



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

FMI

Customer-oriented services

Fourth International Verification Methods Workshop

**Juhani Damski,
Director, Weather and Safety**



Welcome to FMI-HQ

FMI:

- 621 man-years
- services 300/research 286/other 45
- Budget- 2009: 57 M€ (65% Gov.)
- Three regional offices
- Arctic Research Centre at Sodankylä/Lapland



Kumpula campus:

- Alltogether 1000 experts on atmosphere, space, marine & earth systems
- Centres for excellence
- Private enterprises
- Shared professors
- EU & national projects



The national obligations of the FMI

(As stated by the Finnish law)

FMI runs it's services to meet especially the needs of society and public safety

- **Basic services and warnings free of charge**
- **Support to safety and rescue authorities also free of charge**
- **Weather service for the Civil Aviation and the Defence Forces (full-cost pricing)**
- **Commercial weather services**

- **Customer orientation is stressed in all actions**
- **Effectivity measures are based on the indicators**

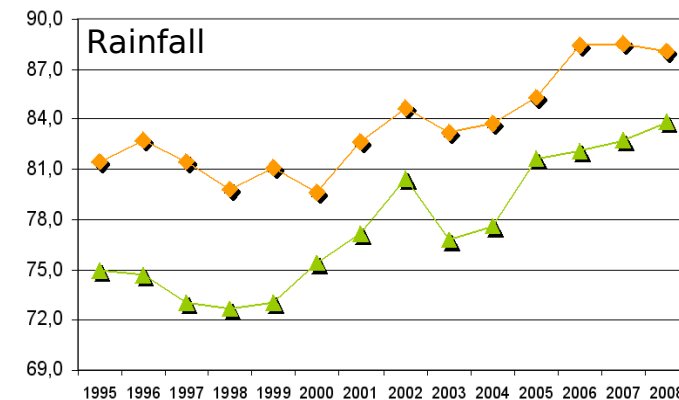
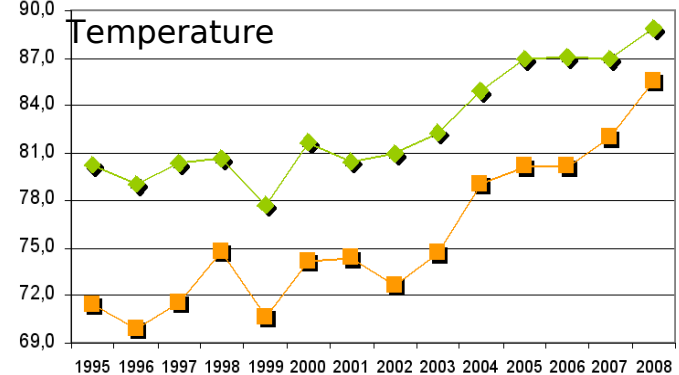
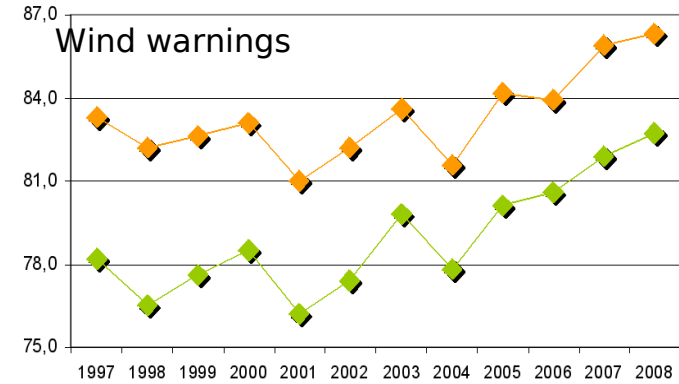




