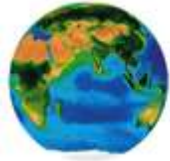




Hermann Bange, Martin Visbeck and Birgit Gaye

**Prospects for an  
Integrated German  
Indian Ocean Study  
(IGIOS)**

a contribution to IIOE-2



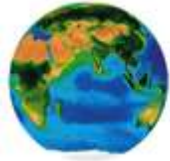
# IIOE-2 in Germany



## Integrated German Indian Ocean Study (IGIOS)

### German activities

- Feb 2013: 1<sup>st</sup> informal planning meeting
- Jan 2014: *DFG Rundgespräch* in Kiel with 35 participants from several institutions of Germany
- > agreement to write 'Science Prospectus' incl. an implementation strategy IGIOS. Writing almost complete



# IIOE-2 in Germany

## IGIOS - Science Prospectus

- 1 Executive Summary
- 2 Introduction
- 3 Scientific Themes

### ***Theme 1: Global Change and anthropogenic impacts***

*Lead author: HW Bange (GEOMAR)*

### ***Theme 2: Biogeochemical cycles and atmosphere***

*Lead authors: E Achterberg (GEOMAR, Kiel), B Gaye (U Hamburg), M Voss (IOW, Warnemünde), J Williams (MPI für Chemie, Mainz), J Lelieveld (MPI für Chemie, Mainz)*

### ***Theme 3: Ocean circulation and paleoceanography***

*Lead authors: M Dengler (GEOMAR, Kiel), M. Mohtadi (MARUM, Bremen), R Schneider (U Kiel)*

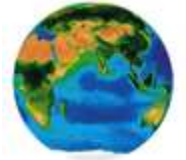
### ***Theme 4: Ocean crust***

*Lead authors: W Bach (U Bremen), K Haase (U Erlangen), U. Schwarz-Schampera (BGR, Hannover), G. Bohrmann (MARUM, Bremen)*

