

Exploitation of agrometeorological data in crop breeding

Merko Kärp
Junior Research Fellow

Background of METK

- Centre of Estonian Rural Research and Knowledge is a **state-managed research** and development institution operating **under the governance the Ministry of Regional Affairs and Agriculture**.
- METK was established by merging the **Agricultural Research Centre (ARC)** and the **Estonian Crop Research Institute (ECRI)**.
- We help to make agricultural decisions that preserve and increase the quality of local rural life.



Our mission is to help the Estonian rural sector with science-based

- **knowledge,**
- **products/services &**
- **by connecting actors.**

METK's Three Main Focus Areas

Research Activities

Plant variety breeding, plant protection, plant biotechnology, gene bank; soilHUB, CAP evaluation, FADN, and many other areas of importance to agriculture.

Laboratory, Field Testing

The accredited laboratories provide a wide range of laboratory services for the agricultural sector and high-level analytical competence. Field testing centers conduct the field trials for Value for Cultivation and Use (VCU) Board and other essential tests.

Networking

Networking activities in the field of agriculture and rural life, AKIS coordination centre, National CAP Network, knowledge transfer actions, Advisory Services, Innovation Support Services including EIP-AGRI.

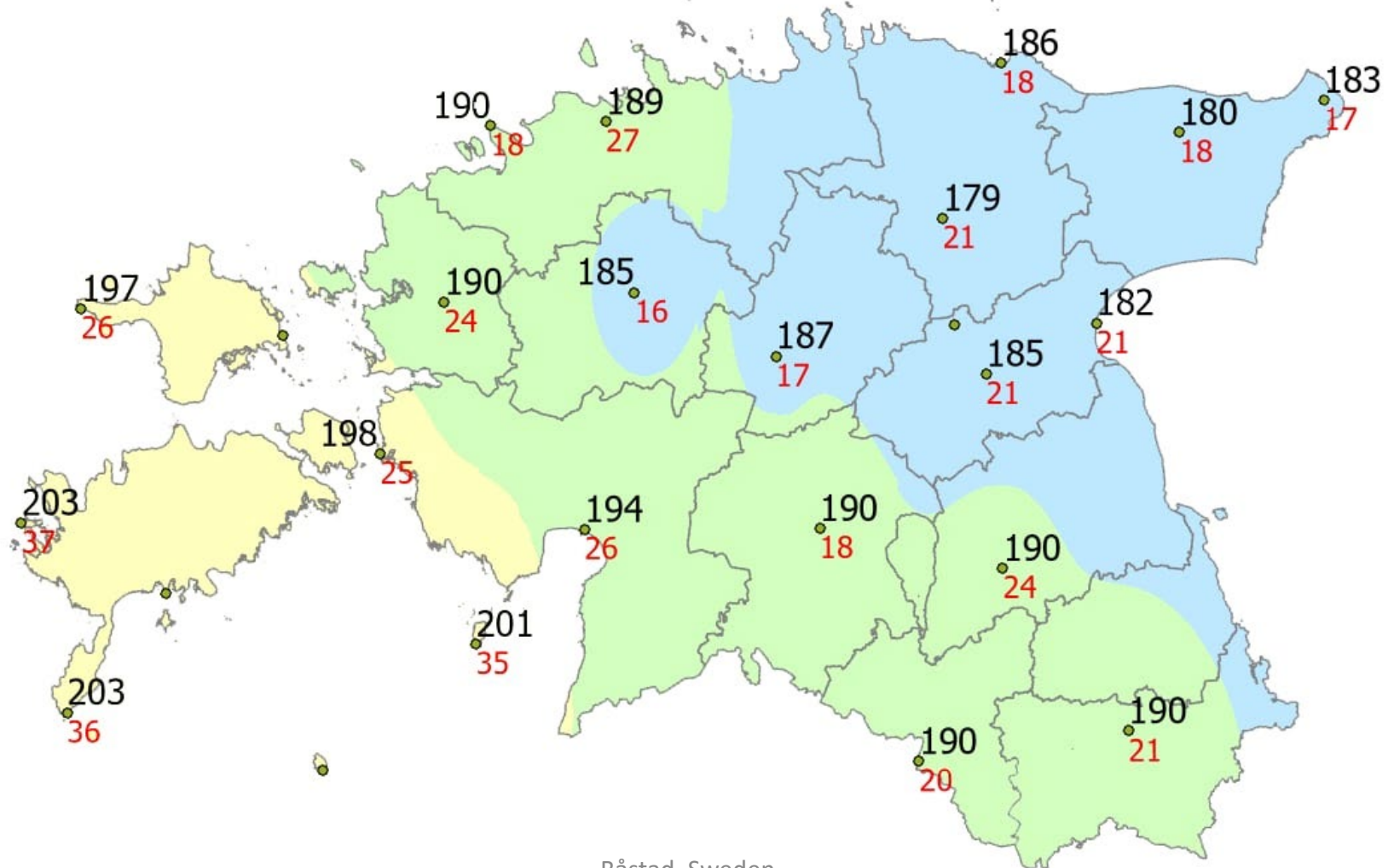
Funky facts about (agro)meteorology

- 1642 Peasant rebellion caused by dry summers.
- 1731 First temperature and pressure measurements in Estonia
- 1922 Meteorological measurement @ Jõgeva
- 1964 established over 180 observation posts of agrometeorology
- 2001 blackout, but...
- 2019- ...

