



Magnetostratigraphy of the Lake Baikal sediments: dating and paleoclimatic reconstructions

Vadim A. Kravchinsky¹

¹ Department of Physics, University of Alberta vadim@ualberta.ca

Records of the climatic evolution of continental interiors are important for understanding the dynamics of past global changes. One of the most important methods used to decode such records is rock-magnetism. The Lake Baikal drilling project (BDP) has taken advantage of the harsh Siberian winters by using the frozen surface of the lake as a drilling platform. BDP has become a world leader in pioneering recovery of extremely long (several hundred meters) lacustrine sediment sequences from deep water. This has made it possible – for the first time – to obtain a continental archive with the same chronostratigraphic integrity as marine records to address critical questions of the last eight million years.

Geomagnetic field reversal records provide a tool for precise dating of the sediments and identification of a few short geomagnetic events (excursions). Furthermore, magnetic minerals (particularly iron oxides) can be produced, transported and deposited by a range of paleoenvironmental processes. Variations in magnetic mineral assemblages and grain size of magnetic particles reflect environmental and climatic changes. Measurements of magnetic susceptibility provide time series that are analyzed to decode the underlying orbital signals (eccentricity, obliquity and precession) predicted by the astronomical theory of ice ages.