Recent limnological changes in a saline lake of the Bolivian Altiplano, Lake Poopo

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Abstract

During the past twelve years, Lake Poopo, located on the Bolivian Altiplano, has had two main types of morphometry. Before 1985, its level was low and the depth shallow (maximum 3 m); there was no outlet and a strong salinity gradient existed from north to south. After 1985, the depth doubled, an outlet developed and the salinity became uniform throughout the lake (~10 g L\(^{-1}\)). Before 1985, the phytoplankton was distinguished by a high number of diatom taxa and by the dominance of diatoms in the algal biomass. After 1985, while diatoms were still numerous in terms of species composition, Peridiniales or Chlorophyceae dominated the algal biomass.

Introduction

The drainage basin of Lake Poopo, with an area of ~55,000 km\(^2\), is situated between 66°22' and 70°05' E and 16°16' and 20° S. It is part of the endorheic system of the Peruvian-Bolivian Altiplano, which, with an area of ~190,000 km\(^2\), includes to the north the basin of Lake Titicaca, in the centre the basin of Lake Poopo, and in the south the zone of salars (Coipasa, Uyuni, South-Lipez) (Fig. 1). A strong salinity gradient exists in this system from north to south: Lake Titicaca is a deep freshwater lake, Lake Poopo is a shallow saline lake, and the 'salars' comprise salt crusts covered only temporarily and partially by a thin layer of water which at maximum is only 20 cm deep (Ballivian and Risacher, 1981).

The principal inflow of Lake Poopo is the Desaguadero. This arises from the southern part of Lake Titicaca and reaches Lake Poopo after
Fig. 1. Map of the area. (After Ballivian and Risacher, 1981).