



2004 Indian Ocean Tsunami flow velocity measurements from survivor videos

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The tsunami of 26th December 2004 severely affected Banda Aceh along the North tip of Sumatra (Indonesia) at a distance of 250 km from the epicenter of the Magnitude 9.0 earthquake. This tsunami flow velocity analysis focused on two survivor videos recorded within Banda Aceh more than 3km from the open ocean. The exact locations of the tsunami eyewitness video recordings were revisited by the survey team between February 22 and 25, 2005 to record camera calibration ground control points. The motion of the camera during the recordings was determined. The individual video images were rectified with a direct linear transformation (DLT) assuming a planar water surface at the level. Finally a cross-correlation based particle image velocimetry (PIV) analysis was applied to the rectified video images to determine instantaneous tsunami flow velocity fields. The measured tsunami flow velocities were within the range of 2 to 5 m/s.