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Glacier-lake outbursts of Gornersee, Switzerland Part 2

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Gornergletscher is located in the Swiss Alps. Gornersee, an ice marginal lake, fills every spring with melt water and drains in early summer. This lake is particularly suited to study Jökulhlaups as hydrographs of the outlet river exist back to 1970 and its easy accessibility. The lake is relatively small with a volume of 1-4 $\mathrm{mio.\,m^3}$ and a peak outflow of about 30 $\mathrm{m^3/s}$.

In the years 2004 and 2005 detailed measurements were done during the drainage of Gornersee. This presentation aims at giving an overview over the wealth of collected data and will in particular focus on the dye tracer experiments conducted in 2005 throughout the summer season.

The most striking differences between the two years are the very distinct lake outflow hydrographs. They suggest that in 2004 drainage was initiated by floatation of the ice dam whereas in 2005 by the classical Nye channel enlargement. The influence of the drainage on the ice flow and subglacial water pressure was similar in both years.

Tracer experiments were conducted to investigate the evolution of the drainage system during the flood and throughout the season. At the peak of the flood flow through velocity of the dye increased. Nevertheless, the drainage system was not fully developed after the flood since the dye travel time further decreased. Also the subglacial drainage system near the lake changed from inefficient to efficient just as the drainage of the lake started, being indicative of a causal relationship.