Performance analysis of regional landslide early warning based on soil moisture simulations

Adrian Wicki[1], Per-Erik Jansson[2], Manfred Stähli[1]

European Geoscience Union, 05.04.2020, Online

- 35 **soil moisture measurement** sites
- 452 **landslide events**
- Scope: All Switzerland, 2008 – 2018
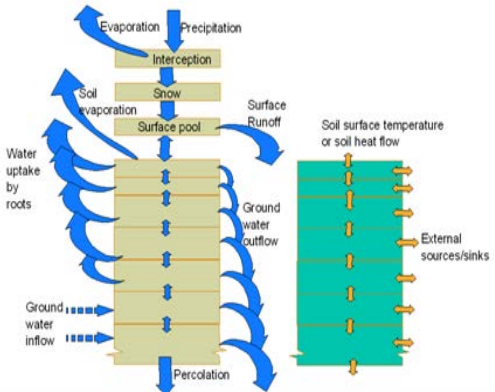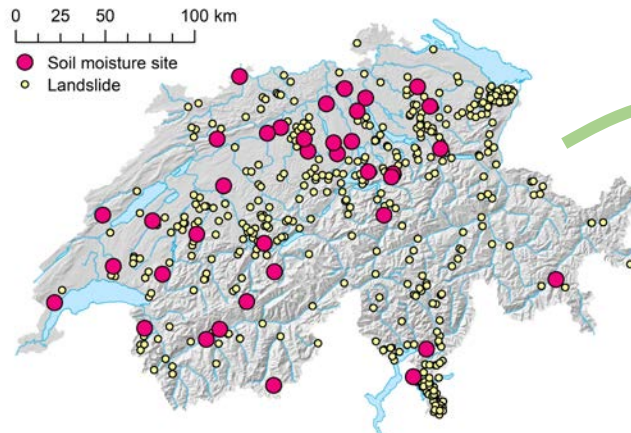
- **Modelling** of soil moisture and temperature
- Hourly meteorological data as forcing to **CoupModel** (Jansson 2012)
- Site-specific soil information
- One parameter representation for all sites

Characterization of **infiltration events**. Classification as **landslide-triggering** or **non-triggering**.
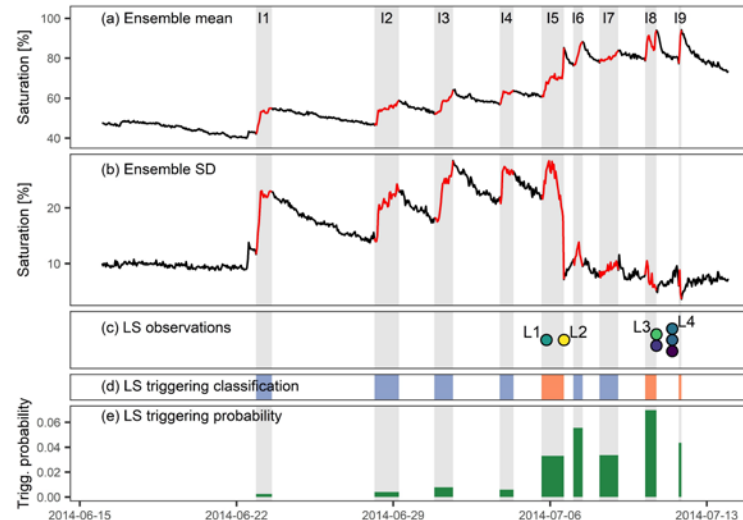
Application of a logistic regression function to model **landslide triggering probability**.

Forecast goodness validation by ROC analysis (Wicki et al. 2020, in Landslides, https://doi.org/10.1007/s10346-020-01400-y)
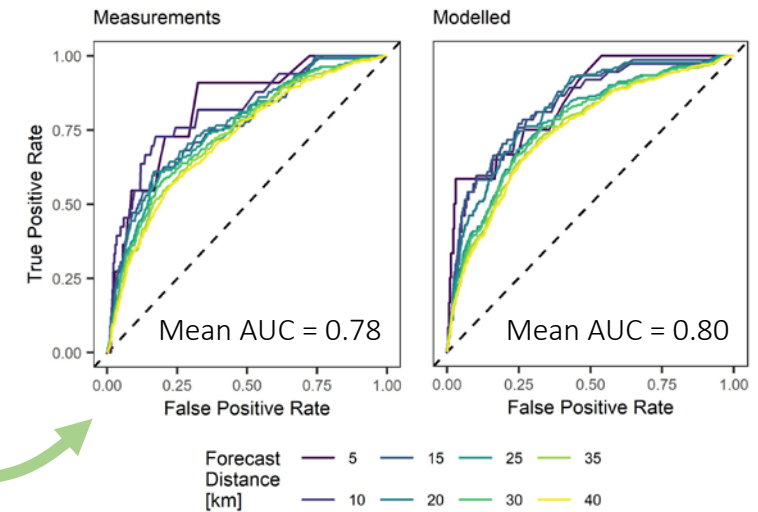
We find a similar forecast goodness between early warnings based on measured and modelled soil moisture.

Next steps:
- Generalize soil properties information to assess the performace with **limited soil information**.
- Simulate **additional sites** to test the use of models to complement a measurements-based LEWS.
- **Site-specific calibration** to assess performance limits.