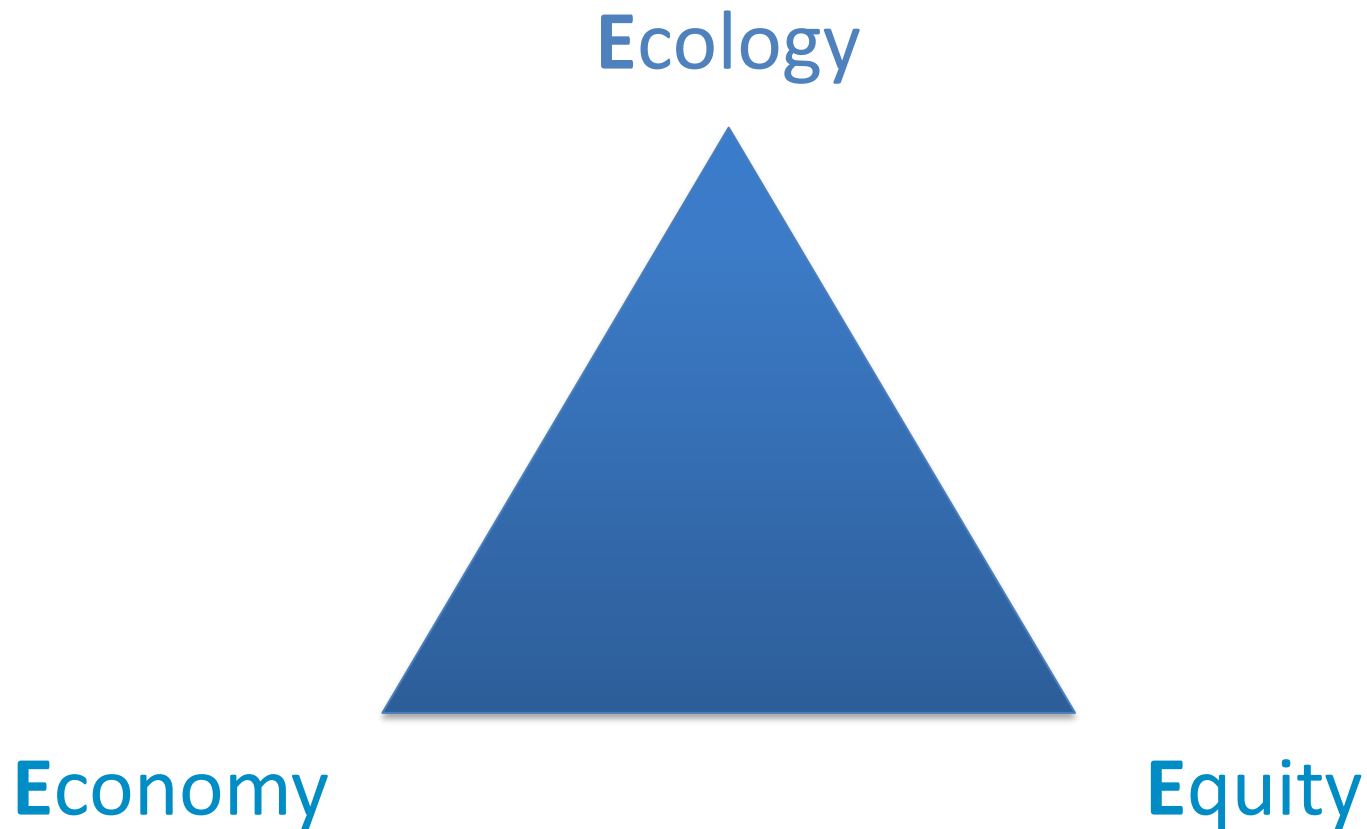
## 4 Implementation strategy



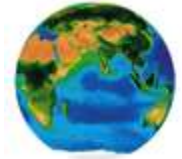
# A Vision for an Indian Ocean Study



**“Science in Support for Sustainable Development of the Indian Ocean”**



# A Vision for an Indian Ocean Study



“Science in Support for Sustainable Development of the Indian Ocean”

## Ecology

### Ocean and Climate

(Monsoons, Circulation, Sea Level, Warming, Acidification, Element Cycling, ... )

### Ocean and Ecosystem

(Fisheries, Energy (renewable and non renewable), Materials, Tourism, ...)

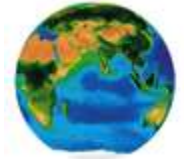
### Ocean and Information

(Capacity building, Information sharing, Ocean Literacy, Ocean Governance,...)

Economy

Equity

# A Vision for an Indian Ocean Study



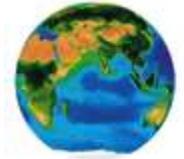
**“Science in Support for Sustainable Development of the Indian Ocean”**

