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## 1. Objectives

- Understand the hydrological behavior of a steep complex watershed, to be able to reproduce it and predict the discharge
- Assess the impact of spatial variability of meteorological variables and soil properties in hydrological modeling
- Acquire, analyze and generate data describing environmental processes which might trigger floods in the Swiss Alps
- Run hydrological model to improve the physical processes happening at various scales



## 2. The experimental site: the Val Ferret catchment



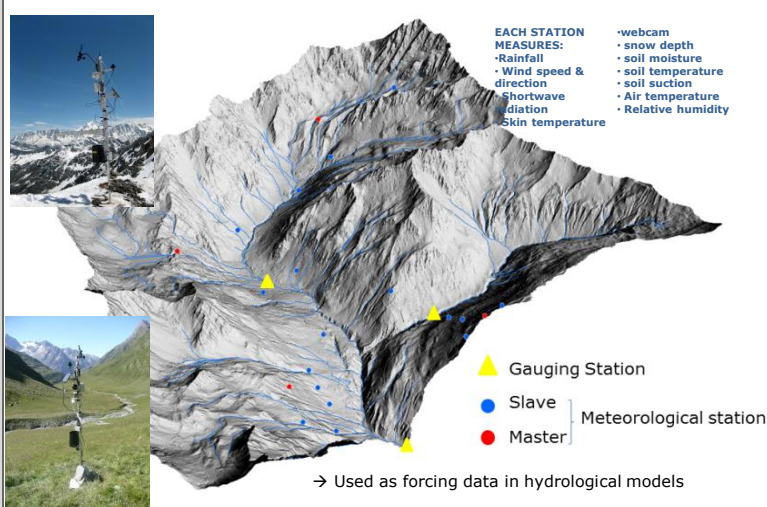
- The study area is located in the Swiss Alps, in the upper part of Val Ferret
- Catchment description:

- Steep complex terrain
- Covered with snow from November to May
- Presence of deep gullies
- Presence of a small glacier
- Sandy silt loam soil

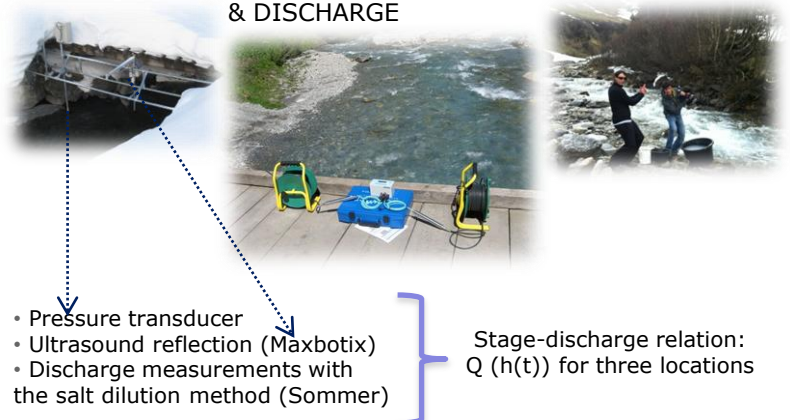


Catchment area = 20 km<sup>2</sup>  
Altitude: 1785 - 3238 m

## 3. The 2011 field campaign

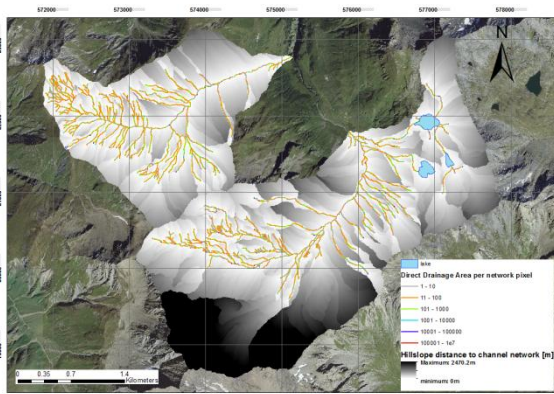


### WATER LEVEL MONITORING & DISCHARGE



## 4. Geomorphological Study

- Channel heads of two sub-catchments monitored
- True network extracted and compared to other extraction methods
- Study of the local drainage density spatial variation:



→ Speculate on the geomorphologic origin of the base flow recession

## 5. Conclusions and ongoing work

- Winter campaign 2011-2012: monitor the snow cover evolution.
- Summer campaign 2012: discharge and conductivity measurements at three different sites.
- Stream and rain water samples: Estimate the residence time distribution of the watershed and perform the hydrograph separation to estimate the contribution of the different sources of water to la Dranse de Ferret with the isotopes used as tracers.
- Improve basin-scale hydrological modeling using a distributed model that will be validated with the data acquired during the previous field campaigns.

## 6. Acknowledgments

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