



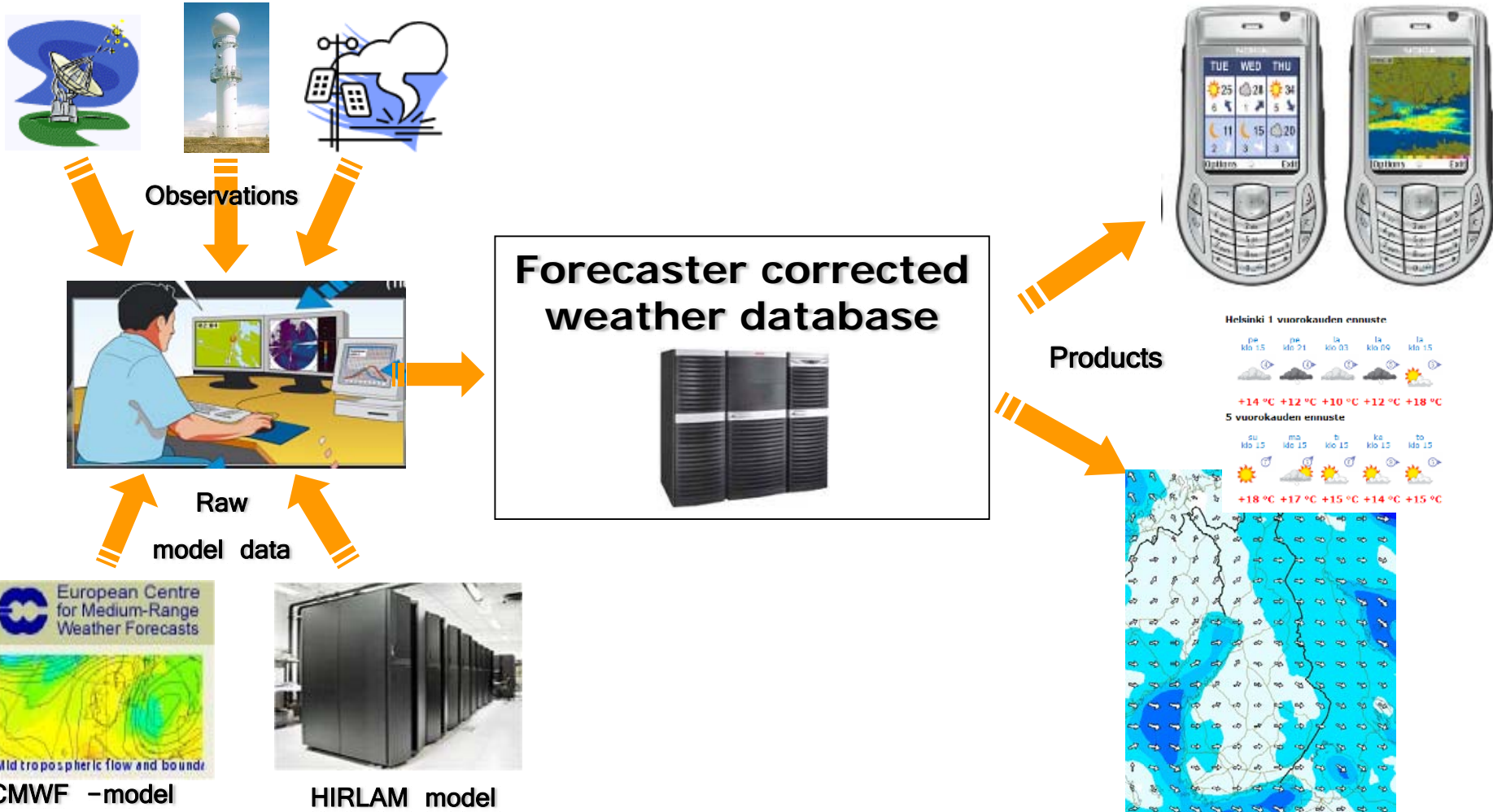
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# Use of ECMWF products at FMI Weather Service

