The periglacial environment – Ice Caves

Cryo cave climatology → (A) mainly concentrated where MAAT < 5°C; MAAT < 2°C for ice caves

(B) P increase with altitude \((R=0.96 \text{ (cryo)} \& 0.97 \text{ (ice)})\)

(C) not present where MWAT > 0°C; significant increase MWAT < -2°C

(D) MSAT not significant → abrupt decrease with MSAT > 13°C

(Colucci et al., 2016 - Geomorphology)
The Canin massif – Julian Alps

The Julian Alps
1853 km²
west to east across the Ita–Slo border

Carbonate massifs

Highest elevations
• Mt.Triglav slo (2864 m)
• Mount Montasio ita (2754 m)
• Mount Škrlatica slo (2740 m)
Automatic weather station (AWS) Canin (since 2012)
2203 m asl - h 9 m
Air temperature
Relative humidity
Precipitation (liquid)
Snow height
Wind speed and direction
Soil temperature (7 depths)
Solar radiation (total and reflected)
Study area and climatology

* Ceschia et al., 1991
  Synoptic generally prevails
  Spring and early summer convection is predominant

* Cw (1800 m) = 7.2 m (winter snow accumulation)

Vrhovec et al., 2004

Julian Alps

Low troposphere
SE winds (Scirocco)

Middle troposphere
SW winds

Isotta et al., 2013

>2600 mm
Precipitation reconstruction 1924-2012

Based on 5 valley weather station around Mt. Canin

B → temperature reconstruction at the elevation of 2200 m 1851-2012

Based on 2 mountain station
(f) Villacher Alpe (2120 m) – Austria
(e) Triglav (2514 m) – Slovenia

Glacial evolution in the Julian Alps since the Little Ice Age

Renato R. Colucci & Manja Žebre

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Geological Survey of Slovenia, Dimščeva ulica 14, 1000 Ljubljana, Slovenia; manja.zebre@geov.cs.si

Legend

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Glacial evolution in the Julian Alps since the Little Ice Age

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Area - 83%
Glacial evolution in the Julian Alps since the Little Ice Age

Colucci & Žebre, 2016 - Journal of Maps

0.066 km³

-96%

0.003 km³
The Canin massif – Julian Alps

Dackstein limestones
The highest karst-cave-density in the Alps
Cryo caves distribution → 3068 caves > 1000 m asl
1111 CRYO caves of which 123 (11%) ICE caves
mainly between 1500-2200 m
mean el. 1838 m, median el. 1888 m

Canin massif
Highest cryo cave percentage
• 751 cryo caves
• 79 ice caves
Median elevation 1928 m asl
→ 991 cryo caves considering also the Slovenian side of Canin