

Status and trends of the Corals of the Saba Bank

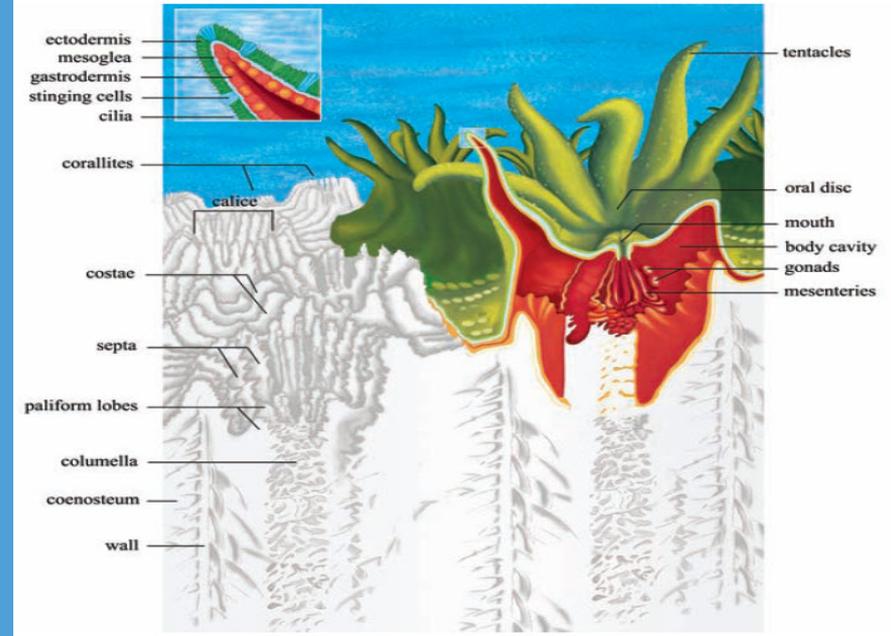
Erik Meesters

Wageningen Marine Research



The importance of corals: what is a coral?

- Animals with algae!
 - A symbiosis that leads to high growth (i.e. Calcium carbonate production).
 - Dependent on light.
 - Clonal: extremely long lived.



The importance of corals: Habitat builders



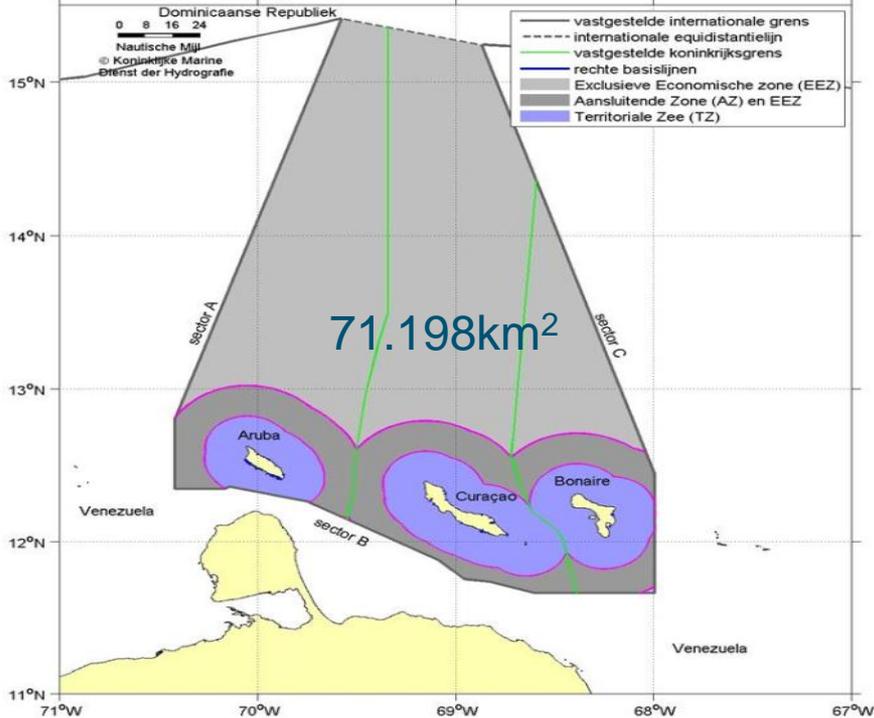
- Habitat builders
 - The coral reef is a building and the coral its brick!
- Living space and food for numerous fish, plants, invertebrates.
- Highly complex with many feedback loops.
- Highest biodiversity and productivity of any marine ecosystem.

The importance of corals: Services for humanity?

