Spatial interpolation of Automatic Weather Station (AWS) data

Description   The WSL Institute for Snow and Avalanche Research SLF in Davos (Switzerland) has a mix of research and operational duties. It is in charge of issuing avalanche forecasting bulletins for the whole Swiss Alps. In order to do so, it manages an automatic weather station network (~180 stations for Switzerland), collects manual snow measurements and develops both snow cover and snow hydrology models. These models are developed based on new insights gained from research that also benefit from the collected data and the modeling efforts themselves.

As the environmental parameters are collected by the AWS, they are point measurements. But many applications require spatially distributed data with a high spatial resolution. Therefore these points measurements must be spatially interpolated. There are many methods available with various degrees of complexity: from very simple statistical interpolations to machine Learning to physical models. The performance of the applications relying on the spatialized data is highly dependent on the performance of the spatial interpolations.

This internship consists in using a newly published dataset that contains up to several decades of AWS data with a high spatial density of stations to evaluate the performance of several spatial interpolation methods as well as the Alpine surface processes model Alpine3D. The internship is based in Davos.

Goals   Evaluate the performance of spatial interpolation methods for the Alpine surface processes model Alpine3D

Benefits
- Getting familiar with environmental research;
- Practical experience of working with AWS data;
- Practical experience of numerical modeling to be used by operational systems.

Required
- Working autonomously with help from the supervisor;

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