REPUBLIC OF ESTONIA
ENVIRONMENT AGENCY

Snow measurement activities & facilities in **Estonia**

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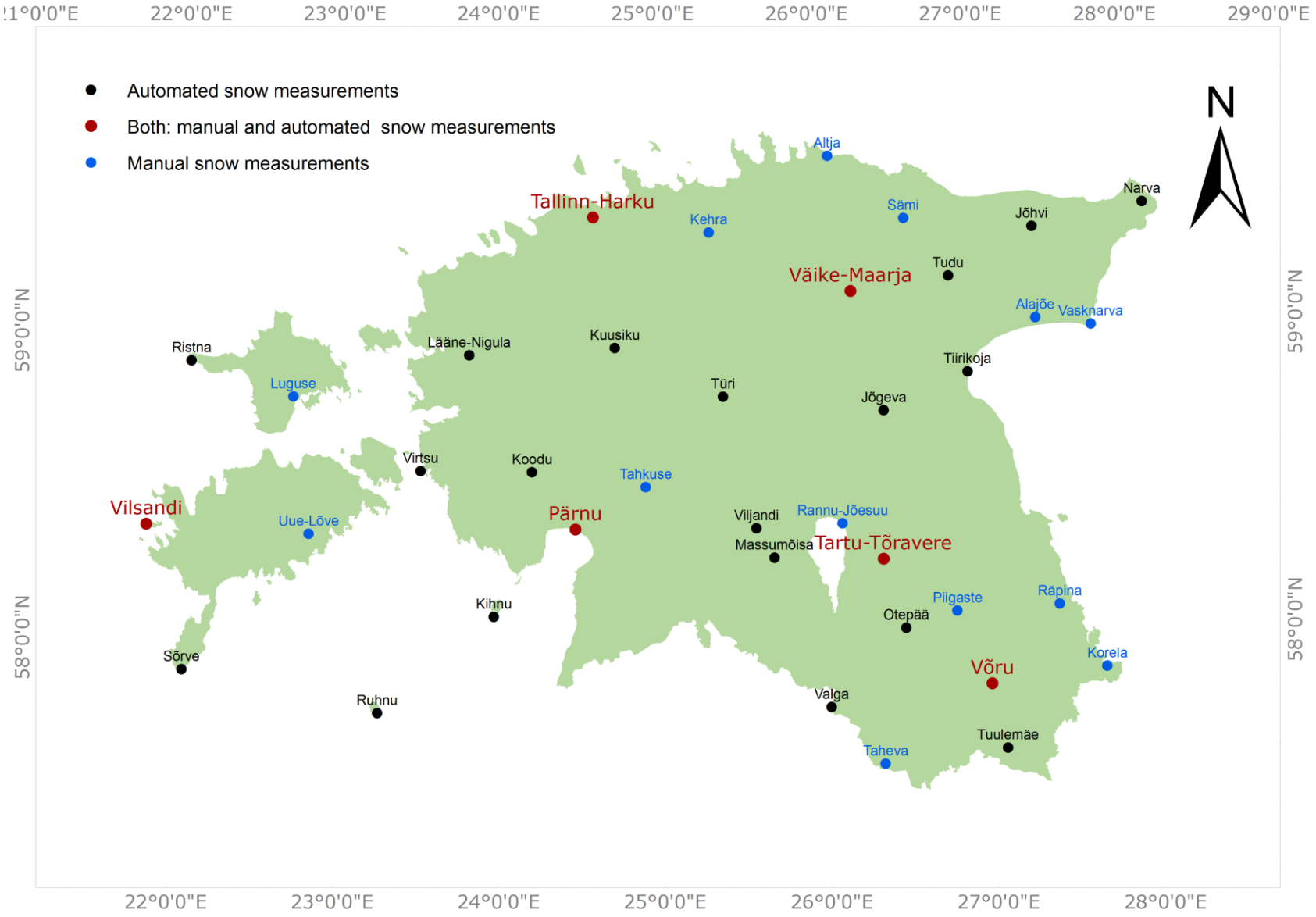
In-situ measurements in the meteorological field

