

environmental affairs  
Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

*Oceans and Coastal Research –  
Climate Change Research*

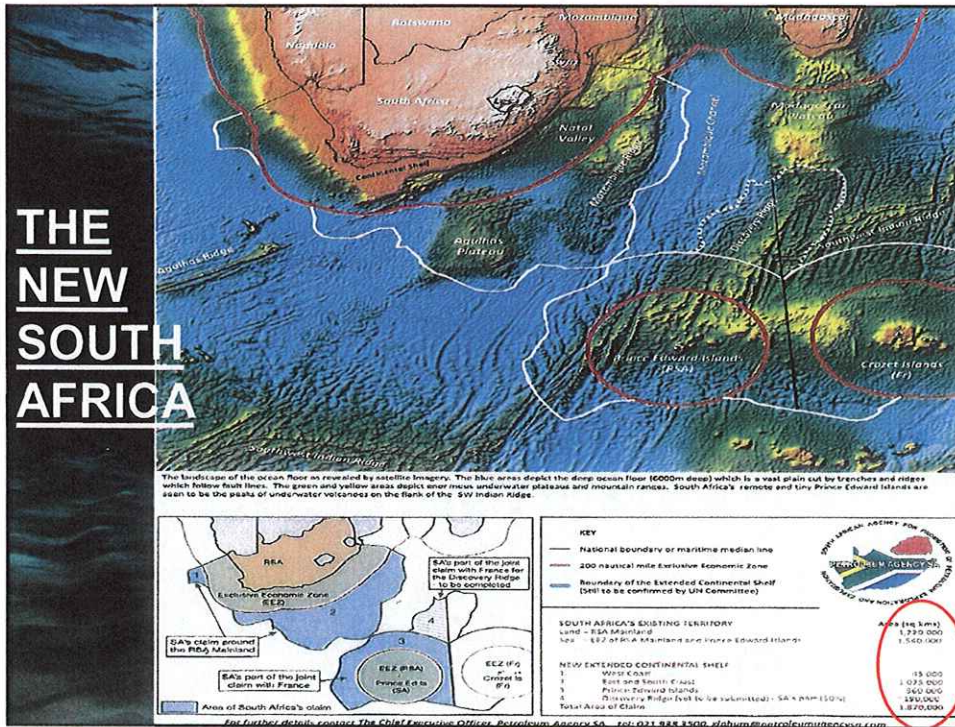
**Portfolio Committee Hearing**

**Tuesday 05 June 2012**

*André Share  
Alan Boyd & Ashley Johnson*

**Policy and Legislative Mandate**

- National Climate Change Response White Paper.
- Integrated Coastal Management Act
- Other NEMA legislation (e.g. Biodiversity Act, etc.).
- Draft Policy on Ocean Management.

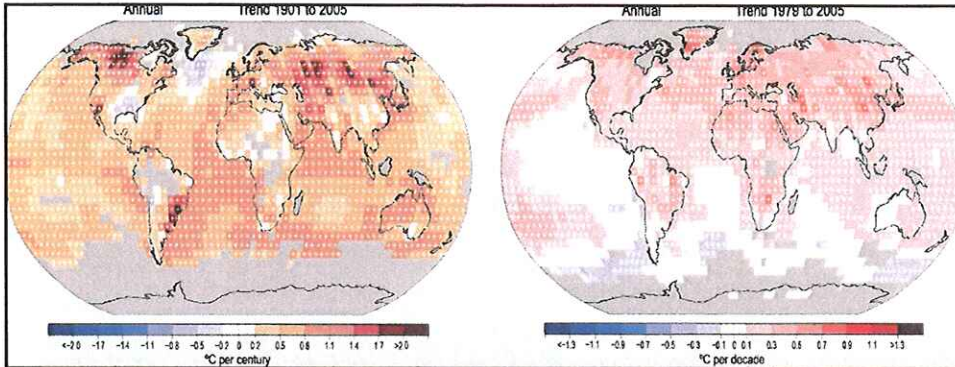


## IPCC 4<sup>th</sup> Assessment Report:

- Projected increase in average global temperature:
  - ~ 2 degrees Celsius by 2100 (max 5).
- Increased Droughts and Floods.
- Increased sea levels: ~ 0.5-1.5m by 2100.
- Increased frequency of Extreme weather events

## Scale?

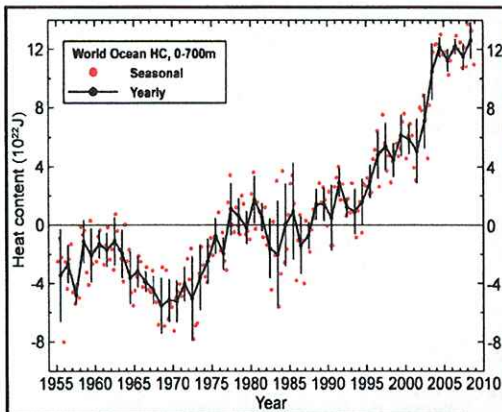
The smaller scale, the greater uncertainty  
 Inadequate ocean data for modeling and predictions.



