

Quantifying, Understanding & Predicting forest growth in Switzerland

Trotsiuk Volodymyr

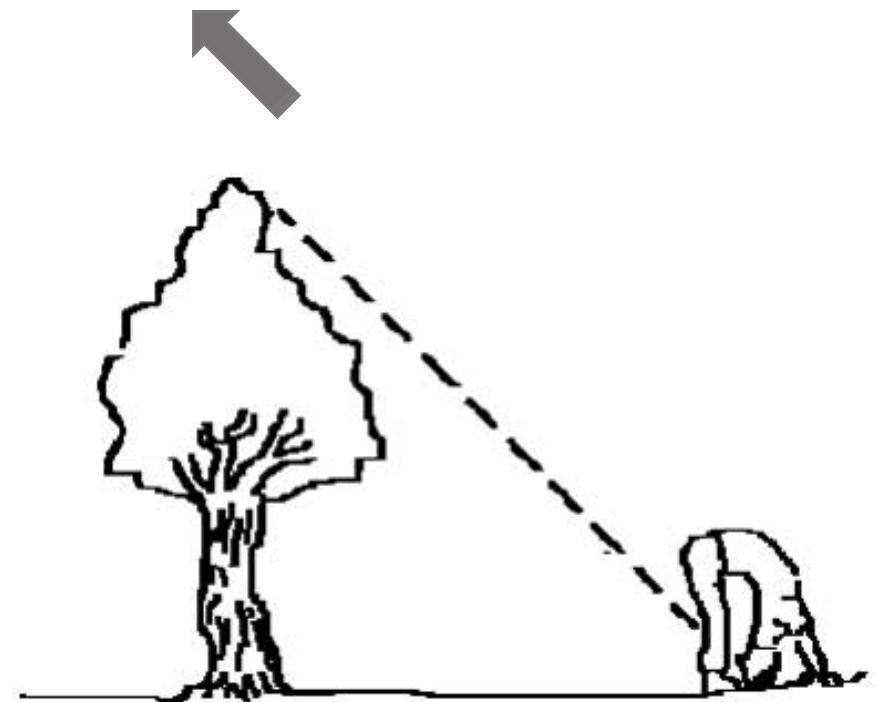
QUPFIS team: Abiven S., Babst F., Buchmann N., Bugmann H., Burri S., Cailleret M., Eugster W., Etzold S., Ferretti M., Forrester D., Gessler A., Gharum M., Haeni M., Hagedorn F., Hobi M., Hug C., Kahmen A., Kumar S., Levesque M., Lischke H., Meusburger K., Piot M., Rigling A., Rogiers N., Rohner B., Schaub M., Schmatz D., Stillhard J., Sutter F., Thurig E., Treydte K., Waldner P., Walther L., Zweifel R.,...