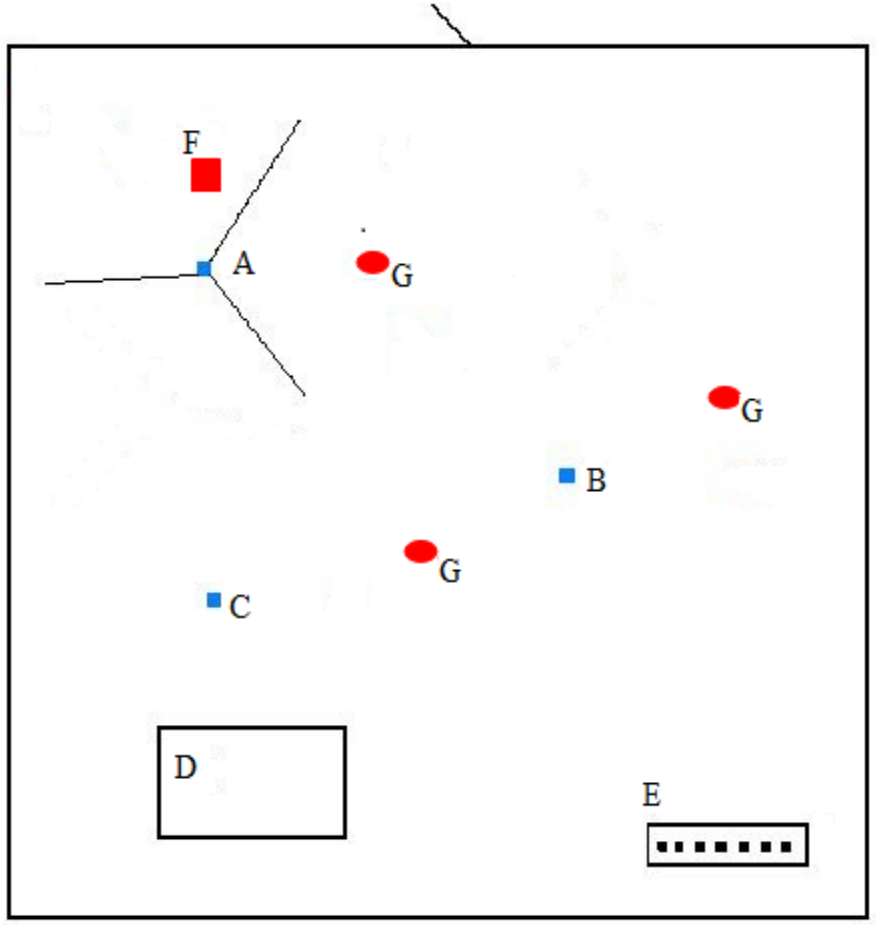


The snow depth: automatic sensor

- Snow sensor USH-8 (Sommer Messtechnik),
  ultrasonic snow depth sensor
- Only snow depth measurements
- Measuring field is a square (1 x 1 m)
- 25 stations equipped with sensor
- Our sensors are connected to
  an analogue or a digital interface
- Sensor installed 2 m above the ground

The snow depth: manual measurements

- snow depth
- snow coverage



A - wind sensor, air temperature and humidity

B - rain gauge (VRG)

