Link with applications: status and plans

ET-App,

EWGLAM meeting Exeter, 20101004

After Athens meeting: decision to focus ET App on:

- The use of meso(km)scale models by users (esp. forecasters) and how to improve this
- Enhance usefulness of NWP as tool to support nowcasting

Status:

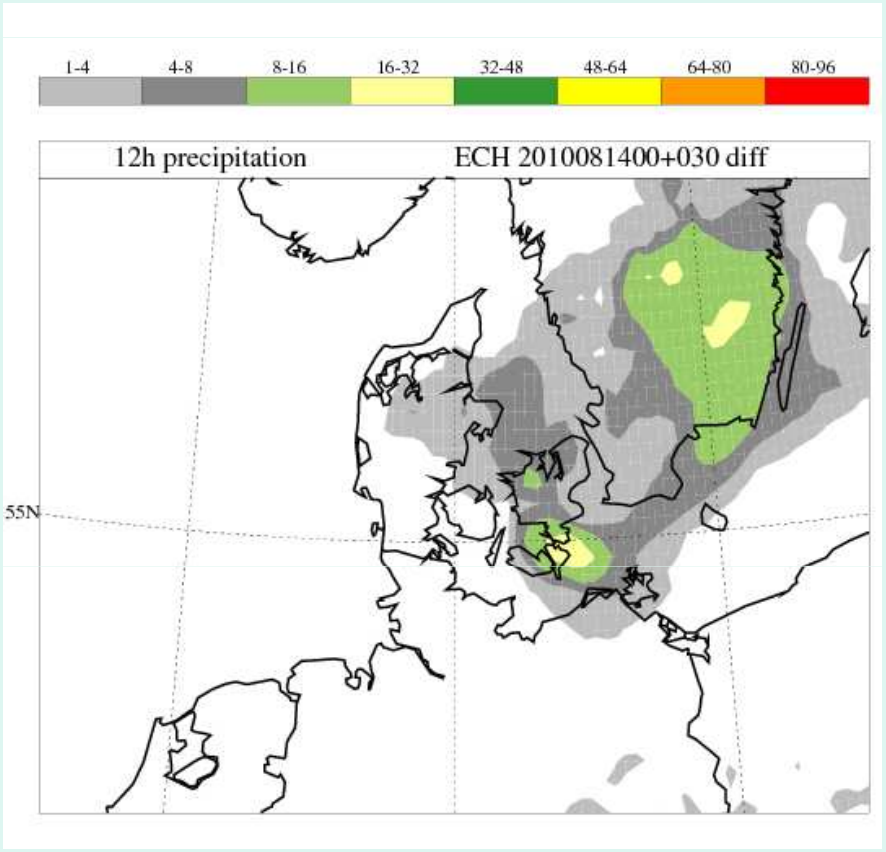
- Too little ET team activity
- However, some individual activities on both topics
- Proposed change in chairmanship

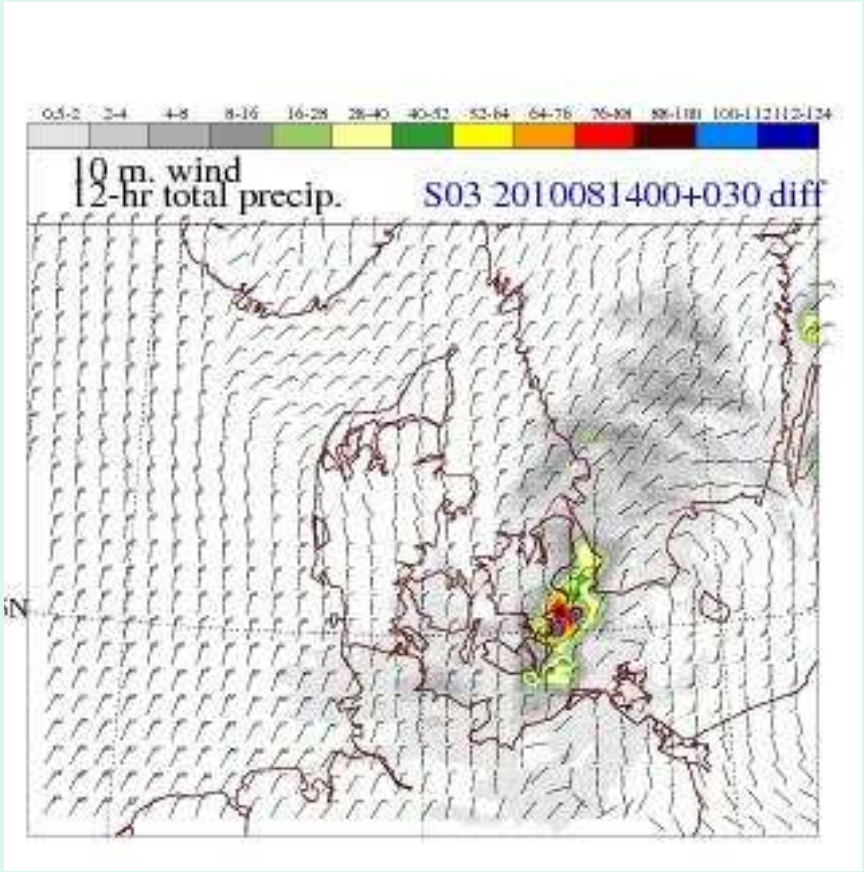
Use of mesoscale models by forecasters / end users