Effectivity indicators - RESULTS 2008

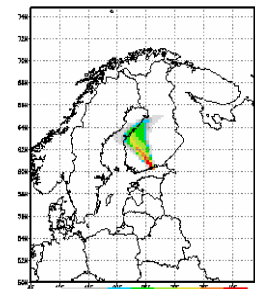
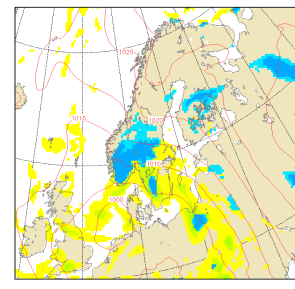
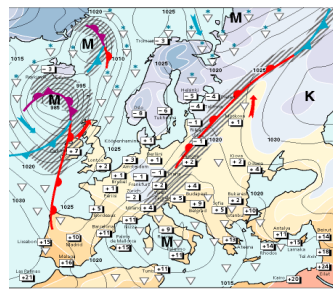
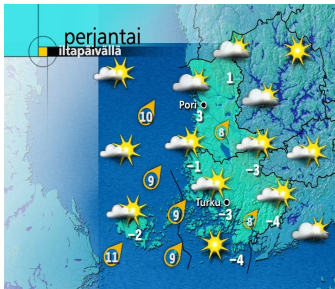
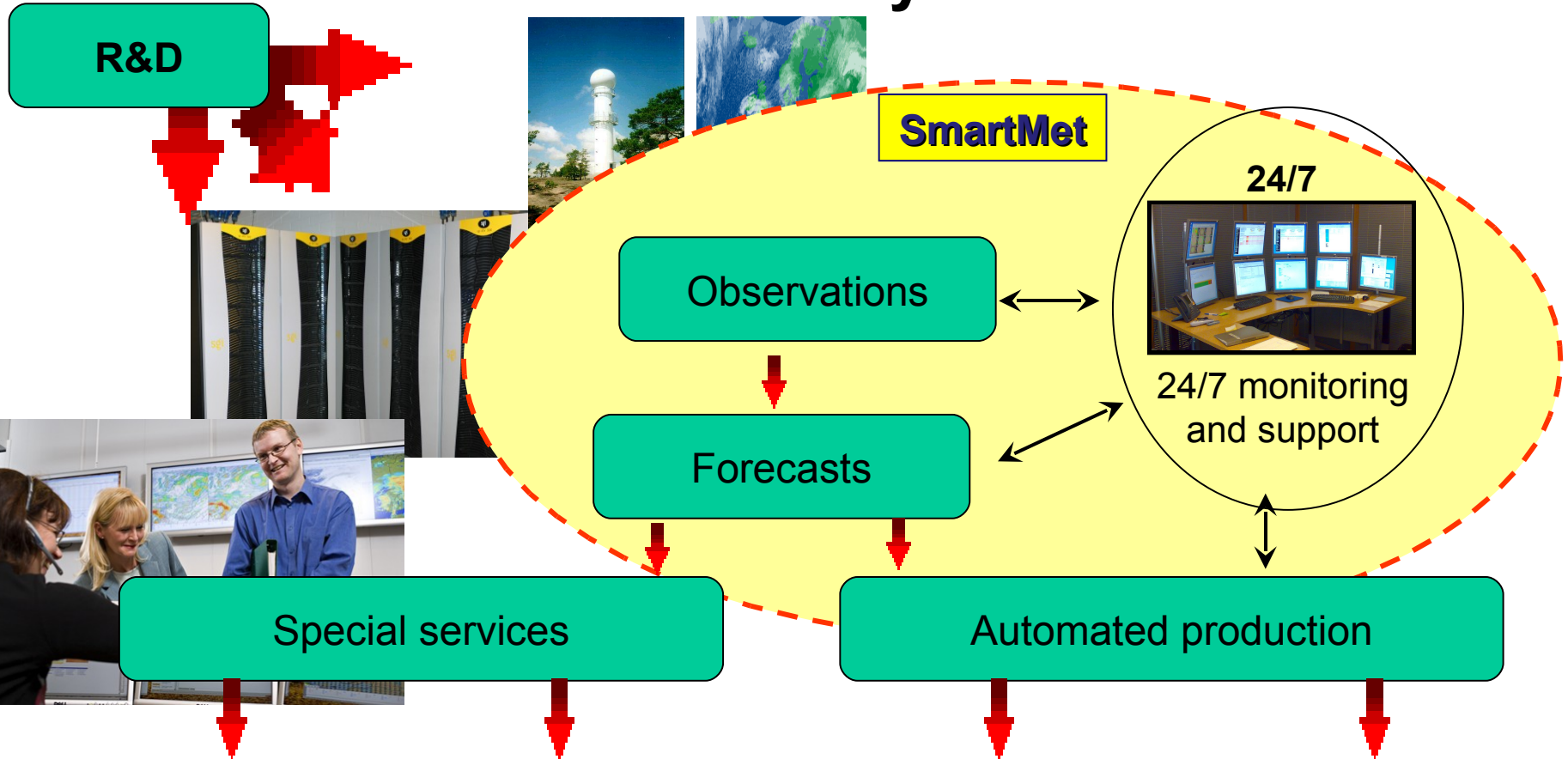
- Accuracy of forecasts 83-90 %
- Observations availability 99.8 %
- Product availability 99.8 %
- Customer satisfaction 4.1/5.0 commercial, 3.9 public
- Staff satisfaction 3.5/5.0
- External funding 17.9 M€, 37 % of FMI budget
- R & D external funding share 53 % of R&D budget
- Publications 248 peer-reviewed
- Productivity growth + 9,1%
- Staff education level 12 PhD thesis