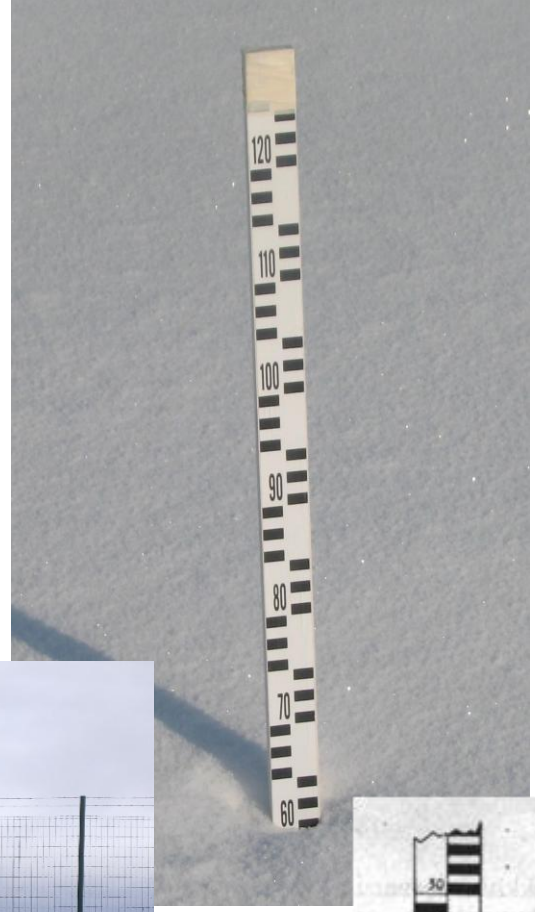
C - weather sensor

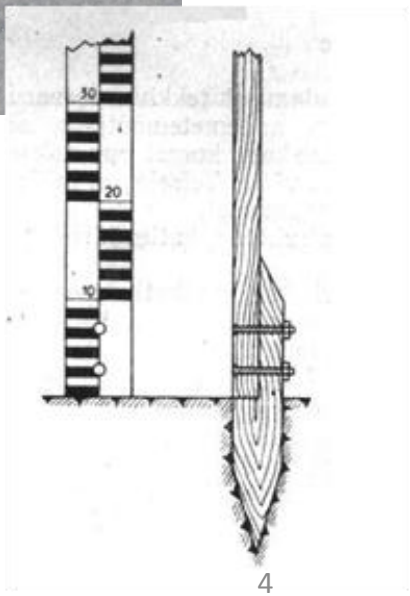
D - garound temperature

E - soil temperature

