

Swiss Experiment

Interdisciplinary Environmental Research

SensorScope: a new environmental monitoring tool

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What is SensorScope?

SensorScope is a new generation measurement system based on wireless sensor networks and capable of producing high temporal and spatial density measurements. Through the collaboration of a large range of research domains (communication systems, IT, environment), bringing the latest technologies from each of their fields, a tool has been produced that is capable of wirelessly monitoring natural processes at high temporal and spatial resolutions.

The advantages of SensorScope:

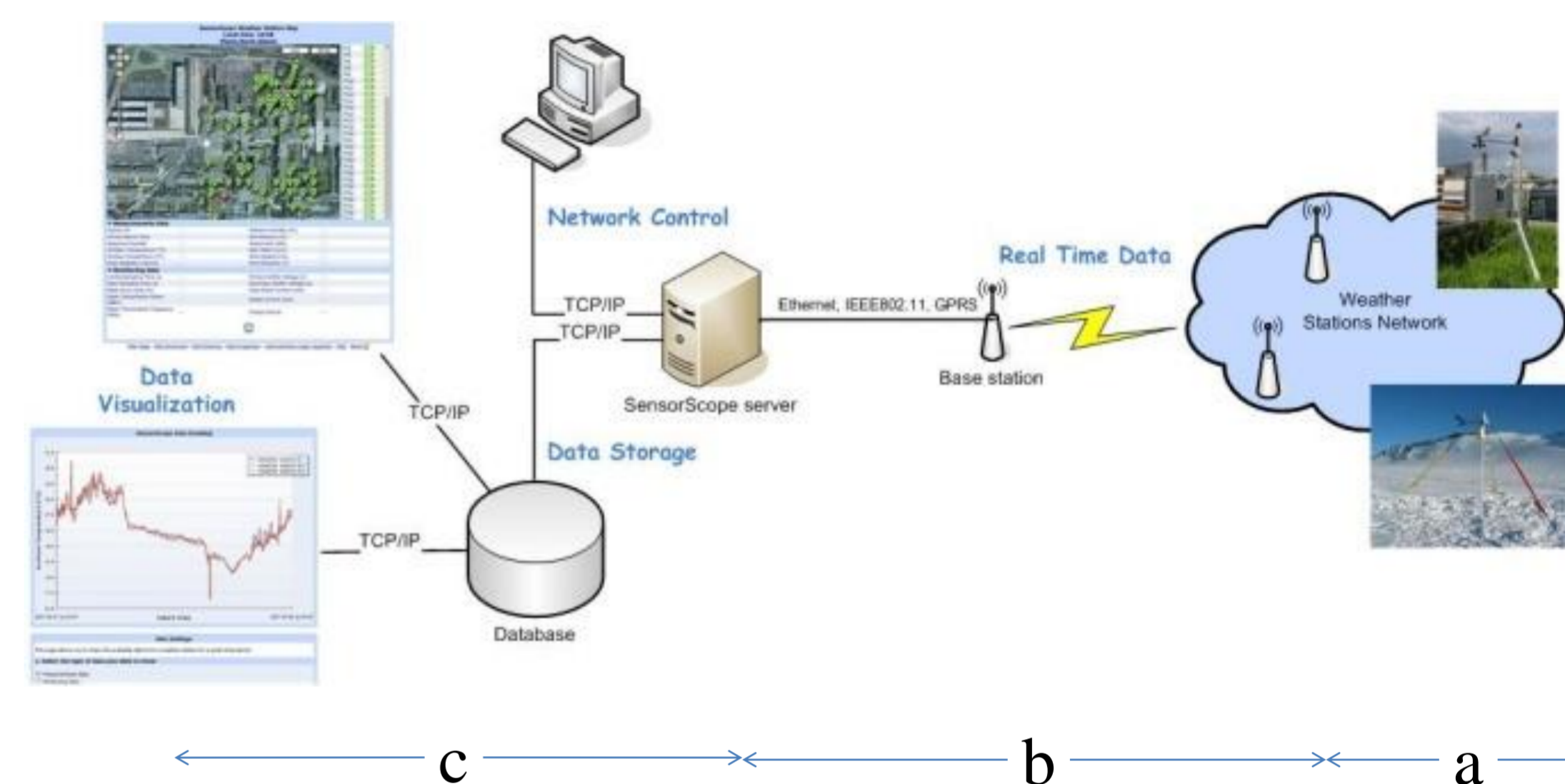
- Flexibility
- Simple Installation
- "Real time" Data Analysis
- Online Visualization Tools
- Low Cost
- Autonomous Stations



What are the technologies involved in SensorScope?