Agreed with the ministry





FMI Production System/Value chain





Verification: Who is the user/customer?

- **Science (eg. NWP)**
- **Forecaster**
- **Institute/Stakeholder**
- **External customer**

- **Customer needs tailoring**
- **Automation of production**
- **Mesoscale**
- **Probabilistic forecasts**
- **Climate change**



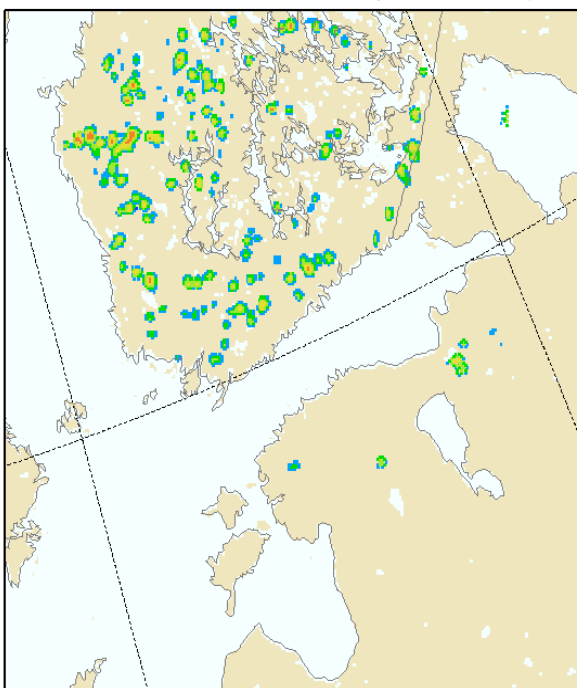


Added value of mesoscale NWP ?

Precipitation:

- Representation of small-scale convective structures – 26 Aug 2006

AROME 26AUG2006 00 UTC Forecast. Radar reflectivity [dBZ]
26AUG2006 15:00 UTC (ARO,2.5km).