Greater temperature increase occurred over last few decades



Coral bleaching

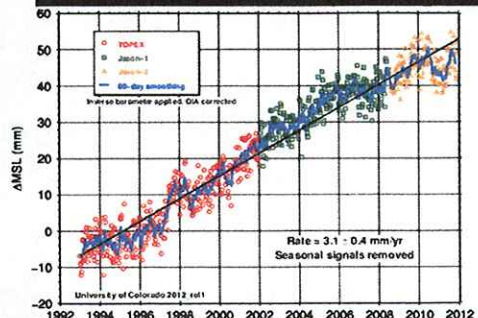


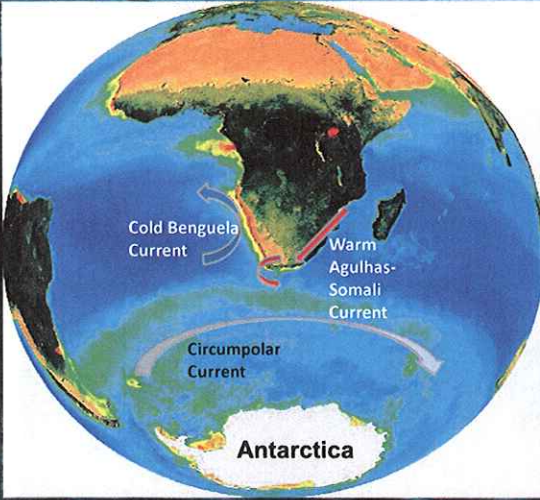
World's oceans are heating up as they absorb most extra heat being added to the climate system.

The graph shows changes in ocean heat content in joules (a measure of energy) compared to the 1955-2002 average.

Increased sea level due to:

1. Expansion due to ocean warming.
2. Melting of ice caps and glaciers.



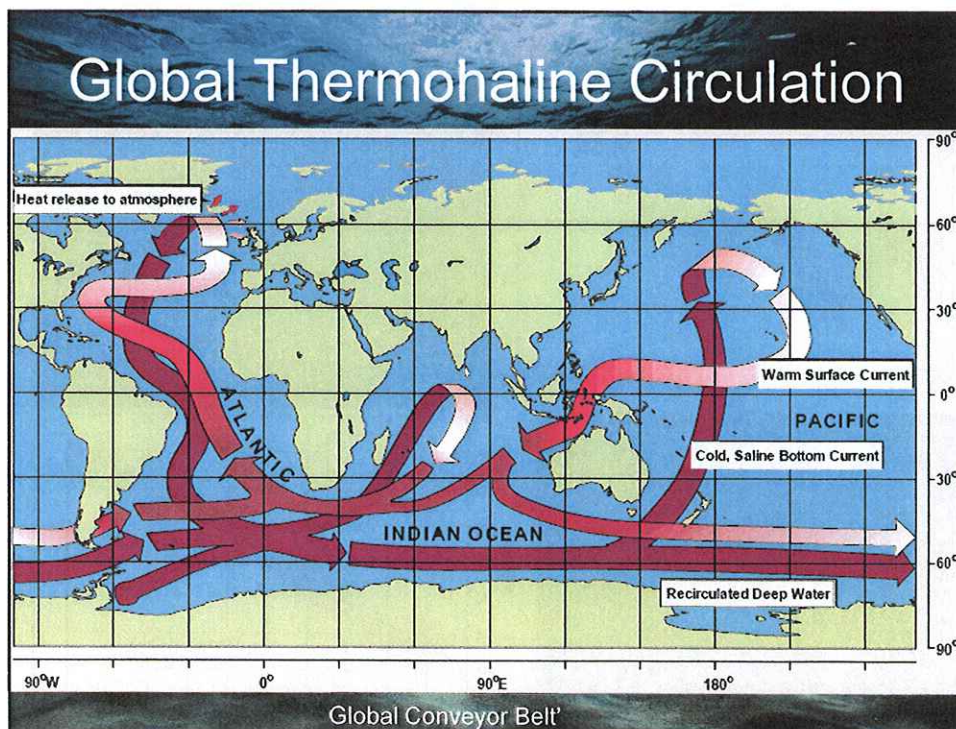


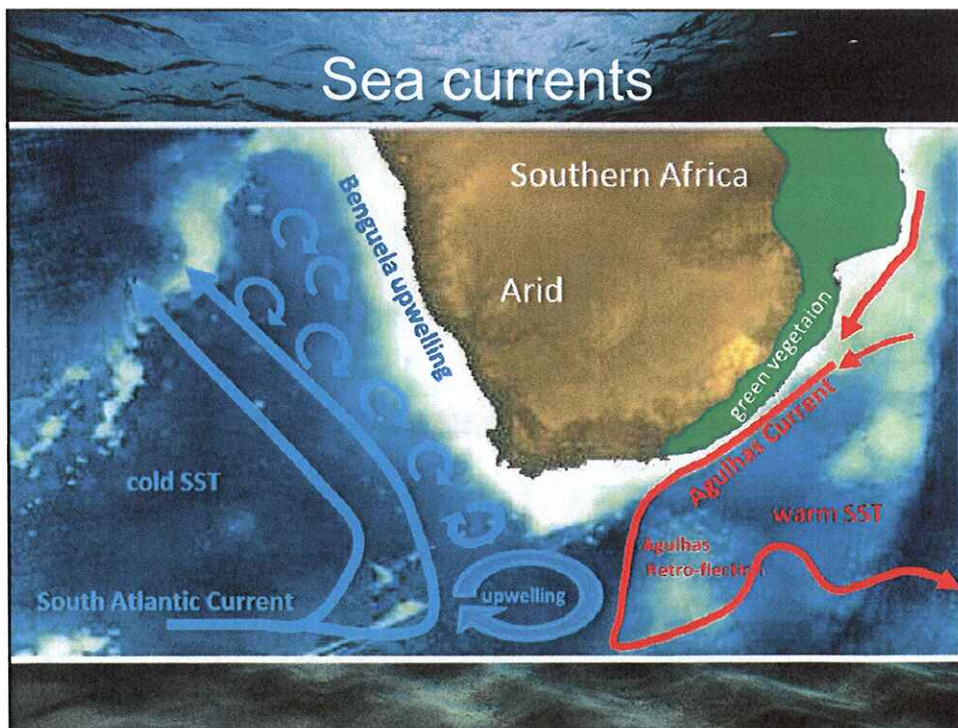
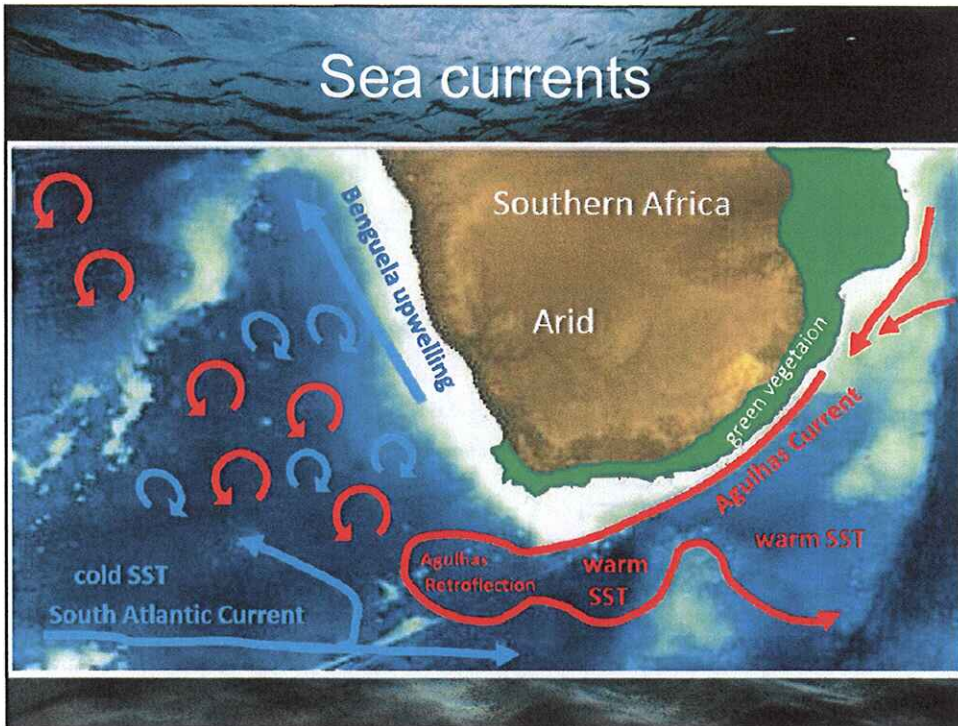
**Fundamental role of Oceans**