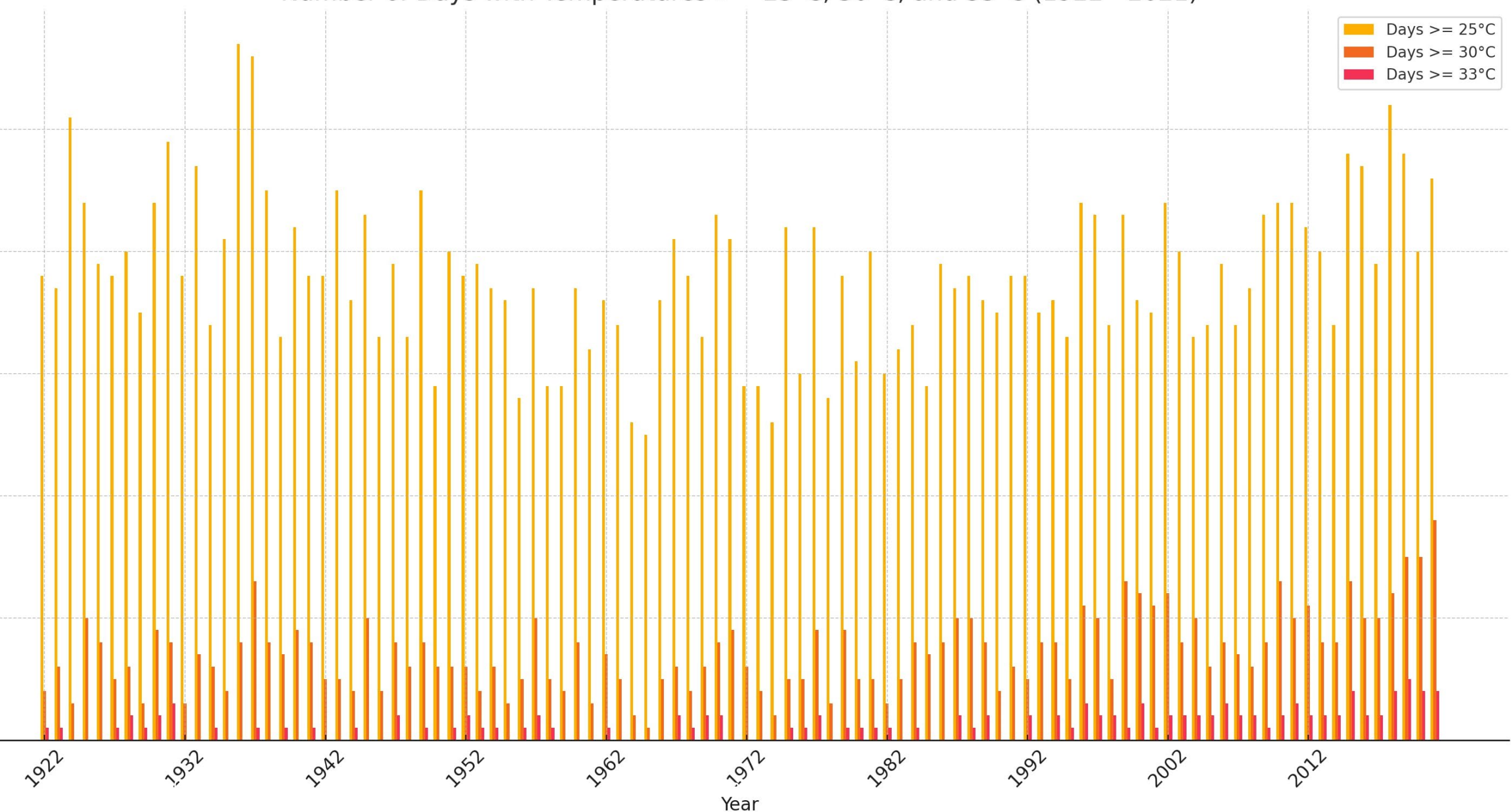
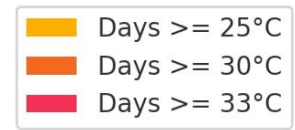
Current situation