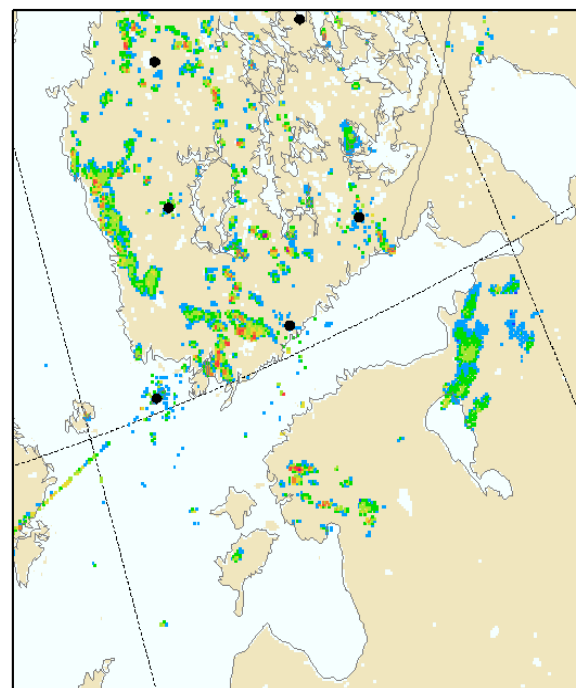
Radars:VAN,IKA,ANJ,KOR,KUO,VIM
Antenna=0.6°

AROME reflectivity: 2.5 km

Max:
46.3223

+ 15 hr

Observed radar reflectivity [dBZ].
26AUG2006 15:00 UTC.



Radars:VAN,IKA,ANJ,KOR,KUO,VIM
Antenna=0.6°

Observed radar reflectivity

Max:
59.7812



Added value of EPS-products in all timescales ?

ECMWF Seasonal Forecast

Prob(most likely category of 2m temperature)