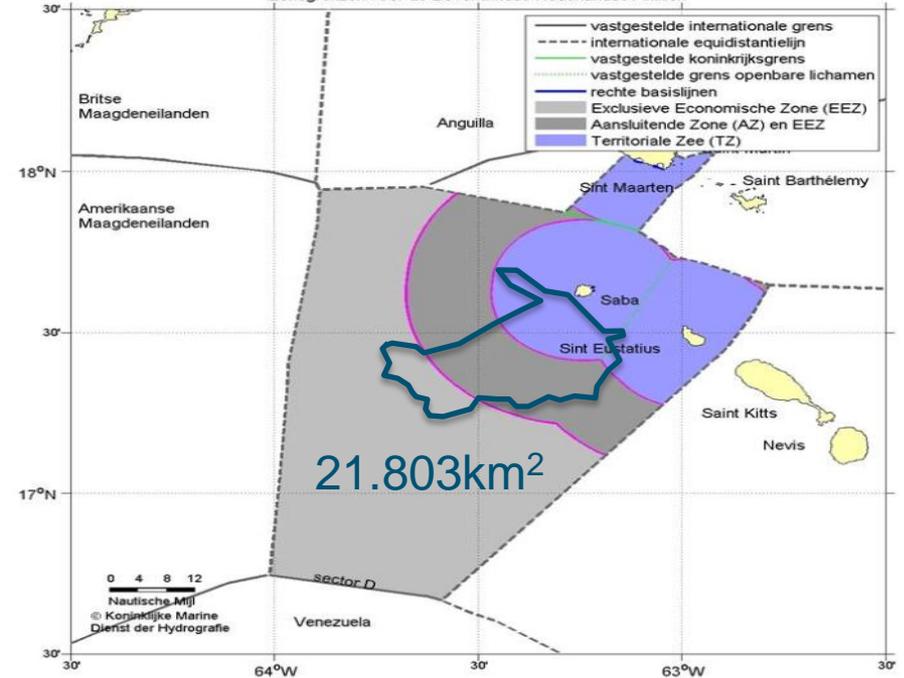
- Providing food for many subsistence fishermen and their families as well as commercial fishermen (primary and secondary production).
- Important for tourism (aesthetic values, cultural services).
- Important for coastal protection (regulating against extreme environmental conditions).
- Important for (undiscovered) medicines/maintenance of biodiversity/genetic resources.
- Important for sand production (e.g. building material).