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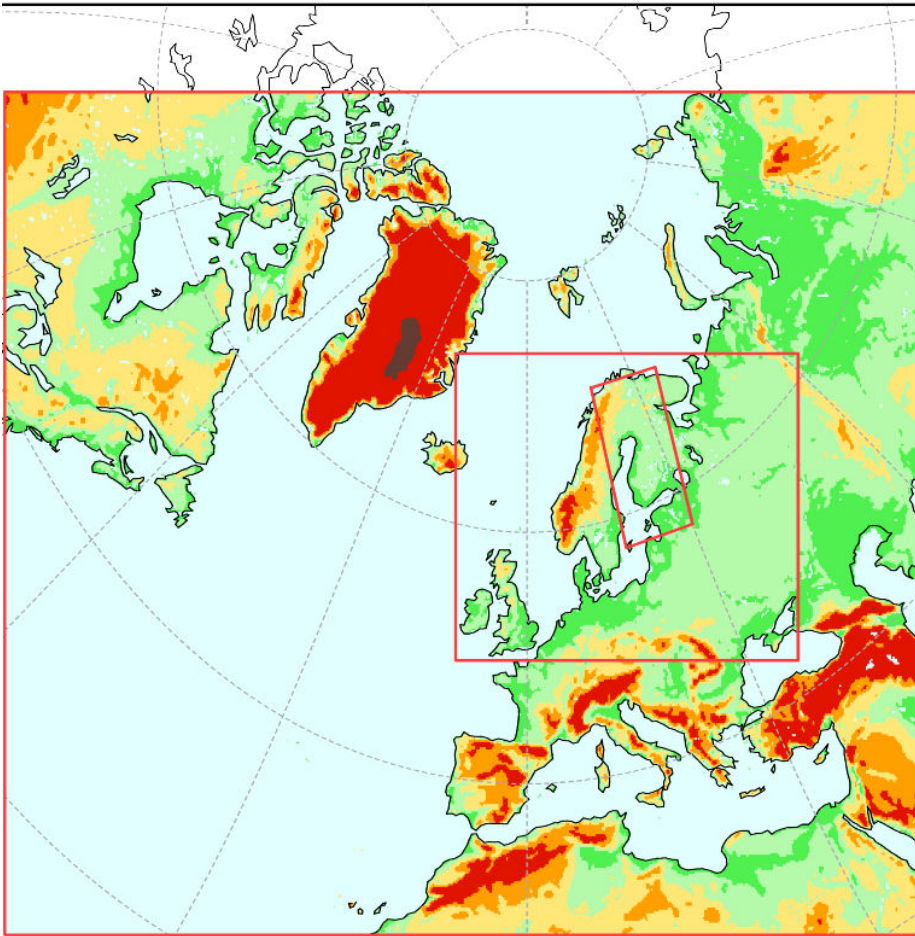
# FMI Production Chain