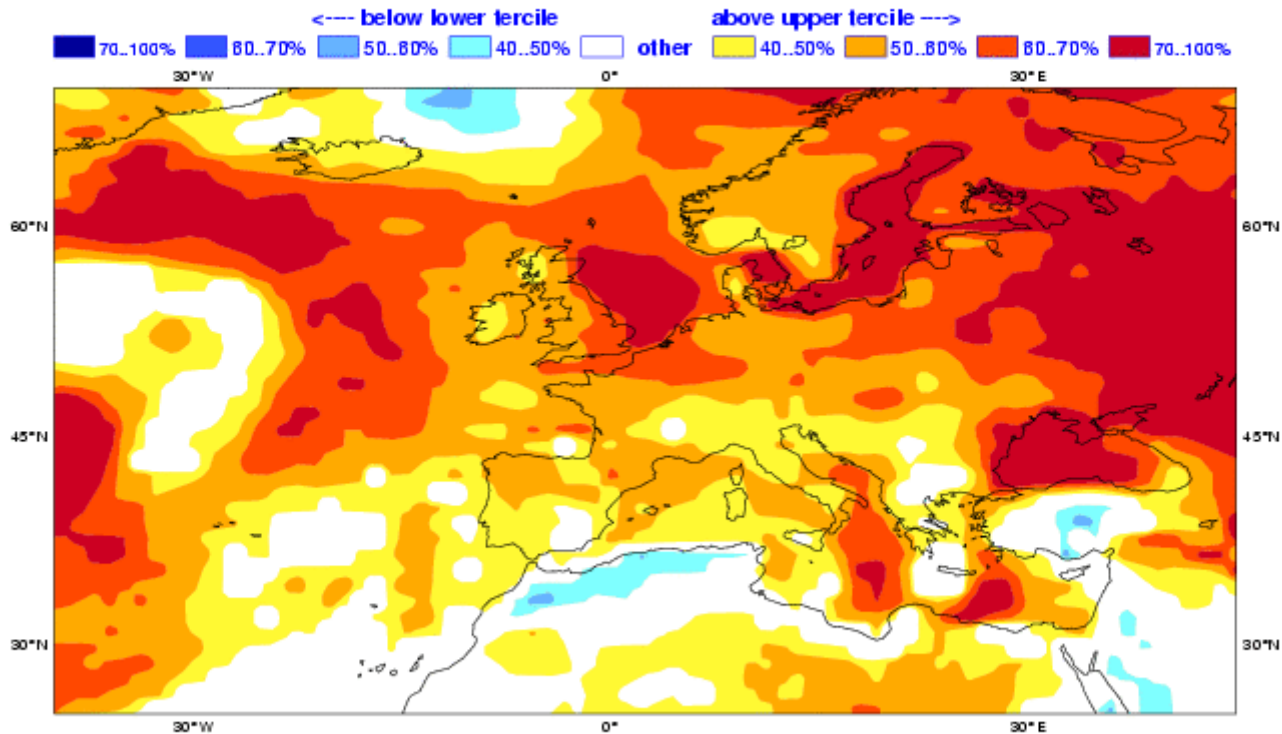
Forecast start reference is 01/04/09

Ensemble size = 41 , climate size = 275

System 3

JJA 2009

No significance test applied