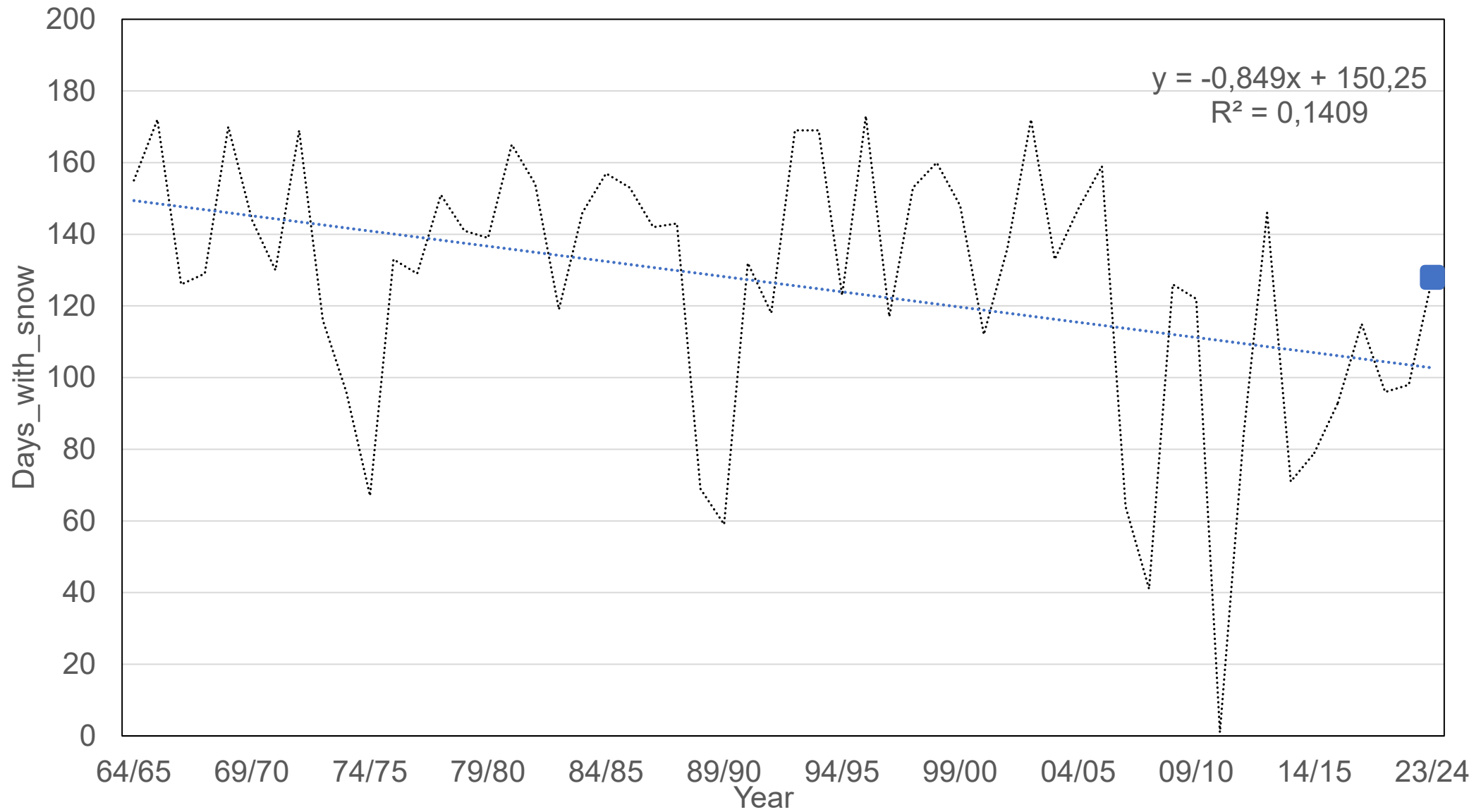
- 2024 agrometeorological weather stations in all our research centers (4)
- AT-4; RH-2, ST-1 , SWC-6, SMP, Wind, PAR, UVab and Air Pressure
- Wireless soil sensors around. 100 pcs. (SWC, Temp, EC).
- Project based weather stations (8)
- Many of sensors in testing and evaluation of their usability