- COSMO Workshop "stratified verification of high resolution models and guidelines to forecasters"
- Contacts with EUMETCAL
- Questions from duty forecasters
  - the best use of high-resolution NWP as guidance tool for severe weather warnings

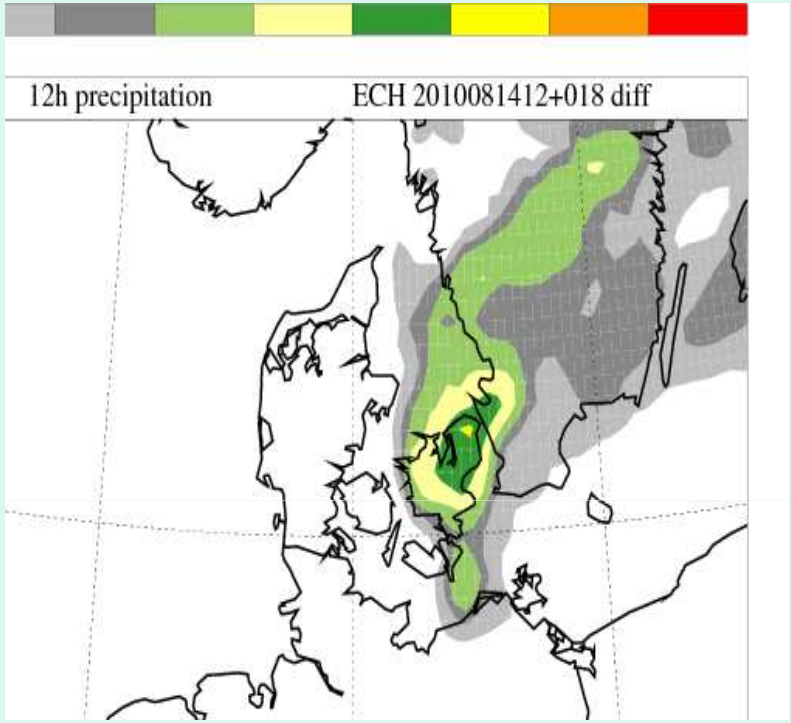
An example: 14/8/2010, Denmark

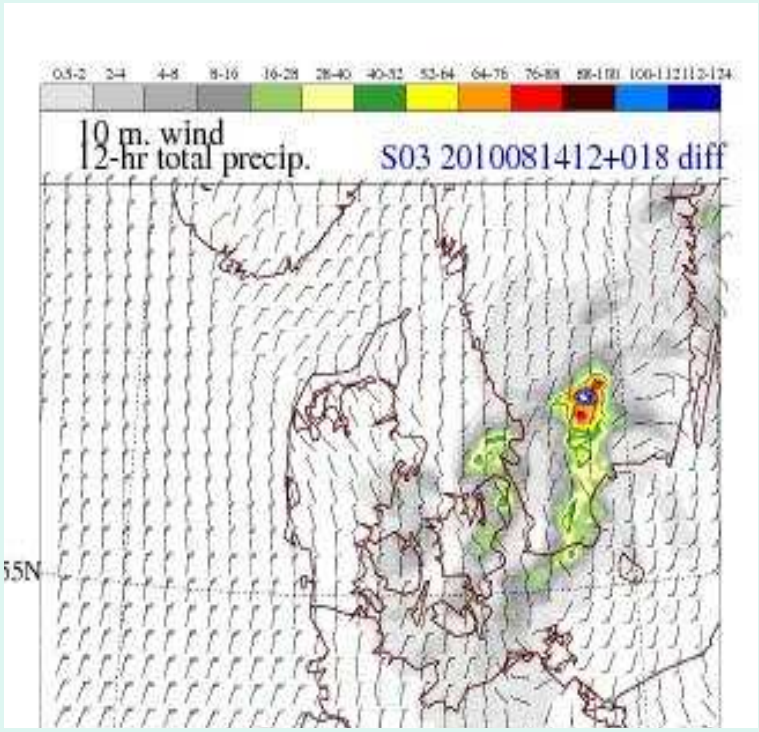
A potential weather alarm situation puts the forecaster on alert:





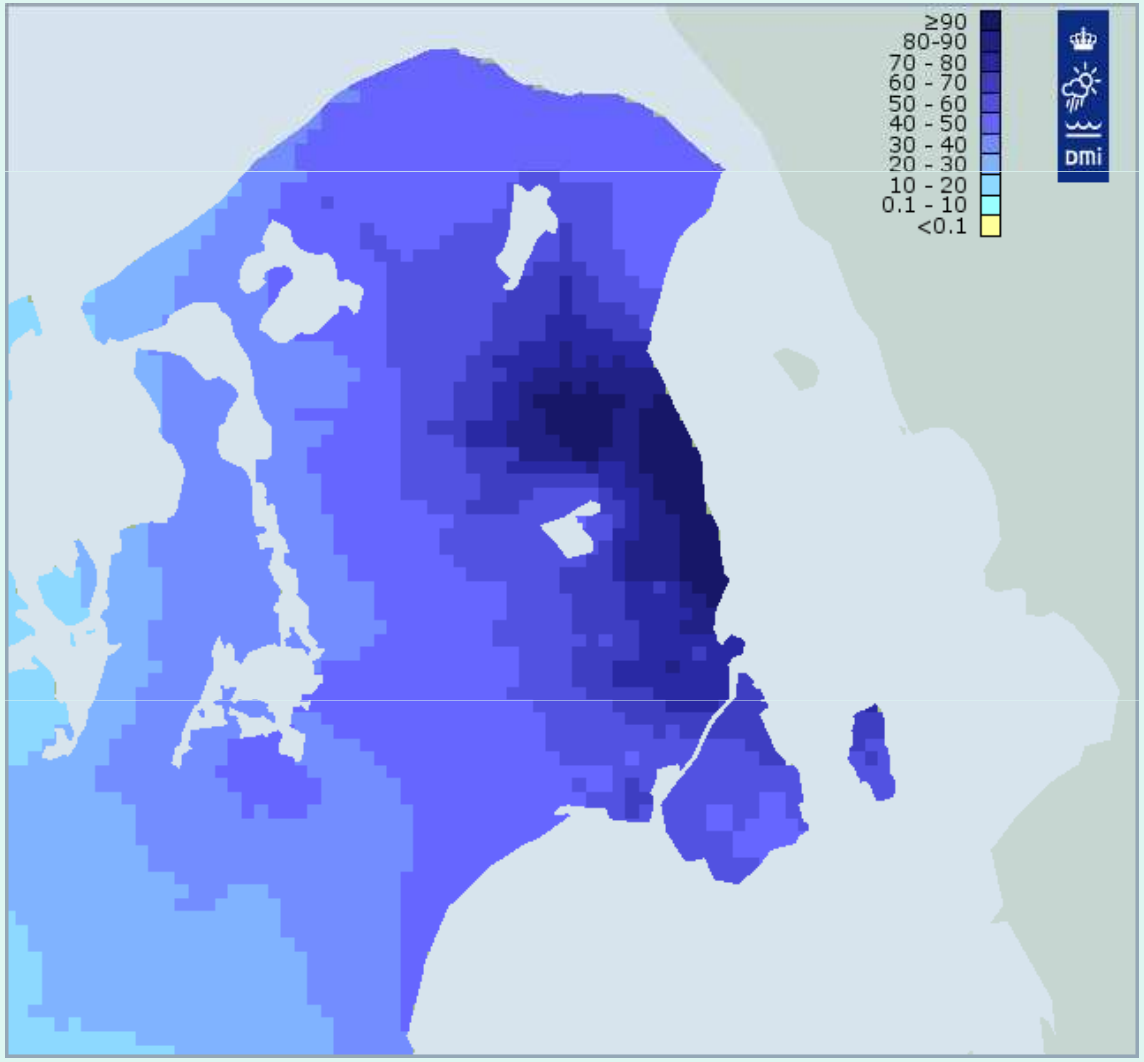
… A dilemma:
is it going to be harmless after all?

