

Holopelagic Sargassum



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What is it?

Brown macroalgae (seaweed)

Pelagic: from classical Greek means open sea.

Holopelagic: All of life is at sea.



Clings (?) together in large mats and long lines.

Can be ~1-2 m thick.

Reproduces vegetatively – breaks and new growth.

Provides a unique open sea ecosystem.



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Fact Sheet

Pelagic Sargassum Influx in the Wider Caribbean

Massive quantities of pelagic sargassum occurred throughout the Caribbean in 2011, impacting aquatic resources, fisheries, shorelines, waterways, and tourism. Similar events have occurred since then, with a particularly heavy influx of sargassum observed during 2015. This Fact Sheet seeks to share the state of knowledge about the sargassum influx and to promote the adoption of best management practices. Some of the questions that we're frequently asked are:

What is it? Pelagic sargassum is a brown alga, or seaweed that floats free in the ocean and never attaches to the ocean floor. These free-floating forms are only found in the Atlantic Ocean. Sargassum provides refuge for migratory species and essential habitat for some 120 species of fish and more than 120 species of invertebrates. It's an important nursery habitat that provides shelter and food for endangered species such as sea turtles and for commercially important species of fish such as tunas. There are two



Left: *Sargassum natans*; Right: *Sargassum fluitans*

Photo: H. Oxenford



Photos: E.Doyle

What about fishers and impacts of the sargassum influx? Since the influx of sargassum is a relatively new topic there is only limited experience in relation to its management, especially in dealing with impacts on fishers and interactions with boats and fishing gear. Fishers might consider the following:

- The sargassum influx does not necessarily affect the same location in the Caribbean all year, so there will likely be periods when a particular fishing area is less affected by sargassum;
- Impacts are being seen on different types of fisheries, sometimes with a prevalence of juvenile fish which are vulnerable to over-fishing;
- Sargassum has impacts on fishing gear and motors. Fishers are coming up with devices to free rudders of weed, to back up engines to free propellers, and are using strainers across the water intakes to prevent blockage and engine over-heating;
- There is a need to be prepared to deal with gear complications plus possible loss of gear or



Sargassum life Photos: D.J. Southall

What are some good practices to apply if removing sargassum from beaches? A review of experiences from beaches affected by sargassum in the Gulf of Mexico at the 2015 Sargassum Symposium hosted by Texas A&M University Galveston Campus, NASA Stennis Space Center and Galveston Island Park Board of Trustees highlighted that:

- Beach cleaning should be done only in the presence of monitors who check for wildlife prior to any cleaning, and operators must respect no-go areas such as sea turtle or bird nests;
- Patience is required, and be aware that it's not necessarily desirable to clean beaches that are already facing a precarious erosion situation, that are essential habitat for sea turtle nesting or where grooming will increase wind-blown sand and worsen erosion;
- Removal of sargassum should be from and to agreed areas only, and equipment should use the same route on to and off the beach to prevent harming dunes, destroying dune vegetation and turtle or bird nests;
- There is a difference between achieving a naturally clean beach and an over-sanitized beach - constant grooming