Obstacles



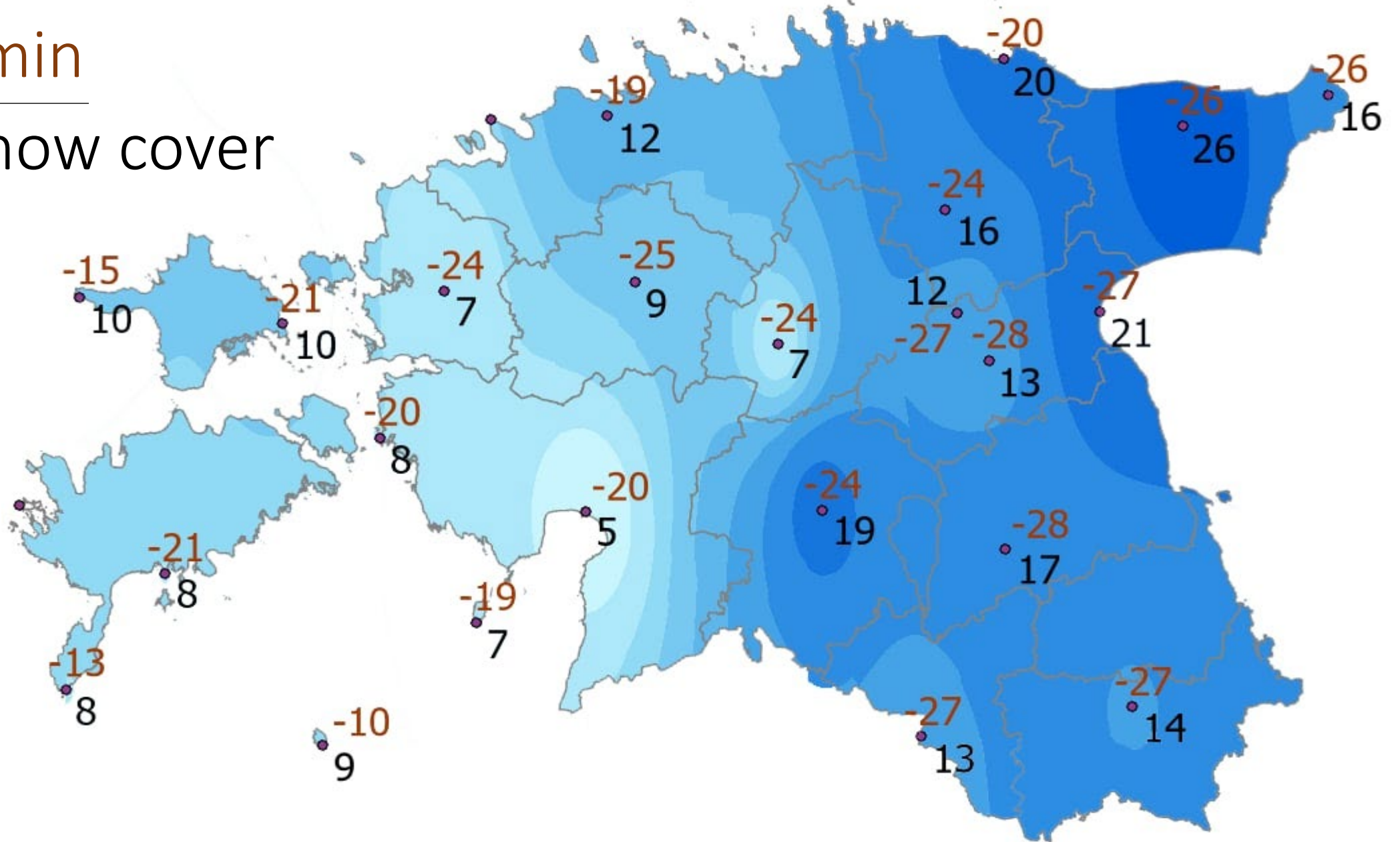
Number of Days with Temperatures $\geq 25^{\circ}\text{C}$, 30°C , and 33°C (1922 - 2021)

