

EGU21-10401

<https://doi.org/10.5194/egusphere-egu21-10401>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



A New Database of Meteorological and Glaciological Observations: Tarija Glacier, Tropical Andes

Pablo Fuchs and Javier Mendoza

Universidad Mayor de San Andres, Institute of Hydraulics and Hydrology, Civil Engineering, La Paz, Bolivia
(jfuchs@umsa.edu.bo)

We present a numerical and geographical database for the Tarija Glacier in the Tropical Andes (68.2° W, 16.2° S, 4820-5380 m.a.s.l.). The database consists of meteorological data, mass balance observations, and variations in glacier front positions. Meteorological data was obtained by an automatic weather station (AWS) located on the glacier surface that includes the following variables: precipitation, temperature, incoming shortwave radiation, relative humidity, wind speed and wind direction. Mass balance for this glacier was observed on a monthly basis in an ablation stake network and annually in a snow pit at 5230 m.a.s.l. The glacier front topography was monitored annually using a DGPS survey. We set up the database using the relational database engine PostgreSQL which is capable of managing geospatial data through the PostGIS extension. The SAGA system was used for image analysis and mapping. Data quality control and further processing was carried out in the R environment which has interfaces to the PostgreSQL database system and SAGA, as well as several additional packages for statistical analyses and modelling. The database contains data spanning the 2011-2018 period and would be useful for multiple applications including environmental and ecological modeling, water resources assessment, and climate change studies.