

Basin characteristics

River Basin / River Basin (according EU-WFD)	Rhine
Operation (from... to...)	2000 to 2007
Gauge coordinates / Gauge datum:	N 51° 04.755, E 7° 53.570
Catchment area:	0,7 km ²
Elevation range:	382 to 425 m a.s.l.
Basin type: (alpine, mountainous, lowland)	low mountain range
Climatic parameters: (mean precipitation, temperature and others)	P: 1250 mm/a; T: ø 8°C
Land use:	forest
Soils:	Cambisol, Leptosol
Geology:	grey clay shale
Hydrogeology: (Type of aquifers, hydraulic conductivity)	unconfined aquifer
Characteristic water discharges: (Q_{min} , Q_{max} , Q_{mean})	Q_{min} : 0,006 m ³ /s; Q_{max} : 3,16 m ³ /s; Q_{mean} : 0,078 m ³ /s

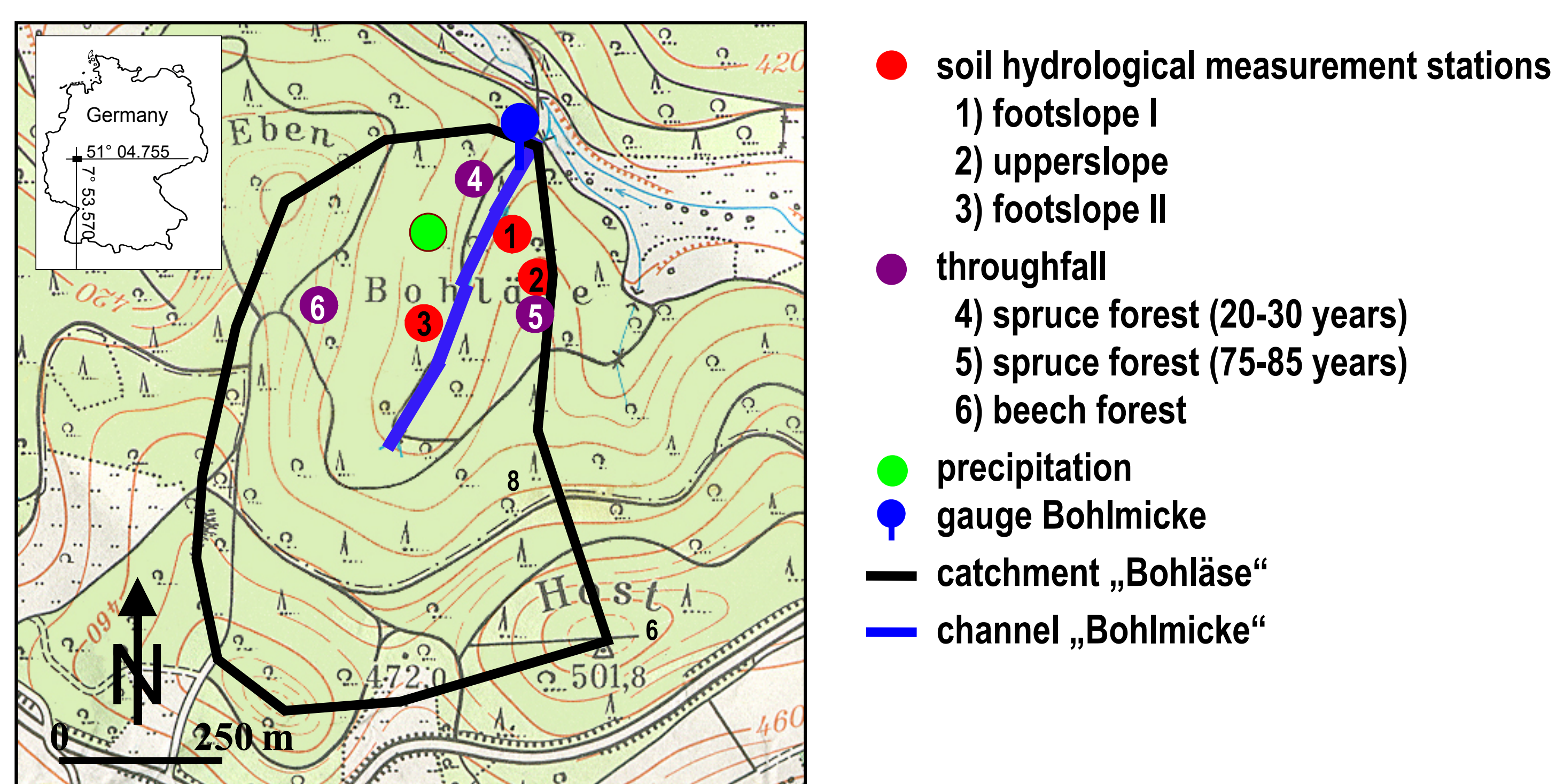
Instrumentation and data

Measured hydrological parameters	Measuring period	Temporal resolution	Number of stations
precipitation	2000 - 2007	weekly	1
throughfall	2000 - 2007	10 min weekly	1 2
discharge	2001 - 2007	10 min	1
soil water potential	2000 - 2007	10 min	3

Applied models

- Any runoff model wasn't applied yet.