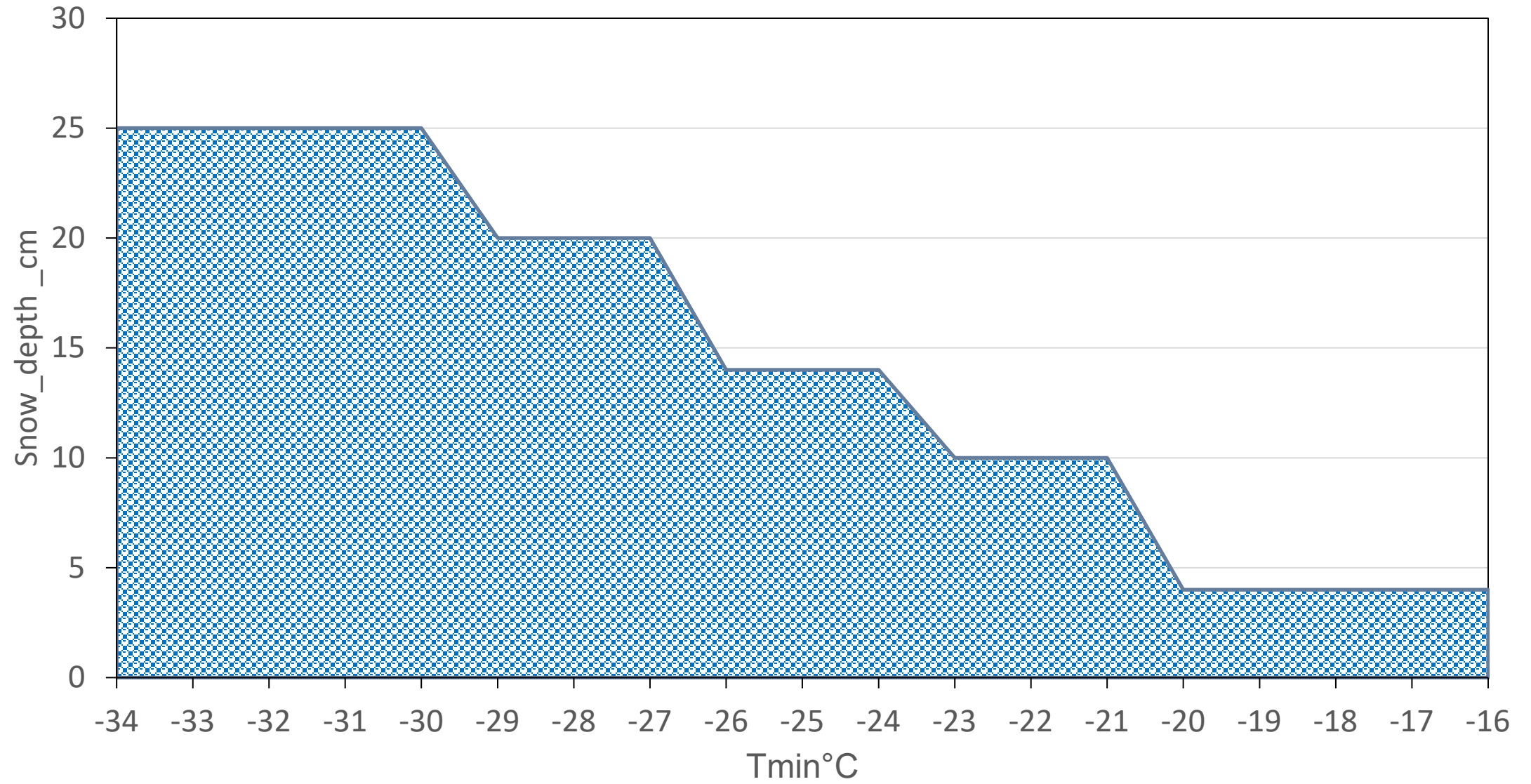




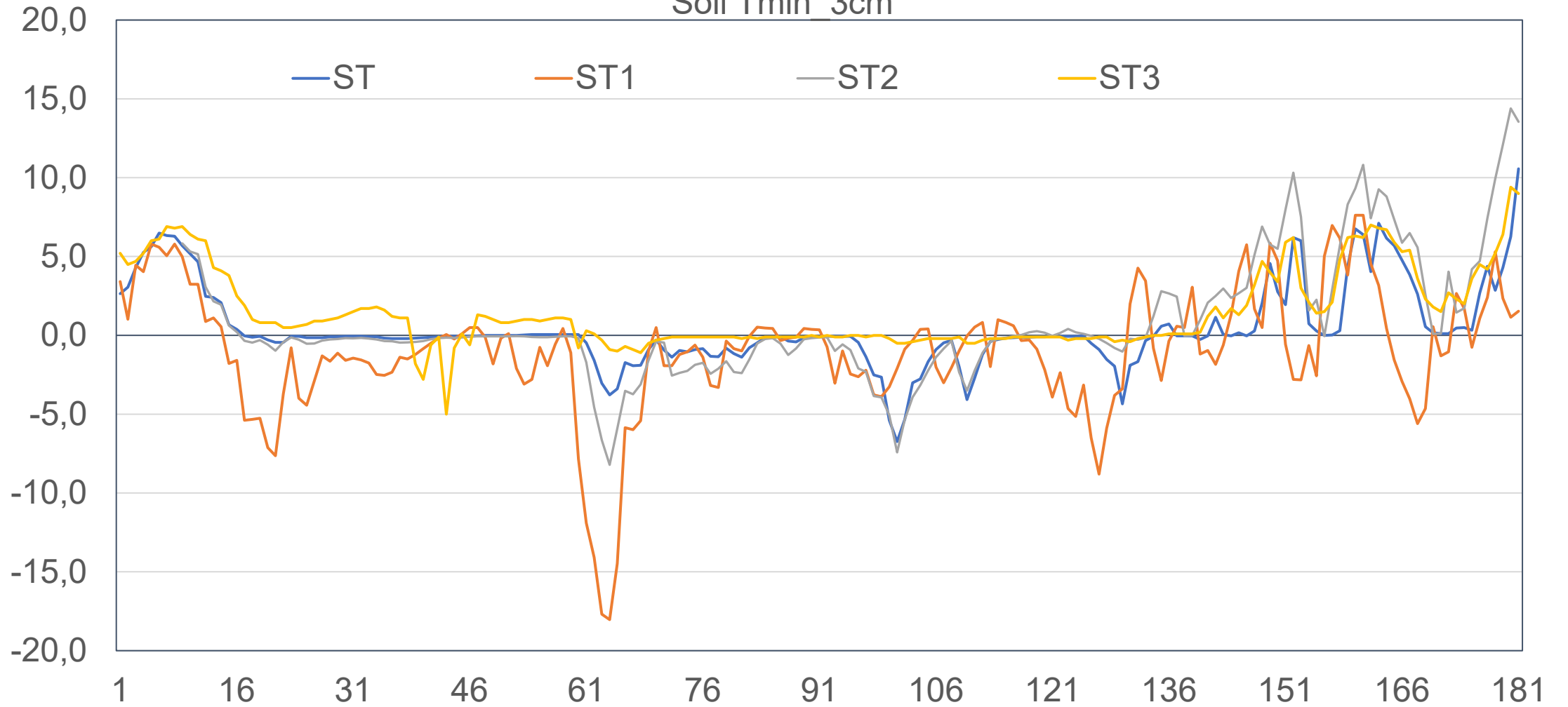
Tmin

