ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Use of HTB data in FMI Weather Warning Service

A-J Punkka

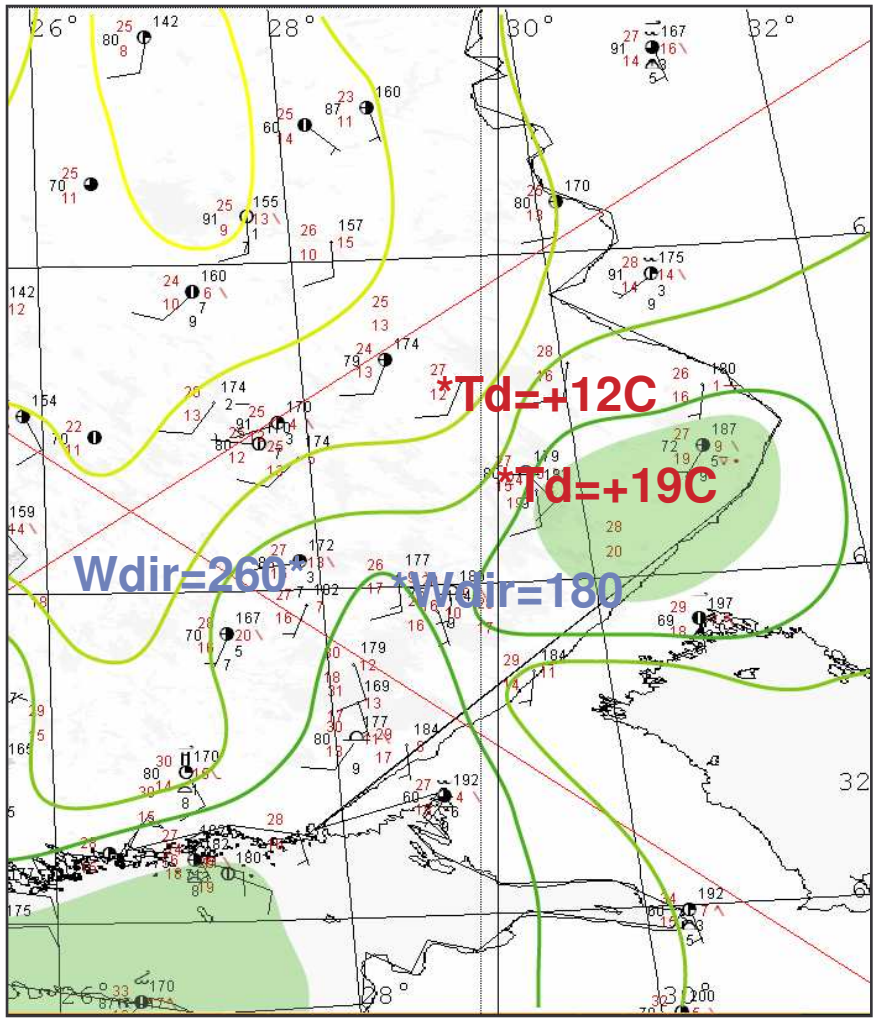
Weather Warning Service, FMI

Benefits of mesoscale observing networks for weather forecasting

- Better understanding and easier monitoring of mesoscale weather phenomena
- Improved warning decision making process and weather warnings