Exclusive Economic Zone (EEZ) Dutch Caribbean

Zonegrenzen voor de Benedenwindse Nederlandse Antillen

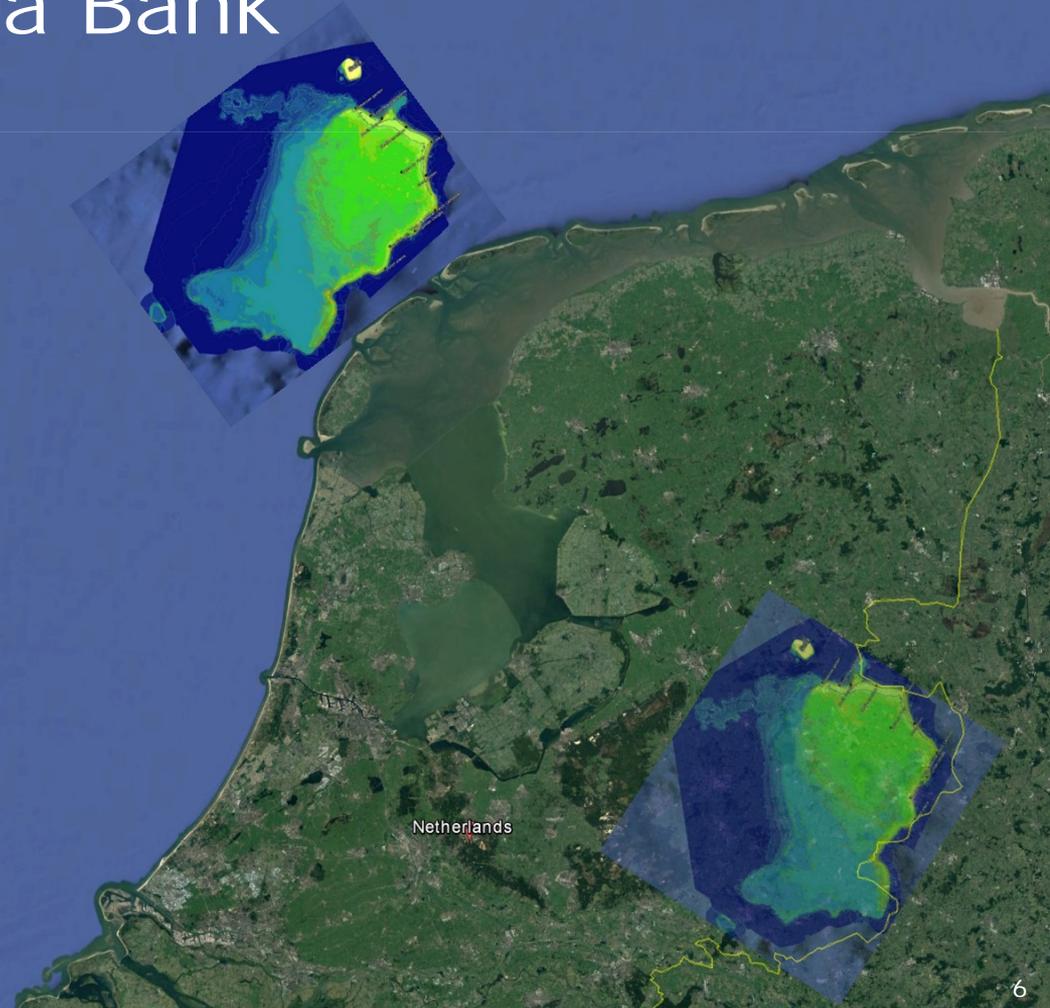


Zonegrenzen voor de Bovenwindse Nederlandse Antillen

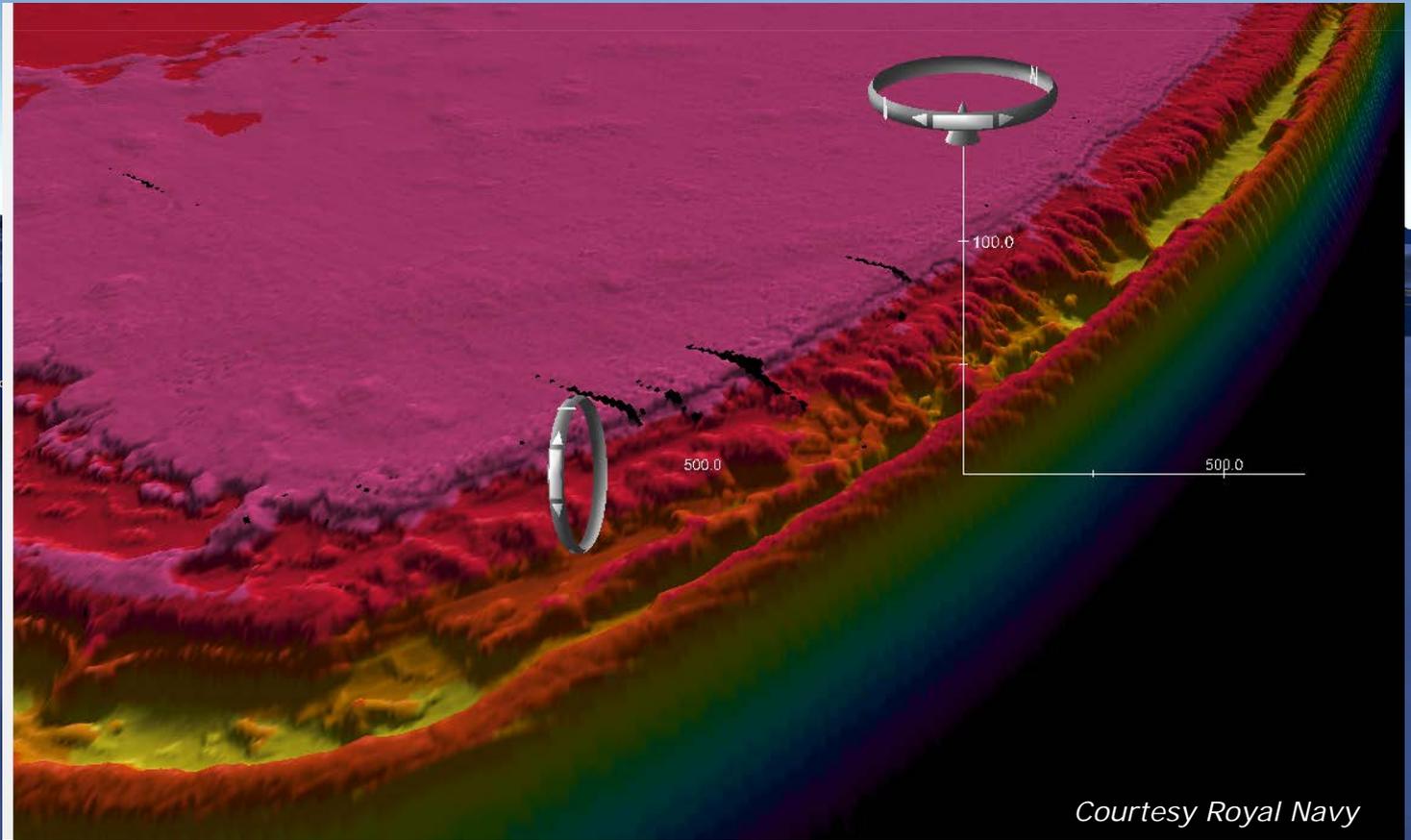


The size of the Saba Bank