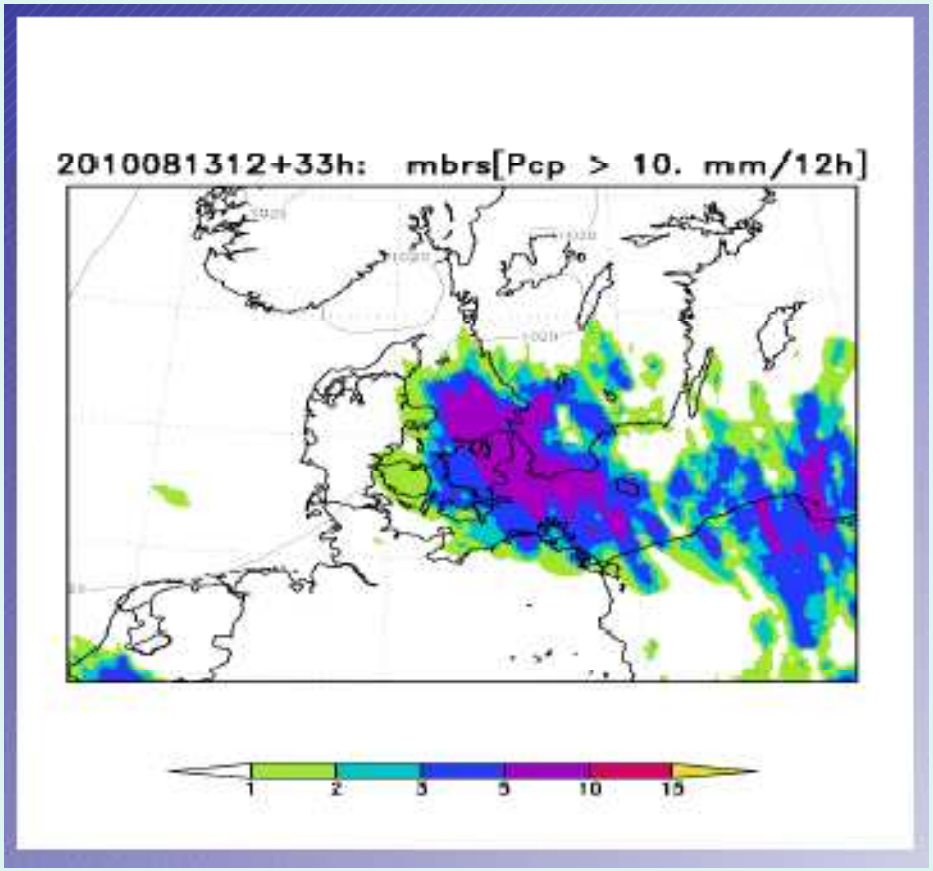





Copenhagen after the rain...
70

>100mm precip in several hours




2010081312+33h: mbrs[Pcp > 10. mm/12h]
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