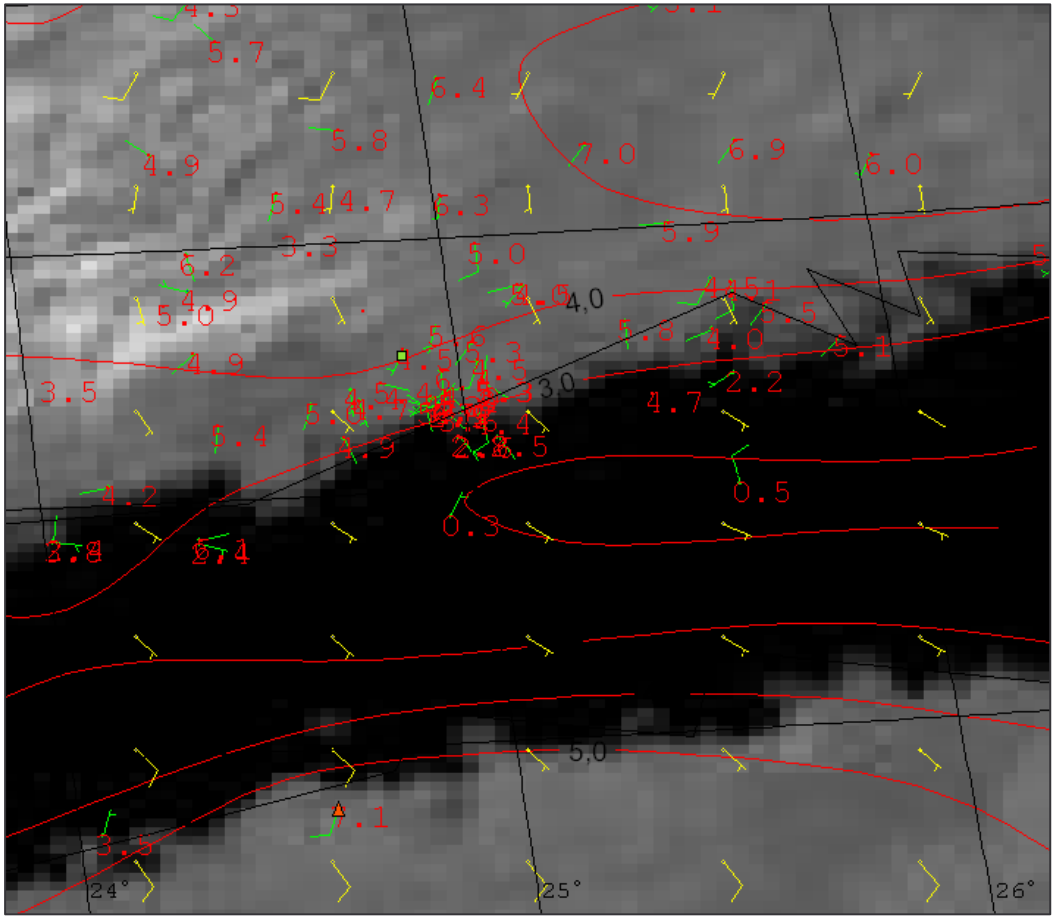
Additional benefits of HTB

- Good location considering…
  - Population density
  - Land-sea distribution
  - Various weather phenomena (winter: rain, snow, sleet... and summer: sea breeze, deep convection...)
- Co-operation between FMI, HU and Vaisala



Past and current use of HTB data in FMI WWS

- Till the spring '07 only 'traditional' observations available in the meteorological workstation.
  - >> forecasters forced to use testbed.fmi.fi in order to examine testbed data
  - >> easy to forget if you're busy
  - >> use of testbed data occasional
- Real-time HTB data now available in the workstation. Possible to superimpose on other meteorological data.
- Denser observation network has clearly given extra value for nowcasting in some cases:
  - Deep convection on 9 and 26 Aug 2005
  - Sea and land breeze
  - Lake-effect snow during winter 06-07
- Rescue authorities and other WWS customers have given positive feedback about HTB observations.

