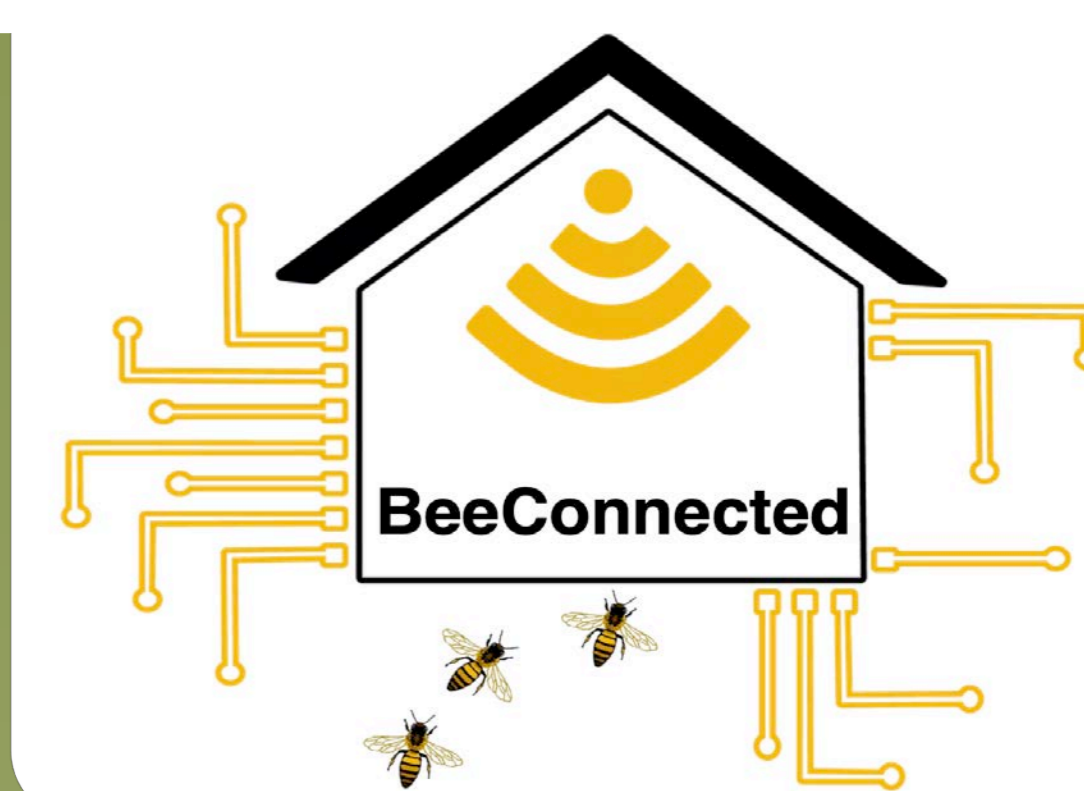# *BeeConnected* - Understanding and anticipating mechanisms of