



Compiling a global database of sap flow measurements: the SAPFLUXNET data workflow

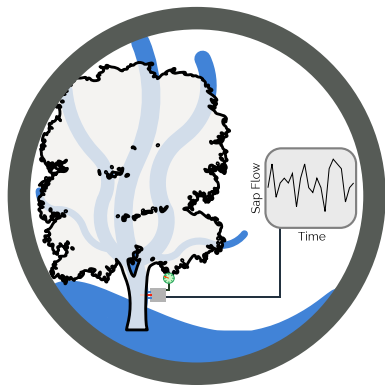
XIV MEDECOS & XIII AEET meeting

Ecoinformatics: data science brings new avenues for ecology
Symposium

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Kathy Steppe & Jordi Martínez-Vilalta



Centre of Ecological Research and Forestry Applications



Different **thermodynamic methods** to determine sap flow using heat as a tracer sap movement

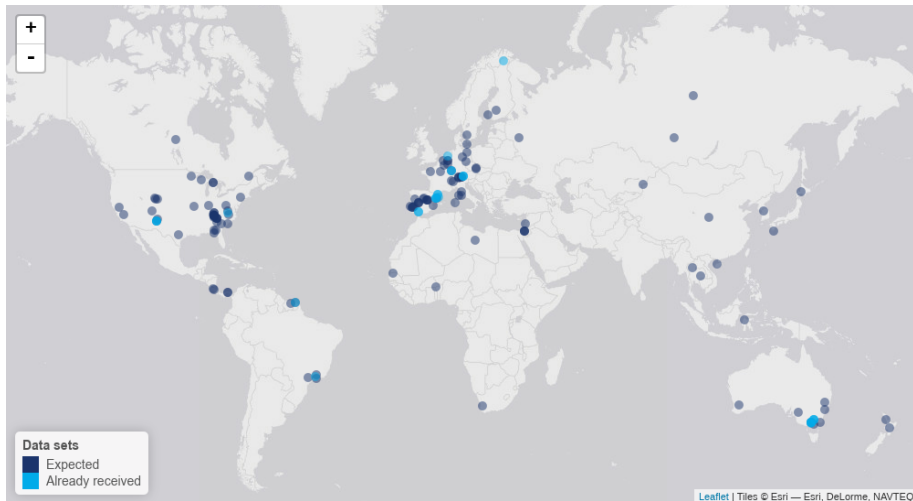
Proxy of the movement of water between the soil-plant-atmosphere continuum.

Allows **upscaling** from stem to plant and landscape level.

The time is ripe for a global database



The **SAPFLUXNET** initiative is building the first global database of plant-level sap flow measurements to analyse the environmental and physiological factors driving tree- and stand-level transpiration



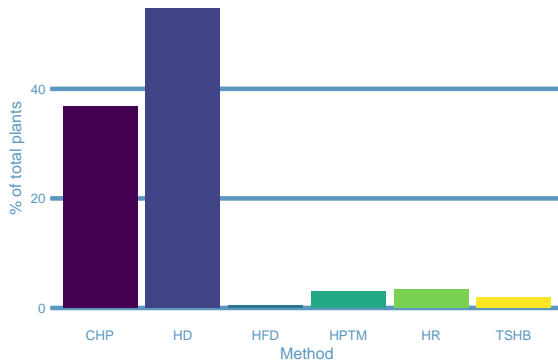


- Stem or whole-plant level
- Field conditions
- Sub-daily intervals
- Environmental data available (RH, Ta, PAR...)
- Abundant metadata (site, stand, plant, species and environmental)



High data complexity:

- substantial methodological variability





High data complexity:

- Large datasets and ancillary metadata

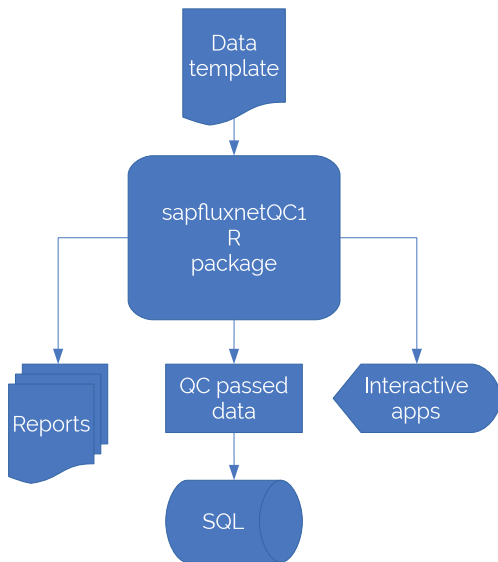
Metadata	Items
Site	20
Stand	16
Species	4
Plant	24
Environmental	16
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Total	80

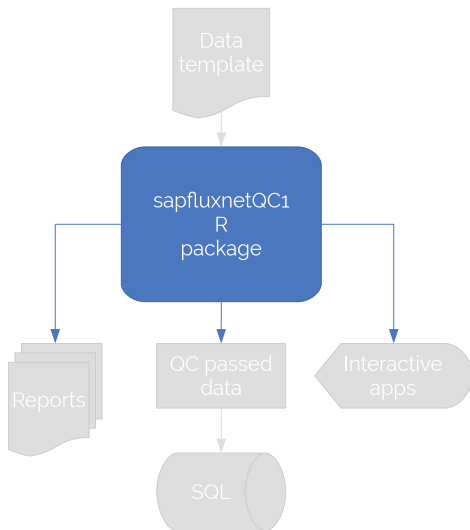


How to assay quality and store data?

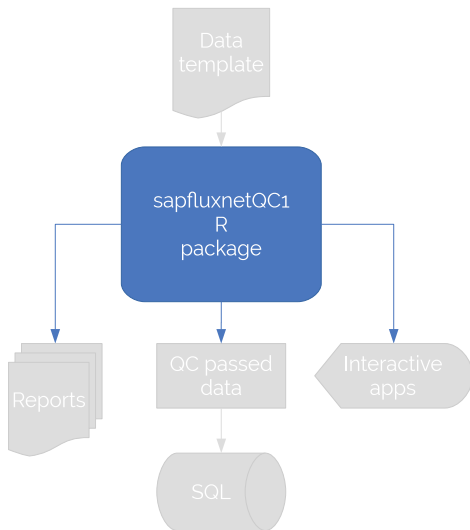
We need **semi-automatic**, **reproducible** and **robust** checks to ensure the quality of the submitted datasets. Also, we need to store the data in a way that allows all essential information to be **available** in order to use the data in checks and analyses

SAPFLUXNET Data Flow



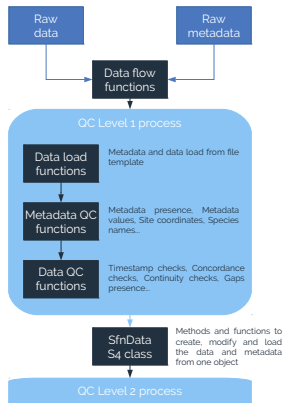


1. Quality control checks (QC)
2. Report generation (automatic)
3. Storing data in special object (SfnData class)
4. Interactive functions allowing fine control of quality control



Benefits of R as environment:

1. Open
2. Reproducible
3. Easy maintenance and update
4. Easy integration with web and SQL technologies



SAPFLUXNET Server Structure