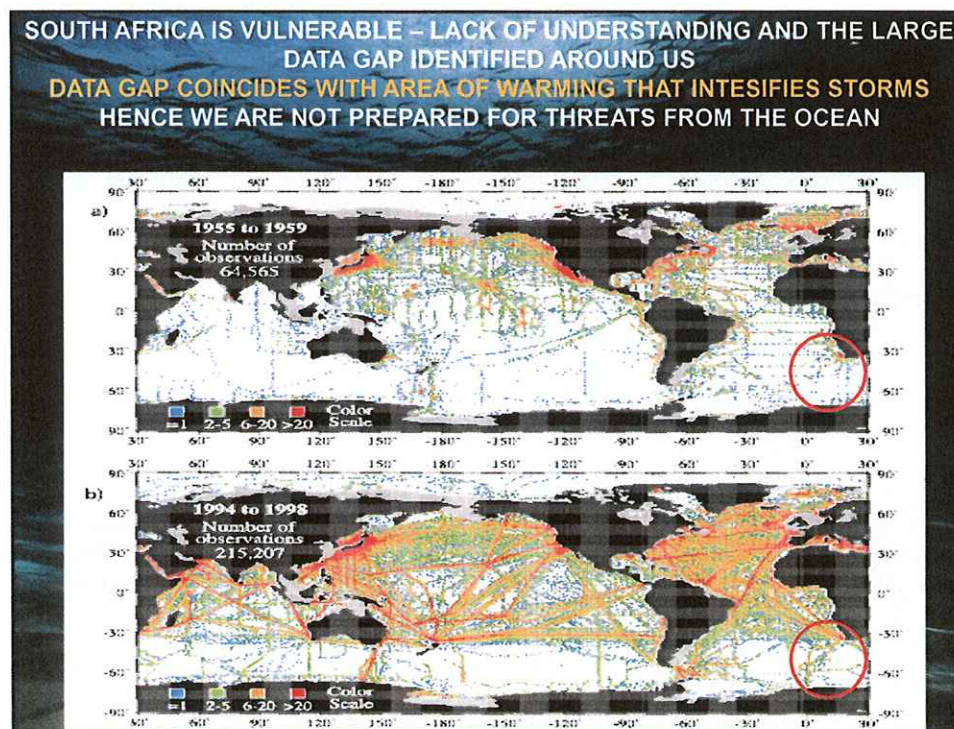
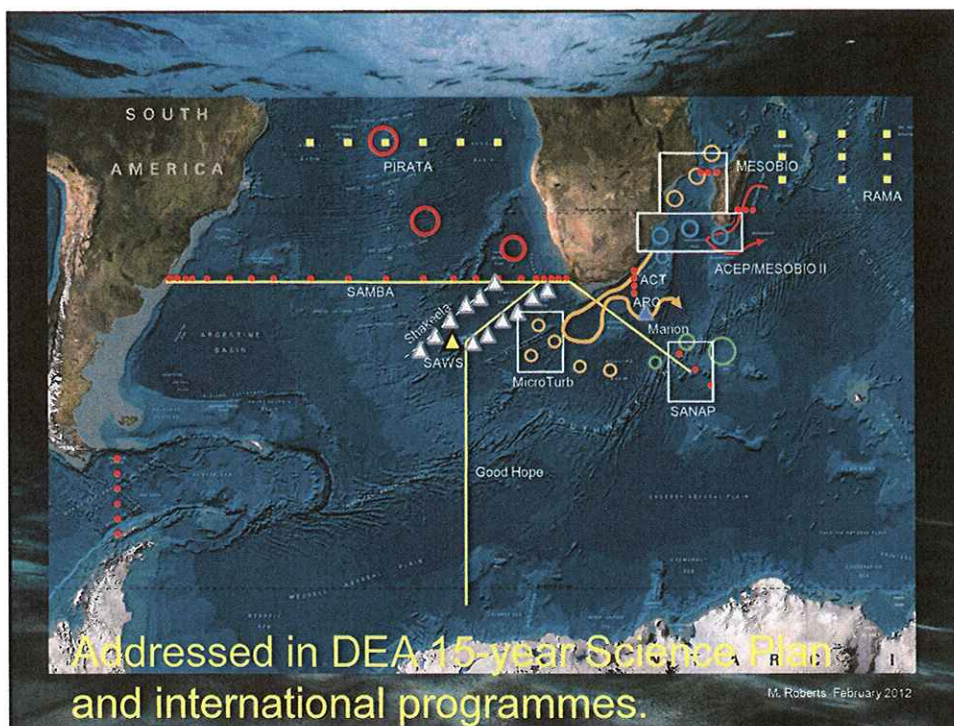
- Producer of Oxygen.
- Biggest natural absorber of CO<sub>2</sub> from atmosphere into ocean – 50% of excess CO<sub>2</sub>
- Result: Ocean becoming more acidic.
- Impact on shell fish and ecosystems.

• Ocean: mitigator of excess Carbon produced through Carbon capture and storage.

• Iron Fertilisation.