Snow cover





Soil Tmin 3cm

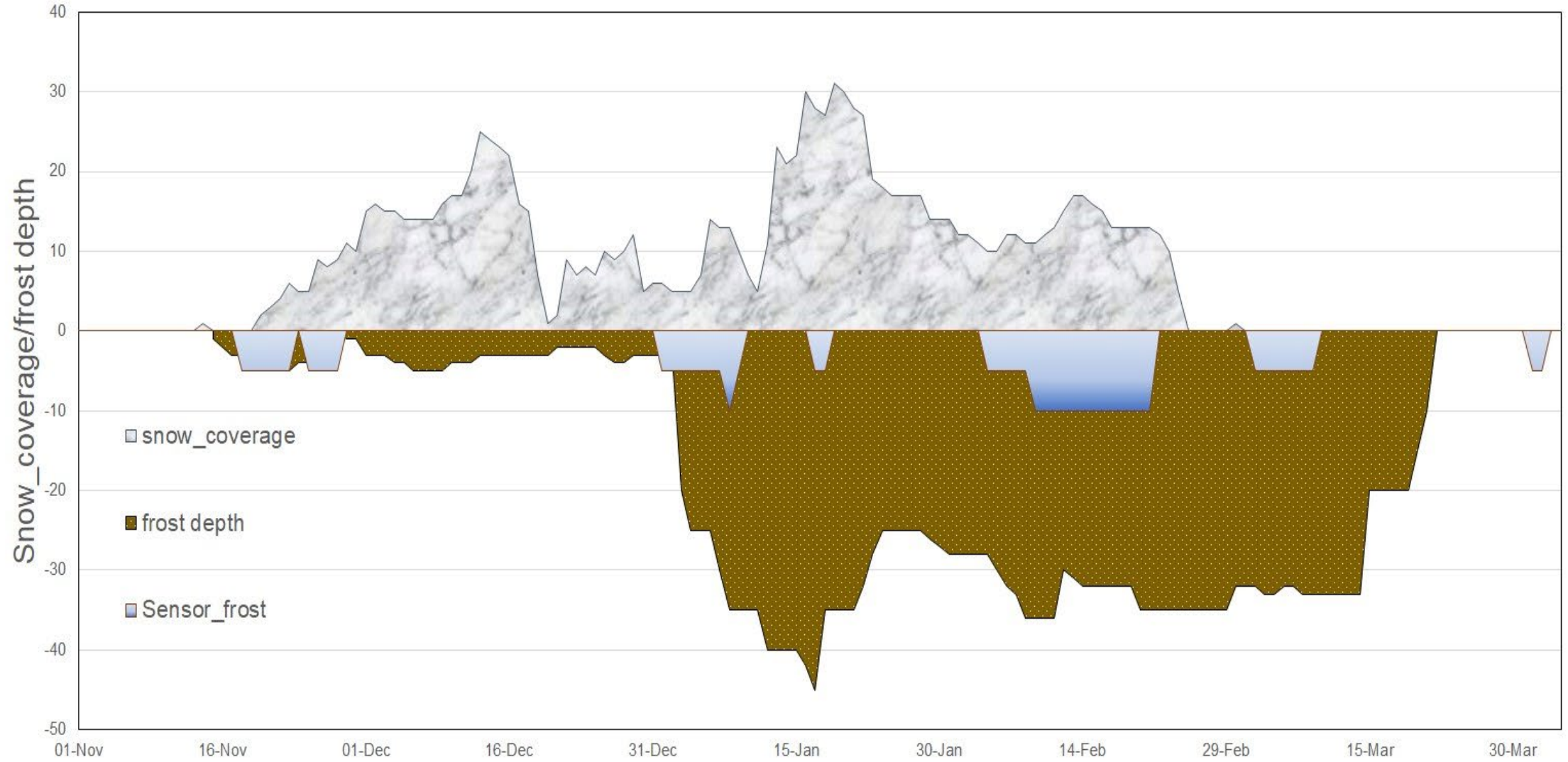




