Geophysical Research Abstracts
Vol. 17, EGU2015-4488, 2015
EGU General Assembly 2015

Lateral transition from long-wavelength traction carpet deposits to massive sandstone units: An example from turbidite deposits of the Kiyosumi submarine fan, central Japan

Yoshiro Ishihara (1), Keisuke Tsuda (2), Yuri Onishi (3), and Miwa Yokokawa (4)

(1) Department of Earth System Science, Fukuoka University, Fukuoka, Japan (ishihara@fukuoka-u.ac.jp), (2) Nihonchiken Co.,ltd (tsuda@chiken.co.jp), (3) Graduate School of Science, Fukuoka University, Fukuoka, Japan (aat.xwx@gmail.com), (4) Lab. of Geoenvironment, Fac. Info. Sci. & Tech., Osaka Institute of Technology (miwa@is.oit.ac.jp)

Successions of thin, inversely graded units are occasionally observed in the lowermost sections of sediment gravity flow deposits. These units, previously described as traction carpet deposits or spaced planer laminations, are likely deposited during high-density turbidity currents. These successions, located directly below massive turbidite units, form sedimentary bedforms such as antidunes and cyclic steps. It has been suggested that these successions correspond to massive sediment gravity flow deposits, even though the transition between the two is poorly understood. In this study, we analyzed lateral variations in the sedimentary structures, grain-size distributions, mud contents, and grain fabrics of a turbidite-hosted succession located in the Neogene Kiyosumi Formation, central Japan. The results of this study include: (1) Units within the succession exhibit upstream dipping (<10 degree) of the boundary surfaces, and an increase in the number and thickness of units towards the downstream direction. Minor fluctuations in unit thicknesses are observed. In the extreme downstream sections of the deposit, clear boundaries disappear and the unit grades into a massive sandstone characterized by rip-up mud clasts. (2) Mean grain size diameters and D5 values (5% of the cumulative grain size distribution) are smallest in the upstream and downstream sections. Grain size distributions in both the upstream and downstream sections of the unit are relatively poorly sorted. (3) In general, imbrication angles, which dip in the upstream direction, increase in the downstream direction. Grain fabrics exhibit higher degrees of variability near the massive sandstone transition. The results of this study suggest that these units were formed by the upstream migration of bedforms (e.g., antidunes and cyclic steps) during a period characterized by high sedimentation rates. Our observations suggest that sediment gravity flows are able to undergo lateral transformation to form massive sandstone units.