## Capacity and Infrastructure

**SA Agulhas II** Marion Island Base



Gough Island Station


## Partnerships

SANAE IV– Antarctic Base

## POSITIONS OF DATA SYSTEMS AROUND SOUTH AFRICAN COAST AND BEYOND

Home About Us Team News R & D **Data** Training Gallery Site Map Contact Us

Lat: 000° 00' 00" S Lon: 000° 00' 00" E

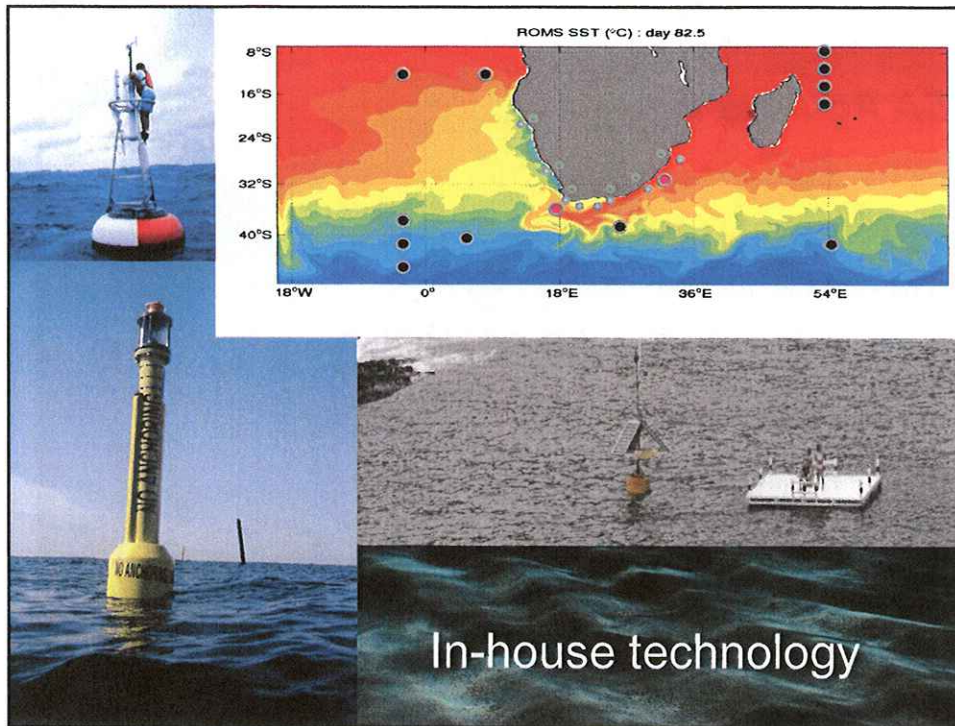


**Instruments**

- Underwater Temperature Recorder (Delayed)
- Underwater Temperature Recorder (Real Time)
- Data Buoy
- Future Data Buoy
- Super Buoy
- Future Super Buoy

Labels On/Off

## BUOY SYSTEMS WITHIN SA EEZ and SOUTHWARD



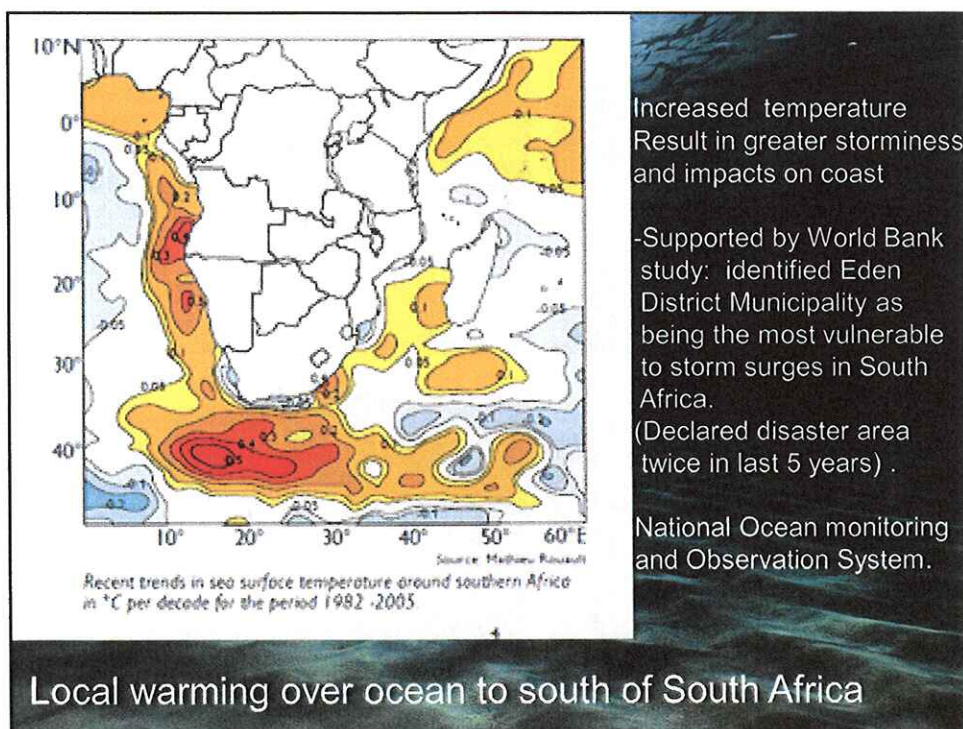
**OUTREACH PROGRAMME – to educate communities and decision-makers, based on good science leading to disaster preparedness!**

The collage features several scenes: a group of people gathered around a table in a community meeting; a computer monitor displaying a software interface with a map and various data points; and individuals examining educational posters or displays at an outdoor event.