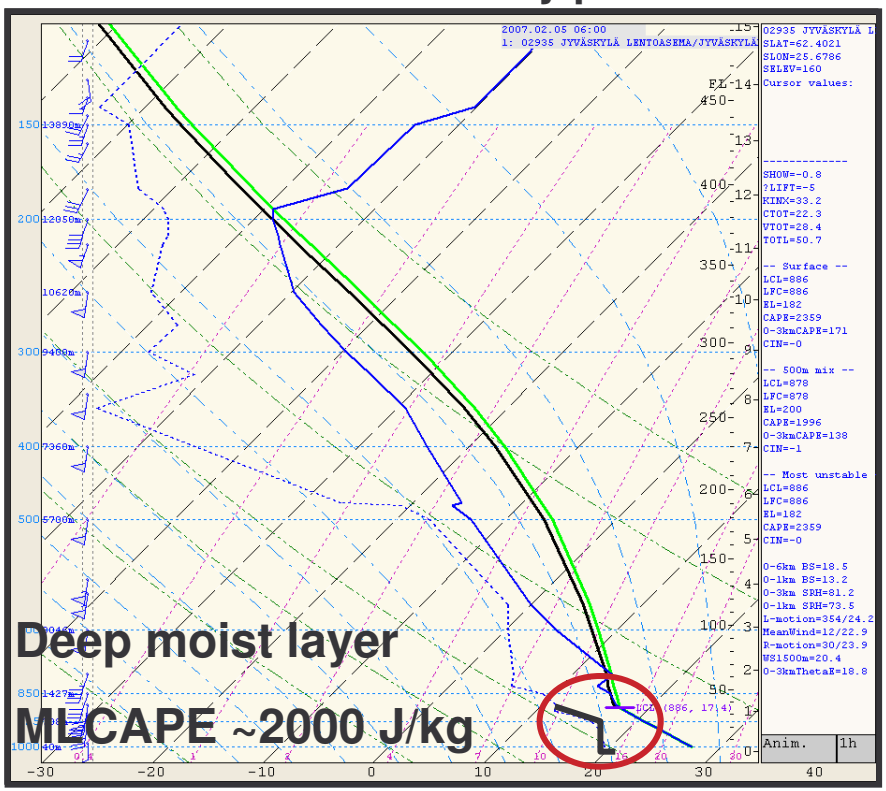


ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Example: Challenges in severe thunderstorm forecasting

- **State of boundary layer**
  - Low-level humidity. Depth of moist layer and spatial distribution.
  - Low-level winds. Low-level jets, convergence lines, outflow boundaries (’backed surface winds’).
  - Low-level temperature.
  - Moisture and temperature advection.