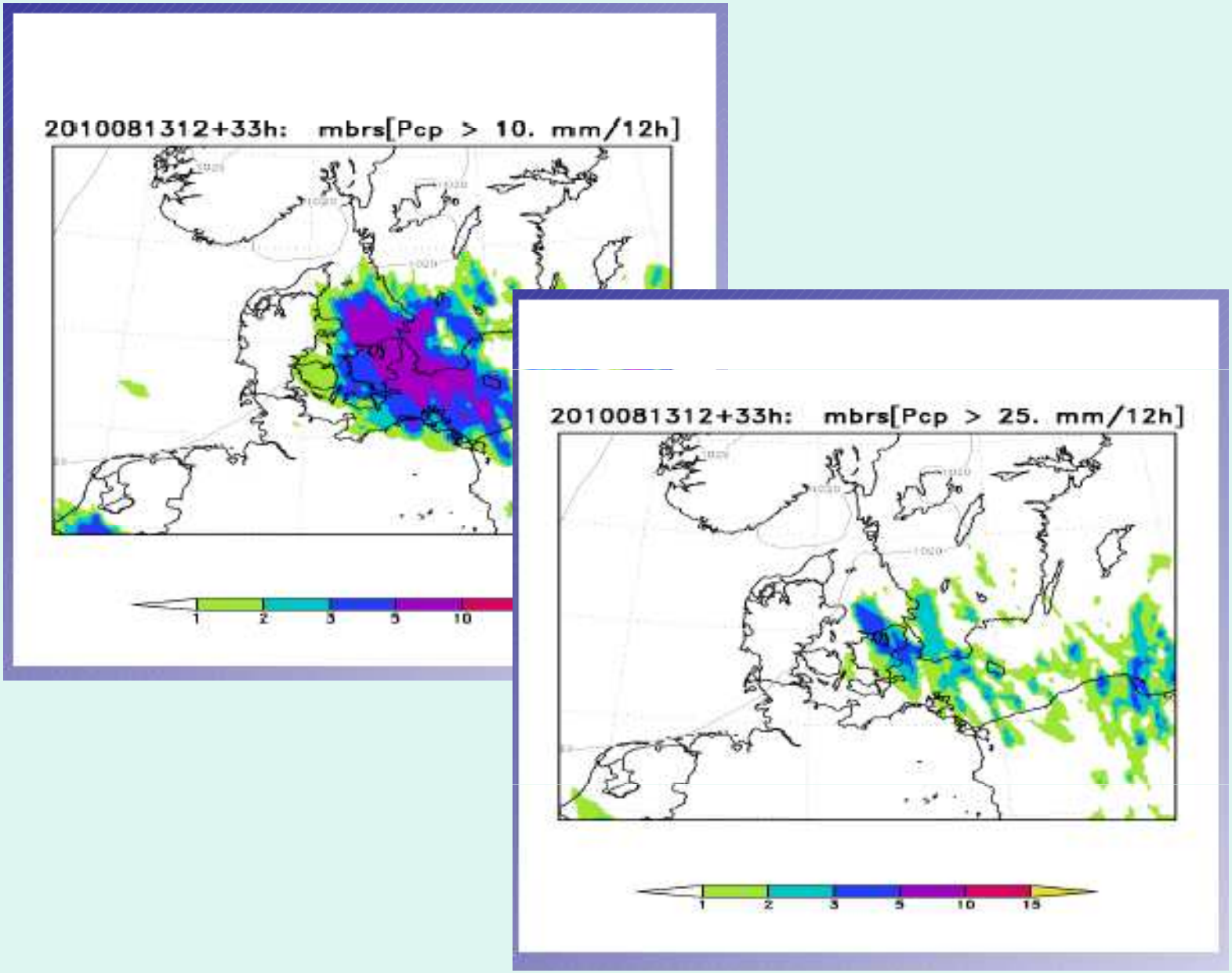
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2010081312+33h: mbrs[Pcp > 25. mm/12h]
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