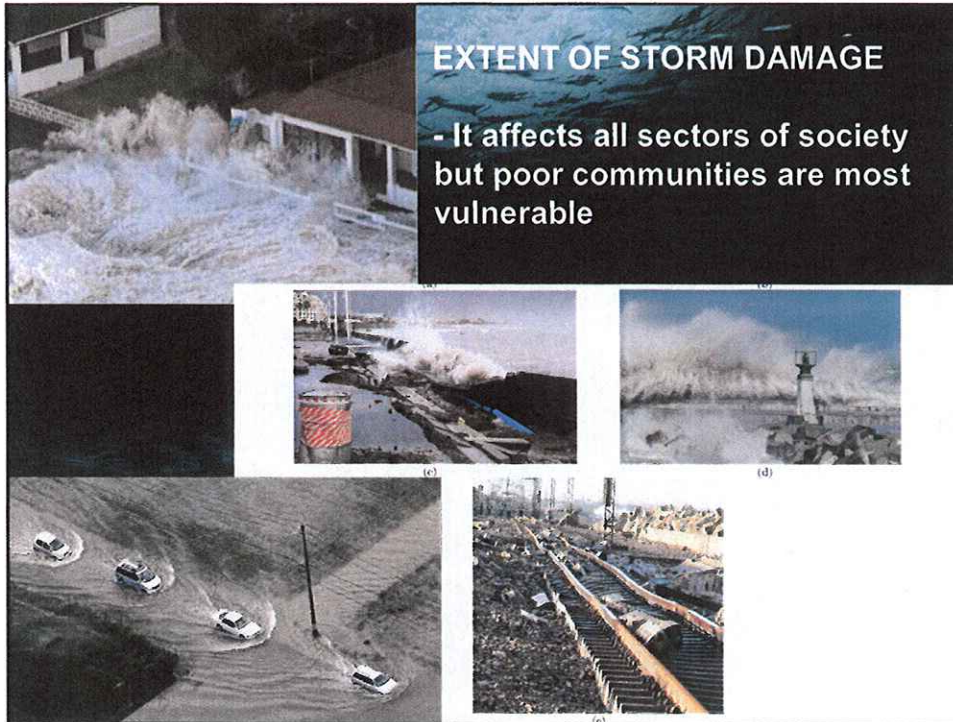


## Forms of impact

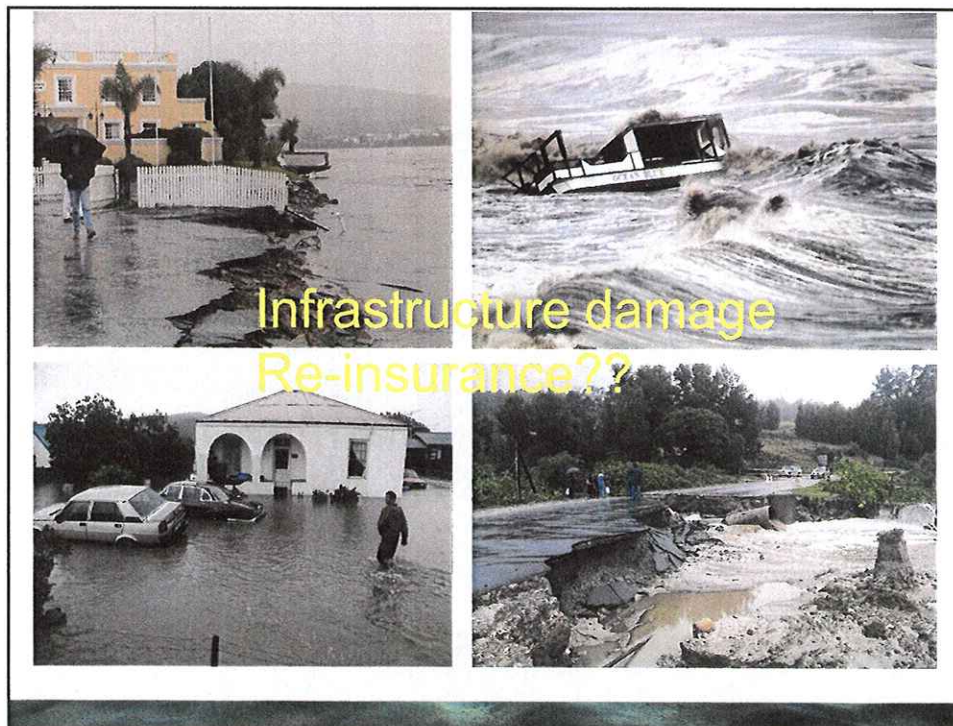
- **Global & Long-term:**
  - Ocean acidification.
  - Sea-level rise & changes in current patterns.
- **Local:**
  - Extreme weather events - increased storminess.
  - Flooding, inundation & coastline loss (erosion).
  - Changes in biodiversity and ecosystem functioning, migration patterns.