Pelagic Sargassum Fact Sheet

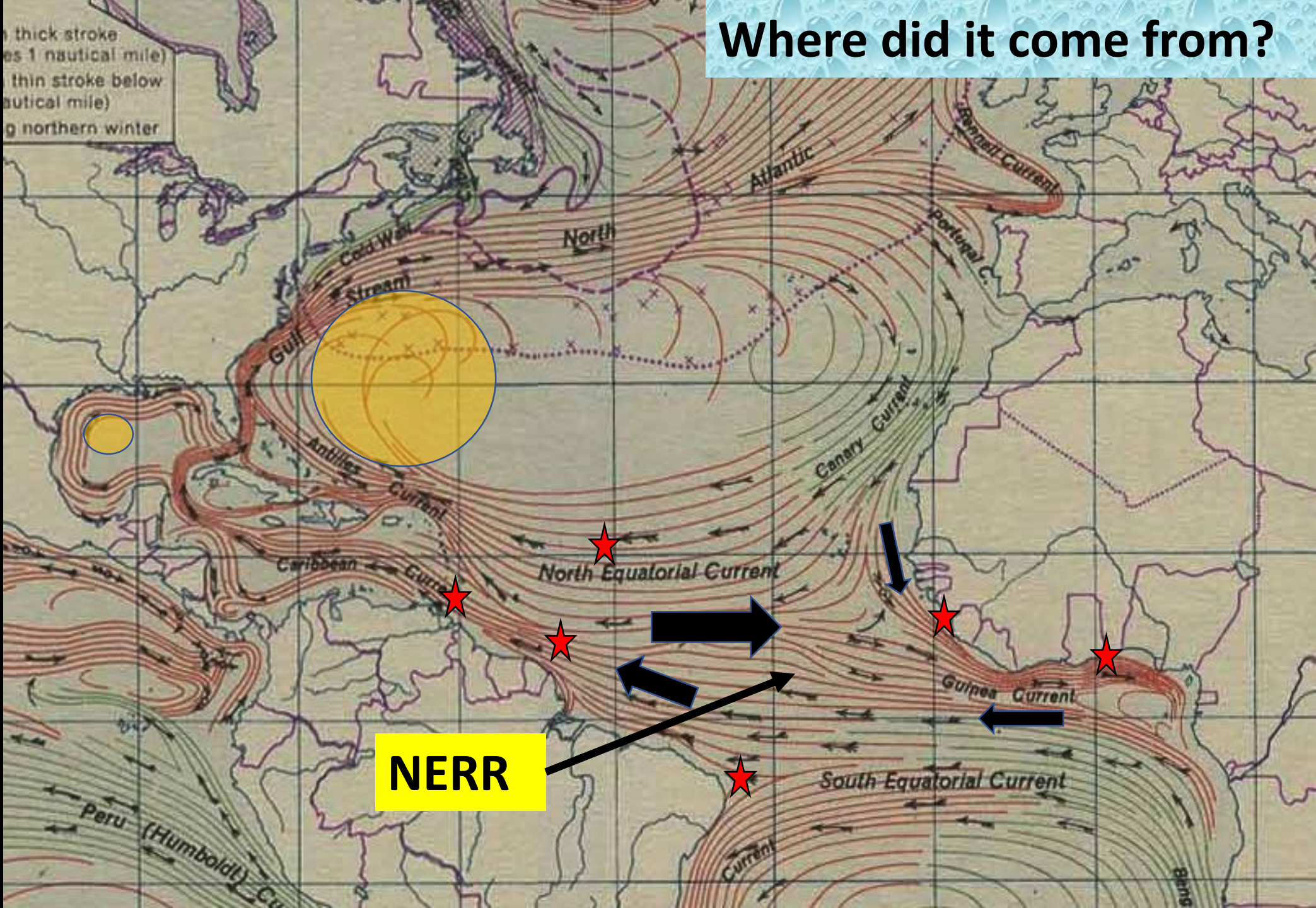
E. Doyle and J. Franks

