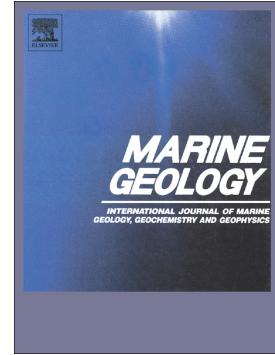


Accepted Manuscript

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PII: S0025-3227(17)30003-8
DOI: doi: [10.1016/j.margeo.2017.04.003](https://doi.org/10.1016/j.margeo.2017.04.003)
Reference: MARGO 5606
To appear in: *Marine Geology*
Received date: 5 January 2017
Revised date: 1 March 2017
Accepted date: 6 April 2017

Please cite this article as: Balázs Bradák-Hayashi, Koichiro Tanigawa, Masayuki Hyodo, Yusuke Seto , Magnetic fabric evidence for rapid, characteristic changes in the dynamics of the 2011 Tohoku-oki tsunami. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Margo(2017), doi: [10.1016/j.margeo.2017.04.003](https://doi.org/10.1016/j.margeo.2017.04.003)

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Magnetic fabric evidence for rapid, characteristic changes in the dynamics of the 2011 Tohoku-oki tsunami

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Abstract

Low field anisotropy of magnetic susceptibility (AMS) and rock magnetic measurements were applied to sediments deposited by the 2011 Tohoku-oki tsunami to reveal the dynamic of the tsunami run-up and the character of the sedimentation along the Misawa coast, Aomori Prefecture, northern Japan.

In the tsunami deposits studied, elongated, coarse-grained, multi-domain titanomagnetite and magnetite minerals were the carriers of the AMS signal.

Two main types of sedimentary environment are described: a higher energy, tangential stress-dominated environment with imbrication and traction/rolling transportation and a calmer, post-peak wave environment ruled by gravitational stress.

Rapid characteristic changes in the tsunami dynamics are also described. The tsunami began with erosion of the pre-tsunami surface caused by rapidly increasing energy. Bedload features such as ripple stratification were developed by the repeated accelerations and decelerations of the

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