- Compared to the Netherlands



Bathymetry



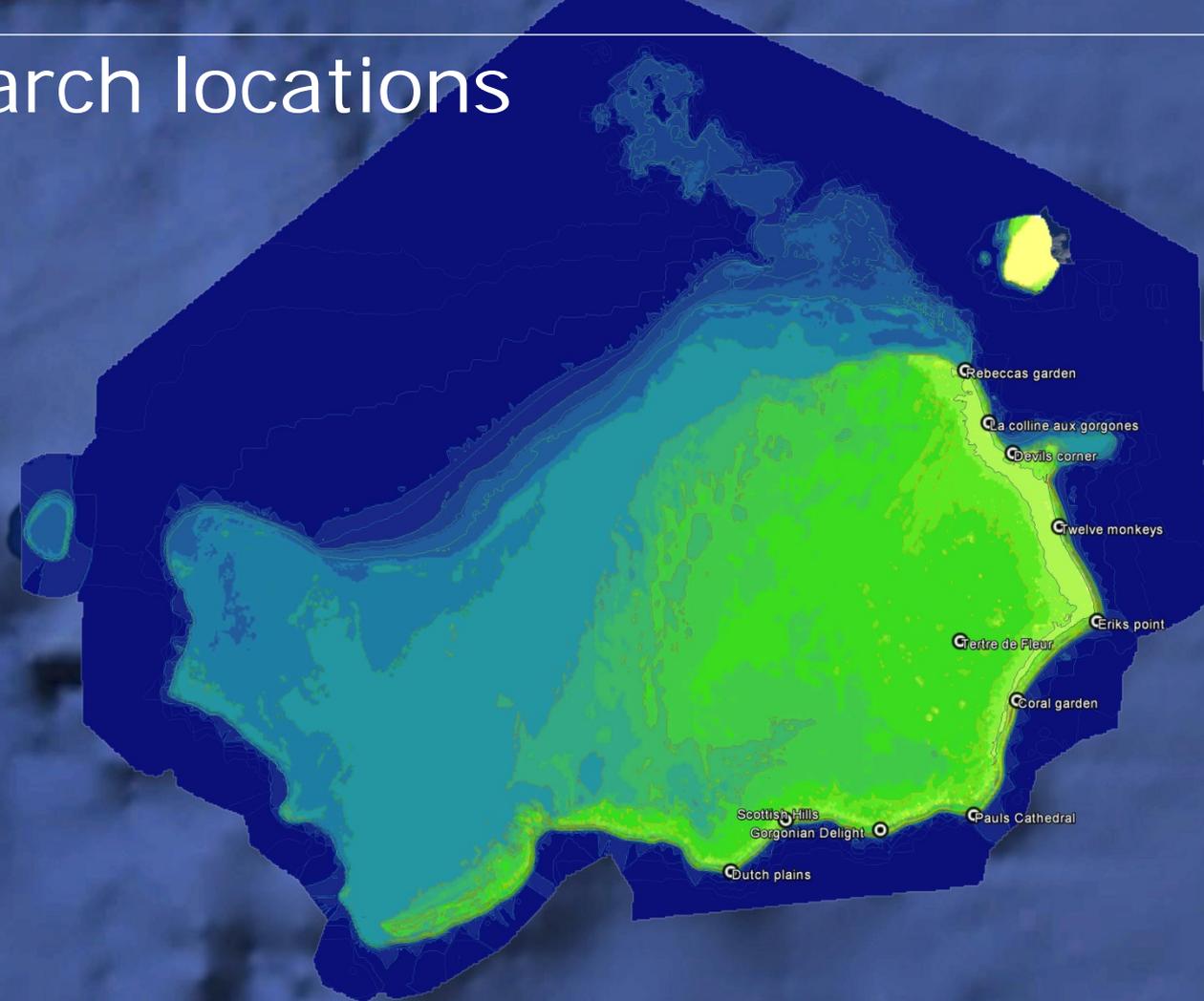
Courtesy Royal Navy

Saba Bank expeditions

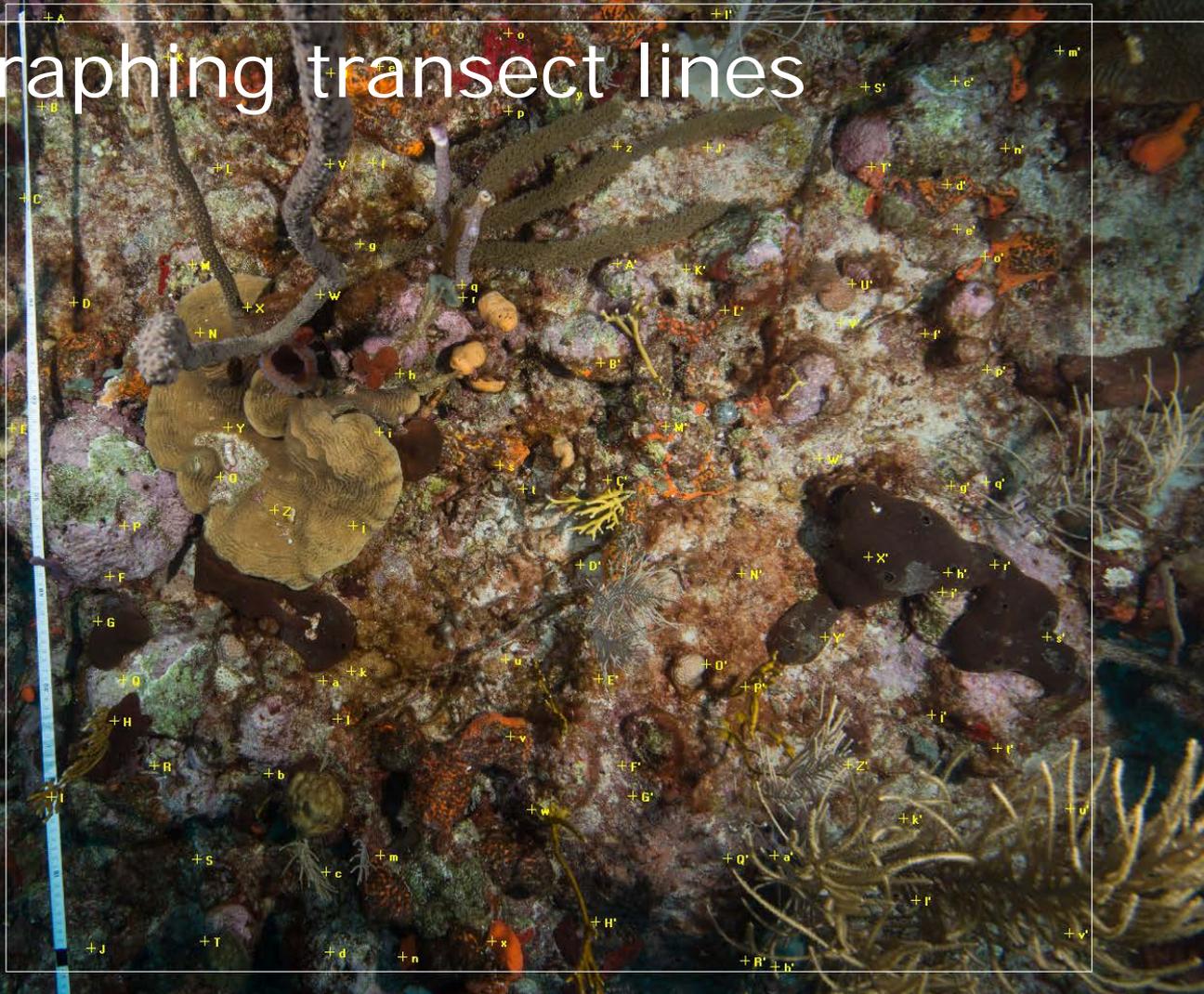
- Now surveyed:
 - 1977, 25 diving stations (Van der Land)
 - 1996, 7 dive locations (Meesters)
 - 1999, 3 dive sites (Klomp & Kooistra)
 - 2006, 17 dive sites (Conservation International)
 - 2010, 200 video drops (CARIPES)
 - 2011, 10 sites, app. 1500m (IMARES)
 - 2013, 11 sites, app. 1650m (IMARES)
 - 2015, 11 sites, app. 1650m (IMARES)
 - 2016, 30 sites, app. 20.000m (NIOZ)