Map of the research basin



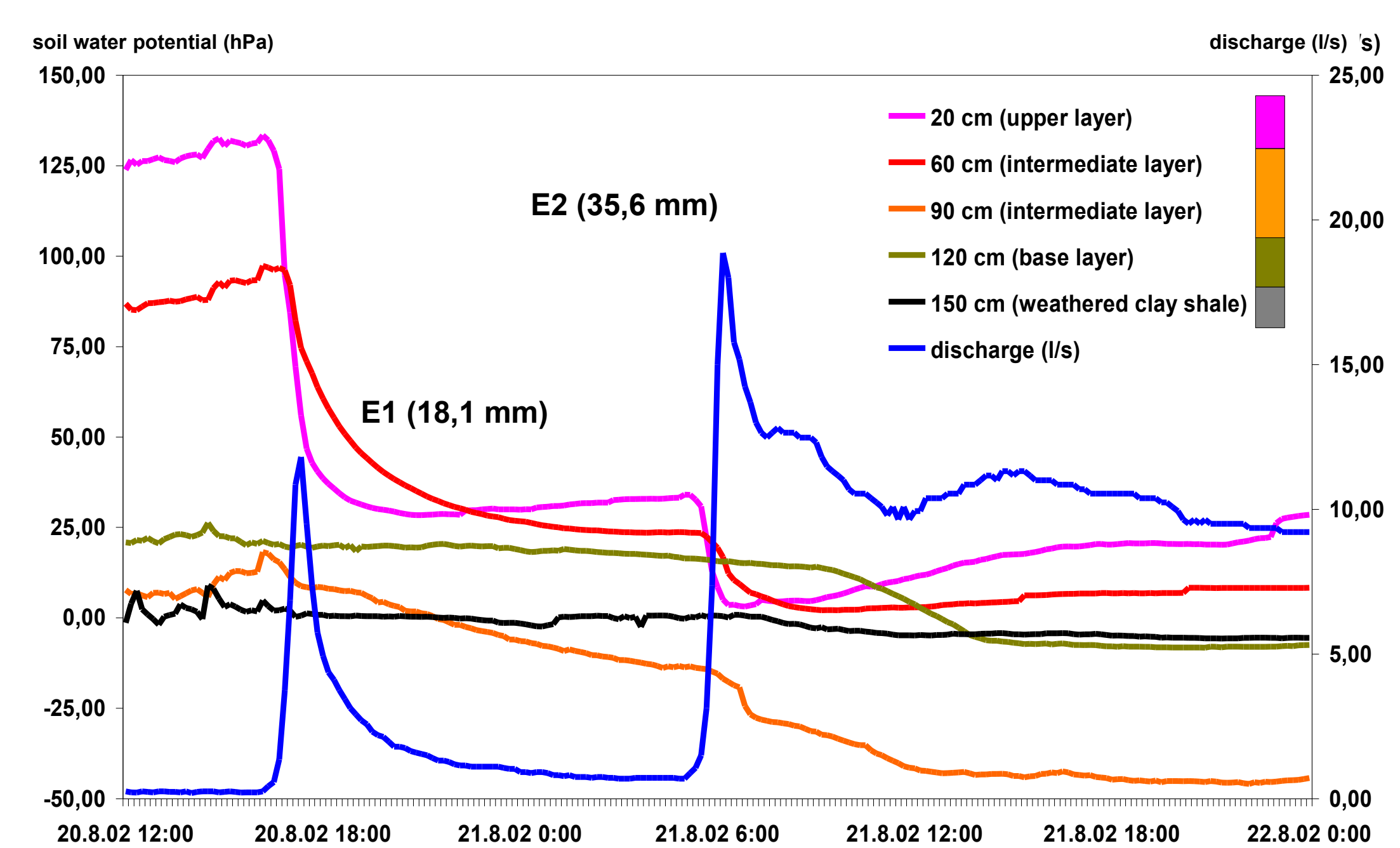