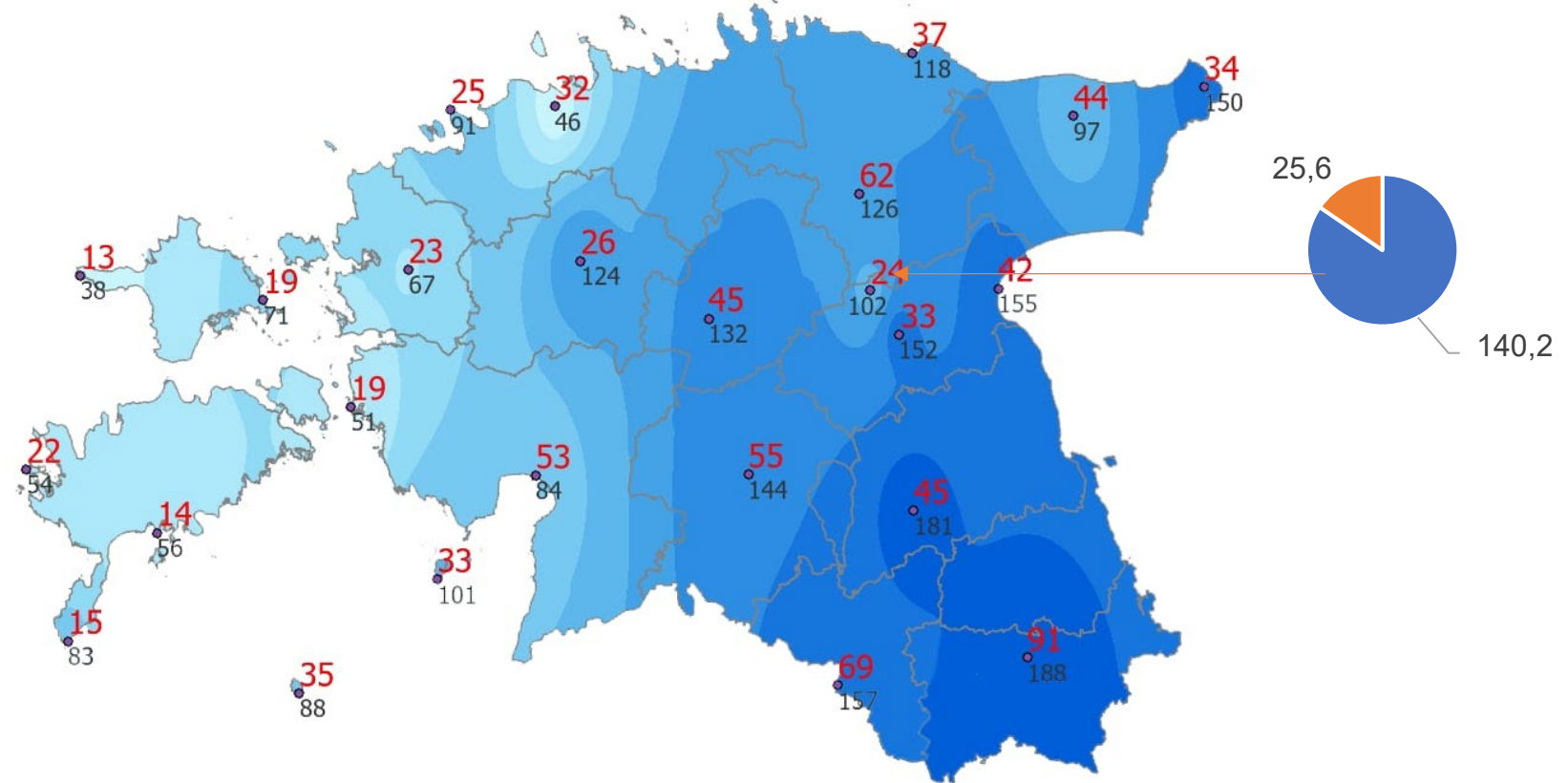
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Båstad, Sweden

