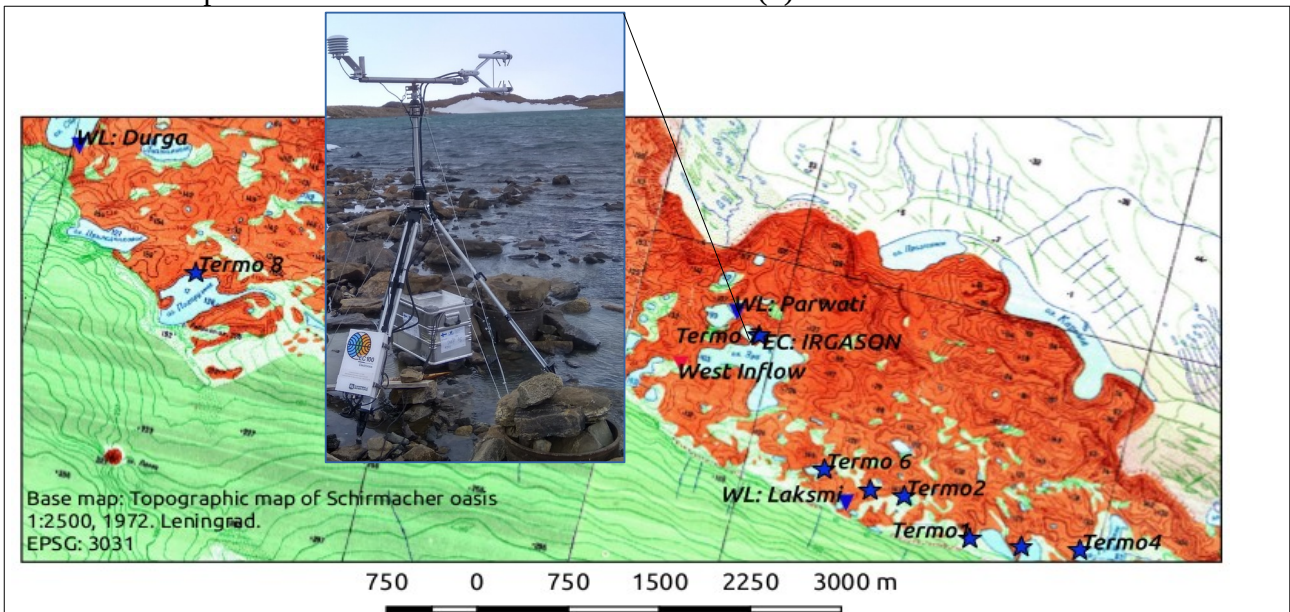


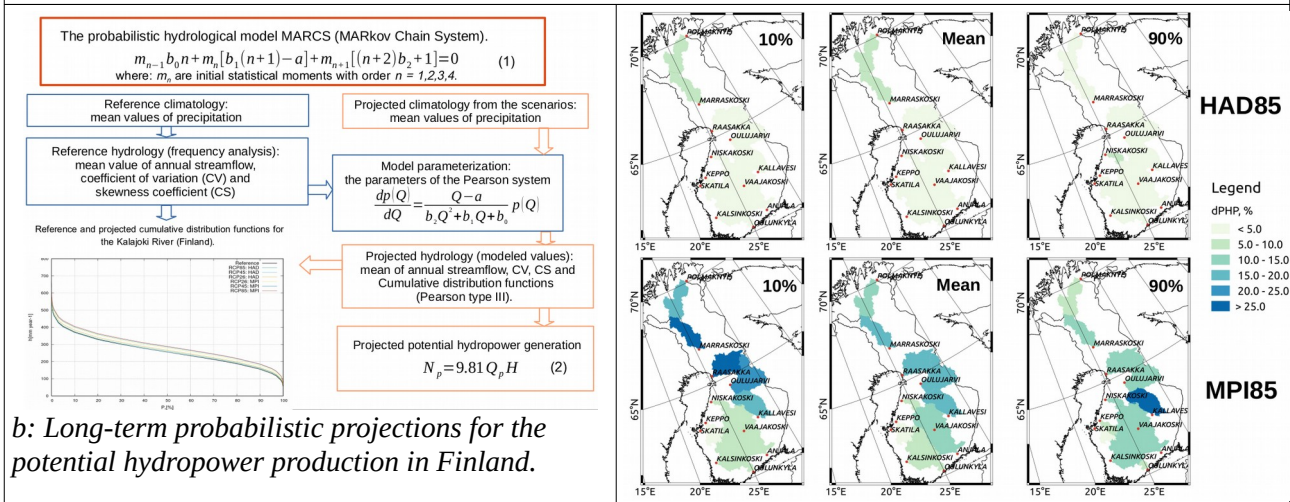
Water balance and probabilistic hydrological models: from observations to forecasts.

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The presentation discusses water balance and probabilistic modeling approaches to predict surface water resources on lakes and river watersheds. Water balance modeling approach is presented on an example of freshwater lakes located in Antarctic oases (a). Instruments and measurement techniques to observe the water balance components are described. Balance modeling approach serves dynamic forecasts of water resources, those have limitations to assess risks connected to water extremes. An advance of a frequency analysis (AFA) is the modeling approach allowing to serve hydrological forecasts in terms of an exceedance probability. The presentation introduces the AFA basis and limitations, and it discusses features of the long-term probabilistic projections of river runoff. Applications of the AFA method to estimate climate related changes in a hydropower production are shown an examples of river catchments located in Finland (b).



a: Measurements on water balance components of the lakes in the Schirmacher oasis: summer 2017-2018.



b: Long-term probabilistic projections for the potential hydropower production in Finland.