Data from air, englacial and permafrost temperature measurements on Mt. Ortles (Eastern European Alps)

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METADATA

Table 1. Column names for variables reported in data files.

Variable	Column name
Air temperature (fan-aspirated Vaisala HMP155A)	Air_T_HMP_Asp
Air temperature (natural- ventilation Vaisala HMP155A)	Air_T_HMP_Nat
Air temperature (fan-aspirated Gemini TGP-4020)	Air_T_TGP_Asp
Air temperature (natural-ventilation Gemini TGP-4020)	Air_T_TGP_Nat
Air temperature (natural-ventilation Onset Hobo H8 Pro Temp)	Air_T_H8_Nat
Englacial temperature at the AWS site	AWS_En (depth m)
Englacial temperature at the borehole drilling site (short string)	BH_En_SS (depth m)
Englacial temperature at the borehole drilling site (long string)	BH_En_LS (depth m)
Englacial temperature at the Hintergrat Glacier	HG_En (depth m)
Soil surface temperature at bivouac Lombardi - ORTL_05	GST_ORTL05
Soil surface temperature at bivouac Lombardi - ORTL_06	GST_ORTL06
Soil surface temperature at refuge Payer - ORTL_07	GST_ORTL07
Soil surface temperature at refuge Payer - ORTL_08	GST_ORTL08
Soil surface temperature at Hintergrat ridge - ORTL_10	GST_ORTL10
Soil surface temperature at Hintergrat ridge - ORTL_11	GST_ORTL11
Rock wall temperature at Mt. Ortles summit - CIMA_ALTO	Rw_ALTO (depth m)
Rock wall temperature Mt. Ortles summit - CIMA_VERTICALE	Rw_VERTICALE (depth m)
Rock wall temperature at Vorgipfel - ANTICIMA_SUD	Rw_ANTICIMA (depth m)
Rock wall temperature at bivouac Lombardi - BIV_LOMBARDI	Rw_LOMBARDI (depth m)
Rock wall temperature at Hintergrat - HINTERGRAT	Rw_HINTERGRAT (depth m)
Rock wall temperature at refuge Payer - PAYER	Rw_PAYER (depth m)

Table 2. Quality code flags reported in data files, their meaning and explanations.

Quality code flag ("_Fl" inflection in column names)	Meaning	Explanation
1	Good data	No issues detected during quality checks
0	No data	Data missing or removed (malfunctioning, physically implausible, sensor/device damaged, sensor underneath snow)
2	Maintenance	Data are affected by field maintenance of instrumentation
3	Ice/snow accretion	The air temperature data are affected by ice or snow accretion
4	Small height of the sensor	The air temperature sensor is less than 1 m above the snow surface
5 (offset)	Sensor offset	Offset applied to correct soil surface temperature data, based on the zero-curtain phase during snow melt (offset value in brackets)

Table 3. Structure of data files. For sensors at different depth below the surface, the depth in m is reported after the variable name, in brackets.

Date and hour (ISO 8601)	Variable name (depth m)	Quality flag code
YYYY/MM/DD HH:MM	value	code

Table 4. Topographic and geomorphological characteristics of sites instrumented for temperature measurements.

Measured variable	Elevation (m a.s.l.)	Easting UTM (m). CRS = EPSG32632	Northing UTM (m). CRS = EPSG32632	Aspect	Slope (degrees)	Site description
Air Temperature (automatic weather station)	3830	618254	5151614	NW	11	Upper accumulation area of Alto dell'Ortles Glacier
Snow and firn temperature at the AWS site	3830	618260	5151619	NW	11	Upper accumulation area of Alto dell'Ortles Glacier
Englacial temperature at the borehole drilling site (short and long strings)	3859	618373	5151536	W	7	Upper accumulation area of Alto dell'Ortles Glacier
Englacial temperature at the Hintergrat Glacier	3476	619435	5151395	N	12	Hintergrat Glacier
Soil surface temperature at Lombardi bivouac - ORTL_05	3351	618202	5152846	SW	7	Northern ridge of Mt. Ortles, bedrock covered by a thin layer of debris (fine gravel, sand)
Soil surface temperature at Lombardi bivouac - ORTL_06	3371	618284	5152772	N	22	Northern ridge of Mt. Ortles, recently deglaciated bedrock covered by a discontinuous layer of loose debris (fine gravel, sand)
Soil surface temperature at Payer - refuge ORTL_07	2994	618361	5153936	N	22	Northern ridge of Mt. Ortles, bedrock covered by a thick layer of debris (pebbles, gravel, sand) with sparse vegetation
Soil surface temperature at Payer - refuge ORTL_08	2899	618287	5154105	W	36	Northern ridge of Mt. Ortles, bedrock covered by coarse debris with isolated areas of thinner debris (fine sand and silt).
Soil surface temperature at Hintergrat ridge ORTL_10	3460	619628	5151341	S	22	Eastern ridge of Mt. Ortles, bedrock covered by a layer of debris (fine gravel, sand).
Soil surface temperature at Hintergrat ridge ORTL_11	3466	619491	5151374	SE	11	Eastern ridge of Mt. Ortles, bedrock covered by a thin layer of coarse debris (gravel, sand), close to the edge of the Hintergrat Glacier
Rock wall temperature at Mt. Ortles summit - CIMA_ALTO	3900	618512	5151691	E	70	70 m south of Mt. Ortles summit (3905 m), in a sub-vertical rock face about 30 m below the crest edge
Rock wall temperature Mt. Ortles summit - CIMA_VERTICALE	3880	618512	5151691	E	90	70 m south of Mt. Ortles summit (3905 m), in a vertical rock face about 50 m below the ridge, 20 m below CIMA_ALTO

Table 4. Topographic and geomorphological characteristics of sites instrumented for temperature measurements (continued).

Measured variable	Elevation (m a.s.l.)	Easting UTM (m). CRS = EPSG32632	Northing UTM (m). CRS = EPSG32632	Aspect	Slope (degrees)	Site description
Rock wall temperature at Vorgipfel - ANTICIMA_SUD	3810	618327	5151269	S	90	Vertical rock face, about 10 m below the upper rock wall edge
Rock wall temperature at Lombardi bivouac - BIV_LOMBARDI	3351	618213	5152784	W	70	Northern ridge of Mt. Ortles, sub-vertical rock wall, about 30 m below the crest edge
Rock wall temperature at Hintergrat - HINTERGRAT	3370	619710	5151334	NE	90	Eastern ridge of Mt. Ortles, vertical rock wall, about 10 m below the crest edge
Rock wall temperature at Payer refuge - PAYER	3030	618372	5153812	SE	90	Northern ridge of Mt. Ortles, vertical rock wall, about 20 m below the crest edge