

# Glacier melt contribution to streamflow during extremely dry summers

Lobith  
Rhine basin



Q components:  
HBV-light model  
1974-2020



Glacierized catchments in the Rhine basin

- 65 catchments - covering ~3% of the basin
- Relative glacier cover all catchments: ~6%

Extremely dry summers

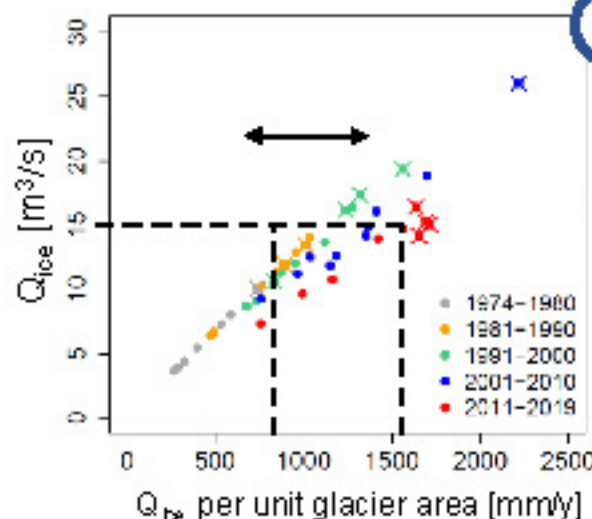
↓  
Low flow

↓  
Glacier melt important contributor

↓  
How much?

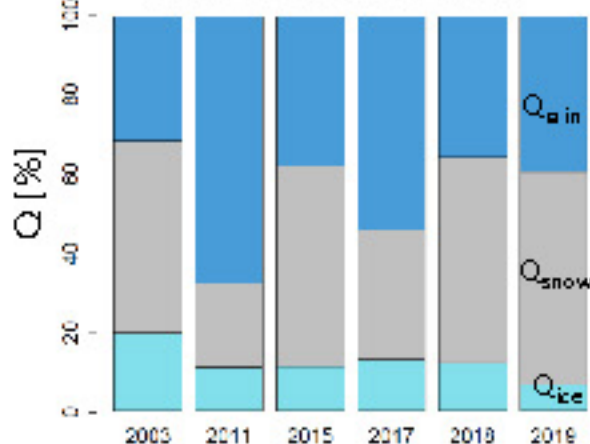
Selection based on Q Lobith and Basel:

2003, 2011, 2017, 2018, 2019



Changing melt rates

1 Summer streamflow



7 - 20% from ice melt &  
32 - 69% from total melt

3 Estimated ice melt contribution in Lobith

If year	Q <sub>ice</sub> summer [%]	Q <sub>ice</sub> daily maximum [%]
2003	6.7	21.9
2011	2.8	11.8
2015	3.1	10.4
2017	3.6	7.2
2018	3.0	11.9
2019	2.2	7.7

Ice melt important downstream