



Field observations of pattern formation and evolution of marine sandwaves

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A series of high resolution multibeam echo sounding surveys near San Francisco, CA demonstrate the occasional migration of marine sandwave crests in the direction opposite to that indicated by the shape asymmetry of the individual sandwaves, in contrast to most observations of the relationship between bedform shape asymmetry and migration. The anti-asymmetry migration occurs over approximately the same time period that a new sand wave crest is formed within the large and relatively stable field. The new sandwave crest appears approximately midway between two larger crests, in the vicinity of a structural defect in a nearly two-dimensional portion of the field. The sandwaves in the vicinity of the new crest are found to have migrated away from the new crest regardless of their shape asymmetry. Later a large section of the new crest disappears, and the neighboring sandwaves migrated back toward the vacated crest location. This migration occurs for sandwaves up to at least ten wavelengths away from the new crest.