

**Dr Jon Havenhand**

Professor, University of Gothenburg, Sweden

Jon is a senior researcher and Professor, working at the Dept. of Marine Sciences, University of Gothenburg, Sweden. Jon's research focusses on the effects of marine climate change and acidification on the reproduction and ecology of marine organisms. Prior to his current position, Jon was at Flinders University, Adelaide, where he helped to establish the Aquaculture and the Marine Biology programs, and also spent time working in Antarctica. Jon is currently on sabbatical at IMAS, Hobart, working on a variety of issues related to the importance of variability in marine climate drivers, and variability in responses among individuals.



***Introduction to Theme 2: Responses***

We still know little about the direct responses of many key Southern Ocean species to changing climate drivers. Results from other marine systems also show that direct responses to climate drivers are often mediated – and sometimes completely offset – by indirect interactions within the ecosystem. At the same time, it's becoming clear that variability in the identities and intensities of key drivers at a range of scales, both in time and space, can fundamentally change responses. A pessimist's view of this situation could be summarised as “we know we don't know enough, and we know we could be wrong”. Untangling this mess may seem a “formidable” challenge, however all is not lost: well-established ecological principles can fill in many of the gaps – and help identify key gaps that we need to fill, and developments in ecosystem modeling are showing how responses can be estimated from scant information. Talks in this session apply some of these tools to focus on i) the effects of regional variability in multiple climate drivers on bottom-up processes and higher trophic levels, and ii) a top-down perspective on the big questions and next steps that we need to address.