PHY-EPS hectometric workshop

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Status

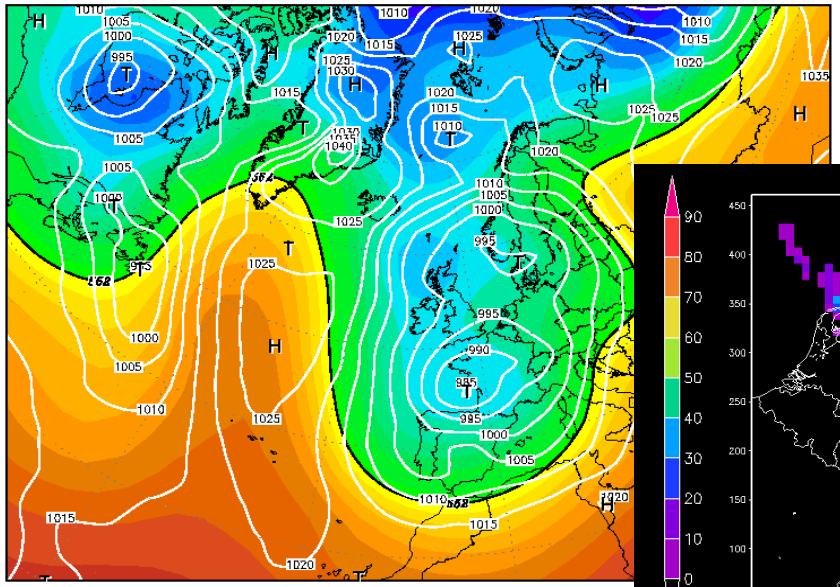
- NWP models are moving towards the hectometric scale
  - What do we mean with hectometric?
    - O(100 m)
    - below 1 km
    - but likely we mean also above 10 m
- Are the models ready?
  - It is not enough to increase the resolution, we also need to adapt the models!
    - physics, physiographic data
    - data assimilation
    - and all the related fields, like verification and post-processing

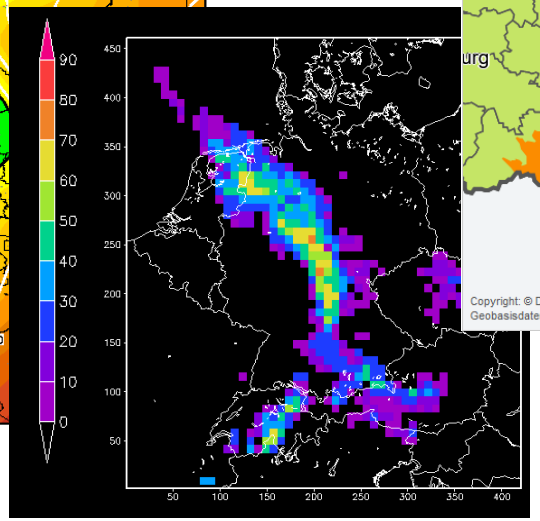
Status

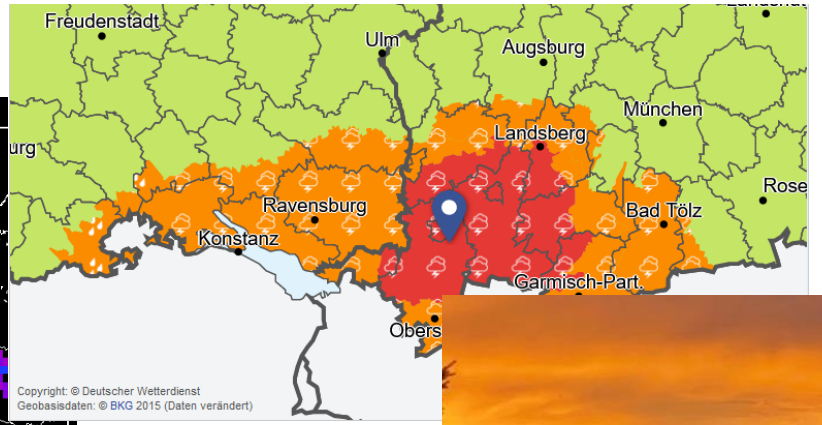
- Do we have the observations to understand if the models are ready?
  - Do we have observations to diagnose the model for high-impact weather?