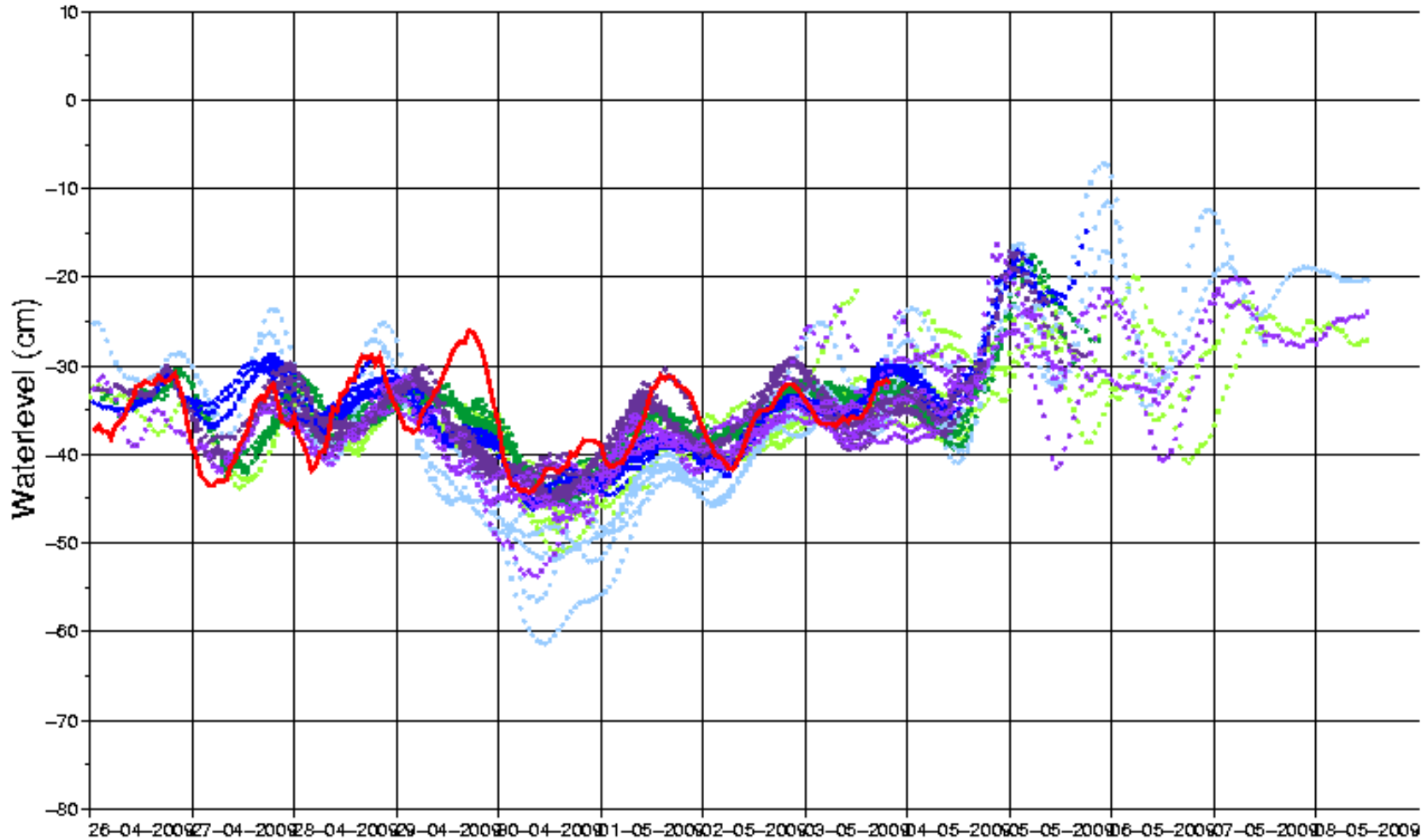
Forecast issue date: 15/04/2009

ECMWF



New users of NWP

Helsinki: wetehinen ECMWF wetehinen HIRLAM hansen ECMWF hansen HIRLAM oas HIRLAM oas ECMWF