Background

Data Assimilation



Model



Observations

<https://matemelga.wordpress.com>

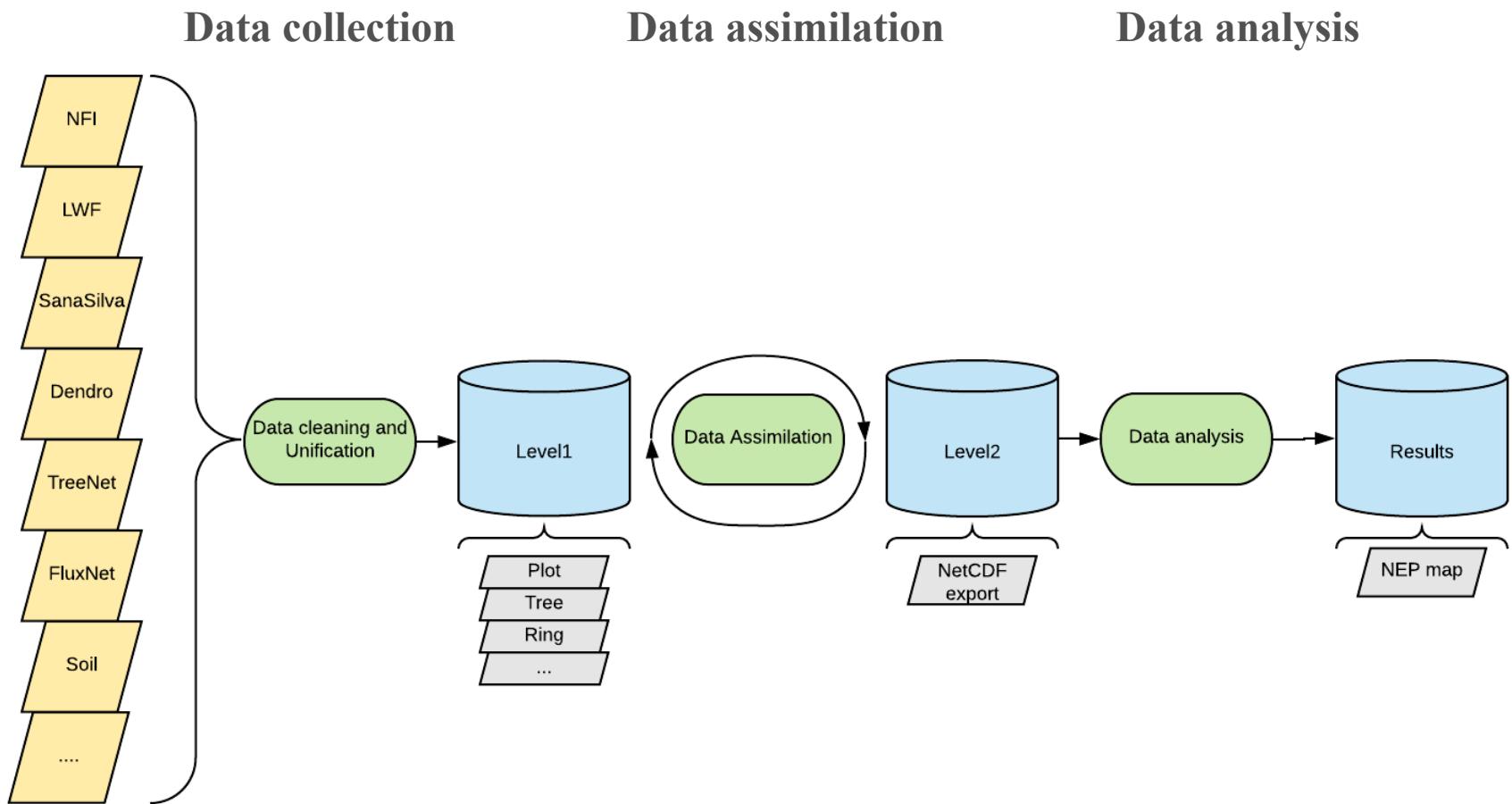
Methodology to combine observational and model information to provide an estimate of the most likely state and its uncertainty for the all observational system (Lahoz & William, 2014).

Project aim

Aim :

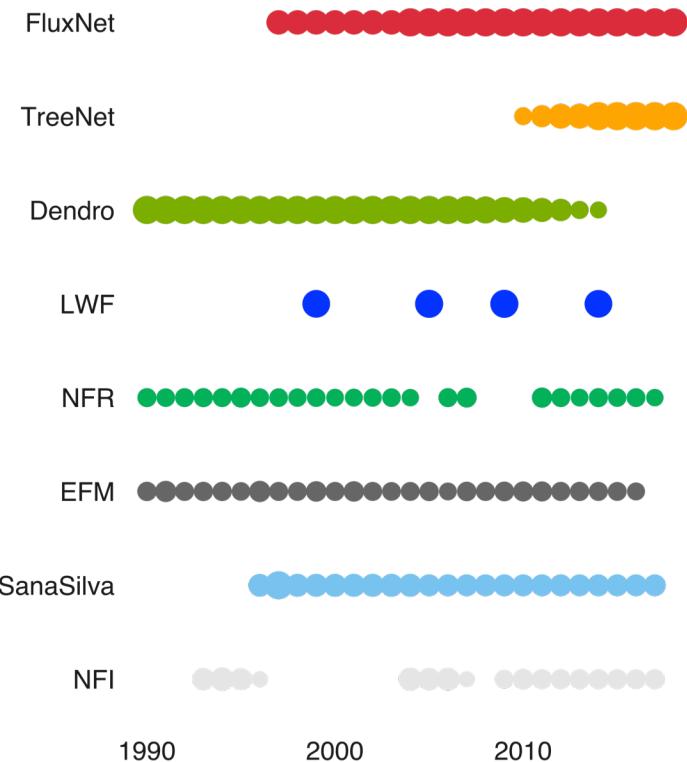
- Link various data with different temporal and spatial resolution
- Assimilate data and models to a homogenized product
- Estimate drivers of forest net ecosystem productivity (NEP) at monthly or seasonal resolution for each individual year

