15:00UTC Session on METplus and Operational

Keynote talk discussion:

[10:21am] (Robinson, Tom) Is this being used in the production of scores which are exchanged amongst the WMO NWP centres?

[10:22am] (Casati, Barbara) not yet ... but it should

[10:22am] (Mittermaier, Marion) It will be used to create the CBS scores at the Met Office once we operationalise.

[10:22am] (Row, Mallory) EMC (US) is using MET to compute the scores for the GFS that we send to the WMO.

[10:23am] (Robinson, Tom) Ah. So why are GFS scores vs observations not being sent? We only receive scores against analysis

[10:23am] (Casati, B) In the moment all centres use METplus, there will be less issues in aligning the way scores are computed, and we could easily exchange also the spatial methods

[10:24am] (Mittermaier, Marion) EMC is several years ahead of us in the process. We have just launched the project for implementing METplus this summer.

[10:24am] (Miettermaier, Marion) Robinson,Tom (ECCC) indeed!

[10:25am] (Row, Mallory) We know we need to get this aspect coded up and sent to WMO. It is getting the resources and time to get it done.

[10:26am] (Robinson, Tom) I know what you mean. I've been there

[10:26am] (Mittermaier, Marion) Having common tools should reduce the overhead on each centre.

[10:27am] (Casati, B) yes. then the next challenge will be having a common gridded obs as verification reference ...

[10:28am] (Miettermaier, Marion) There is always a next challenge.... but yes, this is why remote sensed data sets are so important because they are universally available, and even if they have some shortcomings, if all models are assessed a common dataset, this is very powerful indeed.

[10:30am] (Casati, B) maybe, as the synop stations are a WMO reference dataset, it should be a WMO project to provide model-independent gridded obs datasets for different variables (with associated uncertainty mask) for global verification ..

[10:31am] (Mittermaier, Marion) Common code + universal (gridded) data sets = consistent results with uniform coverage

[10:32am] (Michael Foley) Australian BoM is starting to think about usage of METplus including for the WMO stats. We may be a few years off from that, but hope we can benefit from MetOffice breaking the ground...

[10:32am] (Casati, B) then the only difference is .... the models! that's what we want to compare, right?

[10:36am] (Jess Baker) Thanks for a really interesting and informative talk Tara! What's the best way to collaborate to incorporate new code/diagnostics into METplus?

A: Read information on-line on the METplus web site, use Github to download and contribute to code, but still figuring out the governance of how to bring in new contributions. E-mail MET help for assistance.

[10:38am] (Mittermaier, Marion) Great job Tara! Lots of ground to cover!

[10:39am] (Shafran, Perry) Nice presentation, Tara! Lots of info there.

[10:40am] (Casati, B) Does METplus allow editing the score evaluation routines, so that new developments / adaptations are possible directly on the suite?

[10:41am] (Casati, B) (e.g. if we adopt it in our home institutions, we might want to edit)

[10:43am] (Manfred Doringer) ad Marion: a universal (gridded) and accepted data set: What a challenge!

[10:46am] (Mittermaier, Marion) Dream big Manfred, whlist taking babdy steps.

Q: (Havir Singh) Using MET (lots of children background noise) for heat wave event verification, how can this be optimized?

A: Can find different convolution thresholds for different phenomena in MODE, can turn on "quilt=true" and a string of thresholds for the radius, and it will automatically compute and identify objects for the radii and threshold pairs. This is what I do to find the "sweet spot" with a new data set.

Q: If you choose higher or lower, how does it impact?

A: Radius controls the smoothing of the field, if using high res data like convection, suggest to use smaller convolution radii so that definition is better, and threshold is applied to those fields, kind of "beats down" higher intensity and creates a smoother object. Would like to work with you on this off-line.

Q: (Rahul ?) : Thanks for the presentation, we are using this in Delhi, and full potential of MET and MODE, and it is now making sense and thanks for the assistance

(Zhuo Wang) Process-oriented Model diagnostics for extended-range forecasts: a preliminary evaluation of the GEFS v12 Reforecasts

[11:09am] (Bueeler, Dominik) Thank you for the nice talk! An interesting study that might give insight into possible causes for blocking biases in extended-range forecasts is by Quinting & Vitart, 2019: https://doi.org/10.1029/2018GL081381

Discussion:

No questions or discussion.

(Johnathan Vigh) Developing a Space Weather Verification System Using METplus

Discussion:

No questions or discussion.