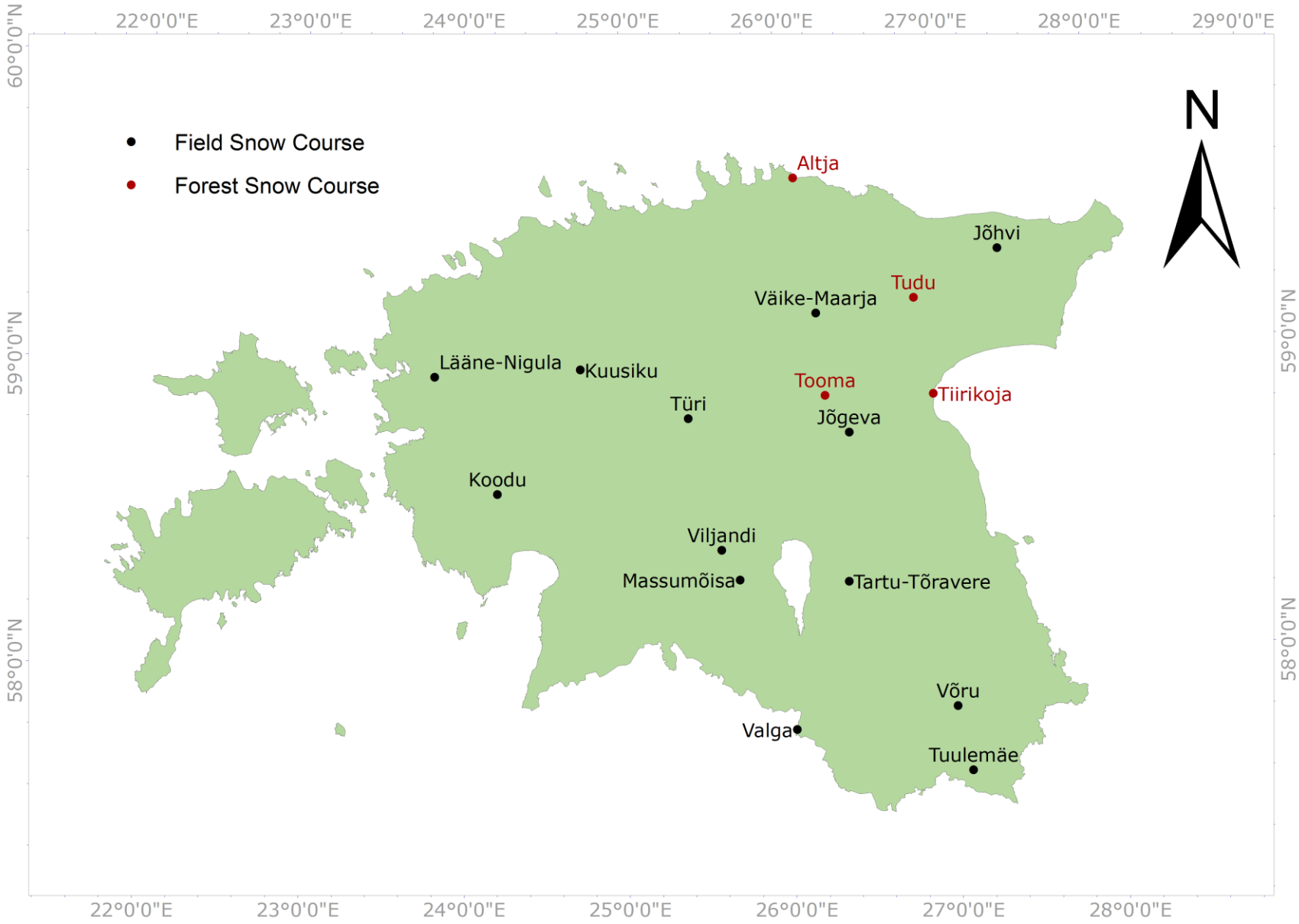
F- snow depth sensor

G - snow stick



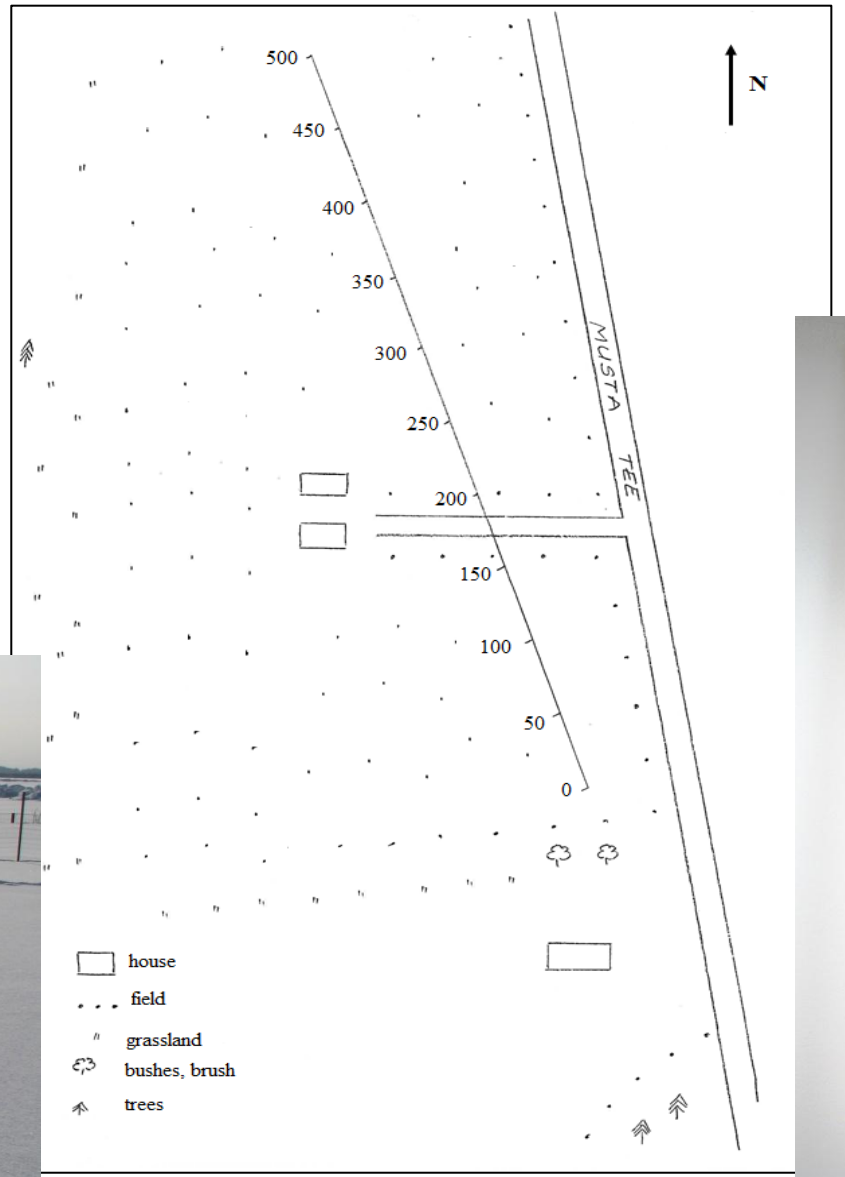


