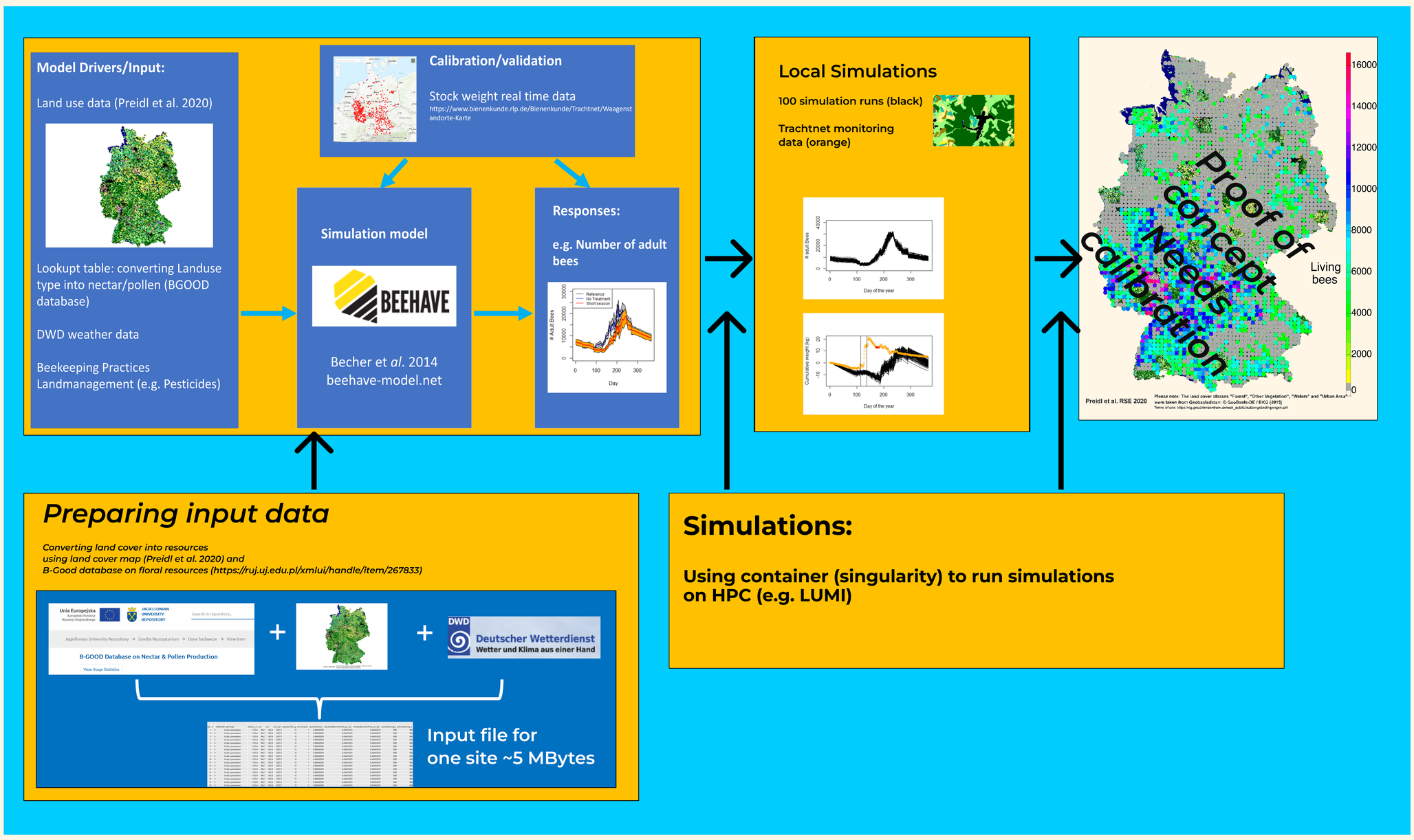
Simulating the effect of landscape structure and land use change on honey bee vitality for Germany

Jürgen Groeneveld [1], Jasmin Krebs[2], Tomas Martinovic [3], Tuomas Rossi[4], Anna Wendt [5], Volker Grimm [1,6]

1. Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany
2. University of Leipzig, Germany
3. IT4Innovations, VSB - Technical University of Ostrava, Czech Republic
4. CSC – IT Center for Science Ltd., Espoo, Finland
5. University of Freiburg, Germany
6. University of Potsdam, Germany

How can we project honey bee health by models for any point in Germany?

We use the honey bee simulation model BEEHAVE (Becher et al. 2014) together with land cover data (19 types, e.g. oilseed rape, sun flowers,...) and daily weather data (sun shine hours, temperature) to simulate several end points such as honey storage, number of Varroa mites, and number of adult bees.



Summary:

- **Workflows for local and nationwide applications exist**
- **Calibration and adaptation still needed.**

References:
Becher, M. A., et al. (2014). "BEEHAVE: a systems model of honeybee colony dynamics and foraging to explore multifactorial causes of colony failure." Journal of Applied Ecology 51(2): 470-482.
Preidl, S., et al. (2020). "Introducing APiC for regionalised land cover mapping on the national scale using Sentinel-2A imagery." Remote Sensing of Environment 240.

Funded by the European Union

@BiodiversityDT | /company/biodt | BioDT | /communities/biodt

BIODT biodiversitydigitaltwin