What is it?

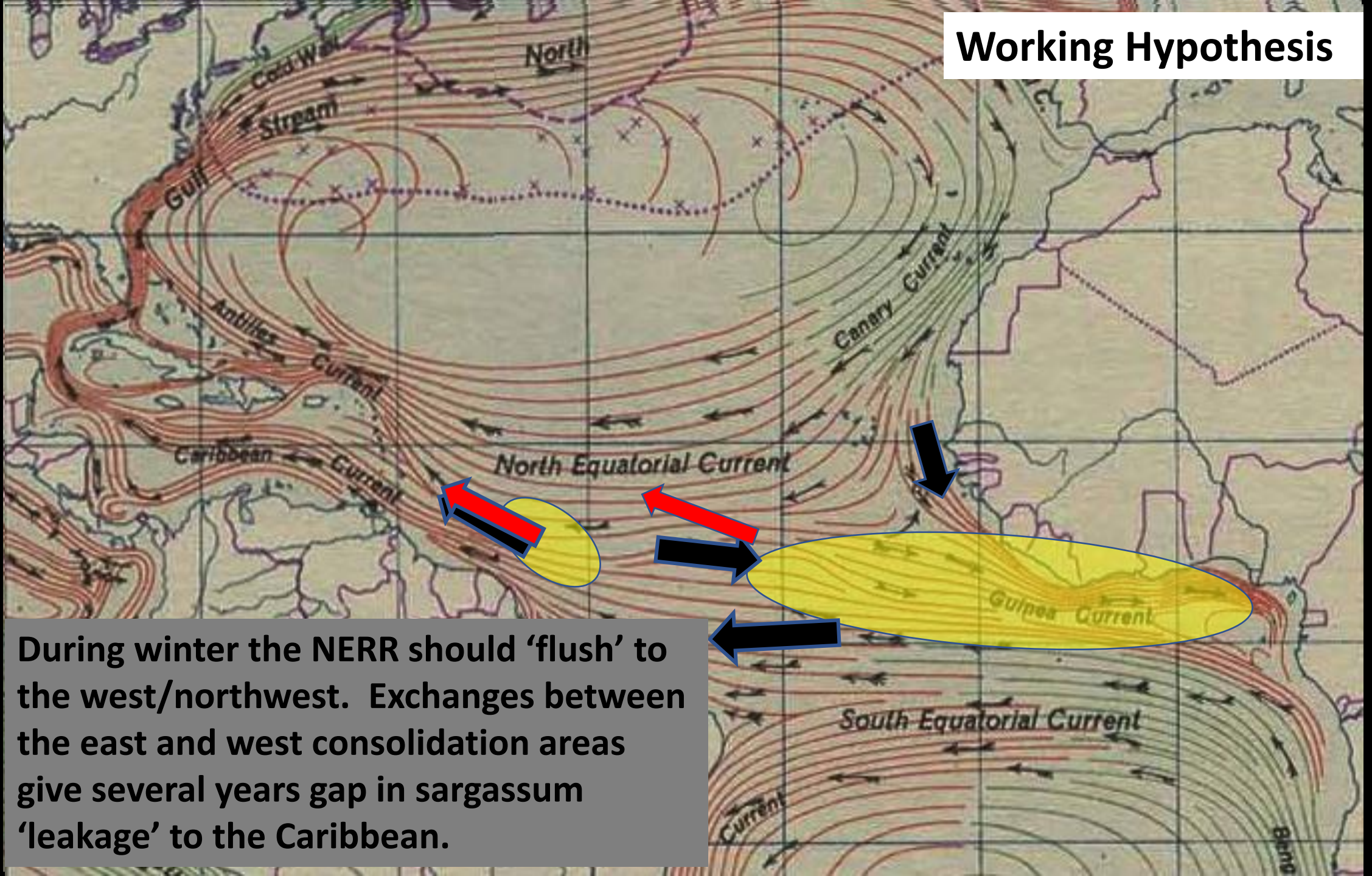
Mitigating impacts on Fishers.