Low-level humidity profile

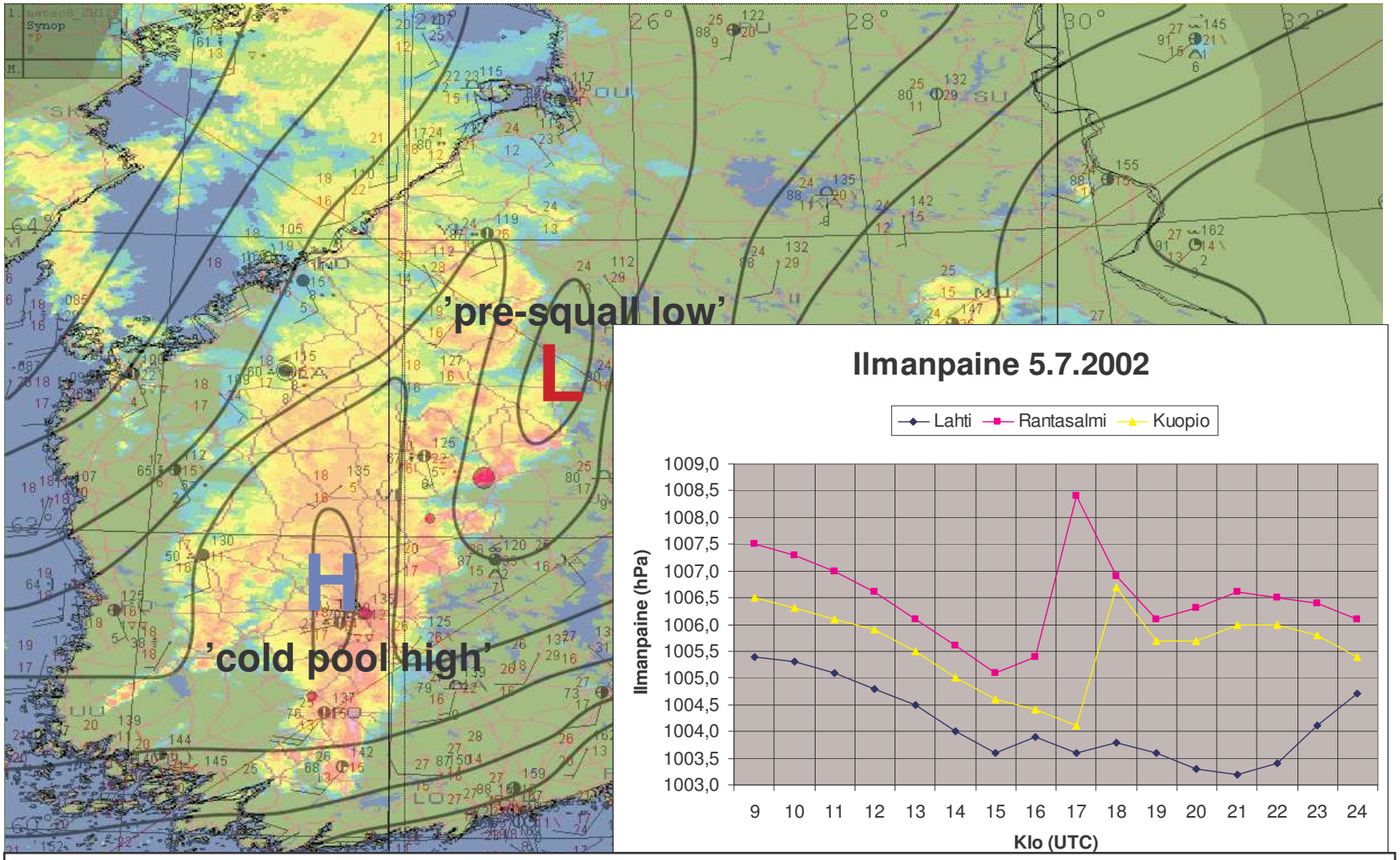


Primary tools : soundings, AMDARs (’aircraft soundings’)

Benefits: Improved assessment of instability (CAPE) and thunderstorm initiation

ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Challenges in severe thunderstorm forecasting: mesohighs and mesolows

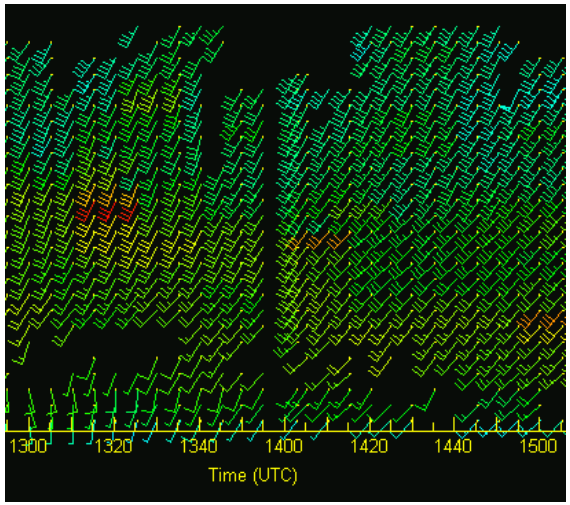


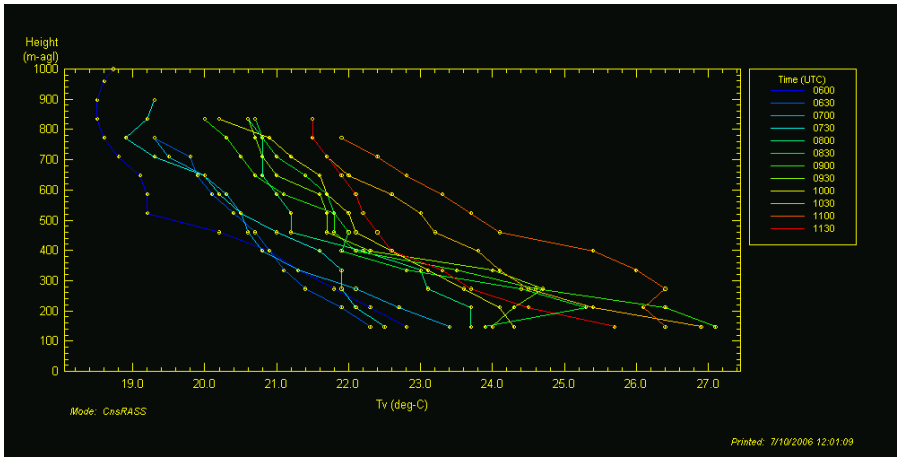
Primary tool : Surface mesonet

Benefits: Improved assessment of cold pool intensity and MCS motion

Future HTB needs in FMI WWS

- WWS strongly in favor of establishing permanent mesoscale observing network
- Decrease of sounding observations >> other profiling instruments needed (wind profilers, RASS, AMDARS…) >> ’3D-network’
- Higher priority for testbed observations in quality control and instrument maintenance
- Better archiving of data (case studies, meteorological training, accident reports etc.)





HTB future views in FMI WWS

- In ideal situation HTB could be important weather data source for
  - forecasters
  - researchers
  - product developers

- Close co-operation between these three would further enhance development of HTB

- Laboratory of synoptic and mesoscale meteorology (in the Aurinko meeting room) could be the first step

Thank you!