Status

- Do we understand the predictability at this scale?
  - what can be predicted, what cannot
  - what mainly determines the predictability of the weather phenomena on which we focus at this resolution







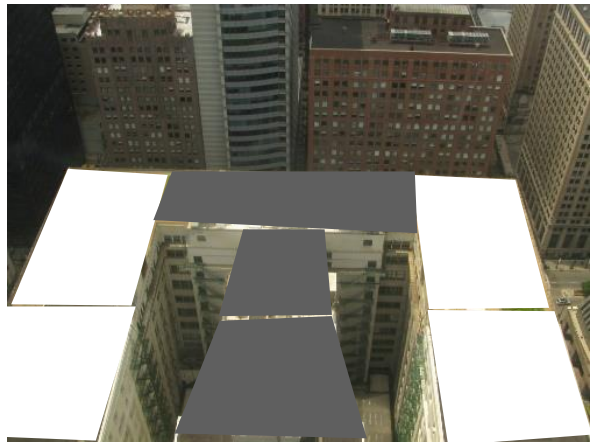
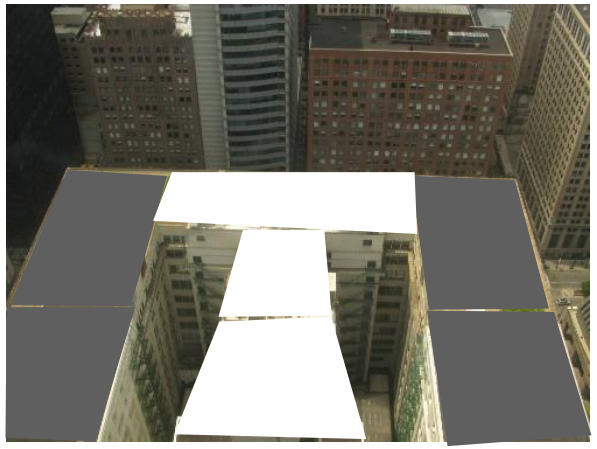
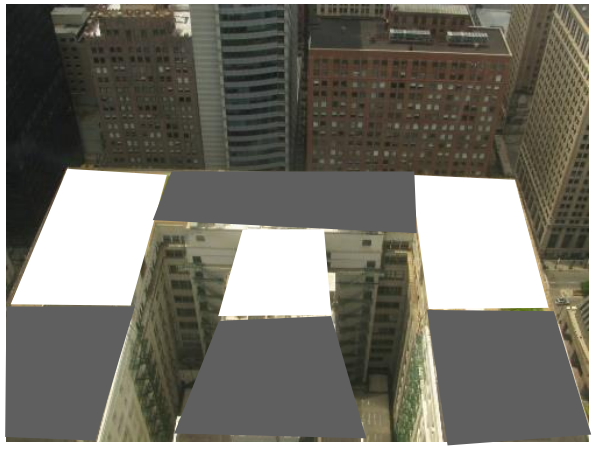
De(/in)creasing complexity of the model physics

- On the one hand, the model will resolve explicitly some processes and their parametrisation will not be needed anymore
  - less parameters, less ad-hoc
  - less unknowns
- On the other hand, we will introduce in the models more processes (e.g. urban modules) which will require new parametrisations
  - new unknowns!

The known unknowns´ tongue twister

- Distinguish between:
  - what we know that we don´t know (maybe we will know it at the next resolution increase …)
  - what we know that we cannot know (e.g. convection?)
- Epistemic and aleatoric predictability

	Knowns	Unknowns
Knowns	**Known Knowns** Things we are aware of and understand.	**Known Unknowns** Things we are aware of but don't understand.
Unknowns	**Unknown Knowns** Things we understand but are not aware of.	**Unknown Unknowns** Things we are neither aware of nor understand.

Why PHY and EPS?

- Based on the existing community created by EWGLAM/Paris RDP/100m-workshop
- Start off on the right foot for the hectometric scale
  - for the ensemble people: work together with the model developers from the beginning, to include the ensemble approach in the models for the 100m scale
  - for the physics people: see if the ensembles can help in forecasting convection!
  - for all: have observations and methods for the diagnostics of the models at this resolution

- Our aim of these three days is:
  - identify and discuss most promising developments, share ideas
  - propose next steps and collaborations

Enjoy the workshop!