(Shafran, Perry) Verification of Air Quality Predictions using METplus

Discussion:

Q: (Tara Jensen) Wanted to point out that the collaborative process with EMC has helped add a lot of tools to MET, and to overcome large challenges with computing specialized metrics with particular data sets. GOES-16 AOD required adding an entirely new tool to assist with verification using that dataset.

Q: (Susan Ledbetter) Does it take a lot of work to put AQ obs into a format readable by METPlus?

A: Some obs had to be put into prepbufr format so it was somewhat easy, but had to configure the prepbufr files to handle the specific type of 24-hour verification needed. Do not know the particulars on gridded satellite data.

Q: (Marion Mittermaier) Responding to Susan, a PHd student used MET, and was able to get AQ obs into MET and can talk if interested.

(Jose Roberto Garcia) MEC – A web-based tool for multi-model weather forecasting evaluation comparison

[11:29am] (Harbord, Roger) I just opened https://garcia-cptec.shinyapps.io/CPTEC_DAILY/ and it looks really nice! The interface is in Portuguese though, while your slides showed it in English - is there a way to switch?

[11:31am] (Leadbetter, Susan) If you open in Chrome it will offer to translate.

A: Internationalization is a future task.

Discussion:

No main questions or discussion.

(Babatunde Atoyebi) The dichotomous method of weather forecast verification at the central forecast office (CFO) of the Nigerian Meteorological Agency

Discussion: Technical issues prevented the entire presentation from being viewed.

General Discussion after all talks/posters complete:

Comment: Tom Robinson: Are any Centers using METplus for production of CBS scores? Yes, EMC for some scores, not all yet, and other national centers are working towards it. Comments in the chat revolved around looking into creating common data sets for verification across international Centers.

Comment: B. Casati: Would be good to have a standardized gridded observation data set that all Centers can use, Can WMO create this into a future project? This tool would be helpful for standardization. The only differences would then be the models.

Comment: Tom Robinson: How much development time would be needed to produce the scores for the CBS exchange?

Comment: Mittermaier: Just getting started, working on data flow issues and spinning up on METplus. In terms of how long it takes, for us, UKMO uses odb and project with NCAR DTC will support odb and will hopefully be able to read odb directly into METplus. Path would be relatively straightforward. It's Center dependent.

Comment: Mittermaier: Need to minimize the amount of data conversions for METplus, but that's one of the issues. Moving to NETCDF has a standard and removing local, custom data formats that are difficult to use. Getting the data into MET is a big undertaking. 90% of the work is data manipulation and preparation, 10% is the actual calculation. The more standard things we have with data sets and formats, the easier the work will be. We have to keep pushing this, and more commonality between international partners. Technical issues could be more than scientific issues.

Comment: Alicia Bentley: Question to Tara, one of the things that EMC has not transitioned to METplus is waves verification. Tripolar grids are difficult, is there an update?

Comment: Tara, Tripolar has made some headway, theoretically, can use the point to grid tool, one of the efforts to start in December that is funded by NOAA is to actually work on using the marine and waves verification package at EMC as python embedding to read in tripoloar data. MET team seems python embedding as a way to overcome these types of data format issues. DTC is getting started soon on this area. MET is moving towards better support for NETCDF, currently supports an older NETCDF version, looking to make better.

Comment: Ashrit: METplus has been WRF centric in the past, but can now be used for reading in different data sets. Different Centers tend to focus on their region of interest, but what is the support for WMO scores?

Tara: MET has support for CBS scores (also known as WMO). EMC is using METplus for some scores. Still needs to include the SEEPS score, collaboration with UKMO will help. Support for the CBS format is supported by METplus currently.

Casati: Can we modify the MET core?

Tara: Yes, you can, you can add into your own capabilities. The core is written in C++, and the Github repositories are open, so you can make changes as you'd like.

Casati: This is encouraging, to make small updates is possible. With new techniques, how mature do they have to be to make it into MET?

Tara: Good question. A governance process will be discussed soon to determine how to bring in and vet new techniques, and how to decide what goes into METplus. In the past, the technique must have been in a published paper so it can be referenced in documentation, but open to new "litmus" tests for bringing in new capabilities.

Marion: Manage externals can be used to possibly link new capabilities to MET. Lots being developed in Python.

Havir: MTD, visualization an event? Is there a plotting tool?

Tara: No specific plotting for MODE time domain at this time to support the community with, but a few example scripts exist.

Marion: We have a script, but it's not very polished and it is a challenging plot.

Ashrit: Basic technical question, does it use spatial-dx (?) package of R.

Tara: No, we don't use that package and we will be moving away from R and towards python. EMC and others cannot support R in real-time operations.