# Models in use at FMI

HIRLAM RCR → HIRLAM MB71 → AROME

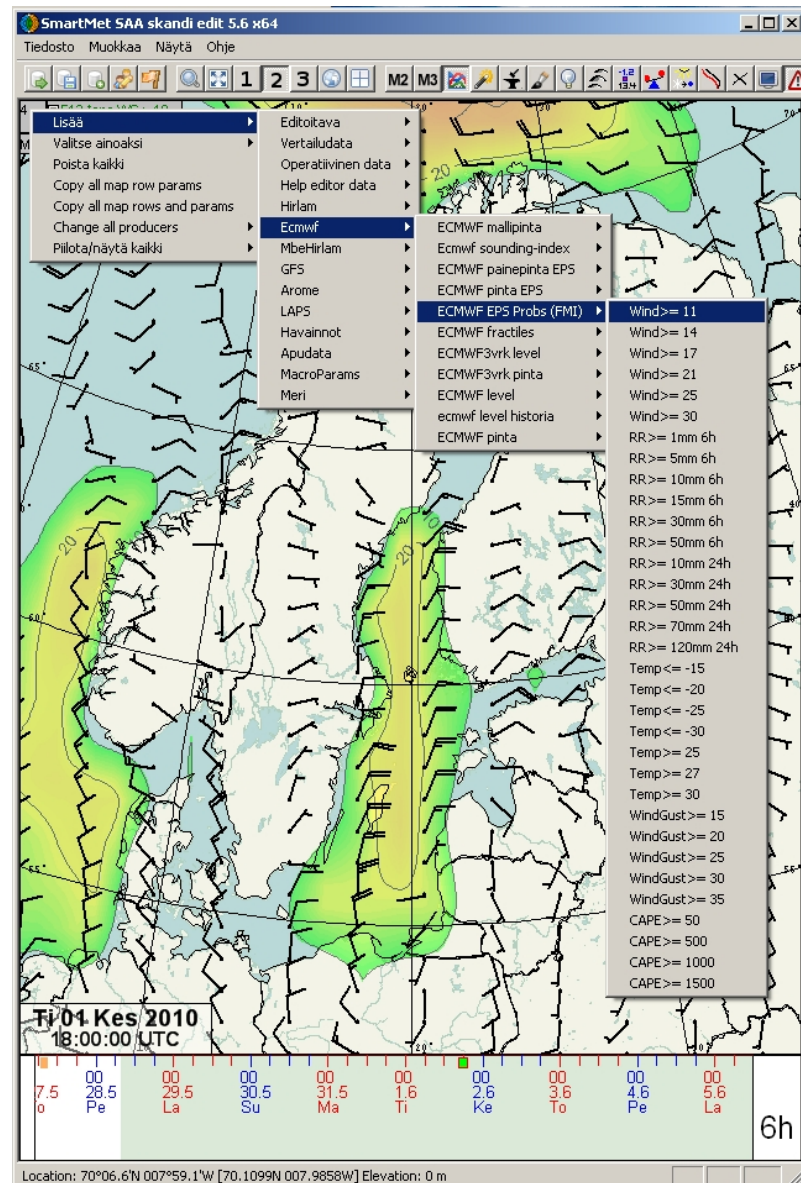


- HIRLAM family:
  - AROME 2,5km-grid
  - MB 7,5km-grid
  - RCR ~15km-grid
- ECMWF 25km (=> 16km) (mostly used in database operations)
- GFS 50 (?) km (not used in database operations)
- LAPS becoming.. ?



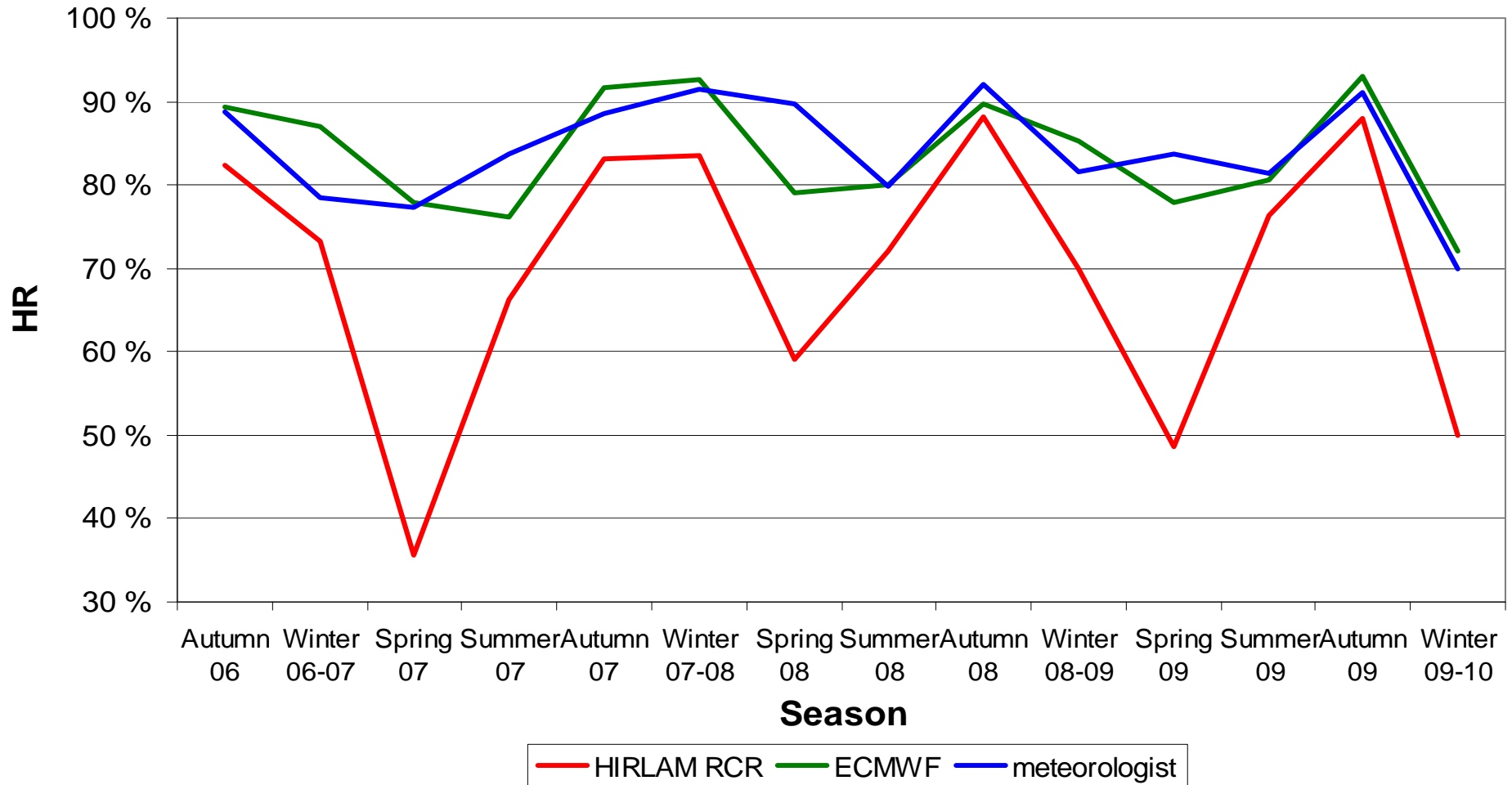
# New EPS-based probability products at FMI

