

Terrestrial Observations - Hydrosphere

# Tuxers Alps

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# Tuxers Alps

The units *Snow and Avalanches* and *Torrent Processes and Hydrology* of the *Department of Natural Hazards* operate **6 stations in the Tuxer Alps with different configurations.**

The main objectives are investigations of the **hydrological processes** in the catchment and themes concerning the **snowpack and snow avalanches.**

Parameter measured/observed	air temperature, humidity, wind speed and direction, gusts, global radiation, reflected shortwave radiation, incoming outgoing longwave radiation precipitation, river discharge, snow height, snow water equivalent, snow temperatures, snow surface temperature, soil temperatures
Starting date	different, first data February 2006
Temporal Resolution	1 min, 10 min It depends on the station and parameter.
Observational Network	long term data acquisition of the Institute of Natural Hazards

National and/or international Networks or Programs	Hydrological data are used by the Hydrological Service. Snow and weather data are used by the Avalanche Warning Service.
Data Submission	automatic data collection: intervals 2 - 4 hours

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Depending on research questions of projects the configurations of the stations changed and they will be adapted to fit the requirements in future. In this context **additional data acquisitions** were performed (automated terrestrial laser scanning – spatial distribution of snow; photogrammetry with images taken by remotely piloted systems – snow depth maps and orthophotos).

- ➡ Aktuelle Stand des Messnetzes
- ➡ Datenverfügbarkeit
- ➡ WMO Programme

## Data Access

Hagen, K., Köhler, A., Markart, G., & Fromm, R. (2023). Daily snow water equivalent and snow depth data from the valley Wattental in the Tuxer Alpen, Tyrol, Austria [dataset] [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7845618>  
<https://lawinen.report/>  
<https://www.lawis.at/station/>

## Publications

Data were used in several publications concerning snow avalanche research and hydrological investigations.

e.g.

Helfricht K., Hartl L., Koch R., Marty C., Olefs M. (2018). Obtaining sub-daily new snow density from automated measurements in high mountain regions. *Hydrol. Earth Syst. Sci.*, 22, 2655–2668, 2018 <https://doi.org/10.5194/hess-22-2655-2018>

Aschauer J., Michel A., Jonas T., Marty C. (2023). An empirical model to calculate snow depth from daily snow water equivalent: SWE2HS 1.0. *Geosci. Model Dev.*, 16, 4063–4081, 2023 <https://doi.org/10.5194/gmd-16-4063-2023>