Palaeoenvironmental and palaeoclimatic evolution of the Shkodra Lake (Albania) during the last 4500 yr through ostracod proxies

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Lake Shkodra is the largest natural freshwater lake in the Balkan region. It is located at the Albania/Montenegro border, few tens of kilometers from the coastline. The Tarabosa and Rumia mountains, up to 1600 m high, separate it from the Adriatic Sea. The lake basin is a tectonic-karst depression located south of the Dinaric Alps. The lake is shallow, and has an average depth between 5 and 6 m with maximum depths around 9-10 m. In the Montenegro part, some karstic springs are located at 60 m of depth. The main tributary of the lake is the Moraca River, located in Montenegro. The Bojana River, located in Albania, is the only outflow towards the Adriatic Sea.

Three parallel overlapping cores down to the depth of 7.26 m have been drilled in the southern Albanian sector of the lake. Ostracod analyses as well palaeomagnetic, tephra, isotope, diatom, pollen, charophythes, and microcharcoal analyses have been performed on the re-

covered sediment cores. Van Welden *et al*. (2008) studied the last 500 yr of sedimentation of the lake and showed that it was characterised by undisturbed sedimentation of fine-grained material. The chronological framing of the sedimentary record, spanning approximately the last 4500 years, has been assessed using four radiocarbon dates and four well-known tephra layers (Sulpizio *et al*., 2010). Two tephras are from Somma-Vesuvius (Pollena, 472 A.D.; Avellino, ca. 3800 cal. years BP), one from Etna (FL, ca. 3300 cal. years BP) and one from Campi Flegrei (Agnano Mt Spina ca. 4400 cal. years BP).

Ostracods have been recovered from 336 muddy samples of 2cm^3 in volume, collected continuously along the cores. They are abundant and well preserved in all samples, represented by adults and juveniles. On the whole, 13 species have been recovered with different frequencies. Among them, some are endemic of the lake (*Candona montenigrina*, and *Limnocythere scutariense*), others were known from other Balkan lakes and are recorded for the first time in Shkodra (*Paralimnocythere georgevitschi* in Lake Ohrid, *Candona paionica* and *Candona "angulata" meridionalis* in Lake Dorjan). The remaining species (*Darwinula stevensoni*, *Pseudocandona marchica*, *Cypria ophthalmica*, *Ilyocypris gibba*, *Cypridopsis vidua*, and *Metacypris cordata*) are species widely distributed in central and southern Europe, but signalled for the first time in Albania. Finally, two more taxa were recovered, *Cyclocypris* sp. and *Zonocypris* sp. left in open nomenclature for their scarcity.

The faunal composition is quite homogeneous, only the percentages of the dominant species vary along the sediment core. Variations in the total ostracod frequencies well mirror the historical palaeoclimatic curve (Bradzil *et al*., 2005). Moreover, the percentages of smooth/tuberculated valves of *Ilyocypris* with increasing frequencies and tuberculated morphotypes coincide with the Medieval Warm Period and several pulses of low frequencies and smooth morphotypes correspond to the long Little Ice Age.

References

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