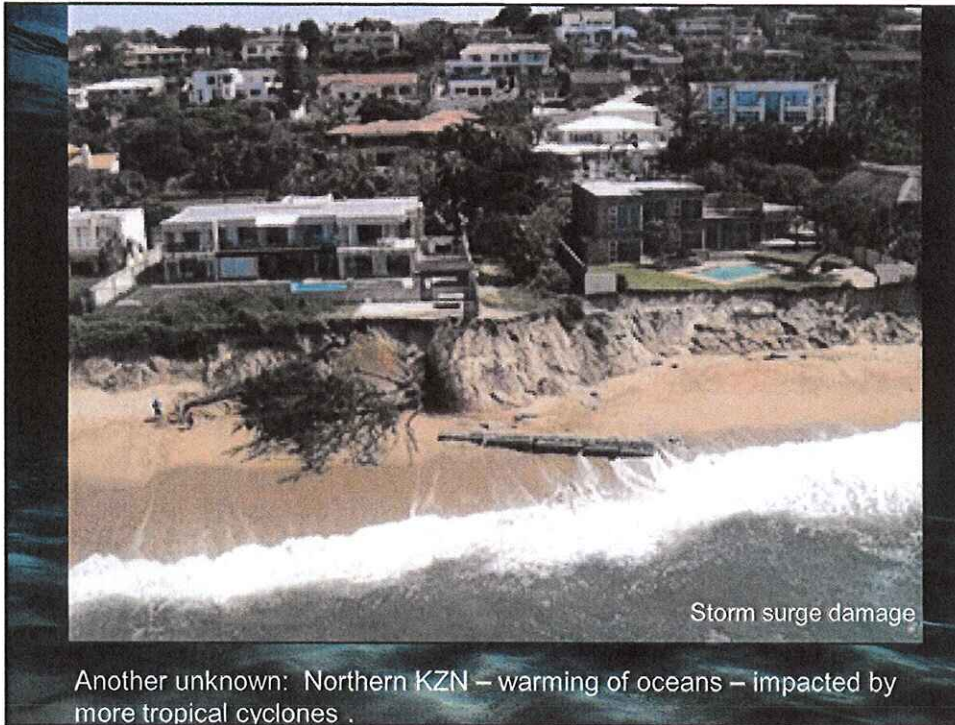


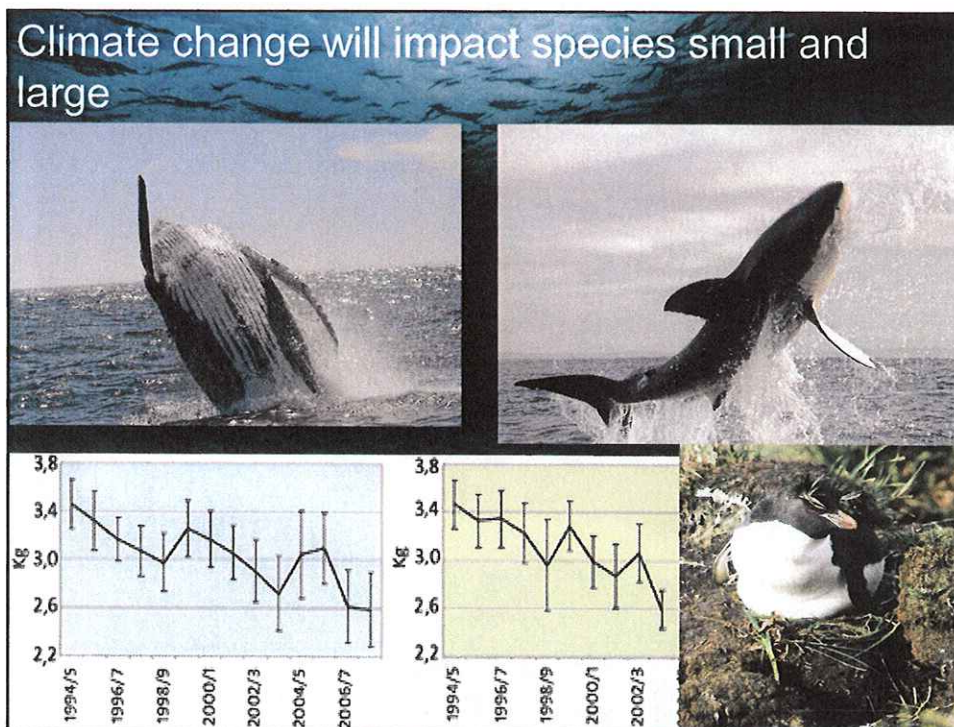
**EXTENT OF STORM DAMAGE**  
- It affects all sectors of society but poor communities are most vulnerable



