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A tale about the precipitation over the Indonesian-Australian monsoon region for the last 600 kyr

YOGARAJ BANERJEE[1], LI LO[1] AND CHUAN-CHOU SHEN[1,2]

[1]Department of Geosciences, National Taiwan University
[2]National Taiwan University

Presenting Author: ybanerjee15@gmail.com

The Indonesian-Australian monsoon region harbors a significant proportion of the global population who depend on seasonal precipitation for their subsistence. The monsoon dynamics over this region are intrinsically related to the seasonal swings of the Intertropical convergence zone (ITCZ). Thus, a long-term high-resolution climate record from this region can provide very important insights into governing factors for the movement of the ITCZ and monsoonal precipitation through time.

Island weathering process at the Papua New Guinea (PNG) region had been identified as one of the major sources of REE influx from the continental interior to the western Pacific Ocean (Sholkovitz et al., 1999). As the abundance of rare earth elements (REE) is relatively more in the crustal materials as compared to the river and seawater, REE can be used as geochemical tracers for the terrestrial influx into the ocean system through the monsoonal discharge (Stoll et al., 2007). Following this approach, previous investigation (Liu et al., 2015) demonstrated the role of the obliquity cycle on the precipitation pattern at the tropical southern hemisphere in the Pacific over the last 282,000 years using planktonic foraminifera *Globigerinoides ruber* (white, *s.s.*) Nd/Ca records of the core MD05-2925 retrieved near the coastal PNG region. In the present study, we have extended the Indonesian-Australian monsoon precipitation record for the last 600 kyr using the foraminifera REE/Ca record from the MD05-2925 core. Our new record shows major dominance of eccentricity cycle during 300-600 kyr time interval. Probable physical mechanisms driving the ICTZ movement dynamics and its interactions with the regional monsoon system will be discussed during the presentation.

References: Sholkovitz et al. (1999) Marine Chemistry 68,39-57; Stoll et al. (2007) Earth and Planetary Science Letters 255, 213-218; Liu et al. (2015) Nature Communications 6(1), 10018.