

## Chat during DATA ASSIMILATION session

**Maria Monteiro** 1:08 PM

did you already published yur studies on CANARI structure functions somewhere ?

**Patrick Samuelson, SMHI** 1:13 PM

Are the default model and obs errors used for SEKF or are they modified?

**Alena Trojakova** 1:13 PM

Please, switch off your microphones

**Reima Eresmaa (FMI)** 1:18 PM

Benedikt, is there any use of geostationary radiances in LACE systems?

**carlos** 1:19 PM

Benedikt, did you study spin-up effects with radar reflectivity ass. in precipitation ?

**Rafiq** 1:34 PM

proof of concept for surface analysis, is this a strongly coupled assimilation system?

**Xiaohua Yang** 1:39 PM

For this slides, what are the main factors behind the large increment for Danish area, Roger?

**Alena Trojakova** 1:40 PM

why diagnosed SFX.TS ? Is not TS a prognostic variable ?t

**Florian Meier** 1:57 PM

Is there some special rescaling needed to use lagged ensemble in ENVar

**Pau Escribà** 1:59 PM

Very interesting talk. Maybe is more for physics people sorry... We also see that HARMONIE-AROME does not reach very large amounts of precipitation, as the case in Alps shown here. Instead, WRF sometimes can. I mean over Spain. Any explanation?

**Filip Vana**2:04 PM

In terms of OOPS execution in the operational context do you plan some breakpoints saving the intermediate state? Or once it fails everything will have to be repeated?

**Pau Escribà**2:05 PM

Thanks Pierre!

**pierre**2:08 PM

Hi Filip , yes good remark, this is an important issue we haven't yet investigated ... but we need

**Piet Termonia**2:08 PM

@Pierre: slide 5, in the comparison between OOPS and non OOPS run, why does writing and reading to files change the results? Is it spectral compactification?

**pierre**2:12 PM

@piet : yes spectral compactification but also the used encoding : for example grib1 or grib2 don't provide the same numerical results when you write and read the fields

**Piet Termonia**2:15 PM

Ok in principle you could switch it of for testing? Thanks for the very nice presentation. Much appreciated!

**Marta Janiskova**2:22 PM

Which types/versions of the linearized physics are used in your 4D-Var experiments?

**Maria Monteiro**2:23 PM

How do you initialise your surface on the Iberian domain (slide 14)

**Claude Fischer**2:25 PM

comment & question

**Filip Vana**2:25 PM

How is your experience with single precision TL/AD? Or do you use only single precision for trajectory use?

**Claude Fischer**2:32 PM

Filip how is your experience with SP in the IFS DA ? (perhaps for the discussion ?)

**Filip Vana**2:34 PM

Thanks for the extensive answer.

**Phillip Scheffknecht**9:13 AM

The plots on the right show RMSE, but it's higher for longer time scales. Or am I misunderstanding something?

**Phillip Scheffknecht**9:14 AM

Oh wait, it's the difference, never mind

**Roger Randriamampianina**9:14 AM

@Ole: This looks indeed very promising. Do you have idea how can we tune this for better performance?

**Pau Escriba**9:16 AM

Very interesting Ole: LSMIX has given nice improvement historically, so this new scheme can also come with better predictions! Congratulations

**Magnus**9:16 AM

Can you use archive to check assumption of similar balances and shape of spectra for lam and host?

**Maria Derkova**9:18 AM

You can directly compute C matrix from LBC files, in the same way you compute B from ICMSH files, cannot you?

**Benedikt Strajnar**9:24 AM

If I get it right it is no need anymore to compute a V-matrix from LBCs - as long as host model has similar bakgr. errors.

**Florian Meier**9:27 AM

It would be interesting to compare it to classical Jk approach. V or C matrix in classical Jk is calculated with FEMARS/FESTAT as B, but I think with univariate approach and appropriate interpolation to final grid without changing resolution

Endi from Croatia did it for us some time ago. So, he is the expert for classical Jk, I suppose.

**Alena Trojakova**9:34 AM

How long forecast did you use for B matrix (6h or 3h) ?

**pierre**9:35 AM

Thank you Ulf very interesting ...

**Magnus**9:36 AM

6h

**pierre**9:38 AM

Did you try these new statistics in an assimilation experiment ?

**Ulf Andrae**9:41 AM

Pierre: Apart from the initial single obs experiments with the MEPS derived statistics we've only studied the sensitivity on the statistics. I think that now it's time to see what kind of setup we'd like to go ahead with and test that further.