Research locations

- 2011
- 2013
- 2015



Photographing transect lines



Navigation and tool icons: Home, Back, Forward, Print, Refresh, Full Screen, Close.

Cache Header Data

Retrieve Header Data

View/Edit Header Data

Save Image with Points

Zoom: 100%

Lock, Rotate, Mwheel

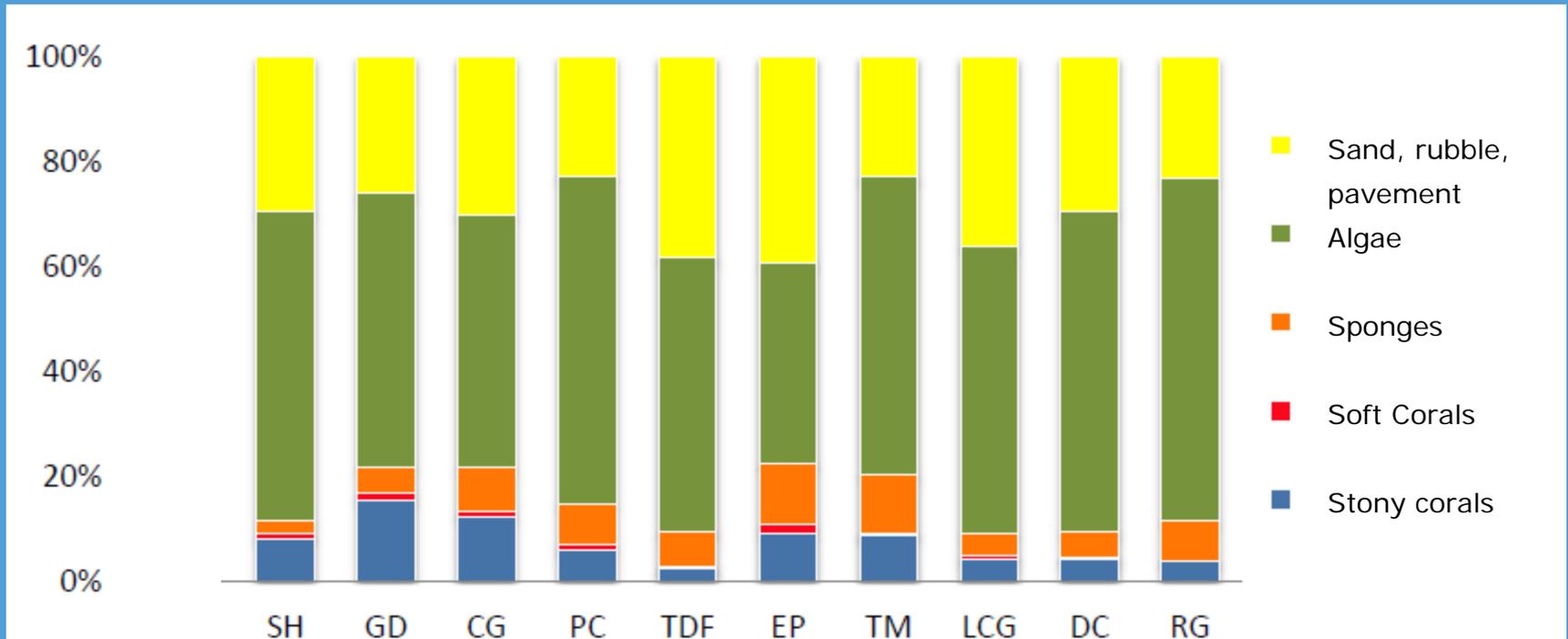
100% 300% 600%

Corals of the Saba Bank



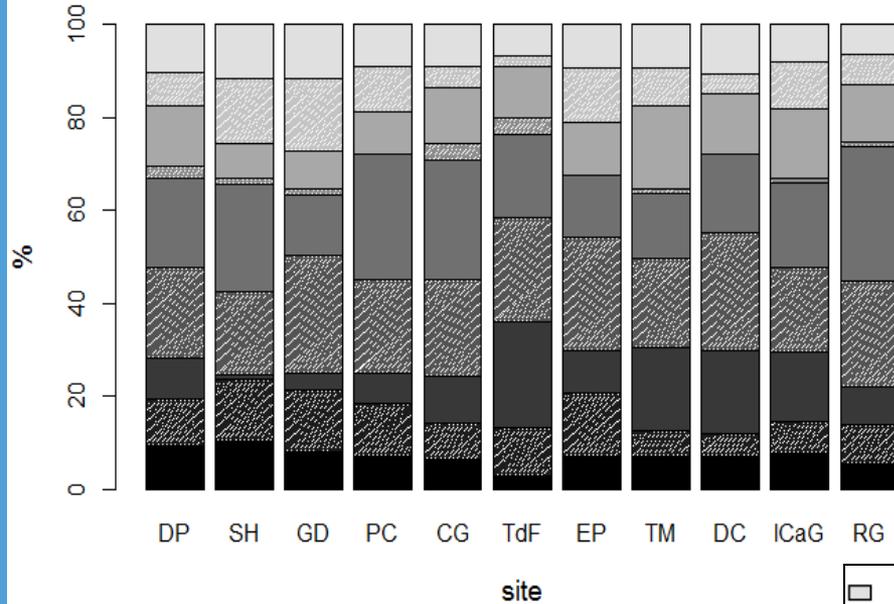


2011 survey: main bottom cover

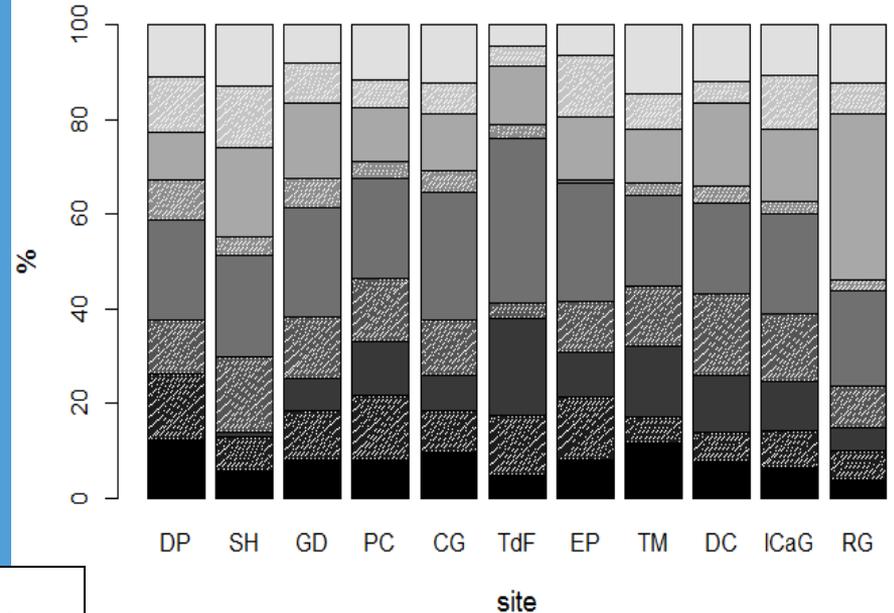


Status and trends of corals of the Saba Bank

A. Benthic cover in 2013



B. Benthic cover in 2015



- CCA
- ▒ gorgonian
- ▓ sand
- substrate
- cyano
- ▨ turfs
- ▩ macroalgae
- ⋄ sponges
- corals