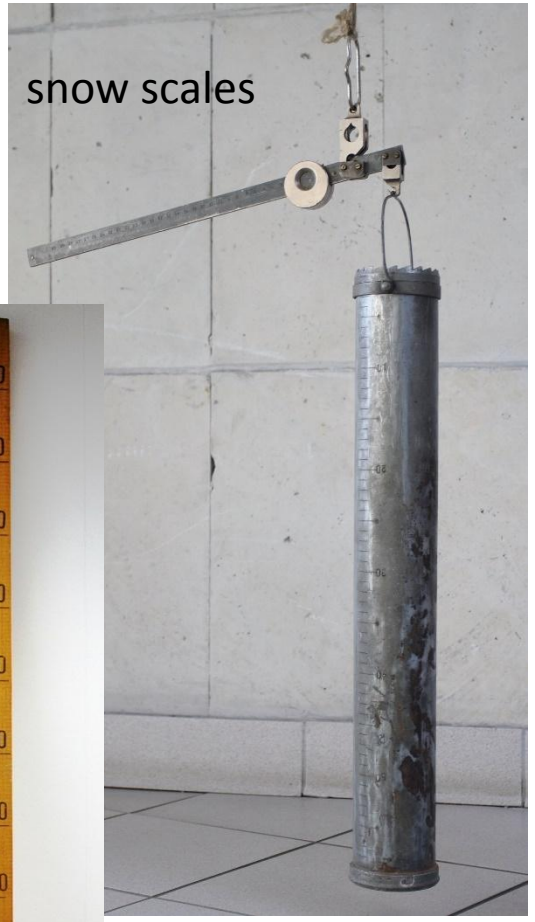
Snow course measurements in Estonia

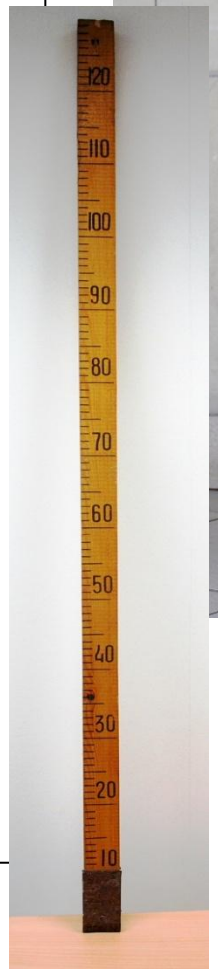


Snow course measurements:

- depth
- cover
- density
- water equivalent of snow
- snow character data

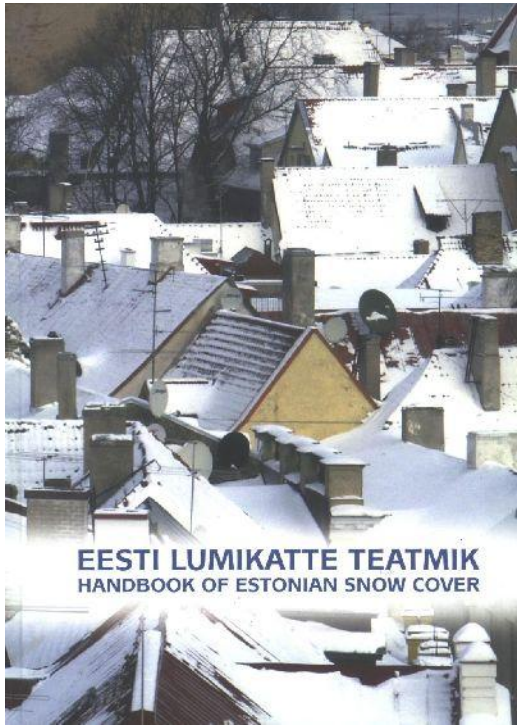






Data and outputs

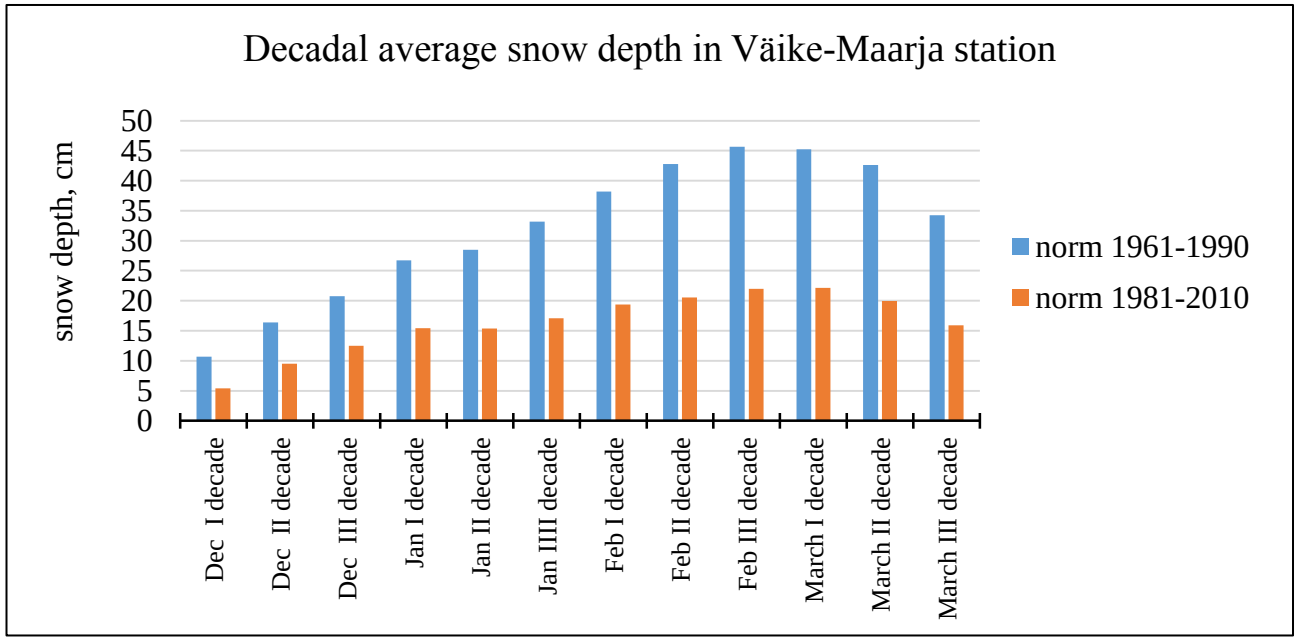
- The oldest digitized snow depth data since 1920
- The oldest digitized snow course data since 1991

