J. Limnol., 67(2): 75-86, 2008

The water chemistry of some shallow lakes in Northern Patagonia and their nitrogen status in comparison with remote lakes in different regions of the globe

Michela ROGORA*, Julieta MASSAFERRO[1)], Aldo MARCHETTO, Gabriele TARTARI and Rosario MOSELLO

CNR Institute of Ecosystem Study, L.go V. Tonolli 50, 28922 Verbania Pallanza, Italy
[1)]INIBIOMA/CONICET, 8400, Bariloche, Argentina
*e-mail corresponding author: m.rogora@ise.cnr.it

ABSTRACT

Eighteen small shallow lakes located in the Northern Patagonian Lake District, in southern South America, were sampled in 2001 and analysed for the main chemical variables (pH, conductivity, alkalinity, major ions and nutrients). The study lakes span a wide geographical and altitudinal range and belong partly to the Pacific and partly to the Atlantic watershed. The main aim of this study was to investigate the relationships between water chemistry and physical/geographical properties of these lakes. Secondly, the nitrogen content of the lakes was considered in detail, and results compared to those obtained in previous studies carried out in other remote areas of the globe (the Central Southern Alps in Italy, the Sierra da Estrela region in Portugal, the Svalbard Islands in the Arctic, the Khumbu-Himal region in Nepal, and the Terra Nova Bay area in Antarctica). In the Alps, lakes are characterised by markedly high nitrogen concentrations, manly as nitrate, due to the high inputs of nitrogen compounds from downwind sources like the Po Plain in Northern Italy. Conversely, lakes at remote locations such as the Andes, Antarctica and Himalaya are characterised by a low nitrogen content, mainly as organic nitrogen. This status is related to the limited atmospheric inputs of nitrogen affecting these regions.

Key-words: nitrate, atmospheric deposition, Alps, Nepal, Antarctica.