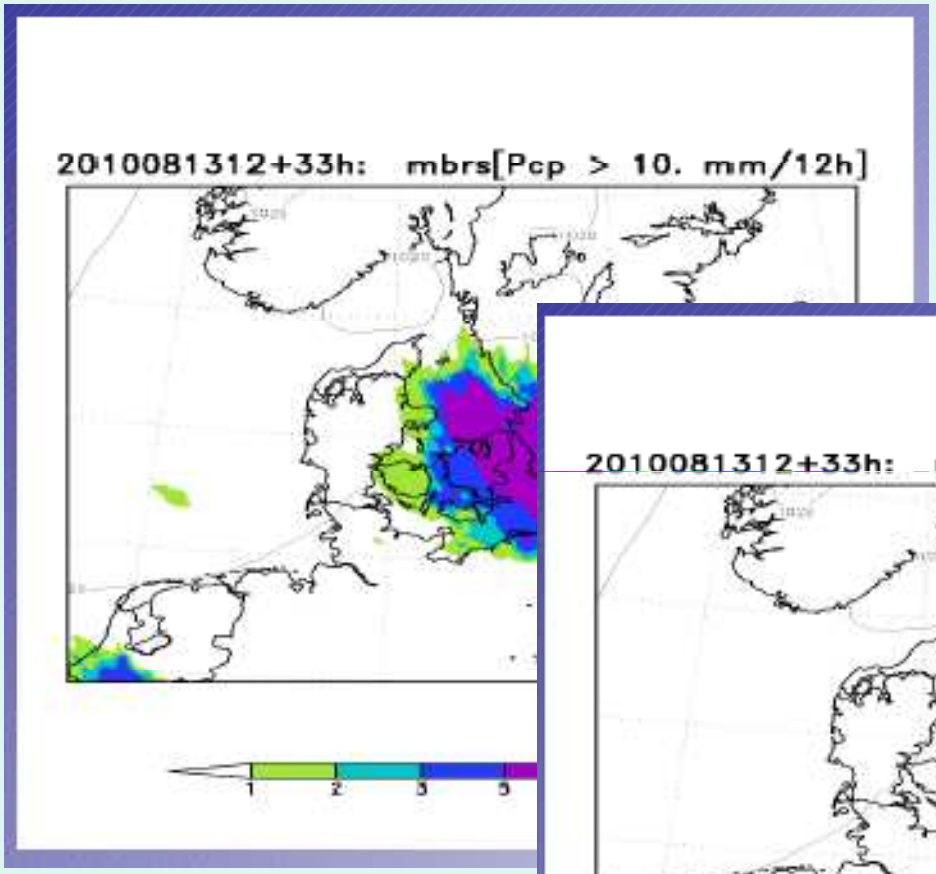
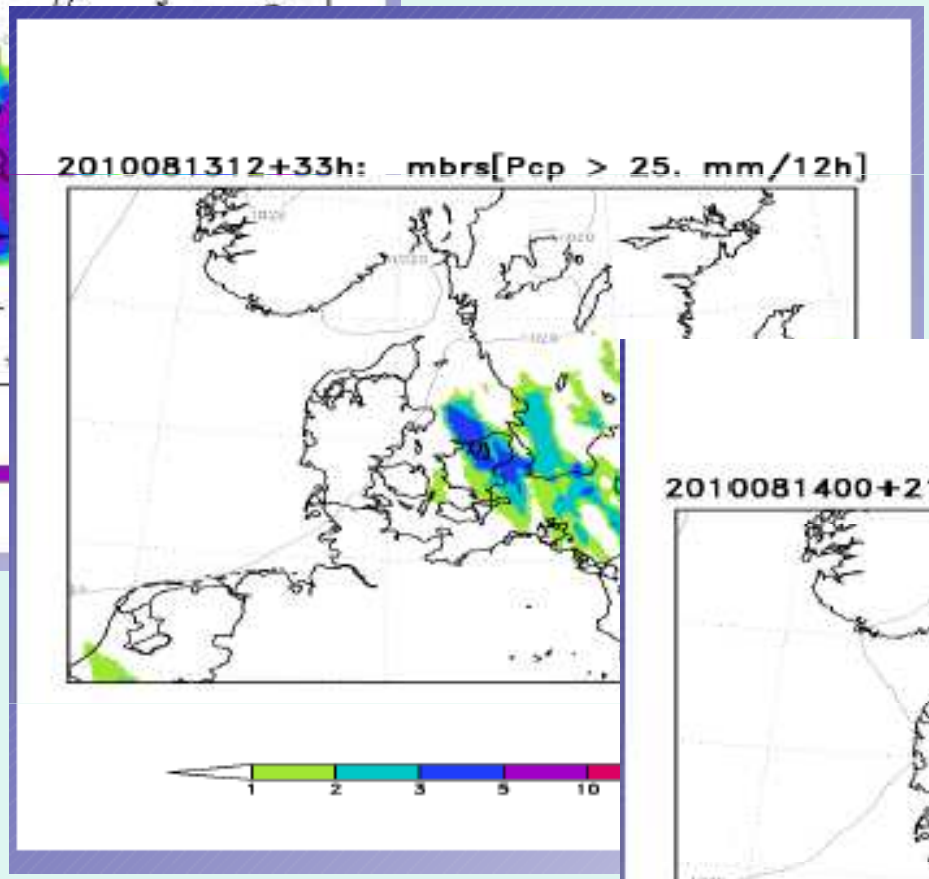
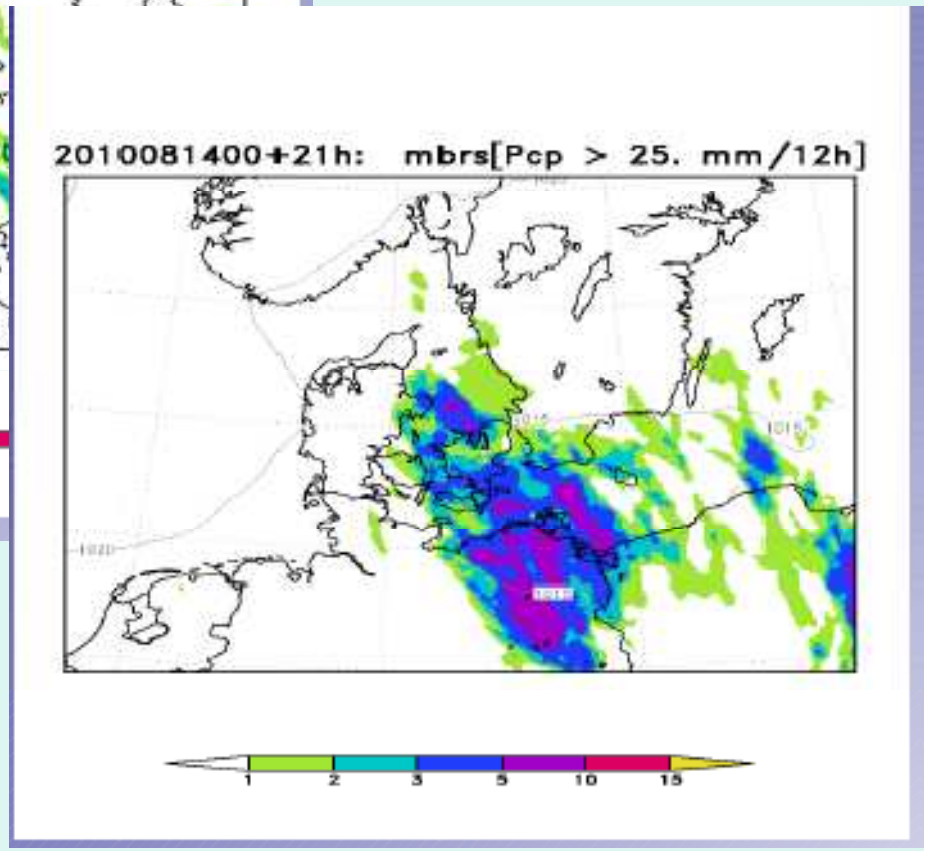
DMI's 5km 25-member HIRLAM EPS: is three members enough to warrant an alarm?