**Ocean Observing**  
(ships, planes,  
satellites, robots)

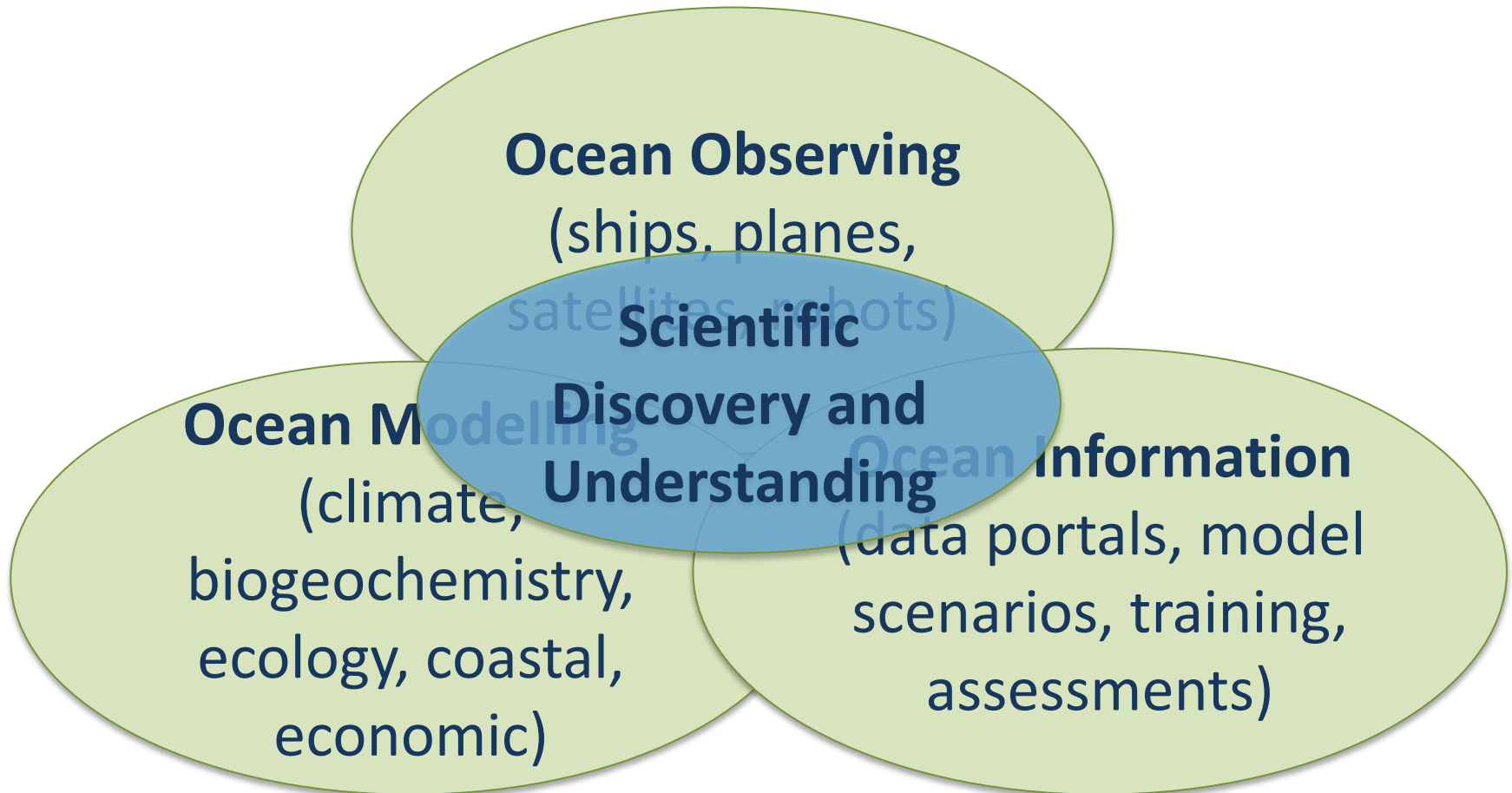
**Ocean Modelling**  
(climate,  
biogeochemistry,  
ecology, coastal,  
economic)

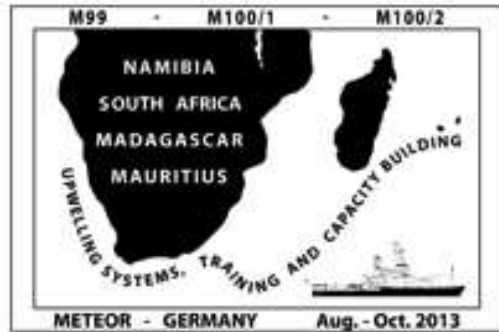
**Ocean Information**  
(data portals, model  
scenarios, training,  
assessments)