**Infrastructure damage**  
**Re-insurance??**





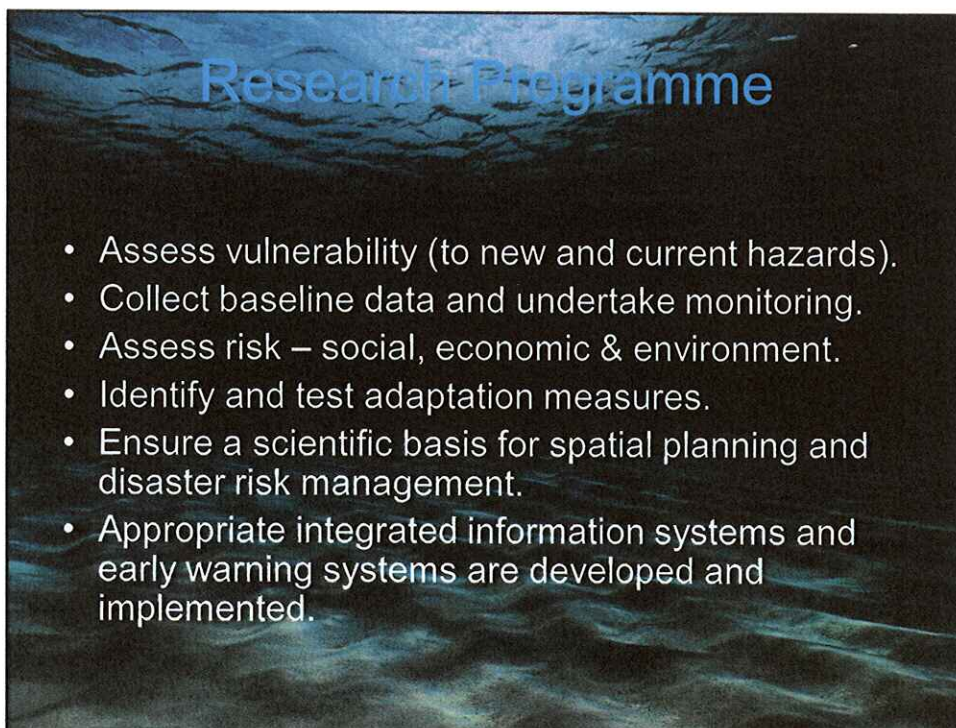
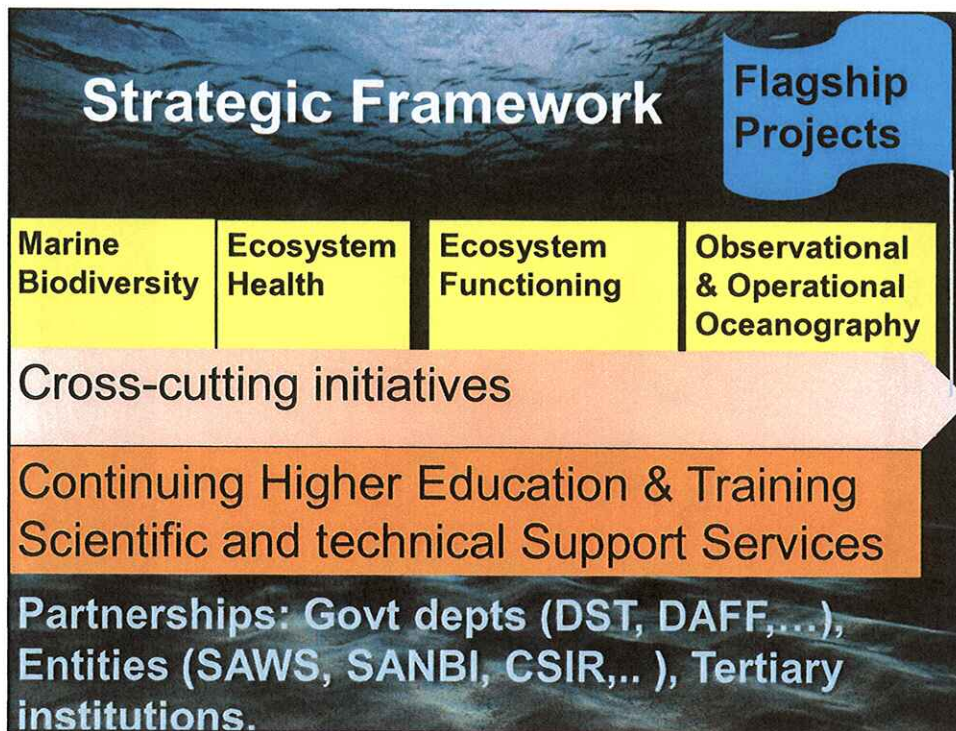


## Research Programme

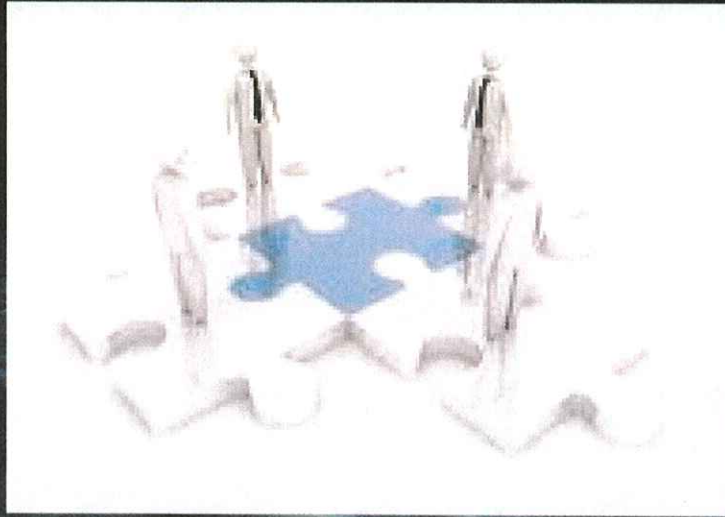
- 1<sup>st</sup> Phase – 15-year strategic science plan built on 5 decades of data collection and monitoring (not starting afresh).
- Understanding process, functioning.
- Impacts.

➔ Adaptation

- Research: multi-disciplinary & multi-institutional with strong focus on Capacity Development.
- Informed decision-making - Management and Conservation.



Putting puzzle together to address  
multitude of challenges



*Thank You*

