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[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.

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## [MIS10-P02]Change in biogenic opal in sediments from South Pacific off New Zealand since middle Miocene

\*Ryota Kakishita<sup>1</sup>, Yusuke Okazaki<sup>1</sup>, Osamu Seki<sup>2</sup> (1.Kyushu University, 2.Hokkaido University)

The Southern Ocean is known as a high nutrient low chlorophyll (HNLC) region. In HNLC, primary production is not proportional to the supply of macro-nutrients such as nitrate, phosphate and silicate. It is suggested that iron deficiency is the reason. In the ocean other than HNLC, macro-nutrients are the limiting factor for primary production. However, in the Southern Ocean, macro-nutrients are abundantly supplied to the surface layer by upwelling. Therefore, iron, a micro-nutrient, is deficient before macro-nutrient. As a result, iron deficiency is the limiting factor for primary production in the Southern Ocean. Diatom is a phytoplankton with biogenic opal frustules and can be preserved in sediments. Therefore, sedimentary biogenic opal content is used as a proxy for past biological productivity. During Ocean Drilling Program (ODP) Leg 181 in 1998, Site 1123 was drilled in South Pacific off New Zealand (41°47.1'S, 171°29.9'W, and 3290 m water depth). In this study, biogenic opal contents for the last 10 Myrs were measured on 219 samples of ODP 1123. Biogenic opal was analyzed by extracting with an alkaline solution (2M Na<sub>2</sub>CO<sub>3</sub>) and molybdenum yellow colorimetric method. Both biogenic opal contents and fluxes were relatively high during late Miocene from 7 to 5 Ma. Alkenone sea surface temperature (SST) and alkane flux records indicated significant cooling with increased dust occurred during this period. These data were consistent with a scenario that an enhanced primary productivity occurred when increased iron supply by dust by expansion of arid regions by intensified cooling. This suggests the studied area near Site ODP 1123 was a HNLC region during 7-5 Ma.