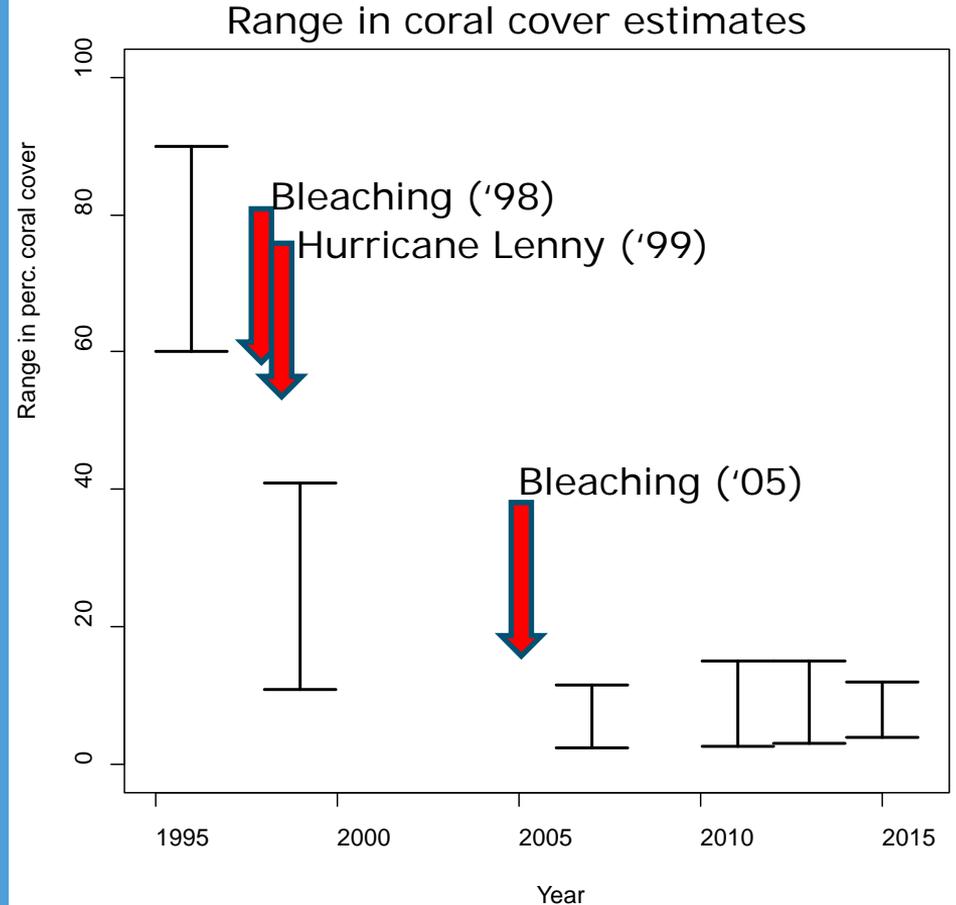
What has happened?



Historic data for coral cover

The last 20 years severe events have severely reduced the coral cover of the Saba Bank.

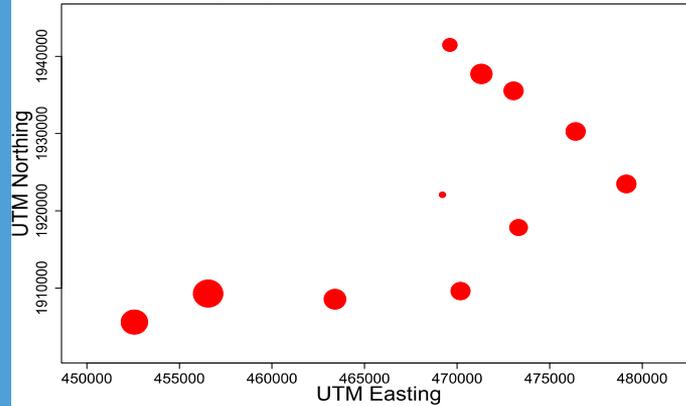
It is not clear if the coral community will be able to recover nor do we know the exact impact of fishing on the capacity of corals to bounce back.



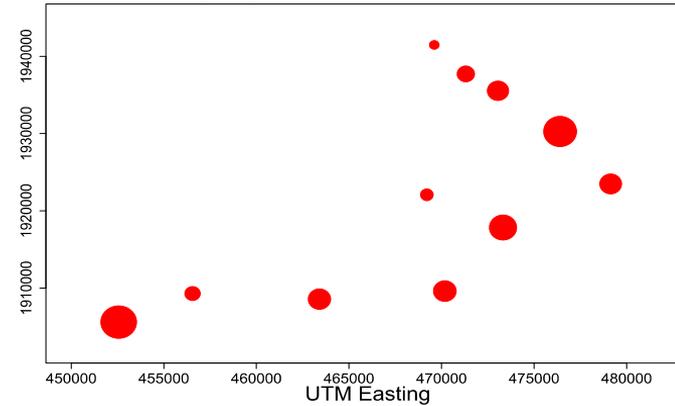
Any reasons for optimism?

- + No land based pollution
- + Little disease
- + Large predators
- + No runoff
- + high water exchange
- Climate change
- Lion fish
- Fisheries
- Hurricanes
- Few grazing sea urchins