Removing from beaches.

Where did it come from?



Working Hypothesis



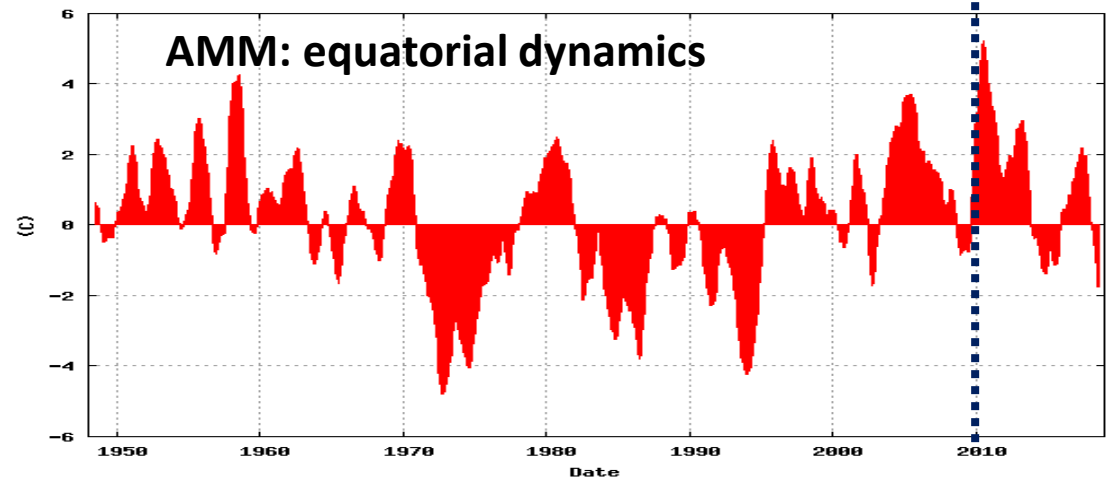
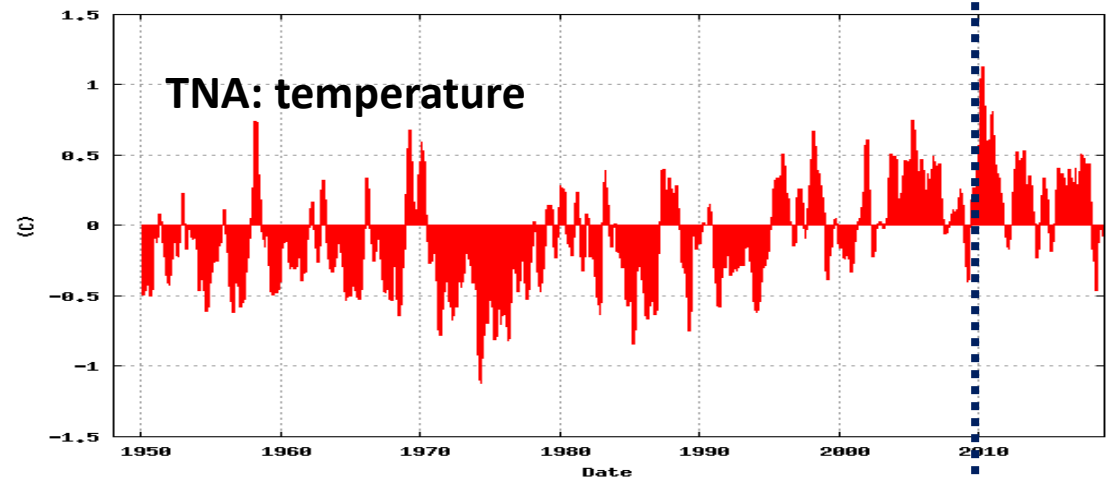
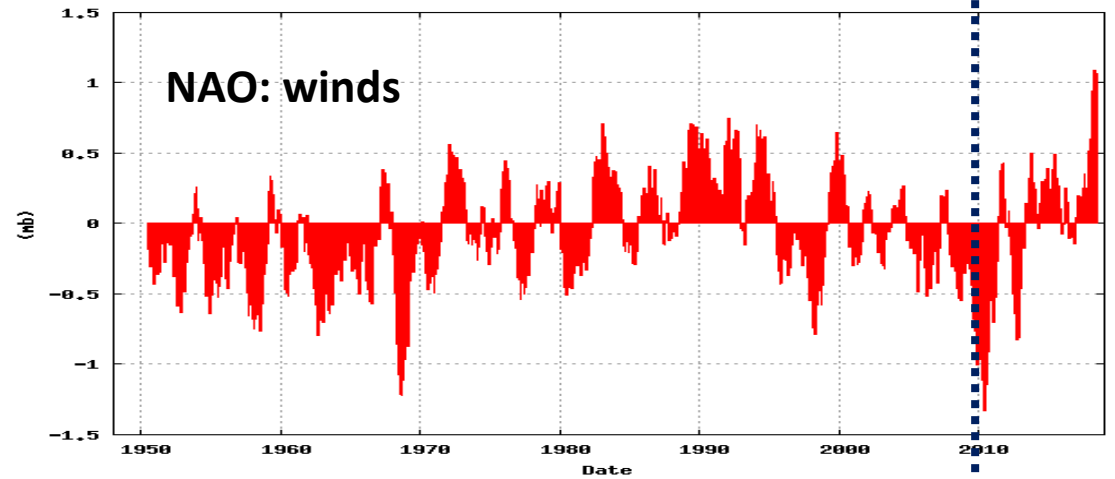
During winter the NERR should 'flush' to the west/northwest. Exchanges between the east and west consolidation areas give several years gap in sargassum 'leakage' to the Caribbean.

Where did it come from?

- Most likely from the North Atlantic in sufficient quantity (critical mass?) to 'bloom' in the NERR before winter current reversals and flushing occurs.
- Once in the NERR it takes different routes from different bloom/consolidation regions to different parts of the Caribbean in different seasons.

Why Now?

- Important Atlantic climate peaks (pos and neg) were coincidental and large in 2010-2011.
- However, no 'smoking gun.'
- Non-linear bio-physical interaction due to large decadal scale climate oscillations may have played a role.
- African dust? Iron, manganese and changing ocean PH.



What are the negative Impacts?

- Tourism and Health
- Shore ecology
 - Turtle nesting
 - Damage from removal
- Coral Reefs
- Sea grasses
- Turtle and porpoise drowning
- Fisheries



**Sierra Leone, Andrew
Huckbody**



South Coast, Barbados, - July 2017

Hazel Oxenford



Brigitte Gavio

Biological Impact of *Sargassum* on the coast.



