The beauty of long-term hydrological datasets: Showcasing four different catchments in South-Western Germany

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**Introduction**

- Long-term datasets of multiple sources ensure detailed comprehension of hydrological and biogeochemical interactions within catchments.
- We present four catchments in South-Western Germany differing in size, land cover, water chemistry, topography, bedrock, soil types and rainfall-runoff characteristics that have been monitored for more than ten years.

**Site Characteristics**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Brugga</th>
<th>Loechernbach</th>
<th>Vauban</th>
<th>Ruetlibach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area [km²]</td>
<td>40.1</td>
<td>1.7</td>
<td>0.16</td>
<td>0.21</td>
</tr>
<tr>
<td>Coordinates</td>
<td>47.93756, 7.95161</td>
<td>47.974813, 7.824792</td>
<td>47.95708, 7.83781</td>
<td></td>
</tr>
<tr>
<td>Elevation range [m a.s.l.]</td>
<td>1493-434</td>
<td>1860-213</td>
<td>236</td>
<td>340-585</td>
</tr>
<tr>
<td>Basin type</td>
<td>Mountainous</td>
<td>Submountainous</td>
<td>Urban</td>
<td>Zero-order</td>
</tr>
<tr>
<td>Ø Annual precipitation [mm]</td>
<td>1730</td>
<td>850</td>
<td>856</td>
<td>625</td>
</tr>
<tr>
<td>Evapotranspiration [mm]</td>
<td>566</td>
<td>625</td>
<td>378</td>
<td>970</td>
</tr>
<tr>
<td>Land use [%]</td>
<td>Forest: 75.7; grassland: 21.8; acres: 1.5; impervious: 0.9</td>
<td>Vineyard: 62; mixed agriculture: 18; steep acivities: 12; roads: 4; forest: 4</td>
<td>Urban: 100</td>
<td>Forest; grassland</td>
</tr>
<tr>
<td>Soils</td>
<td>Brown earth, gley, podsol</td>
<td>Pararendzina, Gley</td>
<td>Urban</td>
<td>Cambisols</td>
</tr>
<tr>
<td>Geology</td>
<td>Gneiss, Migmatite</td>
<td>Carbonatic Loess</td>
<td>Fluvial sediments</td>
<td>Crystalline bedrock overlain by periglacial drift cover</td>
</tr>
<tr>
<td>Discharge [m³/s]</td>
<td>0.2, 33.6, 1.6</td>
<td>0.0005, 7.3, 0.013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Impressions from our research sites**

- Spring discharge measurement at Brugga
- Influence at Loechernbach
- Installation for measuring roof drainage water at Vauban
- Trench installation at Ruetlibach

**Data availability**

- Discharge (Q)
- Water temperature
- Electric conductivity
- pH, Eh (in O2 and H2)
- Major ions
- Precipitation (P)
- Climate

**Research at the Ruetlibach**

- During April and May predominantly, wells on the lower transects become activated
- During June through October well activation is spatially more variable
- In summer, saturation zones seem to extend upslope and are of limited horizontal extent
- The pattern returns to activation of the lower and middle transects in November and December
- High spatial variability of absolute rise for each event

**Further datasets of e.g. pH, nitrate, pesticides, turbidity, surface runoff, groundwater levels and temperature and soil moisture are available for most of our four research sites.**

**We are interested in collaborations! Have ideas? Join us!**

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