# A Vision for an Indian Ocean Study



**“Science in Support for Sustainable Development of the Indian Ocean”**



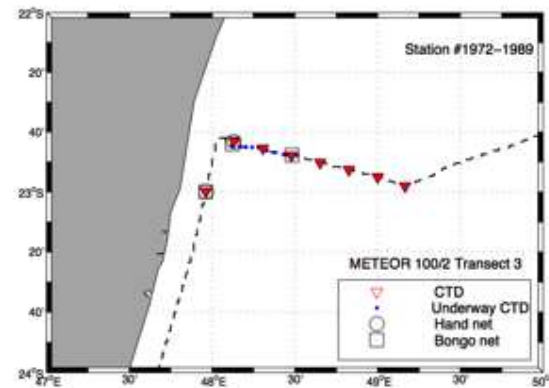
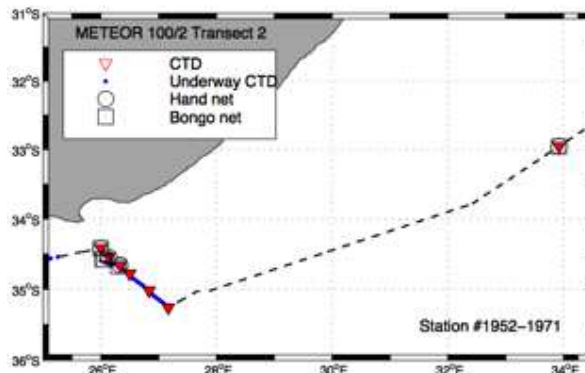
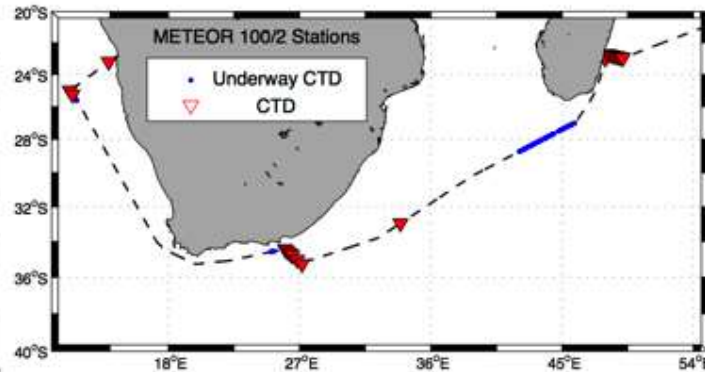
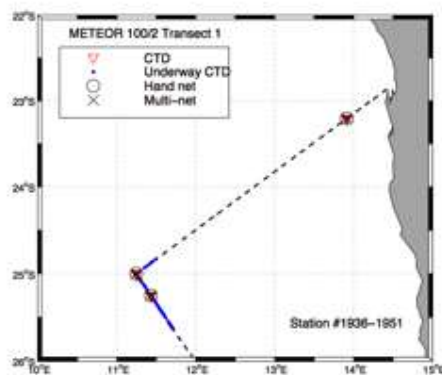


# SPACES GATOR Cruise M100/2, 2013

## “GATOR - German-African Training & Oceanographic Research”

Martin Visbeck (GEOMAR)

Holger Auel (U. Bremen), Tim Rixen (ZMT, U. Hamburg)





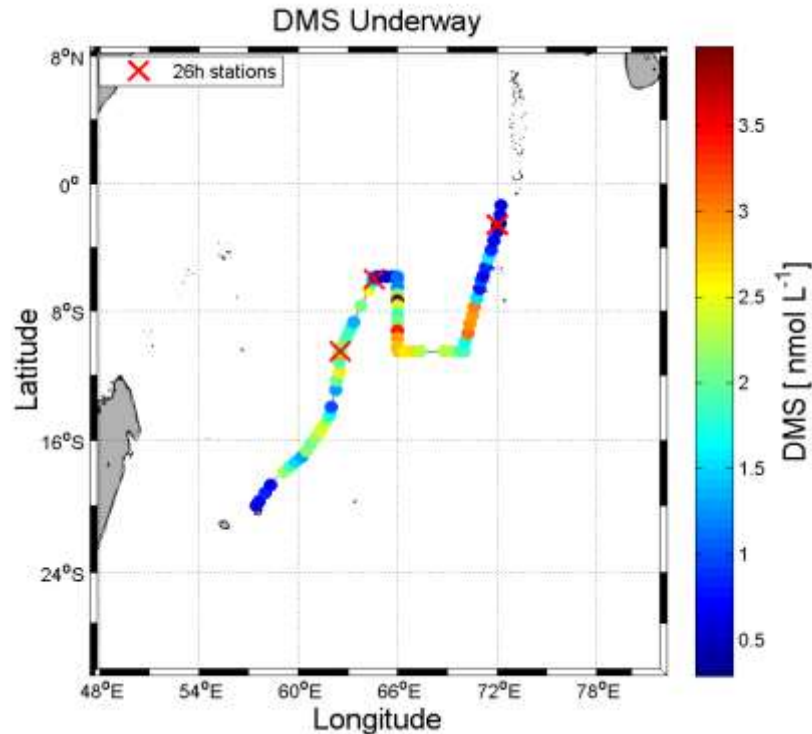


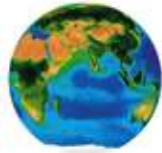
# SPACES OASIS Cruise SO235, 2014

“OASIS: Organic very short lived Substances and their air sea exchange from the Indian Ocean to the Stratosphere”

