

## Responses of complex vs robust clade corals from high latitude South African reefs to warming and acidification

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The high latitude reefs of South Africa's Maputaland coast are considered marginal as they are at the extremes of coral distribution. They are, however, extremely vibrant and biodiverse ecosystems with a high biodiversity including >90 hard and >40 soft coral species. These corals occur at the lower ranges of their thermal tolerances and are subject to significant seasonal variation, suggesting that they might have greater capacity for thermal acclimation than tropical conspecifics. Indeed, the Maputaland reefs were not affected by the global coral bleaching events in 1998, 2010 and 2016 that significantly affected many other reefs in the Western Indian Ocean. The basis for this may lie either in the abilities of the corals to acclimate or because of local physical and oceanographic features that reduce exposure to thermal stress. In order to investigate the potential for acclimation to current and future stresses, representative local corals from the complex (*Acropora austera*) and robust clade (*Hydnophora exesa*) were exposed to preindustrial, current and future temperatures and pH in a multifactorial design. Physiological changes were observed with changing temperature and pH but these were not synergistic. The transcriptional responses to temperature and pH will be explored by assessing differential transcription via a tag-based RNA-Seq approach. The initial step has required assembling full transcriptomes of the target species, which are the first corals from the highly diverse WIO, including one of the few species from the robust clade to be sequenced. As such interesting evolutionary features have been discovered.