Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Physical Modeling of the Cross-Shore Sediment Transport on a Sand-Gravel Beach REGIS XHARDE, CORINNE BRUNELLE, JANNETTE FRANDSEN, INRS-ETE, University of Quebec, Canada — The aim of the study is to investigate the cross-shore evolution of a nourished beach profile under storm wave conditions with specific emphasis on sediment transport within the breaking zone. To investigate the underlying mechanisms of the coastal transport processes, a physical model of the beach was built at scale 1:3 in the new Quebec Coastal Physics Laboratory (QCPL), Canada. The modeled beach is 4.2 m high, 5 m wide and 40 m long with a mean slope of 1:10. The beach is formed of a mixture of sediment with grain sizes ranging from 0.65 mm up to 20 mm. The stability of the beach is tested for operational and storm waves. We report on run-up and run-down processes via wave gages, video records of waves and ultrasonic water level measurements. Sediment transport processes within the surf zone and on the beach face are monitored using acoustic Doppler profilers and optical backscattering sensors. The beach profile is surveyed prior and after each test series using a topographic laser scanner. Initial results show that sand is transported off-shore to a breaker bar while cobbles are pushed on the upper beach by run-up. Details of the underlying mechanism of different breaker types and impact on sediment transport will be presented.

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Date submitted: 30 Jul 2014 Electronic form version 1.4