honeybee colony mortality with connected beehives
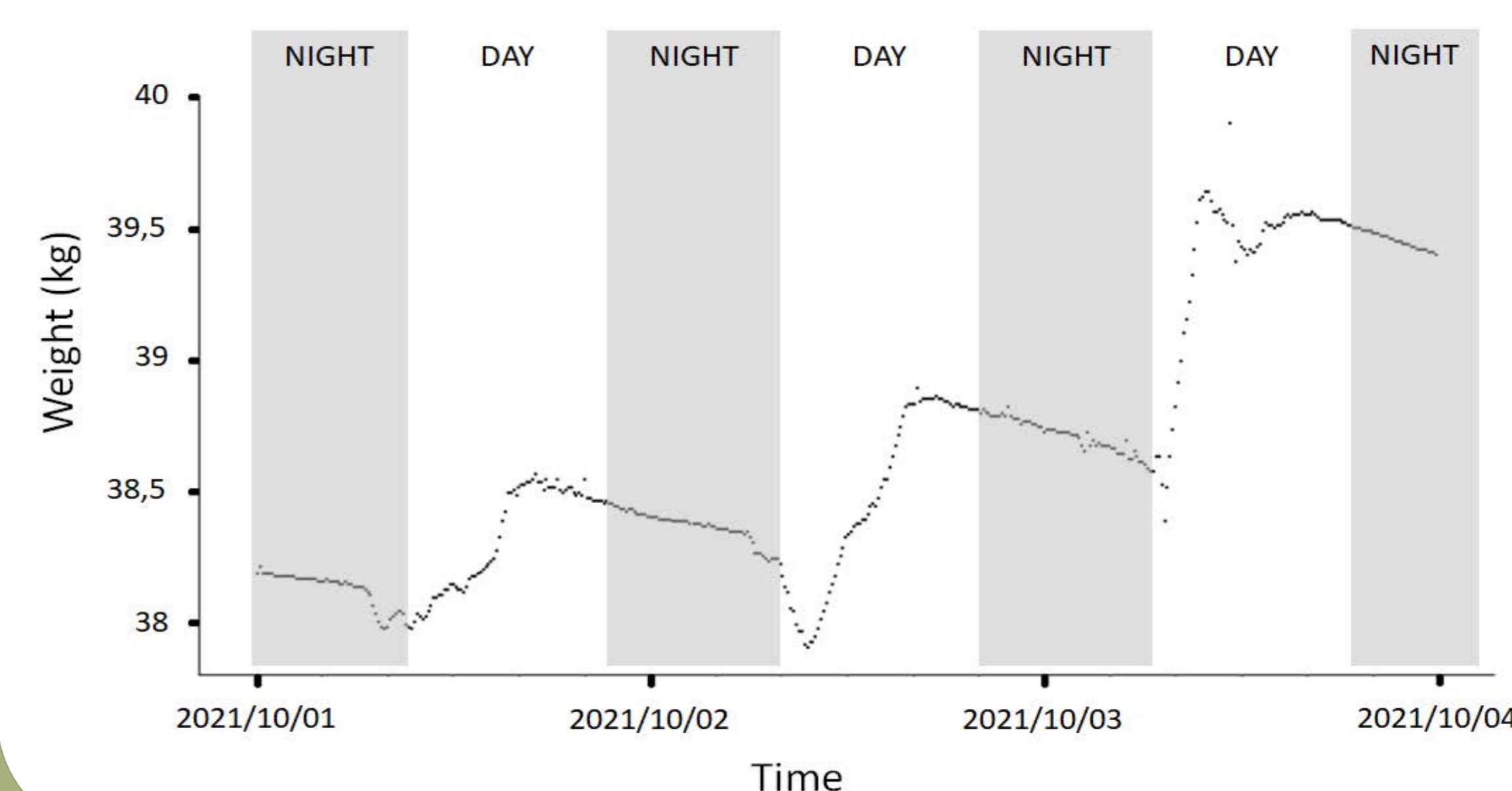
BeeConnected