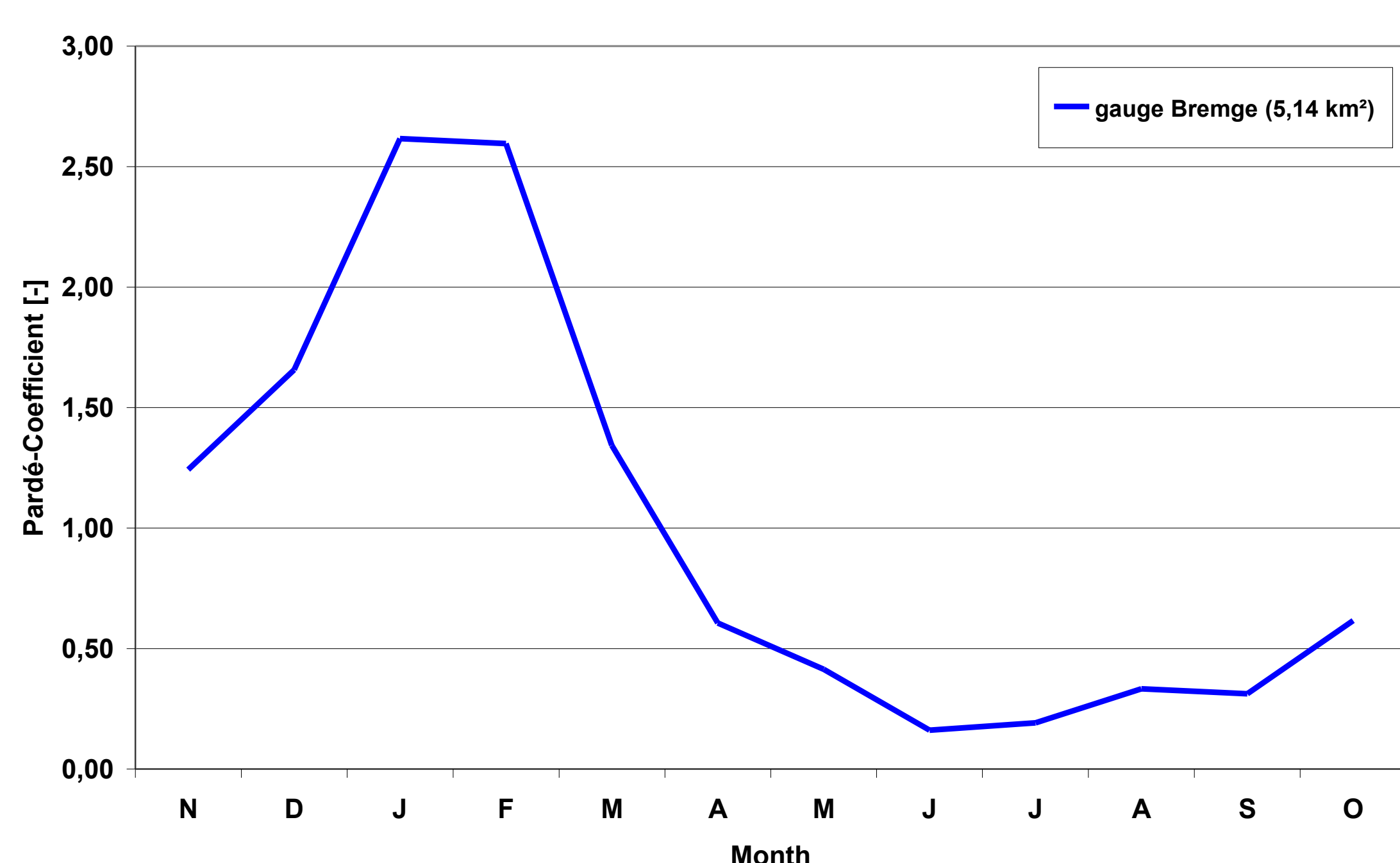
Main scientific results