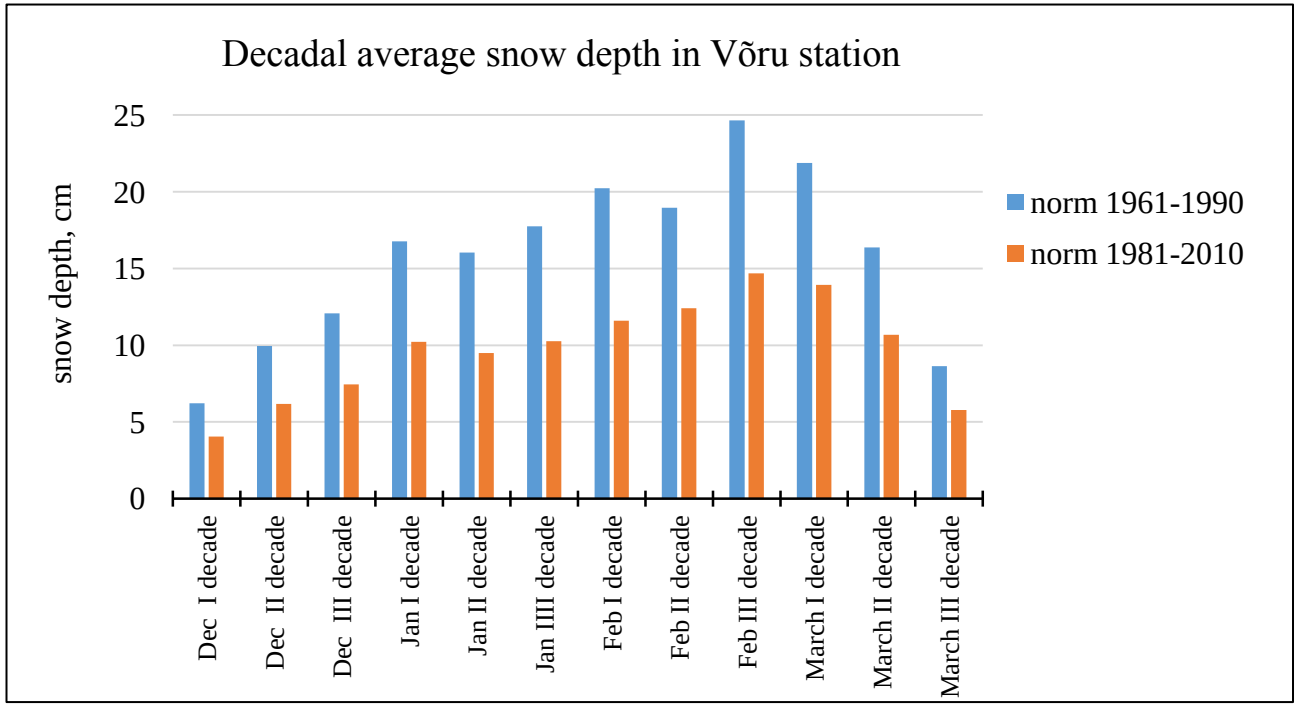


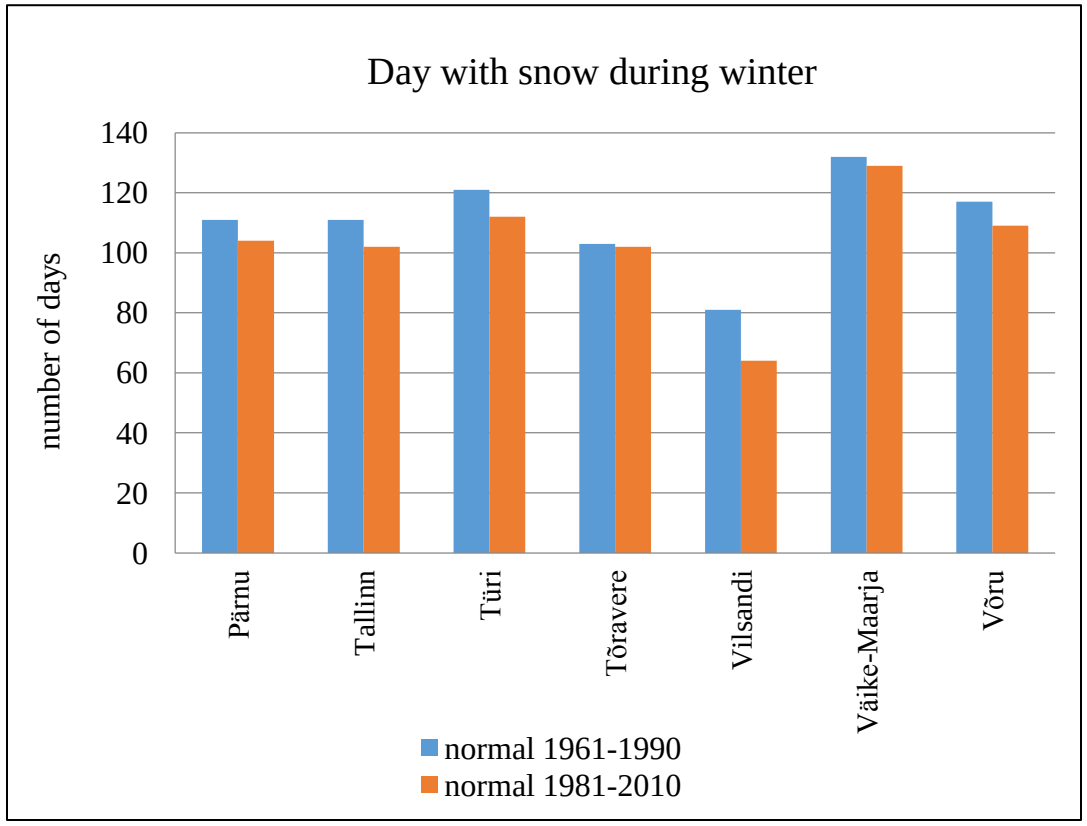
- Data collection, checking and different calculations

- Different parameters: decade average snow depth, day with snow, duration of snow cover, climatological normals
- On the website: snow map and table of snow course measurements