Background

- Abnormal high mortality rates of honey bee colonies (25–50% every winter)
- Strong impacts on beekeeper economy and pollination services
- Beehives are black boxes during the winter

Main objectives

- **Helping beekeepers limiting colony losses**
- Developing new digital solutions based on data
- Delivering **early-warning indicators** of honey bee colony mortality
- Carrying out an international **climate × landscape monitoring** in 27 study sites in **France, Germany and Greece**

Weight monitoring

Climate × landscape experimental design
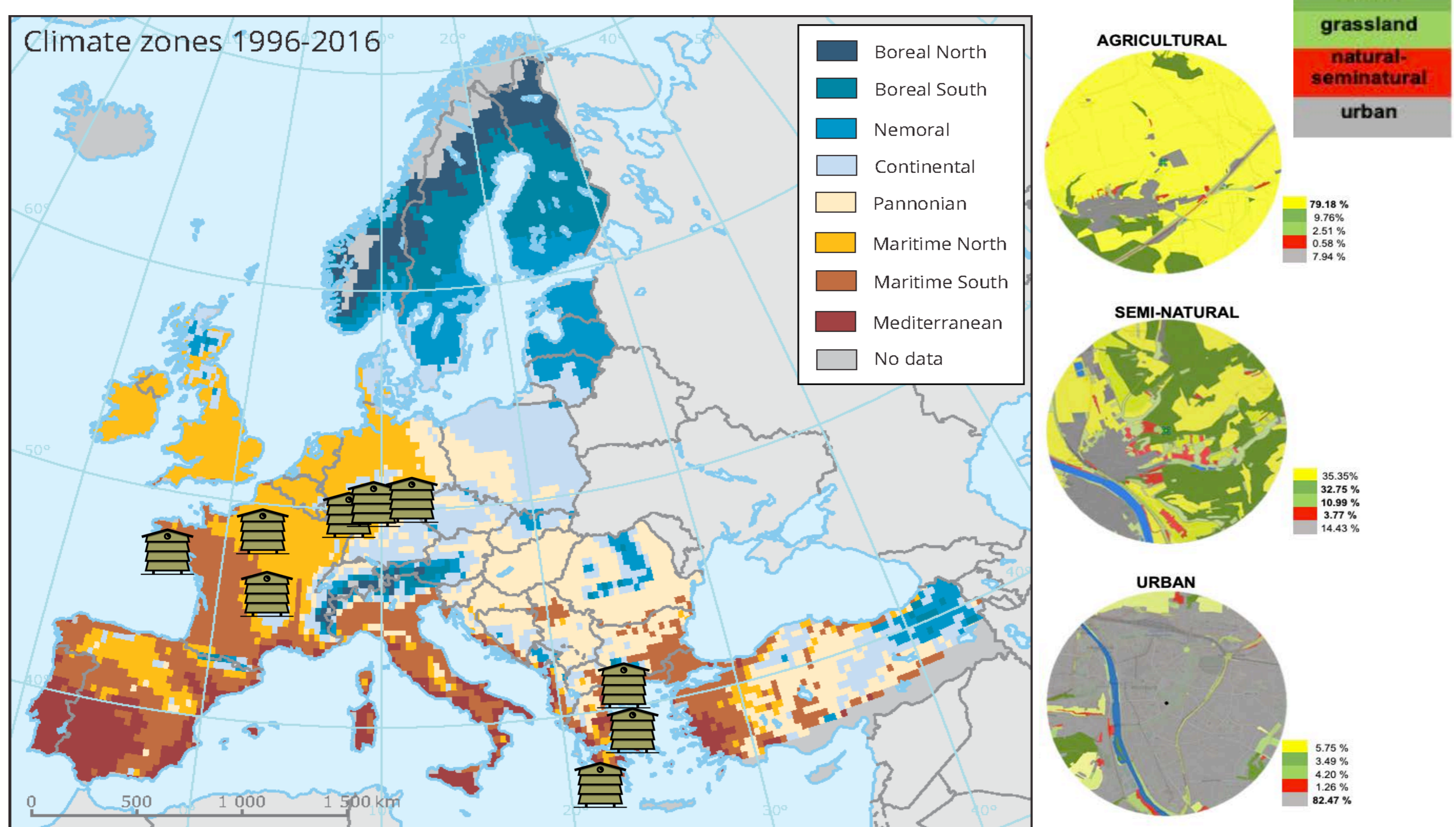
Insights in experiments

Weight, temperature and sound monitoring

- 135 hives with connected scales
- 45 hives with connected frames (1620 temperatures sensors)
- 15 hives with sound record devices