- **Probabilities** for existence of several weather events by using EPS. Limits are fitted for Finland's conditions
  - **10 min avg wind** > 11, 14, 17, 21, 25, 30
  - **Gust wind** > 15, 20, 25, 30, 35
  - **Tmax** > 27, 30, 35C **Tmin** < -15, -20, -25, -30
  - **CAPE** > 50, 500, 1000, 1500 J/kg
  - **24 h rainfall** > 10, 30, 50, 70, 120 mm
  - **6 h rainfall** > 1, 5, 10, 15, 30, 50, 70 mm
- EPS –based products are available in FMI database but using them directly for customer products is problematic because EPS spread seem to be underdispersed and therefore need calibration





## Hit rates: daytime max temperature – 1 day forecast



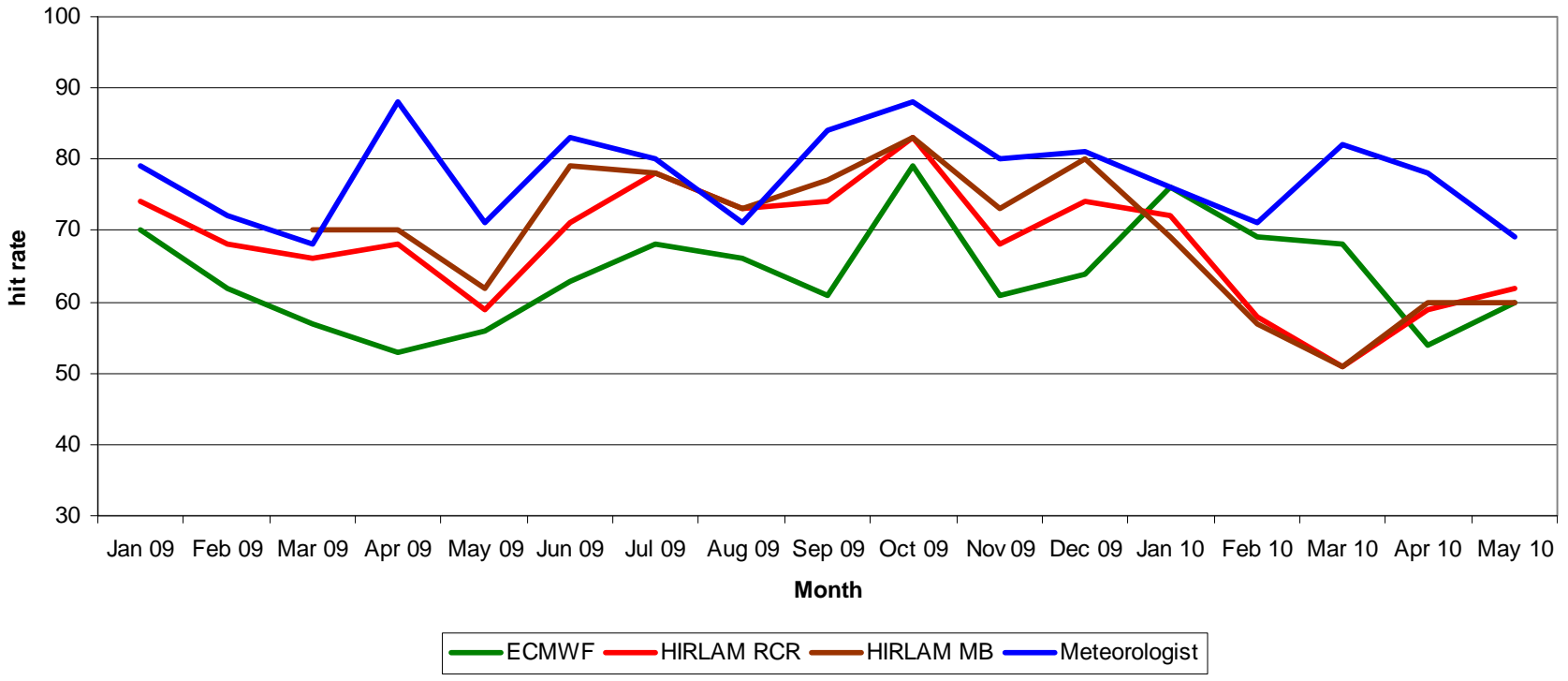
- Serious problems in HIRLAM but ECMWF works well trough the year