12



Monthly precipitation vs max daily





AMBULATOORNE VASTUVOTT

UUS APTI

↑ A G1 H K

J K L KORP

KIRURGIAALINE →

Rainout shelter and precipitation tests area

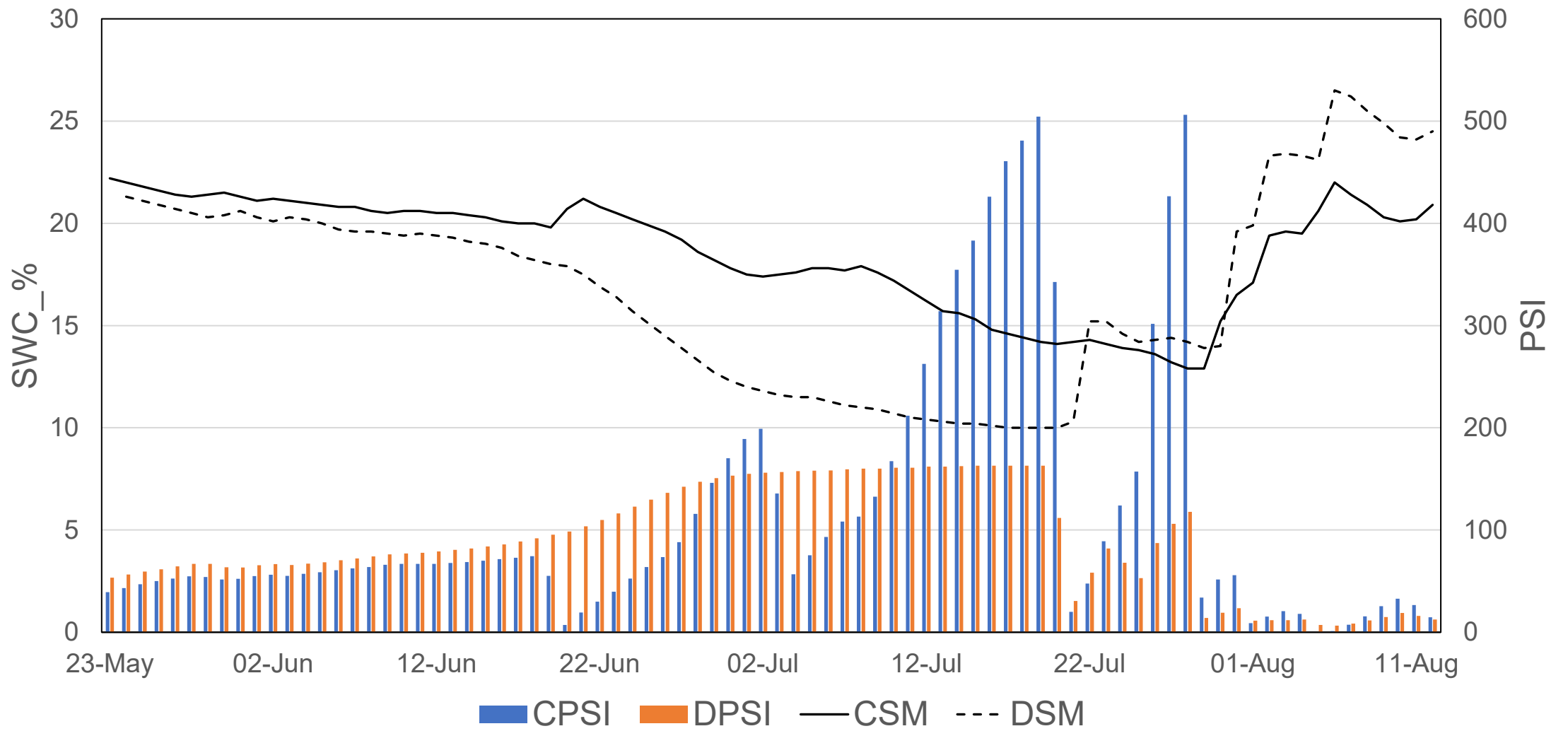
- Drought, Optimum, Water stress area + control
- Possibility to test three (3) time-based different drought scenarios
- Fully automated in next July.
- Lot of sensors



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Båstad, Sweden

17



KIPPER

- Gather data and establish agrometeorological database
- Contemporary agroclimatic statistics and regionalization presented as maps and tables
- Location-specific statistical maps of weather-related damages over the past decade
- A mapping application prototype for regionally determining field operation timeframes based on weather conditions

PhD

- **Article 1: Long-term Spatiotemporal Changes in Soil Temperature Depth Profiles in Estonia**
- **Article 2: Long-term Spatiotemporal Changes in Soil Moisture Depth Profiles in Estonia**
- **Article 3. Behaviour of Soil Moisture Profiles in Different Landscape Profiles**