Even when the ensemble captures the event: routine products (ensemble mean and probability maps) may fail to alert the forecaster.

Dilemma for duty forecasters:

When using high resolution (deterministic + probabilistic NWP input for severe weather warning purposes:

- How to deal with model inconsistency (particularly in +12 - +24h range)?
- How to use small number statistics from LAM EPS in guidance for severe weather warnings?

Can we provide them with some guidance on this?

Nowcasting

- Types of nowcasting tools used
  - Purely observation-based (e.g. radar extrapolation)
  - NWP used indirectly in model-based or hybrid observation-model-based system (e.g. spatialization tools like INCA, VERA, MESAN, SAFRAN; 1D-models for fog; …)
  - Increasingly: direct use of NWP in some form of RUC mode

- Contacts between NWC and NWP communities weak
  - NWP people too little aware of typical nowcasting challenges, and suitable ways to incorporate NWP info in NWC
  - NWC people too little aware of potential of NWP / best ways to incorporate it / probabilistic way of thinking
  - Inherent limitations from the fact that NWP normallu must serve more than only nowcasting

➔ WMO/WWRP initiative to strengthen this interaction

Workshop “Use of NWP in support of nowcasting”

- Confront challenges of NWC with present and future prospects of use of NWP for NWC, scope way forward
- ~30 participants from NWC and NWP communities (invitation only)
- Spring 2011, time and location tbd
- Topics:
  - Challenges of typical NWC applications
  - Present use of NWP used directly for NWC: Capabilities and limitations. How to optimize NWP itself for 0-6h range?
  - Indirect use of NWP for NWC: capabilities and limitations. When to use NWP directly, when better indirect?
  - Future prospects: new approaches to model-based nowcasting of severe convection, fog, fronts and rapid cyclogenesis; predictability in NWC; …

The Eyjafjallajokull eruption

The volcanic ash event itself:

- Major and long-lasting societal impact
- Requirements for observations/monitoring
- Opportunity to test transport models
- Opportunity to test warning procedures and criteria
  - At global level: e.g. ICAO norms for “permissible ash”
  - At European level: role of VAAC
  - At national level: contacts NMS’s – emergency / aviation authorities
- Lessons learned from all of this?

- Volcanic eruptions not very frequent perhaps, but lessons to be learned for other activities?