Geophysical Research Abstracts
Vol. 14, EGU2012-11825, 2012
EGU General Assembly 2012

Paleoclimate in north-east Anatolia during the Quaternary deduced from glacial archives

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Today's climate of the northern part of the eastern Black Sea Mountains is humid with a mean annual precipitation over 2000 mm. The moisture is directly transported from the Black Sea. Field evidence indicate that this area was glaciated during past. Ice build-up can be therefore explained by a moisture transport system similar to today. Analogous to the north, the southern part of these mountains is relatively dry, although the field evidence in Çoruh Valley in Yusufeli, for instance, point to even more extensive glaciations. To accumulate more ice volume in the southern part, a different moisture transport than today is needed, for instance the moisture transport path may have changed in the past. But the time when this ice-build up (recorded by glacial deposits and erosional features) took place is still unclear. To construct the chronology of these glaciations with cosmogenic ^{10}Be and ^{36}Cl, we collected 14 samples from erratic boulders and glacially abraded bedrock in the Çoruh Valley in Yusufeli in the southern part and 41 samples in the Başyayla valley in the northern part.

According to the existing data, glaciers advanced around 21 ka in the Kavron and Verçenik valleys in the northern part during the Last Glacial Maximum (LGM) (Akçar et al. 2007; 2008). While a Lateglacial advance archived around 15 ka in the Verçenik valley, Younger Dryas is recorded around 12 ka in the Kavron valley. Our first results from Çoruh valley indicate presence of two pre-LGM glaciations ($>$35 ka and $>$70 ka), a LGM advance (not dated yet) and a Lateglacial extent around 14 ka.

Both field and dating evidence from the southern part of the eastern Black Sea Mountains enriches our knowledge about the glacier build-up and moisture transport during the Late Pleistocene, which can be interesting for our understanding of changes atmospheric circulation patterns during colder periods.

References

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