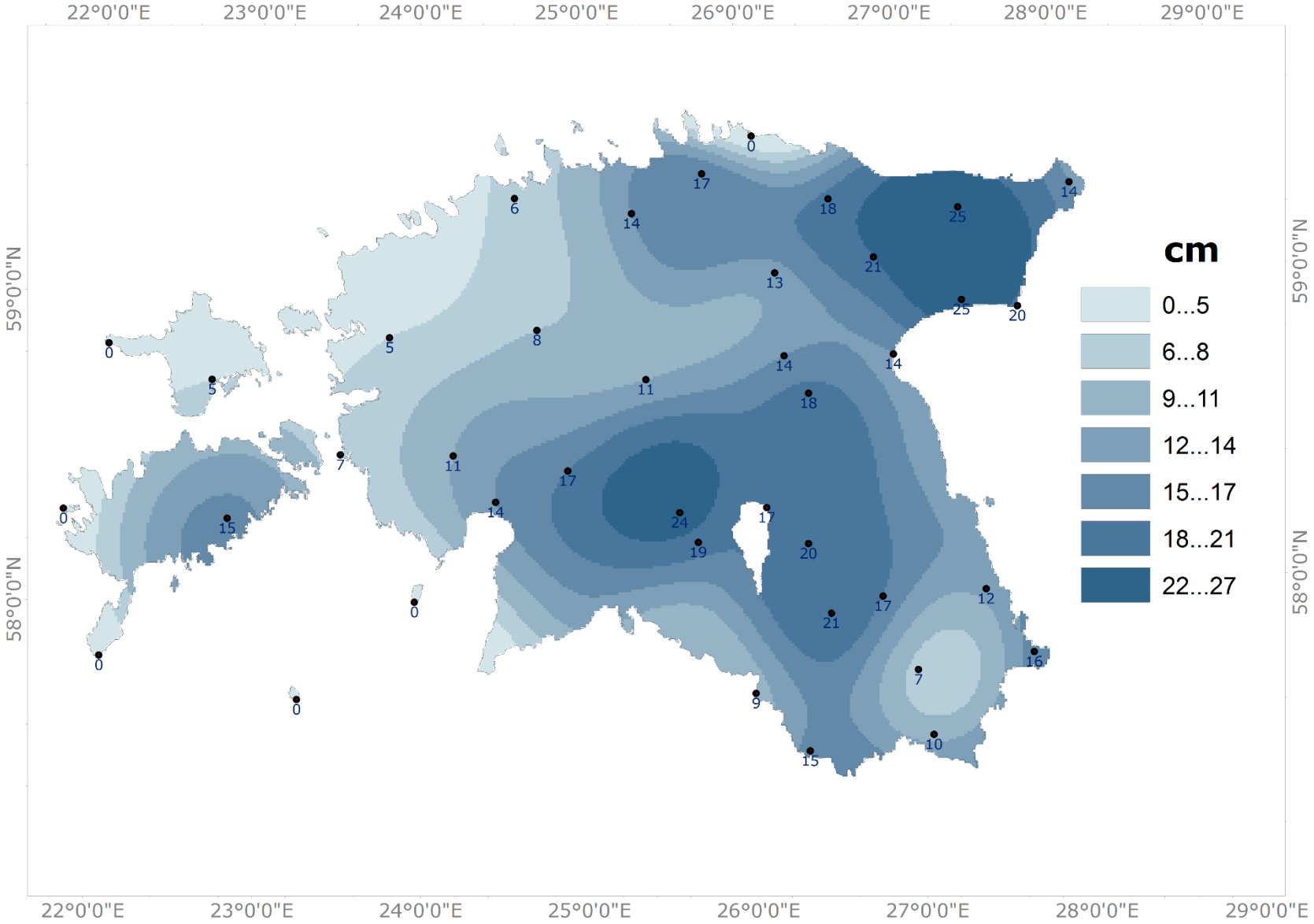
- Handbook of Estonian Snow Cover (issue: 2006)


Decadal average snow depth in Väike-Maarja station
snow depth, cm
50
45
40
35
30
25
20
15
10
5
0
Dec I decade
Dec II decade
Dec III decade
Jan I decade
Jan II decade
Jan IIII decade
Feb I decade
Feb II decade
Feb III decade
March I decade
March II decade
March III decade
norm 1961-1990
norm 1981-2010


Decadal average snow depth in Võru station
snow depth, cm
25
20
15
10
5
0
Dec I decade
Dec II decade
Dec III decade
Jan I decade
Jan II decade
Jan IIII decade
Feb I decade
Feb II decade
Feb III decade
March I decade
March II decade
March III decade
norm 1961-1990
norm 1981-2010


Day with snow during winter
number of days
140
120
100
80
60
40
20
0
Pärnu
Tallinn
Türi
Tõravere
Vilsandi
Väike-Maarja
Võru
normal 1961-1990
normal 1981-2010

Snow depth 31.12.2014



Many questions have arisen over the last few years

EVALUATION OF THE SNOW DATA / QUALITY CONTROL

- Data accuracy: with or without a decimal point?
- The data fluctuation: allowed or not? If it is allowed, how large amplitude of fluctuation is allowed?

HOMOGENISATION

- Countries that have experienced snow data homogenisation? Methods?
- How to share the homogenisation experience within COST Action ES1404 ?

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Thank you for your attention

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