Polish Achievements in the Past Climate Reconstruction

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The Antarctic Cenozoic sediments contain record of global climate deterioration. The opening of the Drake and Tasman Passages and progressive isolation of Antarctica by the Antarctic Circumpolar Current led to the transition from a warm, ice free climate in early Eocene to a colder one and glacial conditions since the end of Eocene. The glacial history of Antarctica in the geological time scale has been revealed mostly from logs obtained during deep see drillings.

Polish geological investigations delivered additionally some important evidences of glaciations from outcrops on the King George Island, supporting climatic scenario deduced from marine sediments. The following glacimarine and glacial sediments intercalated with interglacial clastics bearing terrestrial fauna were found: 1/ Eocene, local alpine glaciers activity, Harve Cove Glacial Event (45-41 Ma), 2/ Oligocene, continental, Polonez Glaciation (36-32 Ma), 3/ Miocene, continental Melville Glaciation (23-20 Ma).

Local environmental changes in the sensitive margin of Antarctic glaciers during Holocene, are delivered from paleolimnological studies carried out by many teams including Polish one. High impact of new formed and evolved watershed on sedimentation in glacial lakes, as well as serious problems with reliable stratigraphy, constrain regional and global meaning of recorded changes.

Both, geological and paleolimnological data support regional and global climatic records from ice cores, covering almost 1 Ma, prolonging it back to 40 Ma (geology) and enriching in local event following the last glaciation (paleolimnology).