Workflow



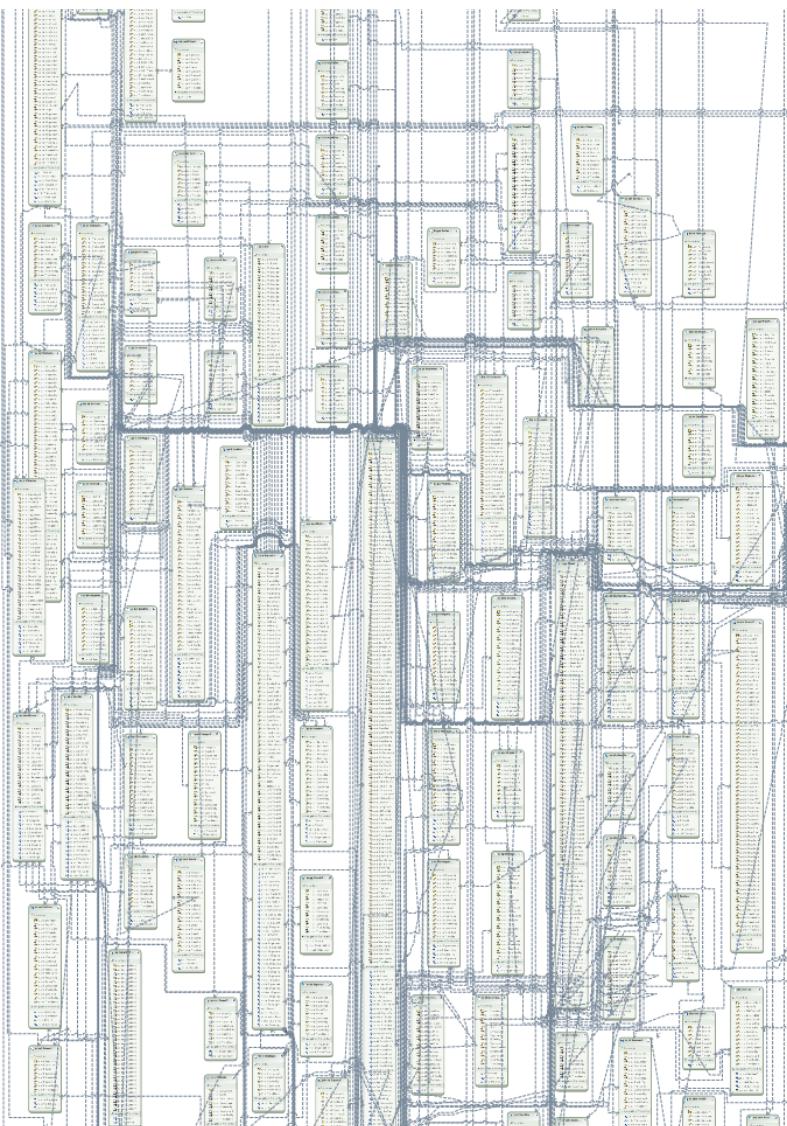
Schematic workflow of the QUPFIS project

Data networks



Data networks integrated into data assimilation framework

Data collection



in f

QUPFIS - Documentation

 SWISS FOREST LAB

Quantifying, Understanding and Predicting Forest growth In Switzerland

Background: Forests world-wide are known as an important net carbon sink and are thus a key component of the terrestrial carbon cycle. However, carbon fluxes and storage vary regionally and with inter-annual to long-term environmental change (Luyssaert et al. 2010; Körner 2017) . A higher frequency of drought events and other negative impacts on growth (increased autotrophic respiration and