# How do we benefit from better model resolution?



## Hit rates (ROC - 24h forecasts) on Finnish Sea areas: Gale and storm cases (ws > 14 m/s)

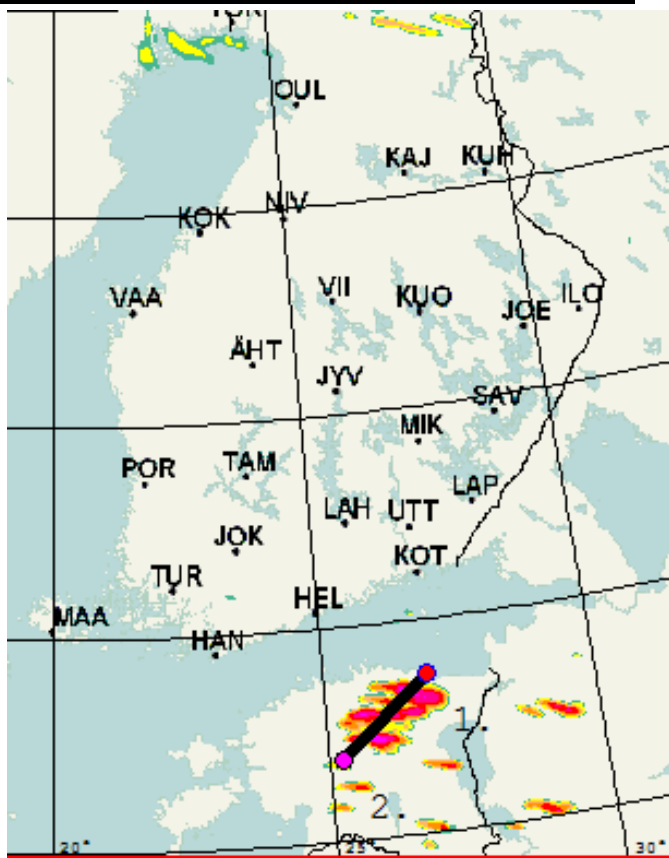


- The better resolution the better wind forecasts



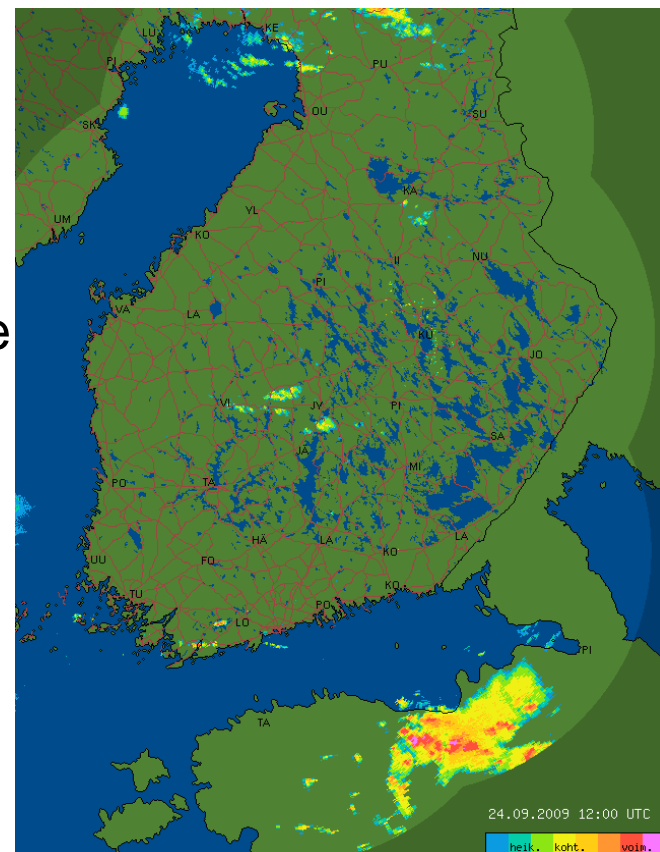
# Mesoscale event 24.9.2009 at 12 UTC

HIRLAM AROME rain forecast



Rather good forecast  
in meteorological sense  
but..

Radar observation



Always inaccuracies in space and time => challenge to deliver  
deterministic point forecasts => need for probabilistic approach



# Conclusions

- **ECMWF as a reliable model is most often used for database operations at FMI**
- **Enhanced model resolution is good, but**  
⇒ **More probabilistic approach is needed**
- ⇒ **Challenge for national weather services**