**Roger Randriamampianina**9:42 AM

Thanks Ulf for this very detailed study.

**Magnus**9:44 AM

What do you use for lbc for arome jb generation Pierre? ARPEGE EDA exp?

**pierre**9:47 AM

Magnus, yes, the arome EDA used for the B computation uses LBC's from the operational arpege EDA

**Roger Randriamampianina**9:55 AM

@Carlos: very interesting ideas and results. Would be good to see the impact of the FA+VC with real Doppler wind.

**Roger Randriamampianina**10:07 AM

@Philipp: Are you planning to also test 1D+Var Bayesian technique in this research?

Im mean for microwave links case

**Carlos Geijo**10:09 AM

Yes Roger. It will be good to have Radar Data assimilated at sub-hourly scales.

**Magnus**10:09 AM

How do you handle/plan to handle bias correction for gnss ztd on moving train having different heights at different positions?

**Jana Sanchez**10:10 AM

@Philipp , why not test those individual ZTD's with ZTD from any Processing Centre (more accurate!) and also with humidity from close Radiosonde?

**Florian Weidle (ZAMG)**10:13 AM

@ Magnus: that is in fact one of the main challenges we expect in the project. At them moment we have only couple of train tracks available to really evaluate the errors. When we have more train data we will do tests whehter we can do bias correction for every train or depending on the coordinate

**Daniel Santos Muñoz**10:16 AM

Is anyone evaluating other private data networks apart from NetAtmo? There are many other crowdsource networks with open data. I think the WMO has an initiative to collect all this data (WIGOS) and flag the quality (OSCAR). Should we create the infrastructure for all these types of data?

**Kasper Hintz DMI**10:17 AM

@Daniel We (DMI) gets data from "Lonobox" at the moment, which have similar amount of stations in the Nordics

**Maria Derkova**10:17 AM

@Daniel: there is an ongoing initiative on the EUMETNET level

**Florian Meier**10:18 AM

We have only 4 radiosondes 3 of them measure only once per day

**Xiaohua Yang**10:18 AM

Do you use all netatmo data that has passed QC ? (are there thinning applied)?

**Alena Trojakova**10:18 AM

Which observations were used for verifications in the comparison of NETATMO vs oper data ?

**Jana Sanchez**10:18 AM

Yes , thanks

**Claude Fischer**10:19 AM

@Roger & Philipp: if 1D-VAR would be considered, I guess there would be a link with how 1D-VAR is being tested for radar refl-derived RR rates => some work done in Morocco on this (Sarah Z.)

**Michal Nestiak**10:19 AM

Daniel you mean for example <https://openweathermap.org/stations> ?

**Florian Meier**10:20 AM

@Alena Synop/TAWES from Austria

which is operational

**Sahlaoui**10:22 AM

<https://rmets.onlinelibrary.wiley.com/doi/full/10.1002/met.1860>

**Florian Meier**10:22 AM

@Claude yes we got the idea from the experiment from Morocco

**Sahlaoui**10:23 AM

The link for the paper about 1d-Var asimilation of radar precipitation

**Daniel Santos Muñoz**10:23 AM

Yes @Michal Here in Spain

[https://www.meteoclimatic.net/?screen\\_width=2560](https://www.meteoclimatic.net/?screen_width=2560)

**Daniel Santos Muñoz**10:24 AM

there are many associations of local observers with Davis stations that probably can offer more and best data than netAtmo

**Michal Nestiak**10:30 AM

For example Davis Vantage stations is recommended by <https://www.wunderground.com/pws/overview> It is hi-quality stations ,but price si under 800EUR and quality is very close to classical meteorological sensors.

**Michal Nestiak**10:31 AM

But Netatmo nowadays 150EUR + 100EUR for wind sensor.

**Florian Meier**10:46 AM

There is also data from radio amateurs (with PWS) APRS, but it is fewer than Netatmo and we did not test it yet.

**Isabel Monteiro (IPMA)**11:08 AM

Good morning. Thks for your presentation focus on this really new sensor. Perhaps I miss in your slides, but can you distinguish in LI product that you use eg. cloud-cloud lighthening or do use "all" lighthening data?

**Florian Meier**11:10 AM

Is there similar problem as in radar that if model shows no lightning et al. DA might fail to ingest it if observed?

**Isabel Monteiro (IPMA)**11:23 AM

@Felix and @Pauline, very curious about your work, Thks for sharing

**Florian Meier**11:24 AM

great achievment

**Alena Trojakova**11:24 AM

@Felix & Pauline Is there any breaking point to use this methodology for ground based lightning observations ?

