SnopViz, an interactive snow profile visualization tool

Charles Fierz (1), Thomas Egger (2), Matthias gerber (1), Mathias Bavay (1), and Frank Techel (1)

(1) WSL Institute for Snow and Avalanche Research SLF Davos, Davos Dorf, Switzerland (fierz@slf.ch), (2) Egger Consulting GmbH, Postgasse 2/46, 1010 Vienna, Austria

SnopViz is a visualization tool for both simulation outputs of the snow-cover model SNOWPACK and observed snow profiles. It has been designed to fulfil the needs of operational services (Swiss Avalanche Warning Service, Avalanche Canada) as well as offer the flexibility required to satisfy the specific needs of researchers. This JavaScript application runs on any modern browser and does not require an active Internet connection. The open source code is available for download from models.slf.ch where examples can also be run. Both the SnopViz library and the SnopViz User Interface will become a full replacement of the current research visualization tool SN_GUI for SNOWPACK.

The SnopViz library is a stand-alone application that parses the provided input files, for example, a single snow profile (CAAML file format) or multiple snow profiles as output by SNOWPACK (PRO file format). A plugin architecture allows for handling JSON objects (JavaScript Object Notation) as well and plugins for other file formats may be added easily. The outputs are provided either as vector graphics (SVG) or JSON objects.

The SnopViz User Interface (UI) is a browser based stand-alone interface. It runs in every modern browser, including IE, and allows user interaction with the graphs. SVG, the XML based standard for vector graphics, was chosen because of its easy interaction with JS and a good software support (Adobe Illustrator, Inkscape) to manipulate graphs outside SnopViz for publication purposes.

SnopViz provides new visualization for SNOWPACK timeline output as well as time series input and output. The actual output format for SNOWPACK timelines was retained while time series are read from SMET files, a file format used in conjunction with the open source data handling code MeteoIO. Finally, SnopViz is able to render single snow profiles, either observed or modelled, that are provided as CAAML-file. This file format (caaml.org/Schemas/V5.0/Profiles/SnowProfileIACS) is an international standard to exchange snow profile data. It is supported by the International Association of Cryospheric Sciences (IACS) and was developed in collaboration with practitioners (Avalanche Canada).