Geophysical Research Abstracts
Vol. 20, EGU2018-17338-1, 2018
EGU General Assembly 2018

Separated or associated turbidites and homogenites: time and space distribution in Lesser Antilles foreland basins. Possible specific paleoseismic significances.

Christian Beck (1), Nathalie Feuillet (2), Gueorgui Ratzov (3), Antonio Cattaneo (4), Chloé Seibert (2), Pierre Morena (4), Eva Moreno (5), Jason Patton (6), and Chris Goldfinger (7)

(1) U.M.R. ISTerre, Université Savoie-Mont-Blanc, France (beck@univ-smb.fr), (2) I.P.G. Paris, France (feuillet@ipgp.fr), (3) GEOAZUR, Université de Nice-Sophia-Antipolis, France (ratzov@geoazur.unice.fr), (4) IFREMER, Brest, France (Antonio.Cattaneo@ifremer.fr), (5) M.N.H.N. Paris, France (emoreno@mnhn.fr), (6) Humbolt State University, U.S.A. (jrp2@humboldt.edu), (7) Oregon State University, U.S.A., (gold@ceoas.oregonstate.edu)

Beside classical turbidites representing fluidized gravity-reworked sediments (different from flood-induced ones), homogenites may occur, either as unique separate layers, or overlying, and associated to, a normally graded coarse interval similar to the basal terms of a turbidite. In this so-called homogenite+turbidite (HmTu), a third specific layer may be intercalated indicated oscillating (to-and-fro) bottom water and removing of bedload and already partly settled suspended load. Previously described separated homogenites have been associated to deep effects of major tsunamis; the later ones being not necessarily triggered by earthquakes.
A detail study of the northern Lesser Antilles foreland, achieved though giant piston coring, is presently used to illustrate and discuss the significance of these different sedimentary events. Within the investigated area (the northern part of the active Barbados Accretionary complex) different isolated basins display the different types of above-mentioned sedimentary events. The provenances of the reworked materials can be distinguished: i) volcaniclastic fraction and platform carbonate clasts from the arc, ii) continental-derived terrigenous fraction from the Barbados complex, iii) planktonic local production. Thus, local vs. distant reworking for each basin can be recognized. Within the Pleistocene-Holocene infills, apart from many “classical” turbidites, several thick homogenites, imaged on high resolution seismic reflection profiles and cored, appear directly overlying graded multi-pulse coarse layers. These events are tentatively correlated between all the - non-connected - investigated basins. Locally, a basal part of the fine-grained homogenite displays larges size convolutes interpreted as slumping. Fluid-escape features, and few thin clastic injections, were observed, one of them, displaced by sub-horizontal fracturing, possibly due to lateral spreading. Thus these HmTu-type events represent multiphasic complex depositional processes, which we discuss in terms of: major subduction earthquakes, local vs. regional tsunamis waves, synchronous but separated water displacements in deeper parts of the different basins, etc..