**Jan Barkmeijer**11:25 AM

I will read the papers off you both with pleasure and also liked the alternative scores like FSS.

**Roger Randriamampianina** 11:27 AM

Sorry for the microphone on. After cancelling 3 times still I got it insisting :(

**Carl Fortelius** 11:39 AM

@Felix and @Pauline: I am impressed. Living at the limits of geostationary coverage, I wonder how specific your methods are regarding the source of lightning data. Could one use other sources than geostationary imagery, such as locations from a lightning detection network?

**Felix Erdmann** 11:44 AM

@Alena and @Carl: The 1DBay retrieval can be applied to ground-based lightning products. It depends, however, on the type of lightning locating system that should be used (VLF like EUCLID, LMA, ...). For example, VLF network provide us point observations, so we cannot directly infer a flash extent. The GEO data generator that I developed could be used for those data just as I did with Meteorage records to simulate MTG-LI data. One should always verify whether a different thinning is necessary.

**Alena Trojakova** 11:46 AM

@Maud: I wonder if the thinning was the same in selected RH profiles and direct reflectivity data ?

**Roger Randriamampianina** 11:48 AM

@Alena: I take the remaining questions to be discussed during the discussion session, in case they aren't answered.

**Alena Trojakova** 11:49 AM

@Roger Thanks but no worries if not tackled

**Maud Martet** 11:52 AM

Alena, in this experiment, I used the thinning of humidity for direct assimilation of reflectivity. But there are technical work to do to be able to apply different thinning for reflectivity and humidity.

**Alena Trojakova** 11:55 AM

OK, thanks. Crossing fingers with further developments.

**Isabel Monteiro (IPMA)** 12:00 PM

Thanks Susanna. Do you intend to use Aeolus in the future in operations (with follow on of Aeolus already planned)? And more tests in 4dvar?

**pierre** 12:02 PM

Thanks Susanna , nice works

**Alena Trojakova** 12:06 PM

Maria, you can try to share now

**Pau Escribà** 1:49 PM

Nice verification plots Magnus. Is this HARP? I don't think is monitor...

**Eoin Whelan (IRE)** 1:51 PM

Are FY-3C data available on EARS? We am only receiving FY-3D. Nice impact with CY43 for Ireland too!

**Florian Meier** 1:53 PM

Is VARBC used for MWHS? Did MWHS already enter common code?

**Roger Randriamampianina** 1:54 PM

@Eoin: I don't think we have these data now through EARS.

**Isabel Monteiro (IPMA)** 1:55 PM

Do you have all-sky for IASI or other IR sounders (of course) already tested?

**Eoin Whelan (IRE)** 1:56 PM

@Florian: I think one minor change required in Bator from CY46

**Claude Fischer** 1:57 PM

I don't get the point of your last bullet in the conclusion slide, Magnus. Can you reformulate ?

**Isabel Monteiro (IPMA)** 1:57 PM

@Magnus: Thanks! Just curious

**Claude Fischer** 1:59 PM

OK, so these data will become available via the usual ESA or EUMETSAT dissemination ?

thanks

**Magnus** 2:00 PM

yes that is the plan claude

**Florian Meier** 2:00 PM

Thanks Eoin. I checked that it is not yet in cy43t2 so we have to check cy46 something

**Roger Randriamampianina** 2:06 PM

@Reima: Very interesting key. I wasn't aware of this. Currently I'm monitoring ascent and descent radiosondes, so this will be checked. Thanks a lot.

**martina tudor** 2:06 PM

Magnus, would that be a constellation of small sats (shoe box size satellites)? some are already launched and do pass over Europe for preliminary study.

**Magnus** 2:09 PM

Yes Martina, washing machine size in fact, such are already launched before in us for example.

**Mate Mile** 2:14 PM

@Reima What about the adaptivity/stiffness parameter? Do you think we can find an optimal adaptivity parameter ( $N_{bg}$ ) in VARBC to protect correcting the model bias?

**Roger Randriamampianina**2:15 PM

@Reima: Very interesting idea. Sounds good idea of VarBC update.

**Mate Mile**2:18 PM

@Reima Like Cameron and Bell with bias halving time

Okay, thanks!

**Roger Randriamampianina**2:21 PM

Interesting thought Xiaohua.

**pierre**2:22 PM

3Guiton400

**Alena Trojakova**2:30 PM

What LBCs were used in your forecast experimnts ?

**Reima Eresmaa (FMI)**2:36 PM

Comment: We should make obs errors depend on satellite. Different AMSUAs for instance are differently noisy.

