



*Supplement of*

**Divergent water balance trajectories under two dominant tree species  
in montane forest catchment shifting from energy- to water-limitation**

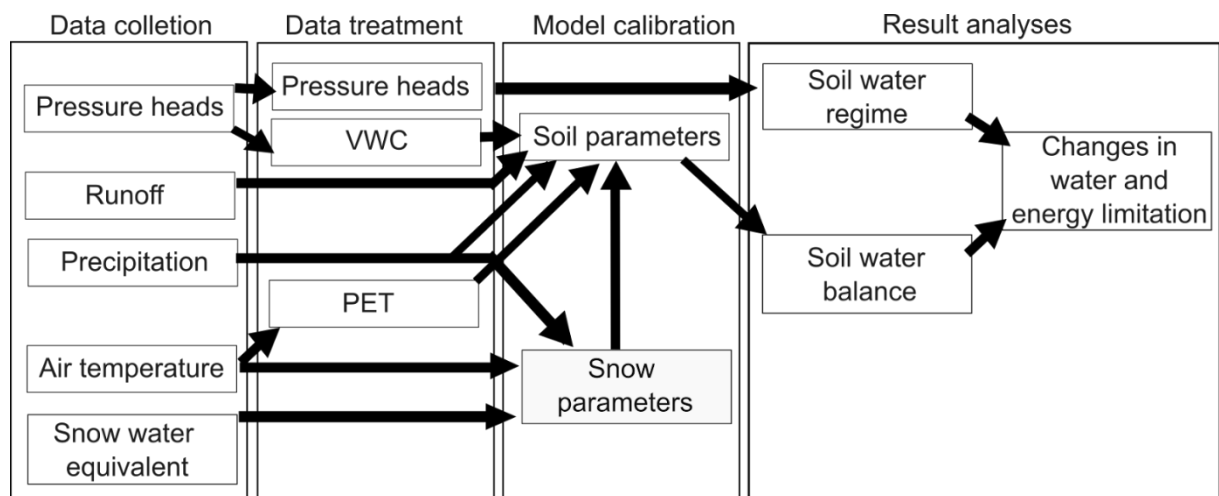
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## Supplementary Material

**Figure S1: Scheme representing the workflow of the study**



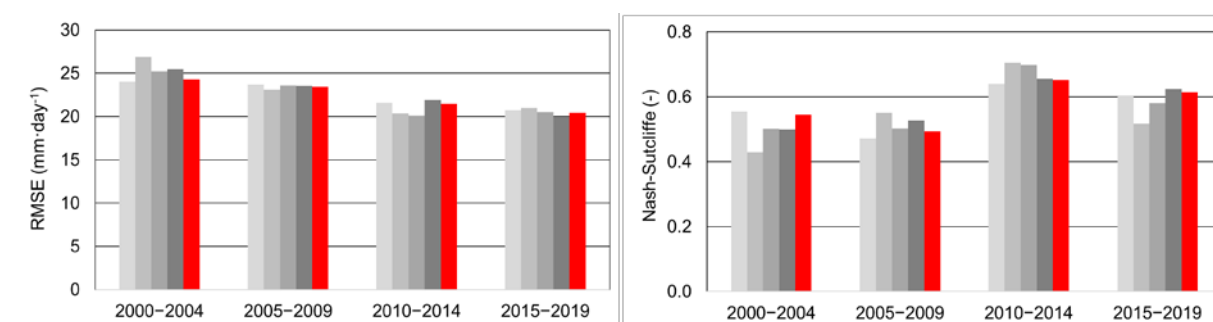
**Figure S2. The soil tensiometer with a reading unit (Thies, Germany)**



