

*July 8 2003*

*To: Ed Cook and the Climate Center Committee*

*From: Erica Hendy*

*Introduction*

The tropical oceans are an important source of short-term climate variability, as evident in the global teleconnections originating in the tropical Pacific Ocean from ENSO. Instrumental records from these regions, however, are often limited in terms of spatial coverage and length. The goal of coral-based palaeoclimate research is to produce a network of high-resolution ocean surface climate records that approach the quality of modern instrumental records, and extend over multi-century periods. The aragonite skeleton of massive coral offers a wide range of isotopic, elemental and physiological tracers that have the potential to provide highly accurate, sub-annually resolved reconstructions of sea surface temperature, salinity, freshwater flux, ocean circulation and solar input (reviewed in Dunbar and Cole 1999). As a developing field of proxy-climate research, however, some fundamental issues remain to be addressed before coral palaeoclimate reconstructions can fulfill their potential. Systematic testing of coral records is needed to demonstrate the confidence that can be placed on the climate reconstructions from each tracer.