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QUPFIS - Documentation

1 Data raw

1.1 National forest inventory
1.2 Natural Forest Reserves and Ex...
1.3 Long-term Forest Ecosystem Re...
1.4 Tree Ring Network
1.5 Growth Indicator Network

References

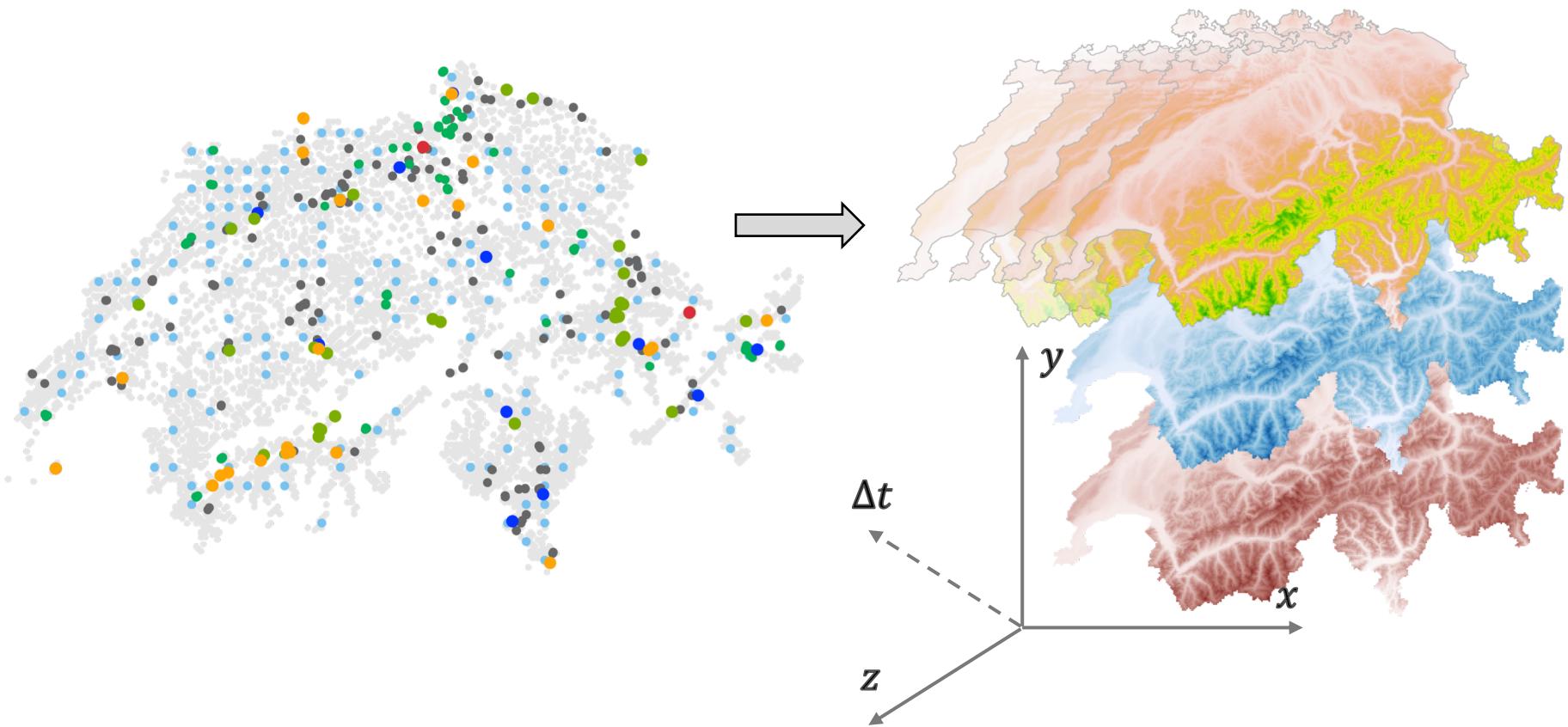
File location

All data are submitted to the [WSL SFTP server](#) `sftp://ftp.wsl.ch`, under specific directory. Contact person from each of the data submission group have his own unique `username` and `password` to access the targeted directory. No access granted to other directory. Only the admin user have access to each of the directory. The directory for file submission have the following structure:

