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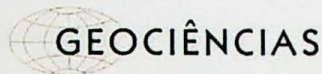
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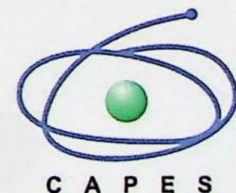
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Are all shell-beds made in the same way? The genesis of Oligocene 3D shell rich concentrations from Antarctica

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Shell-beds preserved in paralic settings have been commonly interpreted as tempestites. Here, we demonstrate that some spectacular marine shell-beds of Antarctica were not generated by storm deposits. The shell-beds are preserved in the Oligocene Polonez Cove Formation (PCF) at King George Island and are among the thickest 3D shell-beds of the continent. The PCF was deposited during an glacial phase and later during deglaciation events, both strongly influenced by volcanic and tectonic activity related to the opening of the Bransfield Rift. The shell-beds are 5 to 40 cm thick and comprise disarticulated, unfragmented valves of the thin-shelled pectinid *Austrochlamys gazdzickii* Jonkers and, more rarely, gastropods, other bivalves, bryozoans, echinoids and unidentified invertebrate remains. Three distinct concentrations are amalgamated in the thicker layer. Facies analysis and new taphonomical data revealed that the shell-beds were not originated by storm deposits, as previously proposed. There is no evidence of sedimentary structures indicating combined flows that were resulted from unidirectional rip currents and oscillatory orbitals (as hummocky/swalley structures). Instead, the presence of channels with erosive base, small proportion of suspension facies (=background sedimentation), the lateral extension of lenses and layers, and the transport of very coarse bioclasts and rock fragments altogether with muddy sediments with rare layers showing normal grading are indicative of high energy episodic sedimentation due to input of fan-delta lobes. These episodic flows reworked and transported the bivalve accumulations that were deposited with unsorted matrix. The final burial probably occurred in the vicinities of the original bivalve habitats, suggesting parautochthonous assemblages.