

DIATOMS AS A PROXY IN RECONSTRUCTING THE HOLOCENE ENVIRONMENTAL CHANGES IN THE PATAGONIAN COAST, ARGENTINA

Espinosa, M.A.^{1,2}, Escandell, A.¹ & Isla, F.I.^{1,2}

¹Instituto de Geología de Costas y del Cuaternario, Universidad Nacional de Mar del Plata

²Instituto de Investigaciones Marinas y Costeras, CONICET/UNMDP

Southern South America is an important area for research about environmental and climatic changes from the Southern Hemisphere. However, the information about fossil diatoms is scarce. The study of diatom assemblages from Mid to Late Holocene sequences from coastal areas of Patagonia, Argentina allowed reconstructing their evolution in relation to salinity and tidal changes. The study area includes two estuaries from Northern Patagonia: the Negro River (40° 57' S; 62° 49' W) and the Chubut River (43° 22' S; 65° 03' W). Two sequences were analyzed from the estuary of the Negro River (1.5 km and 10 km from the inlet); another from the estuary of the Chubut River (0.40 km from the inlet). The diatom content of modern sediment samples along the rivers were studied in order to achieve ecological information useful as modern analogous for Patagonian coast. The analyses included 22 modern samples and 86 fossil samples belonging to the three cores in order to interpret the environmental changes in terms of salinity and depth. Diatom zones were characterized by constrained incremental sum of squares cluster analysis (single linkage, Euclidean distance) in the fossil sequences. Fossil and modern diatom assemblages were compared with Detrended Correspondence Analysis (DCA). Diatom analyses allowed interpreting the evolution of Negro river estuary during the last 2,000 years BP suggesting a shallow vegetated brackish/freshwater environment that evolved gradually into marine conditions (tidal channel) and at last into a marsh. At the inlet of the Chubut River, a marine coastal environment (estuary) is inferred at $4,376 \pm 69$ ¹⁴C years BP evolving into a salt marsh about 672 ± 39 ¹⁴C years BP. Considering the strong influence of salinity changes on diatom assemblages, tidal effects are the main controlling factor for the composition and distribution of diatoms along these mesotidal estuaries from Patagonia. The knowledge of palaeoenvironmental conditions derived from fossil diatom assemblages is very important to infer changes induced by man in coastal areas and can be used as reference levels for the assessment of recent coastal changes (dredging, harbour construction, flood control, pollution).