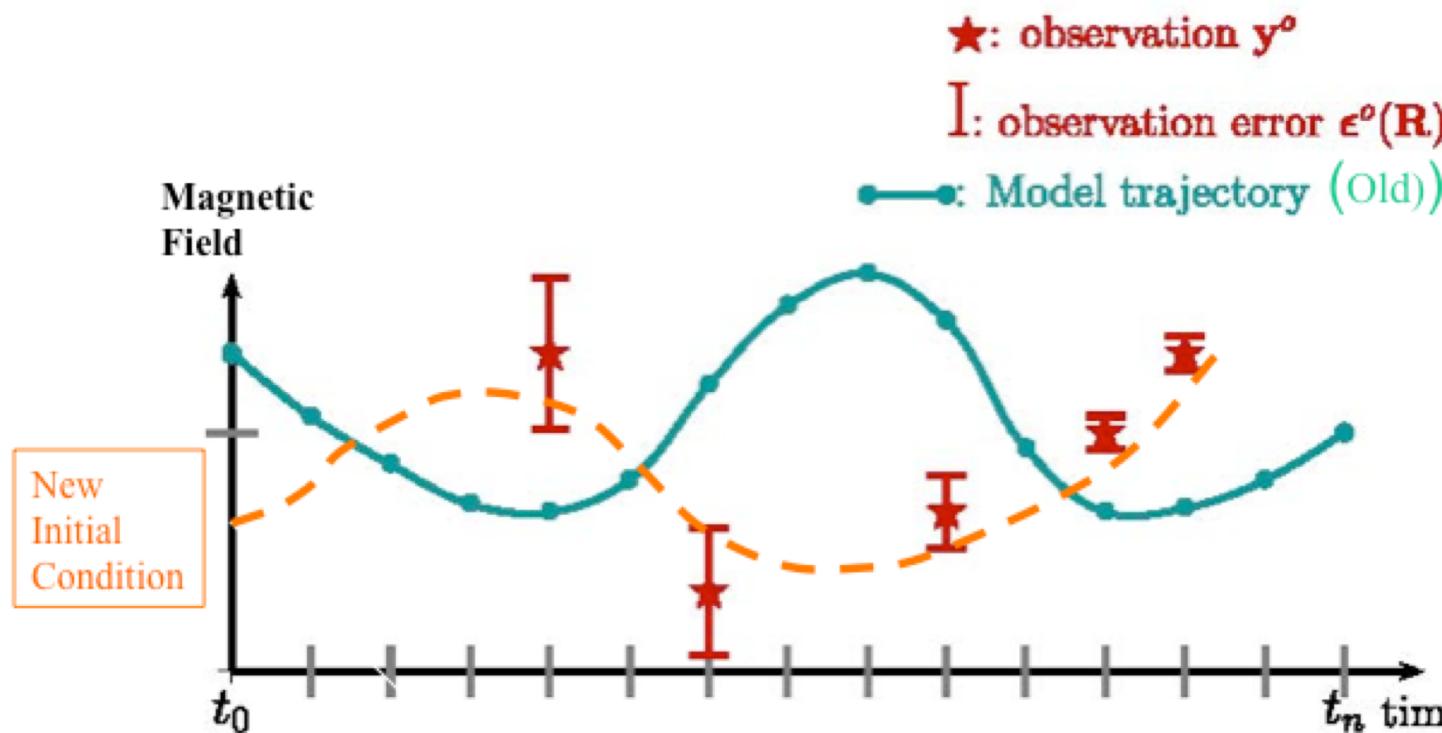
```
ftp/qupfis/
boden/
dendro/
fluxnet/
lfi/
lwf/
hex/
```

PostgreSQL database schema and Example of documentation WIKI for data submission (<https://mattduffield.wordpress.com>)

