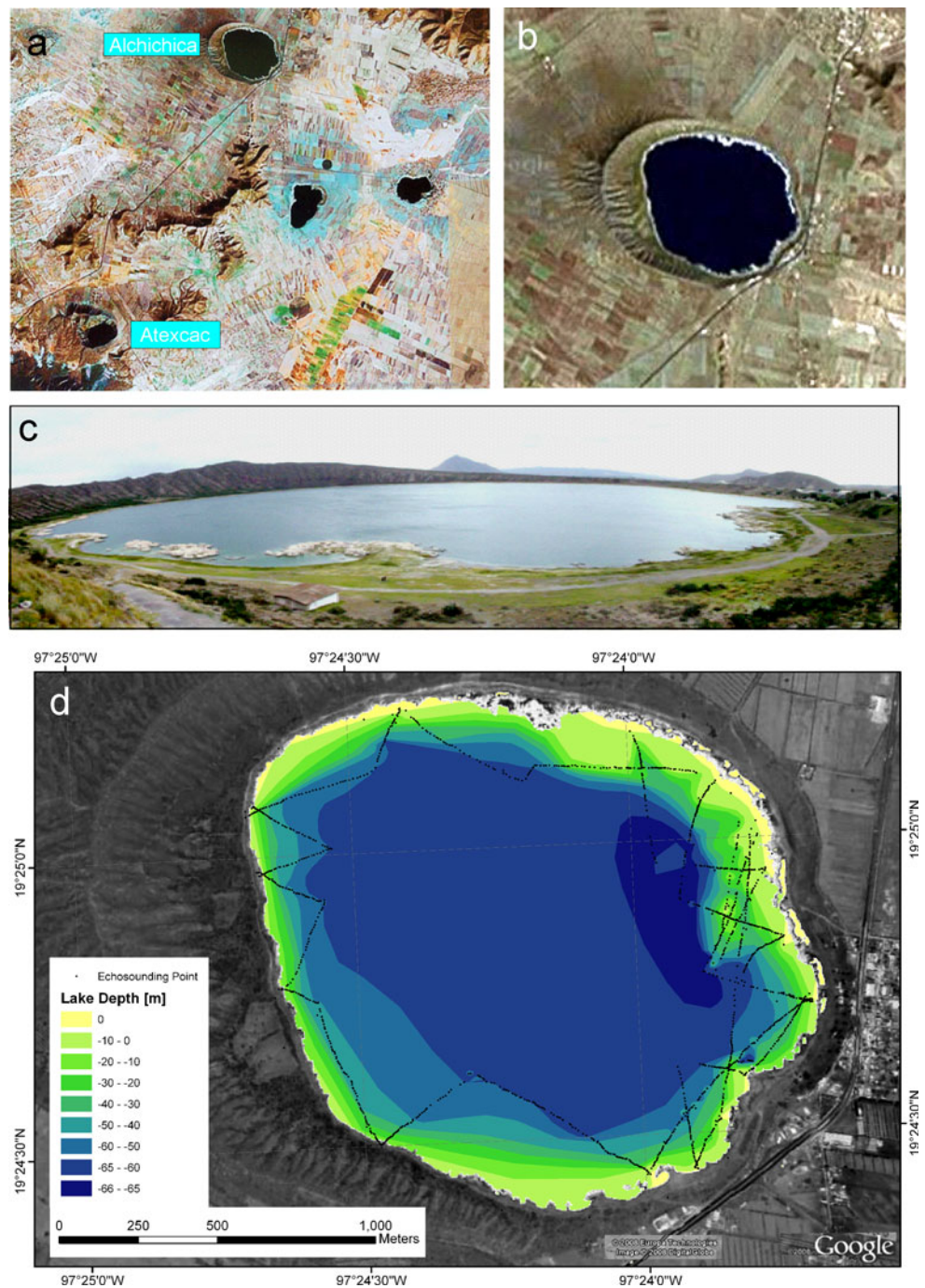


Fig. 1 **a, b** Google Earth satellite images of Lake Alchichica; the white narrow zone visible in **b** along the lake shore corresponds with emerged carbonate microbialites. **c** The lake panorama seen from the southwestern crater wall; notable are the whitish masses of the emerged carbonate microbialites. **d** Bathymetric map of the lake made in June 2007 by the authors using GPS and echo sounder traverses



weighed, pre-combusted glass-fiber filters, and air-dried. In the laboratory, the filters were dried for 3 days at 55°C and re-weighed for measurements of suspended matter concentration.

In the laboratory of the Institute for Applied Geosciences at the Technische Universität Darmstadt, concentrations of cations and anions were measured by ion chromatography (Dionex ISS-90 with column CS12A for cations and Dionex DX-120 with column AS9HC for anions) and Si was determined by photometry (Silikat

Merck 14794). The ratio of the sum of cations to that of anions amounted to 1.0544 ± 0.0082 , i.e., the concentration of the cations (including Na^+ , K^+ , Mg^{2+} , Ca^{2+} , Li^+ , and NH_4^+) is systematically higher by 5.44% than that of the anions (including Alk , Cl^- , Br^- , F^- , SO_4^{2-} , PO_4^{3-} , NO_3^- , NO_2^-), an error typically associated with usage of different methods for anion and cation analysis.

The saturation indices of main carbonate minerals and of PCO_2 were calculated with the computer program PHREEQE (Parkhurst et al. 1990).