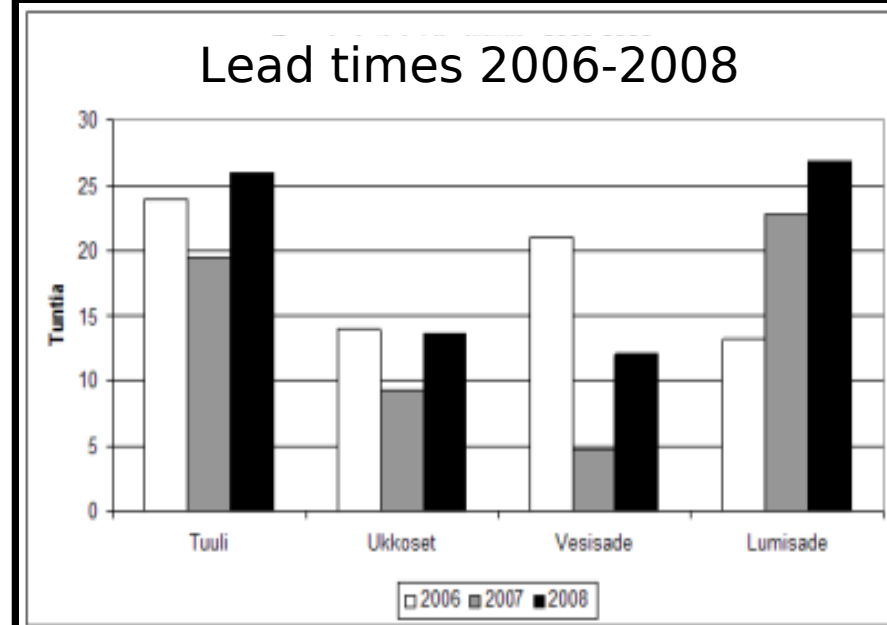
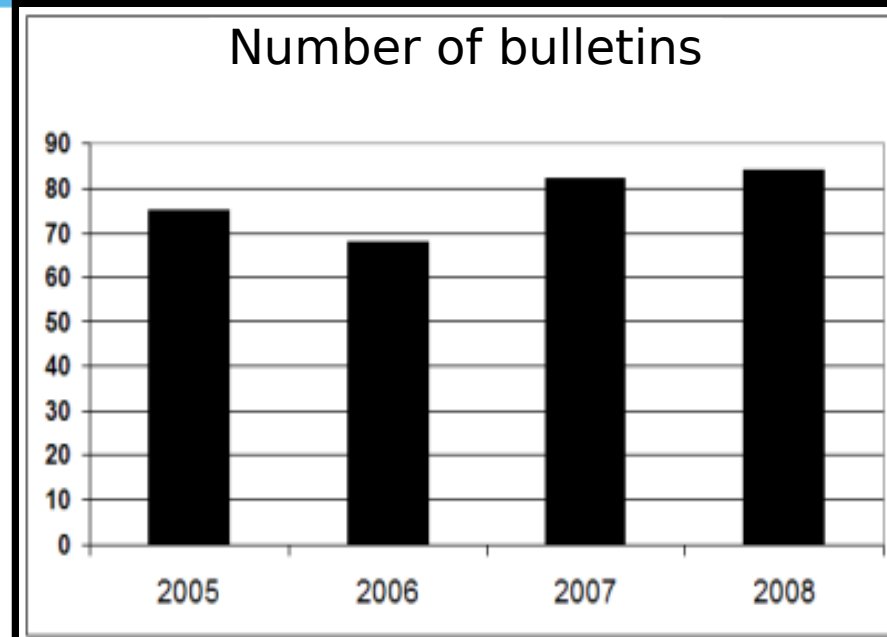
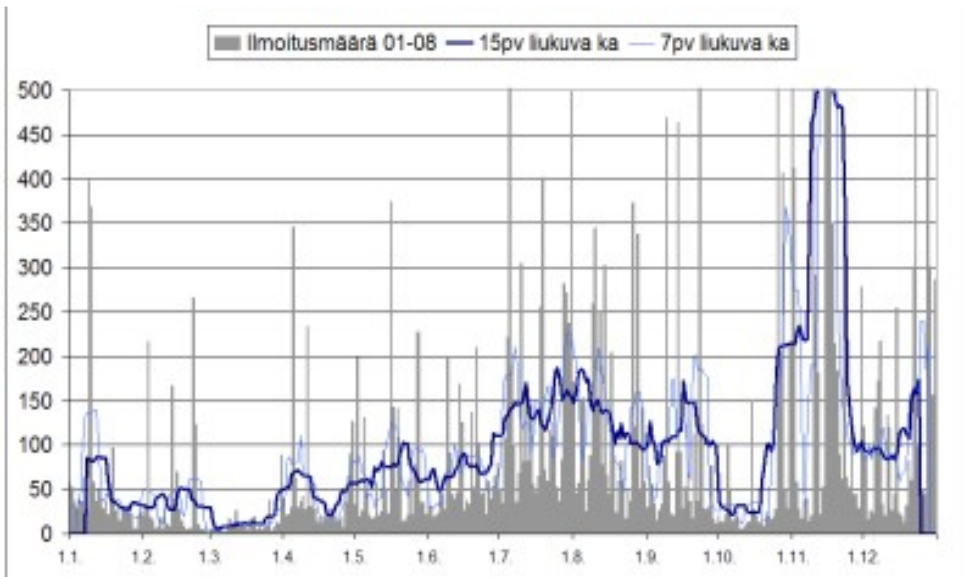
Real-time sea-level analysis and (multi-model) forecasts



”VAARA”-emergency bulletins 2005-2008

- 70-90 annually in 30-50 situations
- Lead times, depending on the phenomenon 12-24 hrs.