Data assimilation

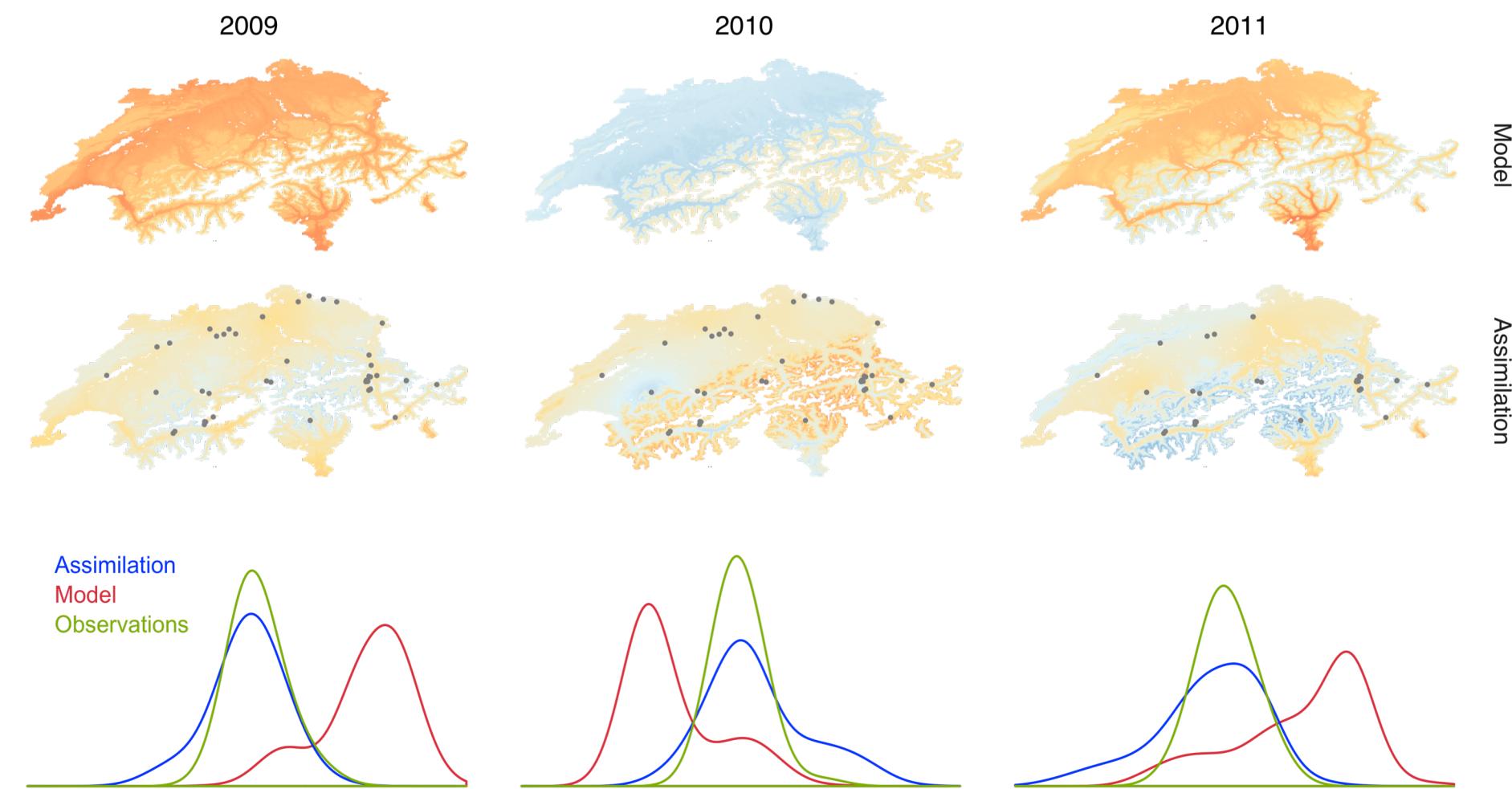


Data assimilation



Modified from Fournier et al 2010

Data assimilation



Growth index before (upper panel) and after (middle panel) assimilation
based on observational data (points)