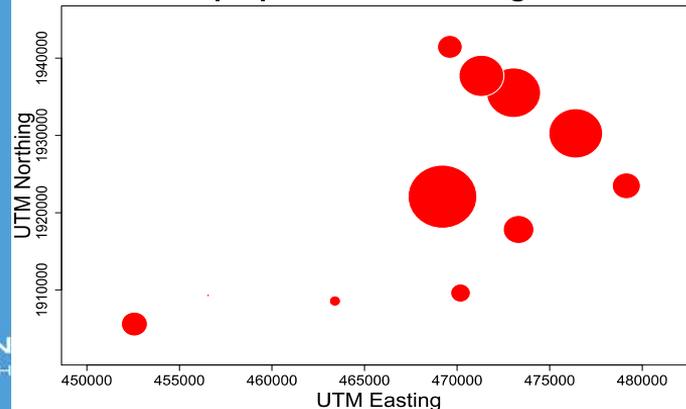
C. proportion of corals 2013



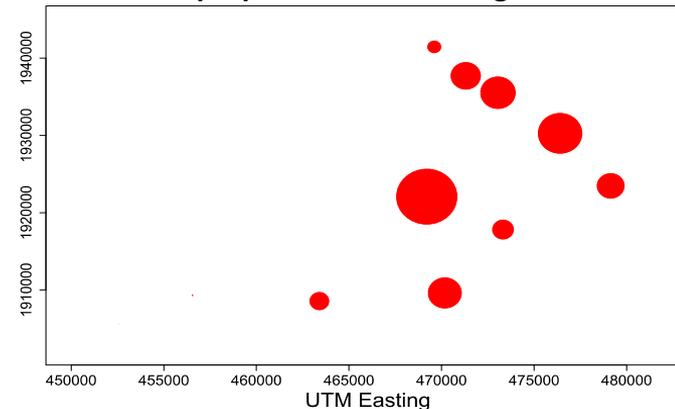
D. proportion of corals 2015



E. proportion of macroalgae 2013



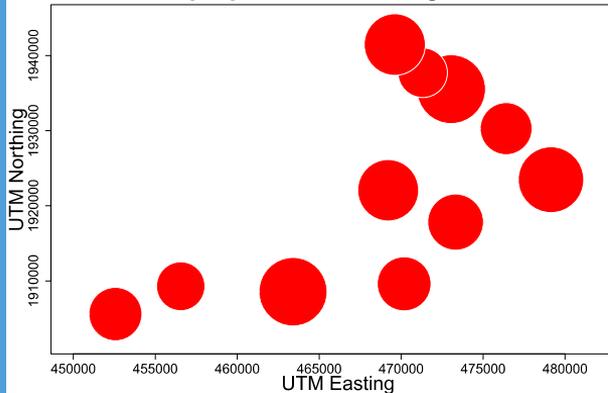
F. proportion of macroalgae 2015



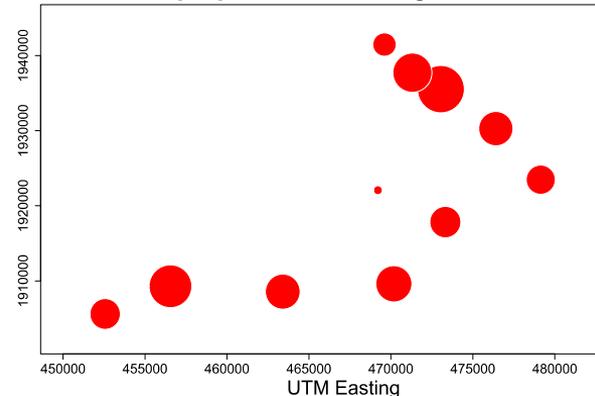
Or not?

Is the Caribbean becoming eutrophied?

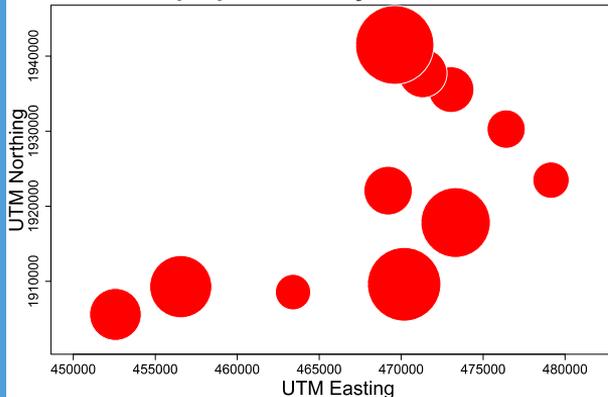
G. proportion of turf algae 2013



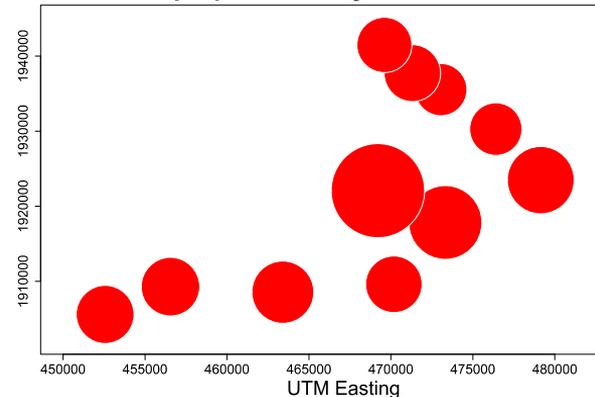
H. proportion of turf algae 2015



I. proportion of cyanobacteria 2013



J. proportion of cyanobacteria 2015



Many different ecosystems on the bank

- Coral reefs
- Fields of calcareous algae
- Sargassum fields
- Algal fields
- Sand plains



Concluding on the Status and Trends of the corals of the Saba Bank

We need to
Improve resilience of Sababank
to cope with the effects of
Climate change.



Sustainable?



Improving?



Resilient enough?



Thank you

Thanks to: Lisa Becking, Oscar Bos, Mirthe Wiltink, Jean Philippe Marechal, Kai Wulf, Fleur van Duyl, Ingrid Van Beek, Paul Hoetjes, Tadzio Bervoets, Joe Phillipson, Dahlia Hassel, Bert Hoeksema, Franck Mazeas, Maggy Nugues, Ewan Tregarot, Marine Fumaroli, David Vermaas, Hans Verdaat, Klaus Lucke, Steve Piontek, Steve Geelhoed, David Stevens, **Royal Dutch Navy, WWF, Ministry of Economic Affairs**, The different crews of the **Caribbean Explorer**, and many more.