Based on studies at different scales, runoff processes in the catchment “Bohläse” (Sauerland, Germany) were analysed during several rainfall-runoff-events. Using hydrological tracers and hydrometric methods, the influence of periglacial cover beds was determined for runoff at the catchment scale and for soil water flux at the point scale.

The process studies show that the influence of the base layer depends on the current water content. If the water content in the base layer is low, vertical water movement is impeded. On the other hand, if the water content is high, the base layer becomes a preferential flow path for interflow. Due to the spatial variability of the soil physical properties, the base layer functions as a preferential flow path for interflow only if the bulk density is low.

The results confirm the importance of periglacial cover beds for runoff processes in low mountain regions and represent an experimental basis for hydrological regionalisation depending on the spatial distribution of periglacial cover beds.

Mean hydrograph / Pardé flow regime



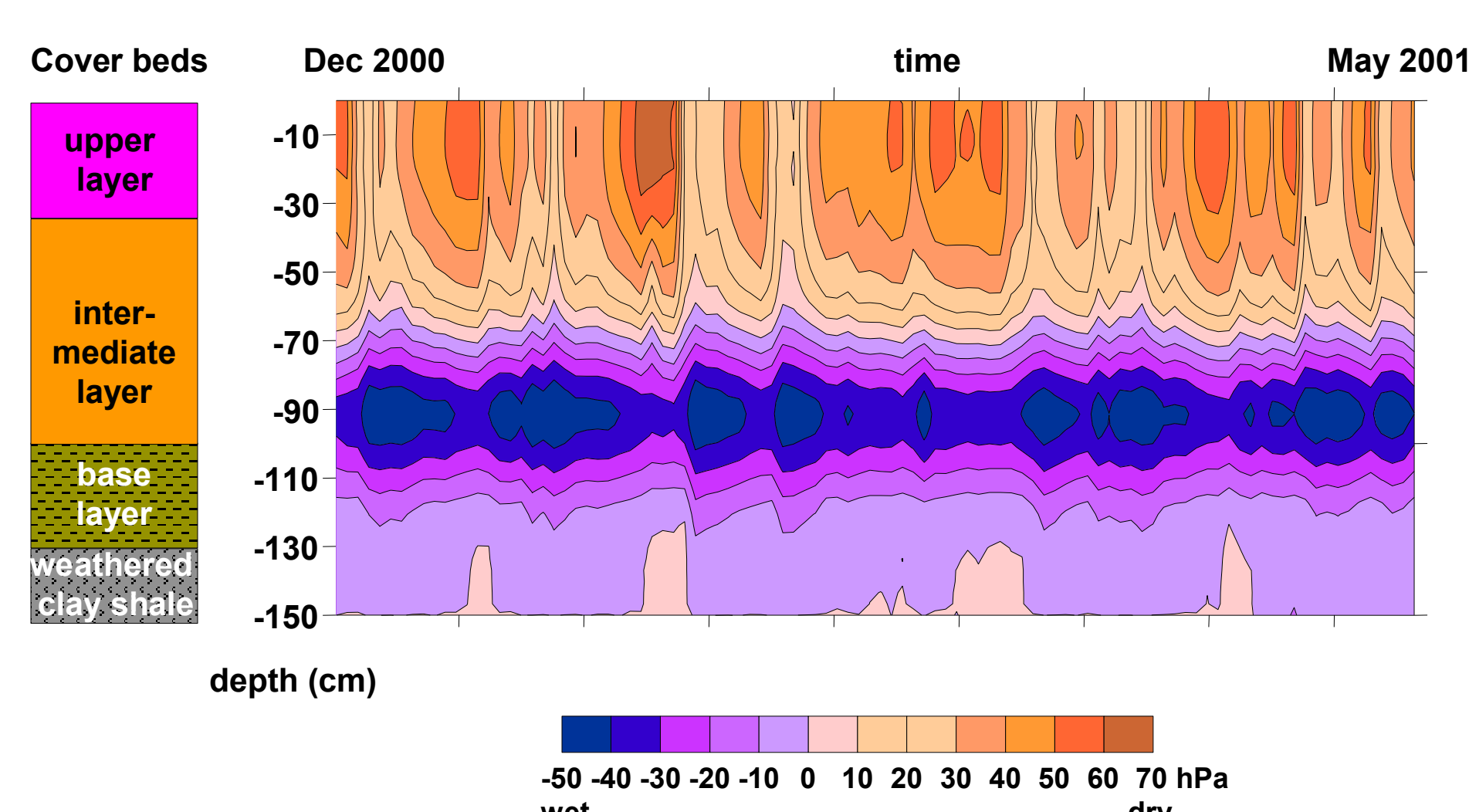
Key references for the basin

- Chiffard, P. (2006): Der Einfluss des Reliefs, der Hangsedimente und der Bodenvorfeuchte auf die Abflussbildung im Mittelgebirge. Experimentelle Prozess-Studien im Sauerland. – Bochumer Geographische Arbeiten 76, 162 S.
- Chiffard, P. & Zepp, H. (2008b): Skalenübergreifende Prozess-Studien zur Abflussbildung in Gebieten mit periglazialen Deckschichten (Sauerland, Deutschland). – Grundwasser 13(1):27-41, doi: 10.1007/s00767-007-0058-1

Special basin characteristics (hydrogeology, lakes, reservoirs etc.)

1. Catchment bears typical periglacial cover beds which are characteristic for low mountain ranges in middle Europe.

3. Good opportunity to analyse the influence of the soil structure on the vertical and lateral soil water fluxes and on the runoff processes.



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