WMS and Ensemble data at KNMI

Overview of current practices

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GLAMEPS

- GLAMEPS is a LAM ensemble with 52 members.
- 4 times a day half of the ensemble runs at ECMWF. Data from 2 consecutive runs is then reconstructed into a full ensemble (a "lagged" ensemble).
- Data is visualised at KNMI by means of the ADAGUC WMS server

Basics for ensemble data

- One of the basic assumptions (borrowed from MetOcean BP for WMS) is sane behavior for non-conformant clients.
- Ensemble data has an extra dimension, called member. Data for one realisation or member are adressable in WMS request as *DIM_member*.
- All derived data (*mean, stddev, probability of exceedance*) are preprocessed and served as separate layers
- A naming system for layers and derived data helps to structure layer data in an understandable way (based on CF *standard_name* plus some extra information)

Derived ensemble data

- Derived data like probability of exceedance of a range of limits can also have an extra dimension for the limits in WMS calls (like DIM_precip03hlimits).

- This yields a reasonable amount of layers; using dimensions for limits (or quantiles) keeps the number of layers small

- KNMI uses precalculated derived data, but that is not necessary; calculations on the fly are equally possible.

Conclusions

- This setup works with any type of client (supporting WMS MetOcean BP)

- This setup stretches the use of dimensions to describe more than spatial/temporal aspects of data. (Personally I see no harm in that).

- This setup can only provide predefined data sets (no flexible processing which can be requested with parameters in the WMS request).