K. Krüger (GEOMAR/U Oslo, Norway)

B. Quack, C.A. Marandino (GEOMAR)





# IIOE-2 in Germany



R/V Sonne cruise (PI: B Gaye, U Hamburg)



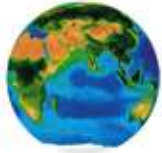
-> Winter Monsoon cruise with R/V Sonne to the Arabian Sea

## Themes

- N-cycling in the oxygen minimum zone: processes and quantification
- Dynamics and interaction of dissolved and particulate organic matter
- Benthic processes
- Reconstruction of Holocene climate and element cycling

## Participating institutes

- Institute of Geology, University of Hamburg (Gaye, Emeis, Lahajnar, Lüdmann)
- ZMT, Centre for Tropical Marine Ecology, Bremen (Rixen)
- Paleobiology, University of Tübingen (Schulz)
- Helmholtz Centre Geesthacht (Dähnke)
- GEOMAR, Kiel (Bange, Wallmann)



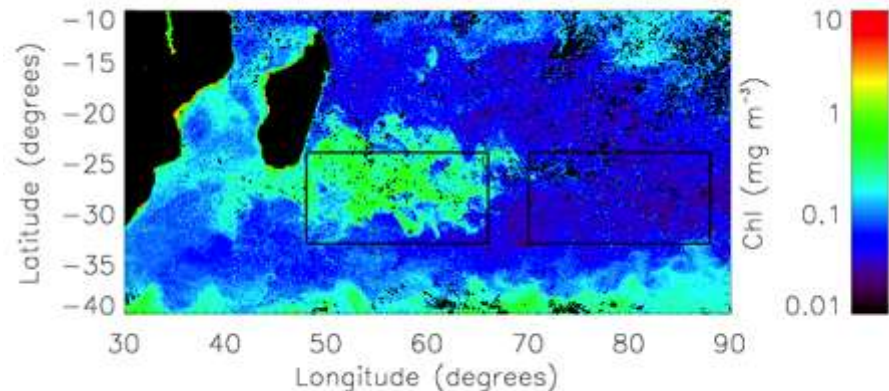
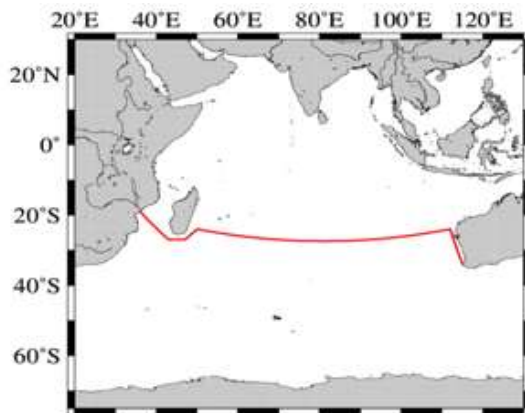
# IIOE-2 in Germany

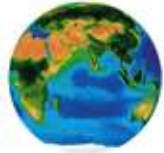


## Zonal section as part of the Internat. **GEOTRACES** in S Indian Ocean: Re-run WOCE I03 and I04

PIs: E Achterberg and M Frank, GEOMAR

- > *What are the fluxes of trace elements and isotopes (TEIs) in the SIO, and what are the dominant processes that control these fluxes?*
- > *Which processes control the concentration and distribution of TEIs in deep waters in the SIO*
- > *How are micronutrients (e.g. Fe) and nitrogen supplied to support the diazotrophy and productivity off NW Australia and in the SW Indian Ocean (off Madagascar and in Mozambique Channel)?*





# IIOE-2 in Germany



## Nest steps for German activities

- We are entering into a phase of debate with German funding agencies (BMBF, DFG) to explore the possibility of a joint source of funding
- Start of Integrated German Indian Ocean Study (IGIOS) in 2017?