
[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS10]Paleoclimatology and paleoceanography

convener:Yusuke Okazaki(Department of Earth and Planetary Sciences, Graduate School of Science, Kyushu University), Atsuhiko Isobe(Research Institute for Applied Mechanics, Kyushu University), Akihisa Kitamura(静岡大学理学部地球科学教室, 共同), Masaki Sano(Faculty of Human Sciences, Waseda University)

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Past environmental changes and events at multi-decadal to tectonic timescale toward an understanding of Earth climate system by an integration of terrestrial and marine proxy studies and numerical modeling will be discussed. We welcome a variety of paleo-environmental studies from a wide range of background. In particular, a series of presentations relating to the Anthropocene will be planned. This is a merged session of A-OS31 "Linkage between oceanography and paleoceanography in marginal, shelf and coastal oceans" and M-IS23 "Paleoclimatology and paleoceanography" sessions at JPGU 2017. We hope that this session will provide an opportunity to promote communication between participants from multidisciplinary field.

[MIS10-P33]The evaluation of bioturbation flux based on biogenic stratification using rule based lattice model

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Keywords:Paleo environment, Bioturbation Index, Sedimentary structures

This study aimed to establish a method to estimate the magnitude of the intensity of bioturbation quantitatively from geologic records. First, we employed the percentage area of bioturbation (PAB) as a proxy of the intensity of bioturbation that is measurable in ancient deposits, and examined the relationship between PAB and the actual biological activity by numerical experiments using a rule-based lattice model of bioturbation. In this model, the migration of sediment particles due to bioturbation are determined stochastically. Experiments were conducted by changing the two dimensionless parameters of bioturbation: the dimensionless bioturbation flux and the dimensionless bioturbation length. These dimensionless parameters were arisen from the dimensional analysis of the model parameters. The first parameter can be regarded as the intensity of bioturbation, and the second is related to the size scale of the dominant tracefossil in the assemblage. As a result of the numerical experiments, we obtained a relational function to estimate the bioturbation flux from PAB and the bioturbation length. Both the parameters PAB and the bioturbation length can be measured from the images of sections of sedimentary rocks, and therefore our method to estimate the bioturbation flux is applicable for the ancient depositional successions.