

2008 Fall Meeting
Search Results

Cite abstracts as **Author(s) (2008), Title, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract xxxxx-xx**

Your query was:

"james cook university"

HR: 17:12h

AN: **GC54A-06 INVITED**

TI: **Coral Microatolls and Their Role as Fixed Biological Indicators of Holocene Sea-Level Changes**

AU: * **Woodroffe, C D**

EM: *colin@uow.edu.au*

AF: *University of Wollongong, School of Earth and Environmental Sciences, Wollongong, NSW 2522, Australia*

AU: **Smithers, S G**

EM: *Scott.Smithers@jcu.edu.au*

AF: *James Cook University, School of Earth and Environmental Sciences, Townsville, QLD 4811, Australia*

AU: **McGregor, H V**

EM: *mcmgregor@uow.edu.au*

AF: *University of Wollongong, School of Earth and Environmental Sciences, Wollongong, NSW 2522, Australia*

AB: Corals microatolls are individual colonies of massive coral that have grown up to a level at which further upward growth is constrained by exposure at low tide, and which then continue to grow outwards, resulting in a flat-topped discoid morphology. Typically, microatolls comprise a single colony of massive *Porites* up to several metres in diameter. Modern microatolls are living on their outer margin but are predominantly dead on their upper surface. Microatolls are fixed biological sea-level indicators of the former upper limits to coral growth providing information on sea level at several temporal scales. Fossil microatolls have been used extensively to reconstruct broad patterns of Holocene sea-level trends in the Indo-Pacific reef province. Where they are preserved at a height above that of their living counterparts in the eastern Indian Ocean, Southeast Asia, northern Australia, and across much of the equatorial Pacific Ocean, they indicate that reef flats have experienced relatively higher sea levels in the mid- and late Holocene. Progressively lower corals have been interpreted to record the fall in sea level to its present position over millennial time scales. Large specimens of microatolls can reach several metres in diameter and contain a growth record of tens to hundreds of years; the upper surfaces of these can be used to track the pattern of sea-level variation over several decades. In this paper we explore the potential for using concentric annuli and subtle undulations preserved on microatoll upper surfaces to interpret sea-level changes over decadal to millennial time scales. We demonstrate that in the central Pacific modern microatolls preserve a surface morphology that reflects oscillations of sea level associated with El Niño. We evaluate the extent to which similar fluctuations may be recorded in the morphology of Indian Ocean microatolls, and the circumstances which promote the

5/03/2009

Coral Microatolls and Their Role as Fi...

Ocean microatolls, and the circumstances which promote the preservation of these morphological records of sea-level change over longer time scales. We discuss the potential to reconstruct extended records of sea-level change by using geochemical signatures preserved within microatoll skeletons to improve cross-correlations between colonies, and assess the precision with which sea level can be inferred.

DE: 1115 Radioisotope geochronology

DE: 1130 Geomorphological geochronology

DE: 1641 Sea level change (1222, 1225, 4556)

DE: 4220 Coral reef systems (4916)

SC: Global Environmental Change [GC]

MN: 2008 Fall Meeting

New Search