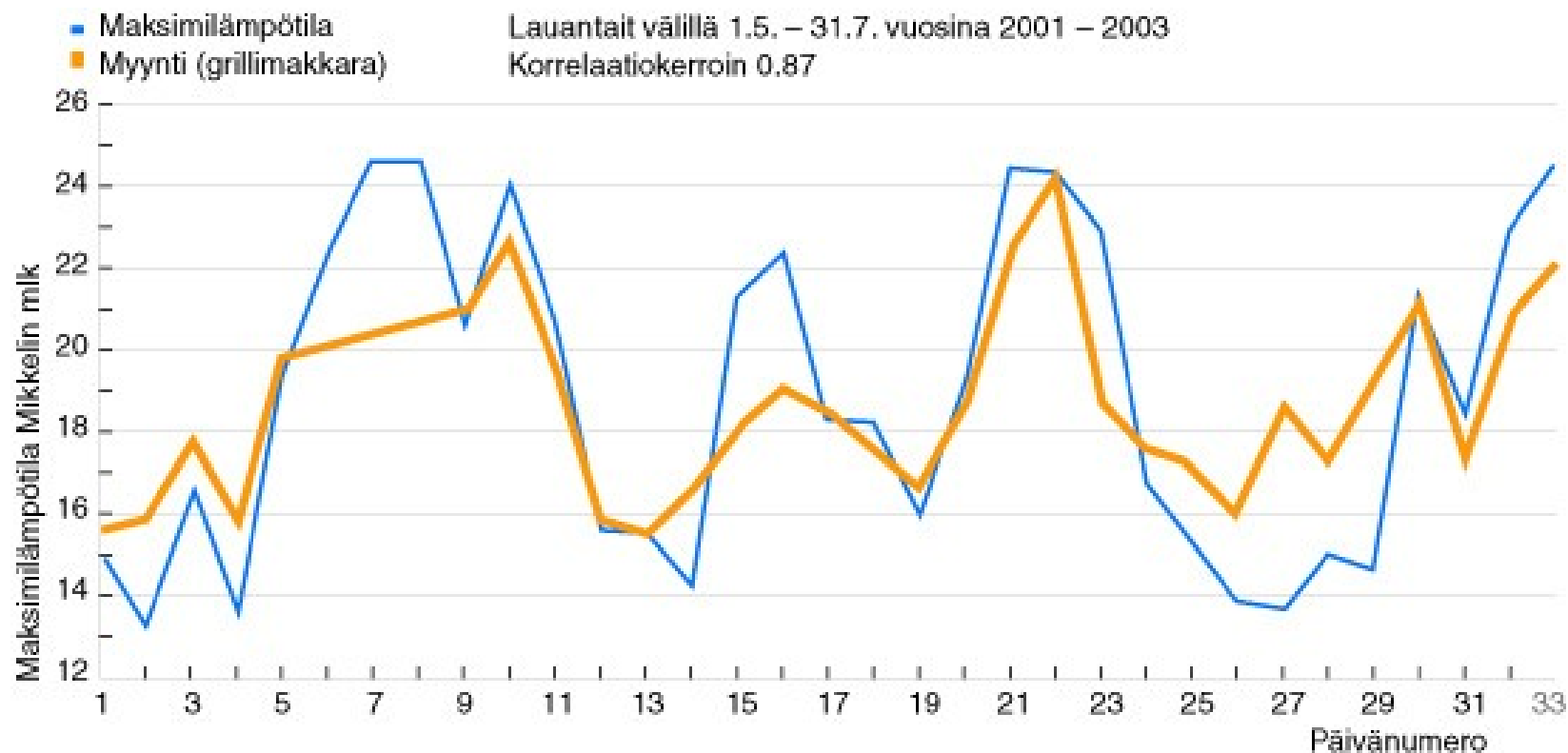
s to emergency exchange due to weather





Basically everything is weather-dependent

- Services for traffic
- Services for industry and trade
- insurance business
- Climate change





Some viewpoints

- **Weather forecasts are getting better**
- **Automation level is increasing**
- **Customers need highly tailored products**
- **Added value should be measurable**
- **Severe weather, high impact weather**
- **Society, industry, and commerce need meteorological information in real-time, and in high resolution**
- **Cost-benefit ratio of meteorological services is at least 5-6.**





More viewpoints

Customer orientation

- Science (eg. NWP)
- Duty forecaster
- Institute
- Institutes customer

Added value should be measurable

- Quality of services should be known in real-time
- Customer perspective
- Effectiveness
- Cost-benefit ratio

We'll get what we measure

- Correct indicators for different users
- User friendliness
- Indicators should direct activities and development
- Collaboration is needed