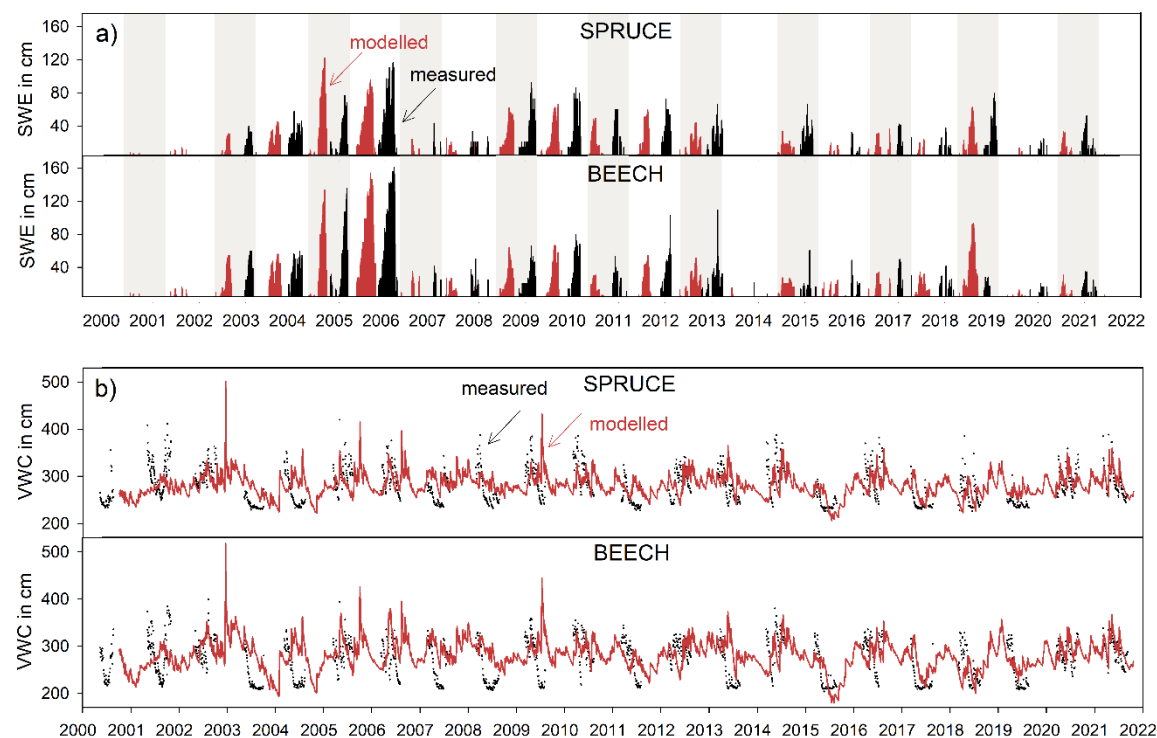
**Table S1: Average soil hydraulic parameters of all soil layers derived from direct measurements. Each value is depicted by its mean  $\pm$  standard deviation.**

| Measured SHP |          | $\theta_r$      | $\theta_s$      | $\alpha$        | $n$             |
|--------------|----------|-----------------|-----------------|-----------------|-----------------|
| Spruce       | 10 cm    | $0.32 \pm 0.03$ | $0.70 \pm 0.04$ | $0.04 \pm 0.01$ | $2.10 \pm 0.53$ |
|              | 35–45 cm | $0.18 \pm 0.04$ | $0.52 \pm 0.03$ | $0.04 \pm 0.01$ | $1.72 \pm 0.15$ |
|              | 50 cm    | $0.15 \pm 0.02$ | $0.48 \pm 0.02$ | $0.05 \pm 0.01$ | $1.58 \pm 0.19$ |
|              | 70–75 cm | $0.15 \pm 0.04$ | $0.50 \pm 0.04$ | $0.07 \pm 0.03$ | $1.45 \pm 0.13$ |
| Beech        | 10 cm    | $0.17 \pm 0.02$ | $0.53 \pm 0.02$ | $0.05 \pm 0.01$ | $1.36 \pm 0.02$ |
|              | 30 cm    | $0.18 \pm 0.01$ | $0.49 \pm 0.04$ | $0.05 \pm 0.01$ | $1.55 \pm 0.21$ |
|              | 45 cm    | $0.17 \pm 0.01$ | $0.47 \pm 0.01$ | $0.05 \pm 0.01$ | $1.46 \pm 0.01$ |
|              | 60 cm    | $0.13 \pm 0.02$ | $0.42 \pm 0.01$ | $0.05 \pm 0.02$ | $1.48 \pm 0.13$ |

**Figure S3: Model performance when calibrated in particular periods. Values from first columns represent calibration from 2000 to 2004, the second and following columns represent the following calibration periods (2005–2009, 2010–2014, 2015–2019, and the last column is an overall calibration)**



**Figure S4: Measured and modelled snow water equivalent (a) and soil water content (b)**



**Figure S5. Comparison of estimation of potential evapotranspiration by Penman-Monteith and Oudin approaches (a) and differences in soil water content modelling using both approaches (b)**

