### Abbreviation Unit Description

**Storages**
- $S_{\text{snow}}$: mm snow storage
- $S_{\text{glacier}}$: mm glacier storage
- $S_u$: mm unsaturated storage, “antecedent soil moisture”
- $S_l$: mm total liquid water availability = $S_u + P_l + M + M_{\text{glacier}}$
- $S_s$: mm slow responding groundwater storage

**Fluxes**
- $P$: mm d$^{-1}$ precipitation
- $T_{\text{mean}}$: °C mean daily temperature
- $P_s$: mm d$^{-1}$ solid precipitation, i.e. snow
- $P_l$: mm d$^{-1}$ liquid precipitation, i.e. rain
- $P_{\text{max}}$: mm d$^{-1}$ percolation capacity
- $D$: – partitioning coefficient
- $K_f$: d$^{-1}$ storage coefficient
- $K_s$: d$^{-1}$ storage coefficient

### Abbreviation Unit Description

**Fluxes (cont.)**
- $M$: mm d$^{-1}$ snowmelt
- $M_{\text{glacier}}$: mm d$^{-1}$ glacier melt
- $E_p$: mm d$^{-1}$ potential evapotranspiration
- $E_a$: mm d$^{-1}$ actual evapotranspiration
- $Q_{uf}$: mm d$^{-1}$ influx to fast responding model component
- $Q_{up}$: mm d$^{-1}$ preferential percolation
- $Q_{us}$: mm d$^{-1}$ percolation
- $Q_{f}$: mm d$^{-1}$ fast runoff
- $Q_{s}$: mm d$^{-1}$ slow runoff
- $Q_{mod}$: mm d$^{-1}$ modelled total runoff
- $Q_{obs}$: mm d$^{-1}$ observed total runoff

### Uniform prior parameter distribution

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Unit</th>
<th>Description</th>
<th>Uniform prior parameter distribution</th>
<th>Posterior parameter distribution percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_{\text{temp}}$</td>
<td>°C</td>
<td>threshold temperature</td>
<td>lower 0.5</td>
<td>upper 1.5</td>
</tr>
<tr>
<td>$melt_{\text{f}}$</td>
<td>mm °C$^{-1}$ d$^{-1}$</td>
<td>melt factor</td>
<td>lower 2.5</td>
<td>upper 5</td>
</tr>
<tr>
<td>$L_p$</td>
<td>–</td>
<td>transpiration coefficient</td>
<td>lower 0.3</td>
<td>upper 1</td>
</tr>
<tr>
<td>$S_{u,\text{max}}$</td>
<td>mm</td>
<td>unsaturated storage capacity</td>
<td>lower 40</td>
<td>upper 300</td>
</tr>
<tr>
<td>$\beta$</td>
<td>–</td>
<td>shape parameter</td>
<td>lower 0.1</td>
<td>upper 1</td>
</tr>
<tr>
<td>$P_{\text{max}}$</td>
<td>mm d$^{-1}$</td>
<td>percolation capacity</td>
<td>lower 0.1</td>
<td>upper 4</td>
</tr>
<tr>
<td>$D$</td>
<td>–</td>
<td>partitioning coefficient</td>
<td>lower 0</td>
<td>upper 1</td>
</tr>
<tr>
<td>$K_f$</td>
<td>d$^{-1}$</td>
<td>storage coefficient</td>
<td>lower 0.05</td>
<td>upper 3</td>
</tr>
<tr>
<td>$K_s$</td>
<td>d$^{-1}$</td>
<td>storage coefficient</td>
<td>lower 0.001</td>
<td>upper 0.3</td>
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</tbody>
</table>