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## #Th/U DISEQUILIBRIA AND ALLO/ISOLEUCINE RATIOS IN FOSSIL SHELLS FROM RAISED MARINE TERRACES OF SOUTHERN PERU: METHODOLOGICAL PROBLEMS AND DATING POTENTIAL

**Ortlieb, Luc**, Mission ORSTOM, Apartado 18-1209, Lima 18, Peru, ***Ghaleb, Bassam, Pichet, Pierre** and **Claude Hillaire-Marcel**, GEOTOP, Université du Québec à Montréal,Montréal, H3C 3P8, Québec.

In the absence of more suitable material, mollusk shells have been often used with mitigated success for geochronological studies of raised marine terraces in tectonically active coastal areas. In southern Peru, the persistence of relatively cool and dry climatic conditions throughout the late Quaternary resulted in little diagenetic effects on biogenic carbonates as shown by isotopic ($^{13}C$, $^{18}O$, $^{14}C$, Th/U), mineralogical (aragonite/calcite) and geochemical (aminoacids) investigations on mollusk and barnacle fossil assemblages collected in terrace deposits assigned to high interglacial sea levels (from isotopic stages 11 to 1). As a consequence, allo/isoleucine (A/I) and Th/U ratios were tentatively used to set a chronostratigraphy of Pleistocene units in the studied areas (Chala and Ilo-Ite). At each site, orderly values are observed in the series of terraces, although unequivocal assignement of A/I ratios to regional aminozones seems debatable. Similarly, significant departures are observed between Th/U dates on shells, even corrected for the "detrical" Th-U component, and the "astronomical" ages of the corresponding high Pleistocene sea levels. When combined, the two methods allow however to decipher at most sites high paleo-sea levels of the isotopic stages 1, 5e, 7, 9 and 11. A few pecularities were observed in the U and Th geochemistry of the studied biogenic carbonates. $^{234}U/^{238}U$ activity ratios decrease from ~ 2 in the oldest samples to ~ 1 in the youngest ones suggesting therefore that the uranium fixed in fossil shell assemblages during their respective early diagenetic phase derived from continental sources progressively depleted in $^{234}U$. $^{228}Th/^{232}Th$ activity ratios average 0.75 in the studied samples; they indicate modern fluxes of $^{228}Ra$, although a relative closure of the $^{238}U$-$^{230}Th$ radioactive system seems to be maintained.