**Alena Trojakova**2:39 PM

For tuning you have in mind DFS,MTEN diagnostics or would you suggeste any other approach ?

**Piet Termonia**3:20 PM

Excellent coordination Maria with clear goals and progress!

**Maria Monteiro**3:26 PM

@Piet: thanks !

**Isabel Monteiro (IPMA)**3:32 PM

Perhaps I miss in your slides, but are you using SAPP virtual machine or the containerisation version?

Thanks! The new version?

**Yelis Cengiz (TSMS)**3:35 PM

it should be the new version

**fu vejr**3:36 PM

Bent: General comment : Impressive how many promising developments in data-assimilation!

**Isabel Monteiro (IPMA)**3:37 PM

Thanks, Yelis!

**Filip Vana**3:39 PM

I have re-connected. So perhaps better chance to be seen/heard now. If there is still interest I can give some summary about SP 4DVAR tests. Sorry for those troubles...

**Claude Fischer**3:42 PM

nice to have you back Filip. Still intersting to hear about SP in IFS 4D-VAR, indeed.

**Florian Meier**3:48 PM

I think in sub-hourly cycling strategy is still an issue: several consecutive hourly, open loop or really sub-hourly cycling?

I doubt that subhourly works well with current spin-up

**Carlos Geijo**3:49 PM

Hi Florian. I mean sub-hourly cycling of course

**Daniel Santos Muñoz**3:50 PM

Sub Hourly cycling is one of HIRLAM system teams priorities for cy46. It requires a almost complete rethink of the Harmonie scripting system. This is going to be treated next week in the HIRLAM System WW

**Florian Meier**3:50 PM

Yes, I think sub-hourly DA is something to go for, but maybe by consecutive hourly cycles starting at full, half etc

**Daniel Santos Muñoz**3:51 PM

The subhourly cycling will be used first in Nowcasting mode and opens the possibility to subhourly DA

**Florian Meier**3:51 PM

subhourly cycling is really challanging maybe better with VC or EnVAR (extended control variable)

**Carlos Geijo**3:51 PM

Do you have any concrete plan for this, Florian ?

**janus**3:51 PM

question

**Florian Meier**3:52 PM

We plan some small exercise on sub-hourly DA, but probably two hourly cycles

**Roger Randriamampianina**3:56 PM

Thanks for the info Florian.

**janus**3:56 PM

Hourly cycling with 4dvar is alreday a challenge with overlapping windows and obs used twice

**Alena Trojakova**3:59 PM

Here is the answer again: @Alena and @Carl: The 1DBay retrieval can be applied to ground-based lightning products. It depends, however, on the type of lightning locating system that should be used (VLF like EUCLID, LMA, ...). For example, VLF network provide us point observations, so we cannot directly infer a flash extent. The GEO data generator that I developed could be used for those data just as I did with Meteorage records to simulate MTG-LI data. One should always verify whether a different thinning is necessary.

**Trygve Aspelien**4:06 PM

We are already using this spectral nudging

**janus**4:06 PM

LUNBC

**janus**4:08 PM

This was a question.

**Florian Meier**4:09 PM

I think it is &NEMELBC0A &NEMELBC0B

**Carlos Geijo**4:10 PM

Do you use spectral nudging also at ZAMG Florian ?

**Florian Meier**4:10 PM

In RUC I use more or less MF 001 namelist

**Michal Nestiak**4:11 PM

And how precise is pressure sensor Bosch BMP280 which is used in NetAtmo?

**pierre**4:11 PM

yes : LESPCL

@florian

**Carlos Geijo**4:12 PM

Which is the difference between these two switches, Pierre ? LUNBC and LESPCL

**pierre**4:12 PM

LESPCL is in the code for a long time you can choose the weight of the nudging

**Carlos Geijo**4:13 PM

you mean that LUNBC is a more recent version of LESPCL ?

**pierre**4:14 PM

no i think it's a redundant think less flexible... and done in a different way

**Claude Fischer**4:14 PM

LUNBC is a sort of Davies relaxation scheme on the vertical (Mariano Hortal), while LESPCL is a spectral nudging on a set of vertical levels ('hope I'm right)

**Jeanette Onvlee**4:14 PM

Correct, Claude

**Ole Vignes**4:14 PM

LUNBC is Davies relaxation, LESPCPL works differently, only on a selection of scales (and levels)

**Carlos Geijo**4:15 PM

OK, thank you for the info. I hope we will have time to discuss more on this !!

