Hydro-CH2018: Discharge and water temperature - UNIL
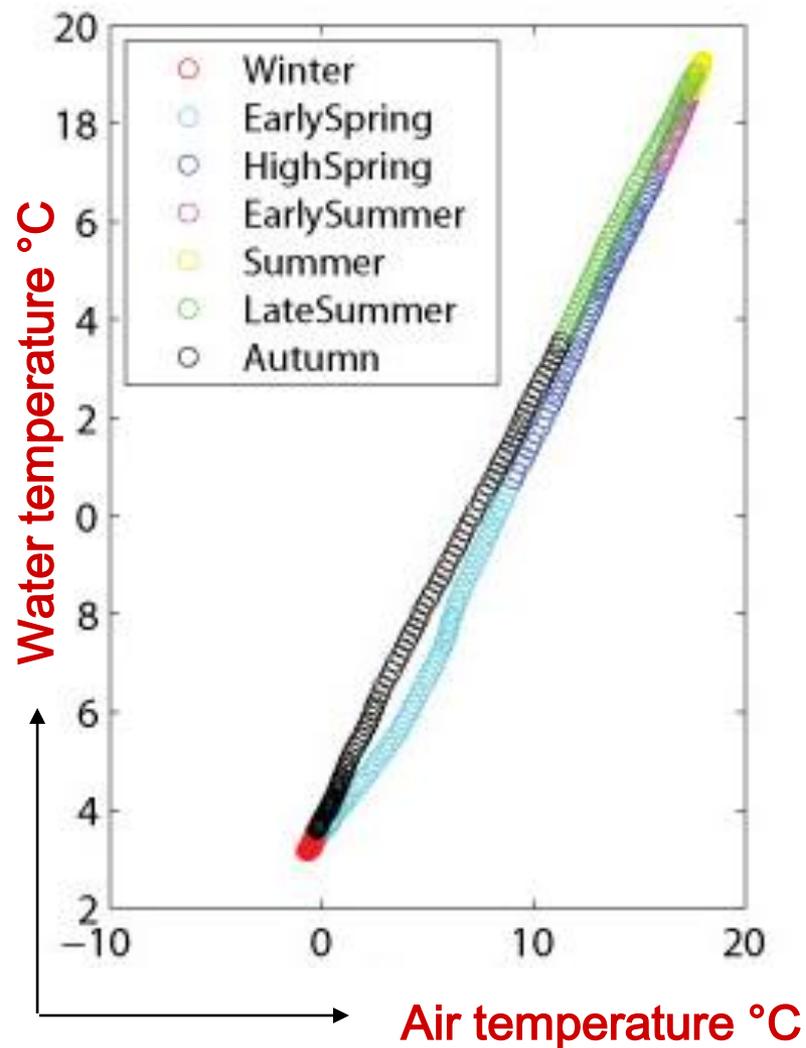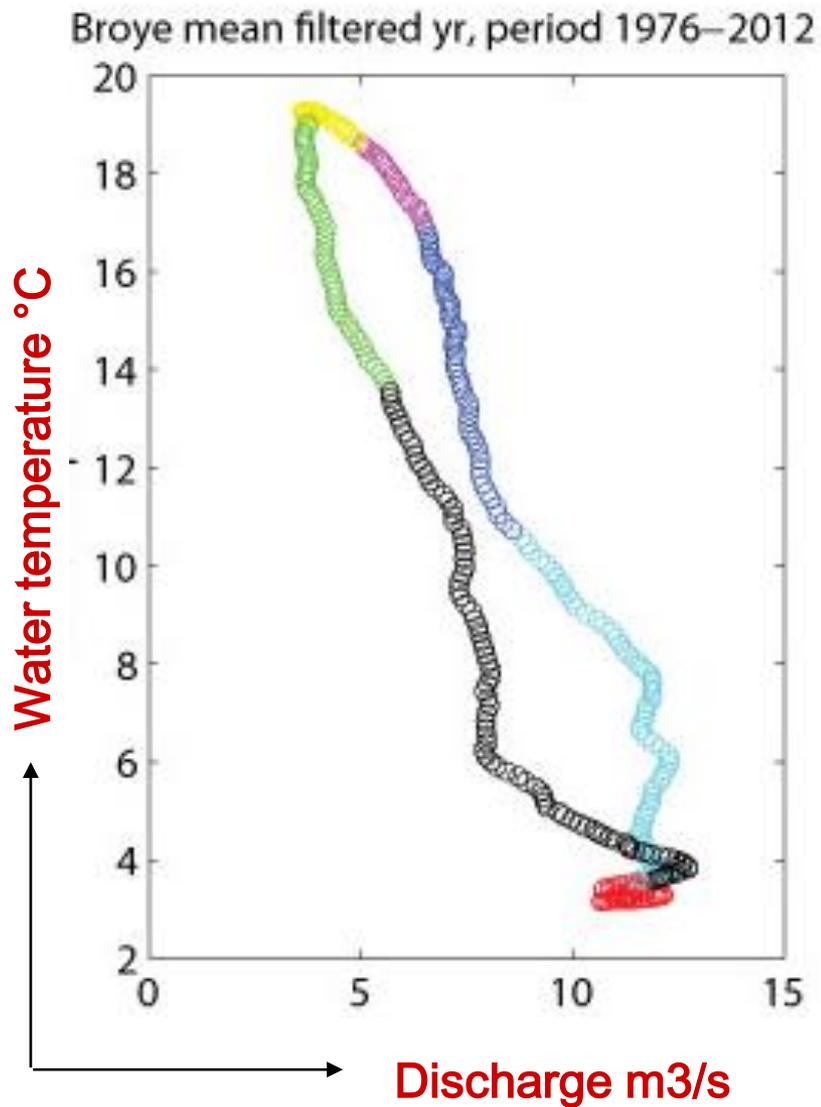
B.Schaefli, J. Larsen

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Objective: regime analysis

- **Quantifying interplay between discharge & water temperature**

- **Steps:**

    - *Classification of* ***bi-variate water temperature-discharge regimes***

    - *Assessment of* ***existing water temperature models****: how do they capture bi-variate regimes?*

        - A) Analytic model proposed by Toffolon and Piccolroaz (2015)

        - B) Physical model of EPFL project

    - ***Analysis of projections***

        - Quantify the significance of simulated water temperature and discharge changes with respect to water temperature regime shifts.

bettina.schaefli@unil.ch

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Bi-variate regimes- example

Broye mean filtered yr, period 1976–2012

Left plot: Water temperature °C (y-axis) vs Discharge m3/s (x-axis)

Right plot: Water temperature °C (y-axis) vs Air temperature °C (x-axis)

Legend:
- Winter
- EarlySpring
- HighSpring
- EarlySummer
- Summer
- LateSummer
- Autumn

Outcome & Synthesis report

- New method to classify bi-variate water temperature-discharge regimes & to assess potential changes

- An assessment of the ability of reference models to reproduce observed water temperature-discharge regimes

- A collection of potential bi-variate regime scenarios for Switzerland based on the scenarios run by our project partners (Huwald et al., EPFL).

- The above points I to III will feed directly into the planned synthesis report.

bettina.schaefli@unil.ch

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