Digging on the origins of the Coral Triangle

Nadiezhda Santodomingo[1] **& Kenneth G. Johnson**[1]

[1]Department of Earth Sciences, Natural History Museum, Cromwell Road, SW7 5BD London, United Kingdom.
n.santodomingo@nhm.ac.uk, k.johnson@nhm.ac.uk

Reefs in the Coral Triangle host the richest coral diversity today, and palaeontological and molecular evidence suggest that the Miocene (5-23 Ma) was an important period for diversification in this region. As part of the Throughflow ITN, the aims of this study are to determine which coral species occurred during this period and to understand how environmental factors controlled coral diversification on both temporal and spatial scales. Our new collections include tens of thousands of specimens from the rich and well-preserved Miocene fossil record of small patch reefs that developed in turbid habitats that are now preserved in the sediments of the Kutai Basin of East Kalimantan (Indonesia). Preliminary results suggest that species diversity was high and comparable to modern coral settings living under turbid environmental conditions. A total of 150 morphospecies from 70 genera have been identified, including nine genera known as extinct. Our findings have revealed that some lineages that were previously known from the Plio-Pleistocene record were already present during the Miocene time. These discoveries have a profound impact on our understanding of the origins of today's diversity in the Coral Triangle. Further research will focus on the incorporation of these fossils into phylogenetic analyses in order to estimate divergence times and explore the relationship of evolutionary trends with environmental changes at biogeographic scale.