2020 Verification workshop presentation notes

10 Nov 2020 – Session 2: Data Assimilation (Discussions with presenters)

Thomas Auligne: Data Assimilation techniques in verification practices (keynote)

- Beth Ebert
    - As for the possibilities offered by DA-based verification: more spatial verification (x-z, vertical profiles) should show structural errors in model forecast
    - Archived analysis increments are usually only for first guess: +6h or +1h or similar, depending on the frequency of the DA cycle. With the Unified Forward Operator, analysis increments can be applied to any lead time (e.g. also +24h), to allow models to be compared with the 3D analysis
- Thomas Auligne: verification can help data assimilation, by providing estimate of the representative error and of the model error

Daisuke Hotta: "Twin-analysis" verification: a new verification approach that alleviates pitfalls of "own-analysis" verification when applied to short-range forecasts (oral)

- Deryn Griffiths
    - Why in the presented scorecards RMSE and ME show often opposite signal? Maybe this is due to the fact that the model is tuned to minimize the RMSE when measured against the own analysis.

Angela Cheng: Measuring uncertainty in sea ice concentration observations in Canadian Ice Service ice charts (oral)

- James Bennet: Is there a clear truth to compare with?
    - A. Cheng: the least possible ambiguous imagines have been selected, with the clearest possible structures. Then it is used as “truth” the ice concentration estimated by an algorithm operating on these images.
- Deryn Griffiths: Is the score able to see the order of the categories (close categories vs far categories)?
    - A. Cheng: yes, this is made by giving different weights depending on the distance of the categories.

General discussion

- Deryn Griffiths: the final remark of D. Hotta was that the verifcation for forecast ranges below 24 h should not be believed, because it is too much influenced by the correlation between the forecast and the analysis. Does D. Hotta suggest how to perform this verification, instead?
    - D. Hotta: he has suggested to apply this “twin-analysis” verification, otherwise it could be good to perform the verification against analyses from different centres

- Barbara Casati: since the “twin-analysis” uses the same observation and the same DA system of the own analysis, is it not affected (at least partly) by the same problem of too high correlation with the forecast?
    - D. Hotta: he does not claim that his proposal is the solution, but the verification against “twin-analysis” provides a lower boundary to the scores
- Chiara Marsigli: referring to the talk of T. Auligne. The usage of info from DA in the verification could have the same correlation problems. For example, the application of bias correction in the DA, based on the comparison with the first guess, may produce an analysis too much correlated with the model forecast. How to address this issue?
    - T. Auligne: The perfect reference to be used in verification does not exist. Usually, care is taken when the bias correction using the first guess is performed, it should be avoided to correct too strongly. The monitoring of the bias correction itself is also needed and it can be used to provide info for the verification.
- Barbara Casati: Which are the characteristics of Jo (presentation of T. Auligne)?
    - It is a norm, a single scalar value, part of the cost function. It provides a measure of the fit of the observations; it combines all the observations from all the instruments.
- Tara Jensen: Where is Jo contained?
    - T. Auligne: it is in OOPS.