Large-scale sampling

- 4320 bee samples
- 810 colony assessments
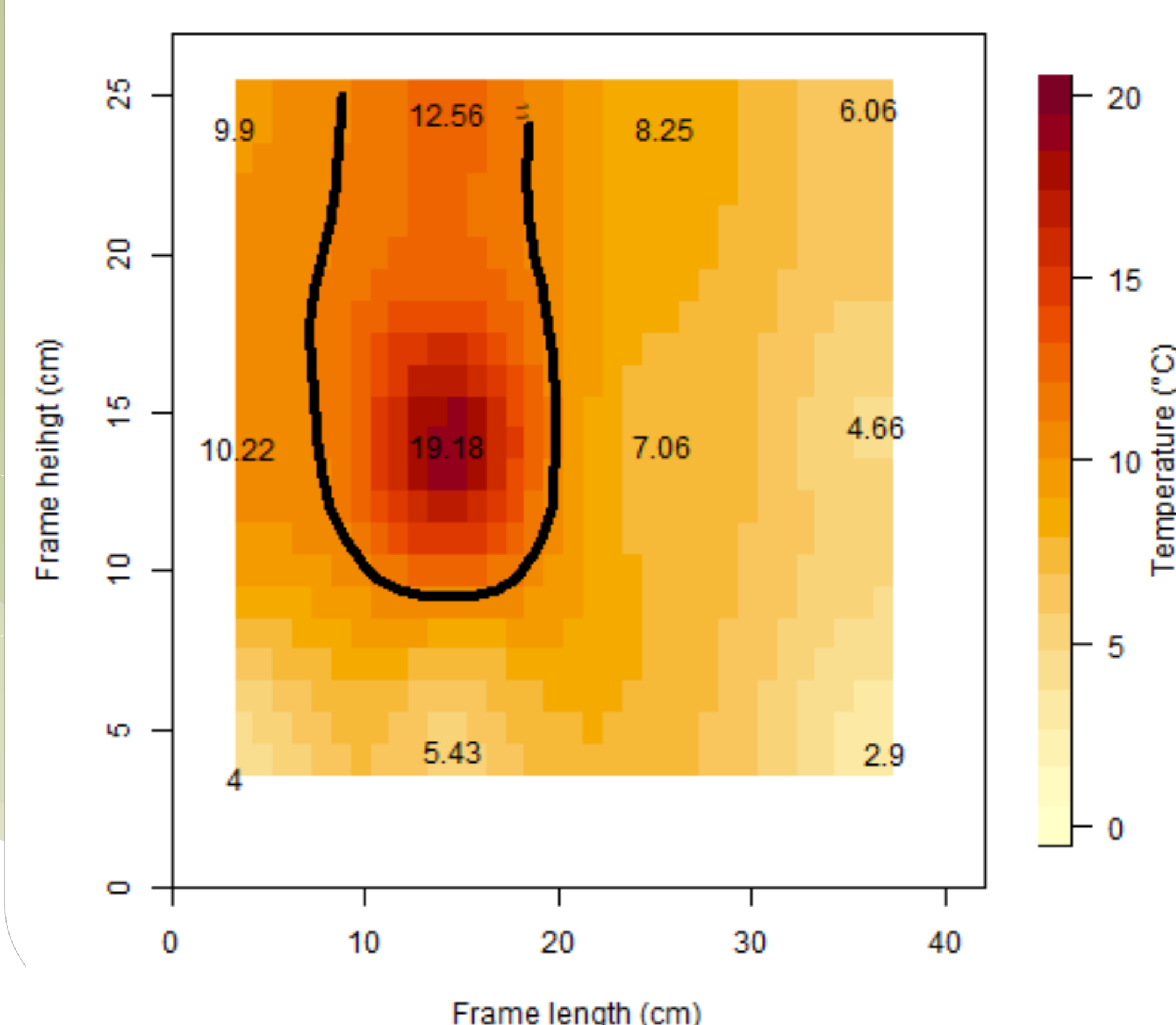- 540 pollen samples

Potential impact

- ICT for the detection of abnormal behaviours
- Acceptability analysis of the use of ICT by beekeepers
- Understand mechanism underlying winter bee colony mortality
- Production of decision-support tools to help beekeepers minimizing colony losses in winter

Future research activities

- Analysing the climate and landscape effects on winter dynamics in colony weight, thermoregulation and sound
- Adapting machine-learning algorithms to automatically detect behavioural anomalies and early-warning indicators of colony mortality

Temperature monitoring

BeeConnected consortium
https://www.beeconnected.online/

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