Mustique – July 2014

Radio Grenadines



Barbados Sea Turtle Project



Catch of Flyingfish 1994-2017 Barbados

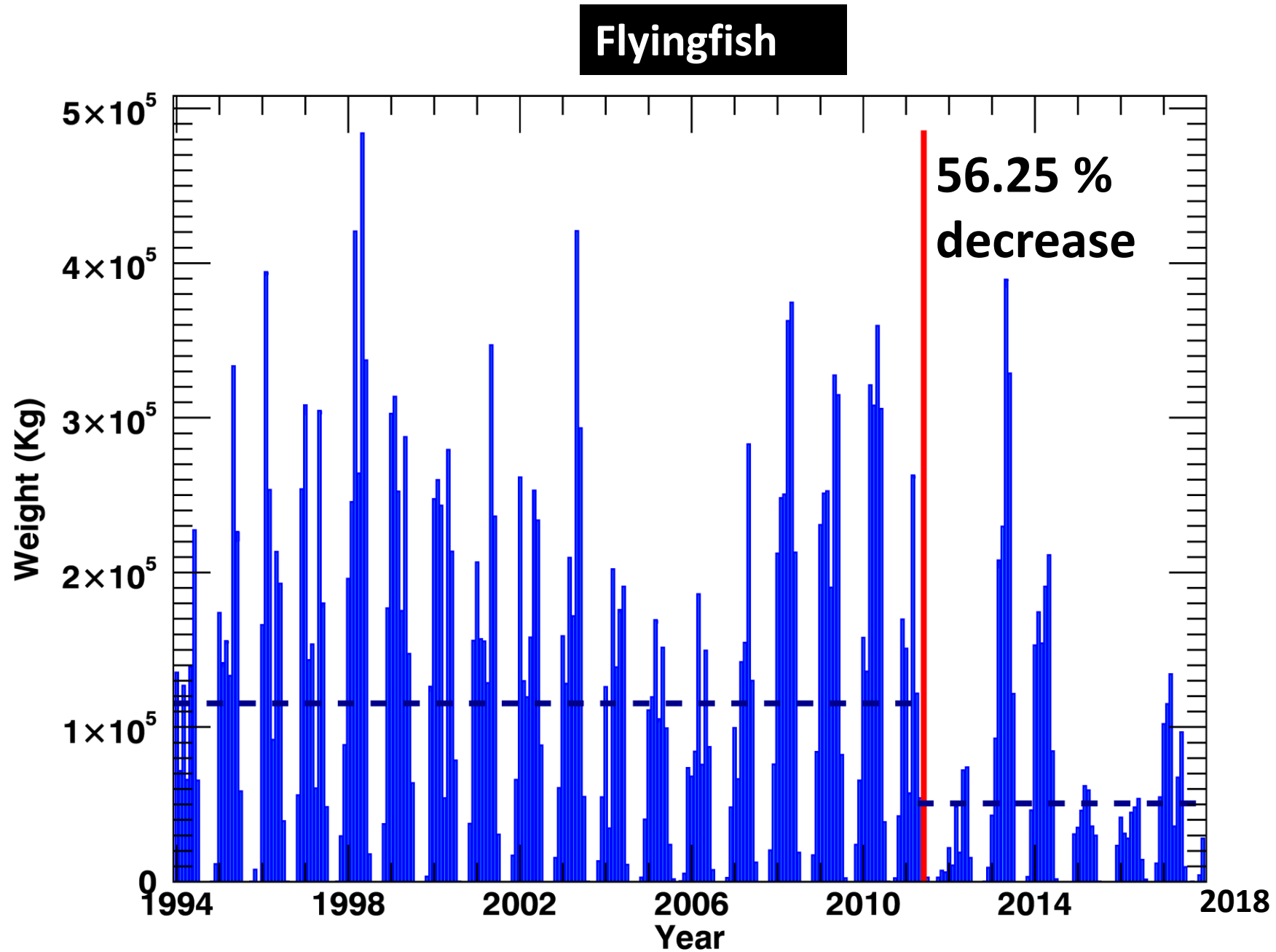
Red line indicates first report
of *Sargassum* event at
Barbados.

Horizontal dashed lines are
mean catch before and after
June 2011.

Flyingfish use *Sargassum* to
attach egg masses.

Flyingfish being replaced by
Almaco Jacks in the fisheries.

Dolphinfish are juveniles.



Take away messages

- It is very doubtful that the Sargasso Sea simply expanded its territory. The NERR appears to be a separate consolidation and bloom area that was seeded by the Sargasso Sea.
- The new area extends across the Atlantic from Brazil to West Africa. *Sargassum* on the coastline is not just a 'Caribbean' problem.
- It is not clear, but the NERR bloom possibly began with a combination of coincidental climate conditions and biological responses.
- Coastal ecosystems are seriously harmed by massive invasions of pelagic *Sargassum*.
- Offshore fisheries (fish and fishers) can be harmed or enhanced, but certainly changed.

Management response (from Emma Doyle)

The response to the sargassum influx has often been a knee-jerk reaction - uncoordinated and not always environmentally sustainable.

Local agencies need to agree on where and when it's justified to take action to clean beaches or collect sargassum and how to dispose of it.

Although various new approaches are evolving to manage sargassum in-water, they are costly, challenged by real marine and coastal conditions, and have at best mixed results.

Good communications between agencies and the private sector, with the press, and with locals and visitors is essential.