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Lateglacial evolution of the Brenno glacier (Southern Swiss Alps): preliminary results

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The Lateglacial evolution of the Ticino glacier and tributaries is poorly known because of the lack of research by Quaternary geomorphologists during the last decades. In spite of the interest for the cryosphere reactions during the Lateglacial climate warming, only few scientific studies were carried out about the history of the northern valleys of the Ticino Alps during the deglaciation (e.g. Seiffert 1953, Renner 1982, Hantke 1983). Within the framework of geomorphological investigations on the Lateglacial and Holocene glacier/permafrost evolution in the Ticino Alps, the history of the Brenno glacier (Blenio Valley, Eastern Ticino Alps) during the end of the Pleistocene has been studied.

The deglaciation sequence of the Blenio Valley is still not complete (Scapozza *et al*. 2009). Only the first glacial stadial of the Brenno glacier and the last Lateglacial stadials of the Greina region (northern Blenio valley, see Fontana *et al*. 2008) and of the upper Malvaglia Valley (eastern Blenio Valley, see Scapozza *et al*. 2008) have been unequivocally defined. For every stadial, the surface of the palaeoglacier and the depression of the Equilibrium Line Altitude (ELA) have been reconstructed on the base of geomorphological mapping.

- The first individual glacial stadial of the Brenno glacier corresponds to the Biasca stadial of the Ticino glacier defined by Hantke (1983). The ELA depression of 1100-1200 meters and its morphological and glaciological characteristics allow us to correlate this stadial with the Weissbad stadial defined by Keller (1988).
- In the Greina region, three stadials corresponding to the end of the Lateglacial have been identified, with an ELA depression of 110, 210 and 310-350 meters (Fontana *et al*. 2008).
- In the upper Malvaglia Valley, three stadials corresponding to the end of the Oldest Dryas and the Younger Dryas have been identified for the Orino glacier, with an ELA depression of 290, 400-420 and 470-560 meters (Scapozza *et al*. 2008).

If we consider the other (fragmentary) glacial deposits of the Blenio Valley, it is possible to define a regression sequence of the Brenno glacier with 8 stadials, from the Biasca stadial to the end of the Younger Dryas. An attempt of correlation with the model "Gothard" developed by Renner (1982) and Hantke (1983) and with the model "Eastern Swiss Alps" developed by Maisch (1982) is proposed in Table 1.

The following chronological conclusions are, therefore, proposed: (1) the Biasca stadial is probably the first stadial after the transition Pleniglacial – Lateglacial; (2) the stadials BRE 7 to BRE 3 are positioned between the beginning of the Lateglacial and the Bølling-Allerød interstadial; (3) the stadials BRE 2 and BRE 1 are assumed to be related to the Younger Dryas event.

Brenno glacier	**ELA dep. (m)**	**Gothard** (Renner, 1982)	**ELA dep. (m)**	**Eastern Swiss Alps** (Maisch, 1982)	**ELA dep. (m)**
BRE 1	110	Alpe di Cruina	116	Bockten	100-150
BRE 2	210-290	Maniò	200-240	Egesen s.s.	170-240
BRE 3	310-420	All'Acqua	260-315	Daun	250-350
BRE 4	470-560 ?	Fontana ?	420-450	Clavadel/Senders ?	380-470
BRE 5	600-700 ?	Airolo ?	660	Gschnitz ?	600-700
BRE 6	800-850 ?	Faido ?	805-830	Steinach ?	700-800
BRE 7	950-1100 ?	?	?	Bühl III ?	900-1000
BRE 8 – *Biasca*	1100-1200	Biasca	1100-1300	Bühl II – *Weissbad*	

Table 1. Attempt of correlation of the Brenno glacier regression sequence with the regional sequences established by Renner (1982) and Maisch (1982).

REFERENCES

Fontana G., Scapozza C., Reynard E. 2008. Lateglacial glacier evolution of the Greina region (Central Swiss Alps). *6th Swiss Geoscience Meeting, Lugano, 21st – 23rd November 2008*, Abstract Volume 6.8: 182-183.

Hantke R. 1983. *Eiszeitalter. Die jüngste Erdgeschichte der Schweiz und ihrer Nachbargebiete. Band 3: Westliche Ostalpen mit ihrem bayerischen Vorland bis zum Inn-Durchbruch und Südalpen zwischen Dolomiten und Mont-Blanc*. Thun, Ott Verlag.

Keller O. 1988. Altere spätwürmzeitliche Gletschervorstosse und Zerfall des Eisstromnetzes in den nördlichen Rhein-Alpen (Weissbad-Stadium/Bühl-Stadium). Geographischen Institut der Universität Zürich, *Physische Geographie* 27: 1-241.

Maisch M. 1982. Zur Gletscher- und Klimageschichte des alpinen Spätglazials. *Geographica Helvetica* 37: 93-104.

Renner F. 1982. Beiträge zur Gletscher-Geschichte des Gotthardgebietes und dendroklimatologische Analysen an fossilen hölzern. Geographischen Institut der Universität Zürich, *Physische Geographie* 8: 1-182.

Scapozza C., Lambiel C., Reynard E. 2008. Glaciers rocheux et distribution régionale du pergélisol discontinu dans les Alpes Tessinoises orientales (Suisse). *In* Rothenbühler C. (ed.). Klimaveränderungen auf der Spur. *Studien des Europäisches Tourismus Instituts an der Academia Engiadina, Samedan* 5: 79-92.

Scapozza C., Fontana G., Lambiel C., Reynard E. 2009. La storia glaciale e periglaciale. *In* Scapozza C., Fontana G., Antognini M. (a cura di). Le Alpi Bleniesi: storia glaciale e periglaciale e patrimonio geomorfologico. *Memoria della Società ticinese di Scienze naturali*, in prep.

Seiffert R. 1953. Die Vergletscherung des Calancatales. *Bollettino della Società ticinese Scienze naturali* 67/68: 103-114.