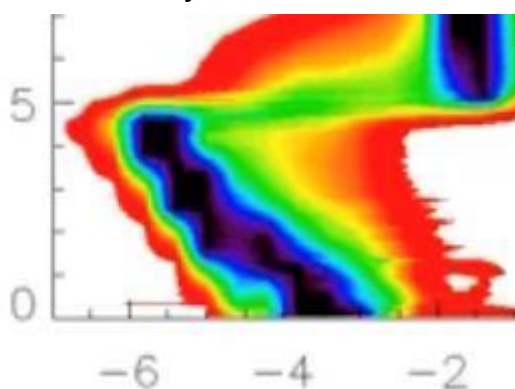
[2022/02/17 23:16] Bjorn Stevens (MPI) (Guest)
I had the same question

[2022/02/17 23:17] Takuji Kubota

@Bjorn-san, In the JAXA-DLR Strategy Dialogue 2020, held on Nov. 2020, the JAXA and the DLR agreed future validation cooperation for the EarthCARE. (by Takuji Kubota JAXA, sorry for my Japanese name in the teams)

[2022/02/17 23:32] Bjorn Stevens (MPI) (Guest)
@JAXA-colleague Thanks for this good information. I would very welcome the possibility to use this agreement/partnership as a basis for more coordination (also with ESA) in the framework of EC-TOOC in 2024.

[2022/02/17 23:45] Bjorn Stevens (MPI) (Guest)
Following on Masunaga-san's comment, the stronger influence on ice clouds, and their offsetting of the column CRE between SW and LW suggests that the big microphysical effects on climate might be on the circulation through the Atmospheric CRE, as the SW/LW trade off is one between the surface and the atmosphere.

[2022/02/18 0:10] Bjorn Stevens (MPI) (Guest)
The other point I wanted to make was that the problem might even be worse because the RT assumes the cloud is overhead, and so the overlap is even further exaggerated, although this is an easier problem to solve.

[2022/02/18 0:13] Muelmenstaedt, Johannes Heinrich Georg
Ann Kristin, very intriguing to see how converged the SRMs are compared to GCMs. It would be really interesting to see whether this convergence in state translates into a convergence in sensitivity. I think we could learn a ton from a Cess-type (or other prescribed SST increase) DYAMOND exercise.

[2022/02/18 0:17] Robin Hogan
Jean-Louis Dufresne (Invité) (Guest) Nice talk - I just wanted to point out that many models (e.g. ECMWF and Met Office) have had exponential-random overlap and sub-grid

heterogeneity in their cloud-radiation interactions for the last 15 years (via the McICA solver), so maximum-random and homogeneous clouds is not really the state-of-the-art.

[2022/02/18 0:22] Jean-Louis Dufresne (Invité)
I agree

[2022/02/18 0:37] Bodas-Salcedo, Alejandro

Robin Hogan (Guest) that's true, but I wonder if the exponential decorrelation parameterisation does well for physically thin clouds. Could it be possible that the decorrelation does not drop fast enough for small thicknesses and the parameterisation is effectively working like a max overlap for these clouds?

[2022/02/18 0:38] Bjorn Stevens (MPI) (Guest)
is the spatial resolution of the doppler too limiting too look at convective, especially shallow convective clouds

[2022/02/18 0:39] Robin Hogan
Certainly there is the paper by Roel Neggers showing that overlap decorrelation length for cumulus in his LES is quite a bit smaller than the typical 2 km we get from all-cloud stats from cloud radar data.
like 1

[2022/02/18 0:43] Jean-Louis Dufresne (Invité)
I agree that ECMWF and HadGEM models has the exponentiel-random overlap you developed, but unfortunately this is the exception rather than the general rule among the 40 CMIP6 models. And I don't know for the DYAMOND models.

In addition, something I don't have the time to speak is that the value of the decorrelation

length for low level clouds has to be quite low (a few hundred meter) compared to the few kilometre usually used (if I'm correct).

[2022/02/18 0:46] Robin Hogan
I'd be keen to see a review of precisely what radiation schemes and assumptions are used for these 40 models...
like 1

[2022/02/18 0:48] Cole,Jason (ECCC)

I'd also like to see a review as well. CanESM uses exponential decorrelation with a fixed global value. How to set the decorrelation lengths seems to be the open question. I think I've seen some papers on this topic.

[2022/02/18 0:49] Bjorn Stevens (MPI) (Guest)
for radiation in ICON run as an SRM we try to do things as simply as possible, so there is no cloud fraction, just condensate distributed plane-parallelly with an inhomogeneity factor that we take from analysis of CERES.... but this more reflects my interest in understanding what the fewest equations do, rather than trying to best fit the observations by adding additional equations...

[2022/02/18 0:49] Andrew Gettelman (Guest)
Theoretically the information on what is in models should be in 'ES-DOC' information that was collected with CIMP....

[2022/02/18 0:50] Robin Hogan
We use the Shonk et al. (2010) latitudinal dependence of overlap from ARM+CloudNet sites, or you can use the Barker (2008?) 2-km everywhere

[2022/02/18 0:51] Andrew Gettelman (Guest)

And Bjorn: you are right that there are really 2 things here. One is cloud fraction. The other is in-cloud inhomogeneity assumptions in the microphysics. The former can go away at higher resolution. The latter we probably need down to that 25 to 10m scale with LES. It affects microphysical process rates.

[2022/02/18 0:51] Bjorn Stevens (MPI) (Guest)

I wouldn't recommend ES-DOC to anyone other than the CMIP panel.

[2022/02/18 0:57] Graham Feingold (Guest)

Toshi: Do you see any evolution of the thermal size distributions with time? Is there evidence of aggregation and breakup?

[2022/02/18 1:00] Graham Feingold (Guest)

Kenta, another use of ATLID   that I forgot to mention is addressing the wet removal of aerosol. Tristan L'Ecuyer has a nice paper on this using MODIS and GOES.

[2022/02/18 1:03] Kentaroh Suzuki (Guest)

@Graham: Yes, I recognize the Tristan's paper looking at wet deposition, which would be enhanced by ATLID HSRL.

[2022/02/18 1:04] Bjorn Stevens (MPI) (Guest)

Masaki Satoh (AORI)   (Guest) „, sorry, I have to leave for another meeting… see you tomorrow!