Geophysical Research Abstracts,
Vol. 11, EGU2009-11774, 2009
EGU General Assembly 2009

Particle distribution in oscillatory wave-like flows

J.M. Redondo (1), P. Lopez (2), and D. Bolster (1)

(1) Universidad Politecnica de Catalunya, Dept. Applied Physics (3 Hydraulics), Barcelona, Spain (redondo@fa.upc.es, +34 93 4016090), (2) Instituto Pluridisciplinar, Fluid Laboratory. Univ. Complutense de Madrid, Madrid, Spain

A new laboratory model to investigate the local distribution of sand
(and ballotini glass beads) under oscillatory wave induced flows is used to investigate the structure of sediment deposition in strong turbulent flows.

The lift-off and particle displacement processes are generated by the evolution of uniform and random forced oscilatory flow produced by oscillations in a U shaped channel. We describe the corresponding qualitative and quantitative transport and mixing processes measuring the density of the bead fields of different sizes and the heights of the different layers, using a descriptor similar to the Thorpe scale for stratified flows, except that in this case we use the bead density for different sizes (local masses). We characterize the partial mixing process and the role of viscoelastic and tensioactive gels that may enhance or hamper bead transport.