The system is composed of three parts :

- a) autonomous sensing stations:** measure environmental parameters
- b) networking:** multihop transfer data from the stations to the server
- c) data management:** scientific data visualization and analysis



How can SensorScope stations be used within the SwissEx infrastructure?

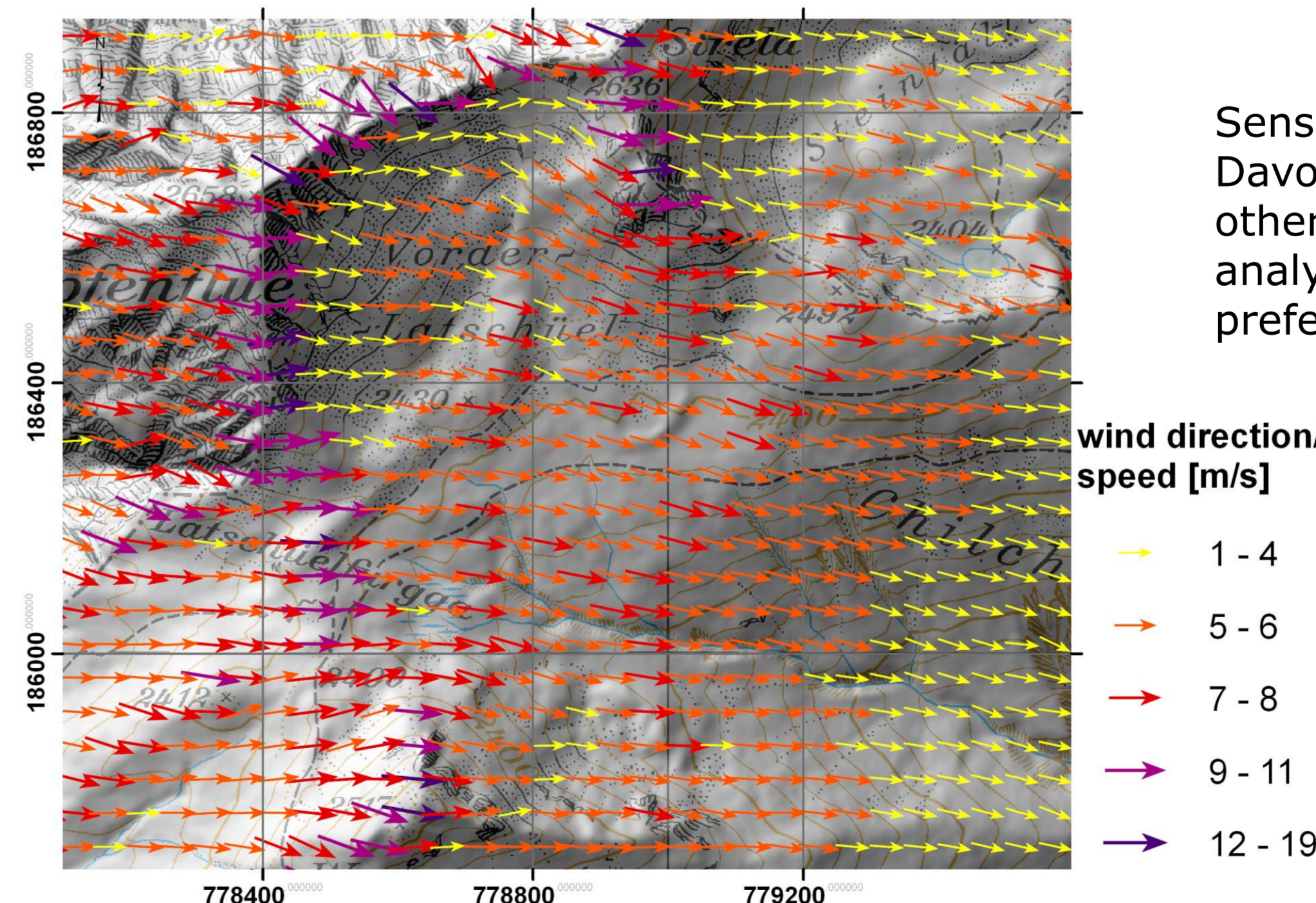
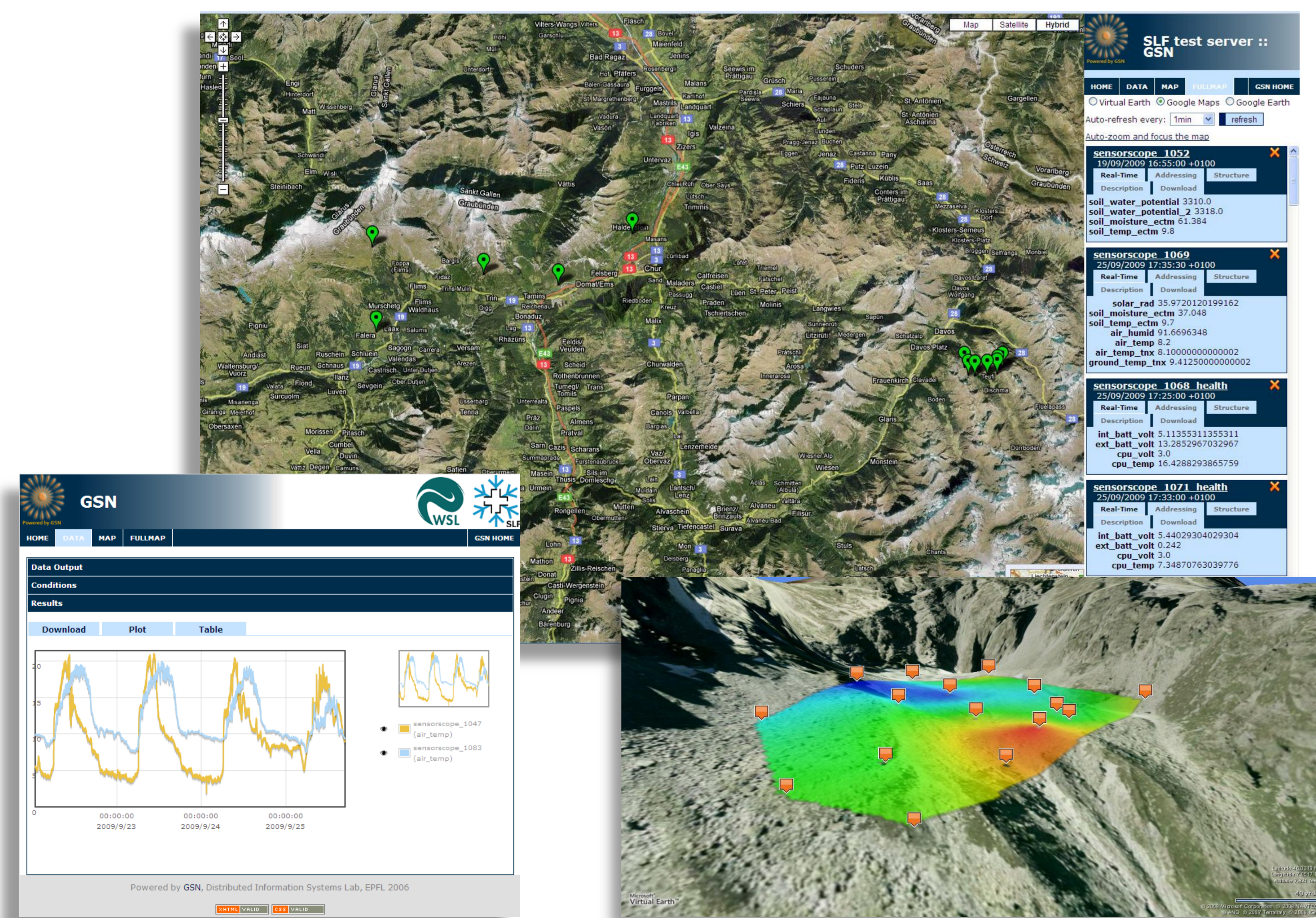
SensorScope stations are directly compatible with the whole SwissEx data acquisition infrastructure and have been an integral part of the development from the beginning. As such, once a SensorScope station has been installed, the live data can be compared or used as an integral part of an existing measurement infrastructure in the analysis of data from existing sensors. Such integration is of paramount importance if the station is to be of use to existing research groups.

Examples of usage over the past few months:

- Windfield analysis/model calibration
- Dendrometer meteo data comparison
- No. of freezing days for plant freezing damage
- Altitudinal meteo gradient data collection
- ALPINE 3D interpolation validation
- Monitoring of conditions for a CO2 experiment
- Monitoring of conditions for altitudinal plant transplant experiments
- Soil water data collection in a glacier forefield
- Hydrological catchment model evaluation
- Ground water data collection in a river restoration area

Examples of future use:

- Snow drift and wind field monitoring in dense spatial fields
- Radiation and snow water content monitoring for wet snow avalanches
- Precipitation distribution calibration for the X-band radar



SensorScope will be used in Davos this winter, amongst other things to aid the analysis of windfields and preferential deposition

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