

**Post-Hurricane Mitch:
Status of Coral Reefs, Bay
Islands, Honduras**

Hurricane Mitch Program Review

December 7-8, 2000

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USGS, St. Petersburg, Florida

Cooperators

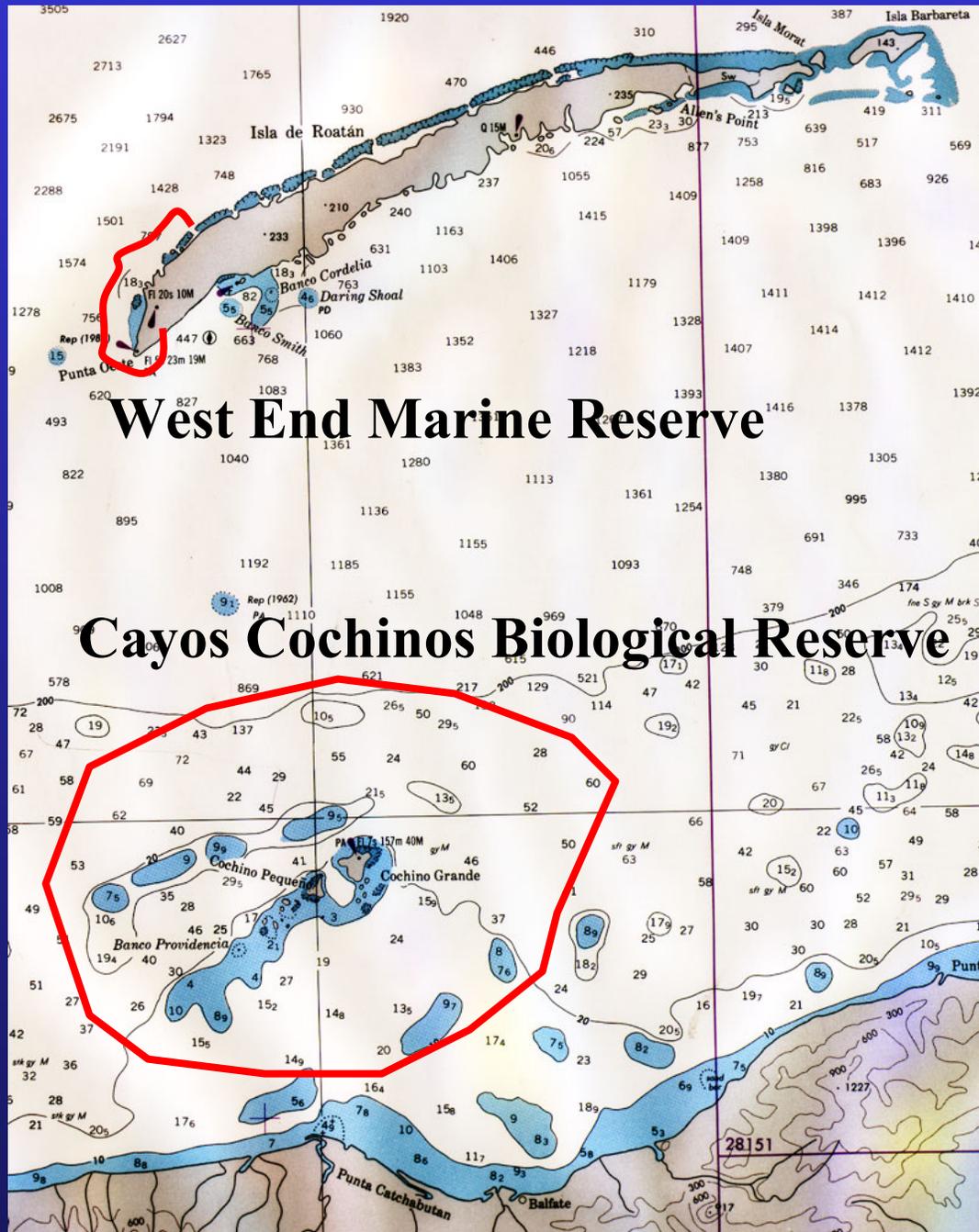
- **Cayos Cochinos Biological Reserve Personnel:**
 - **Elías Aguilar, Carlos Garcia-Saez, Alex Rubi, Adoni Cubas, and the many volunteer students**
- **Jennifer Keck; Roatán Institute for Marine Science (RIMS)**
- **Robert Young; Western Carolina University**
- **Enoc Bennett; Ministry of Tourism in Roatán**
- **Global Vision International: Tanya Barnett**

WHERE DO WE STAND?

- New aerial photography of Cayos Cochinos obtained
- One year worth of coral reef observations after Hurricane Mitch at both Cayos and Roatán
- One year of shallow water temperature data for Cayos and pre/post Hurricane Mitch temperature data at Roatán obtained from RIMS
- New salinity and light (PAR) data from shallow reefs in Cayos and Roatán
- Photographic coverage (still and video documentation) of reef sites was broadened with assistance of Jaime Rojas at Cayos.

SIGNIFICANCE

- **Consequences of hurricane damage to coral reefs is not limited to *only* physical damage, but may also include:**
 - Sedimentation from river discharge or direct land runoff
 - Increase in nutrients, pesticides, metals, or other anthropogenic sources of pollution to surface waters.
 - ∞ Result: corals become stressed or immuno-suppressed and hence more susceptible to disease
- **Socio-economics of reef management**
 - Fishing practices {need for better education}
 - Importance of indigenous Garifuna fishing communities vs large-scale commercial fisheries
 - Carrying capacity of reefs (tourism/eco-tourism)

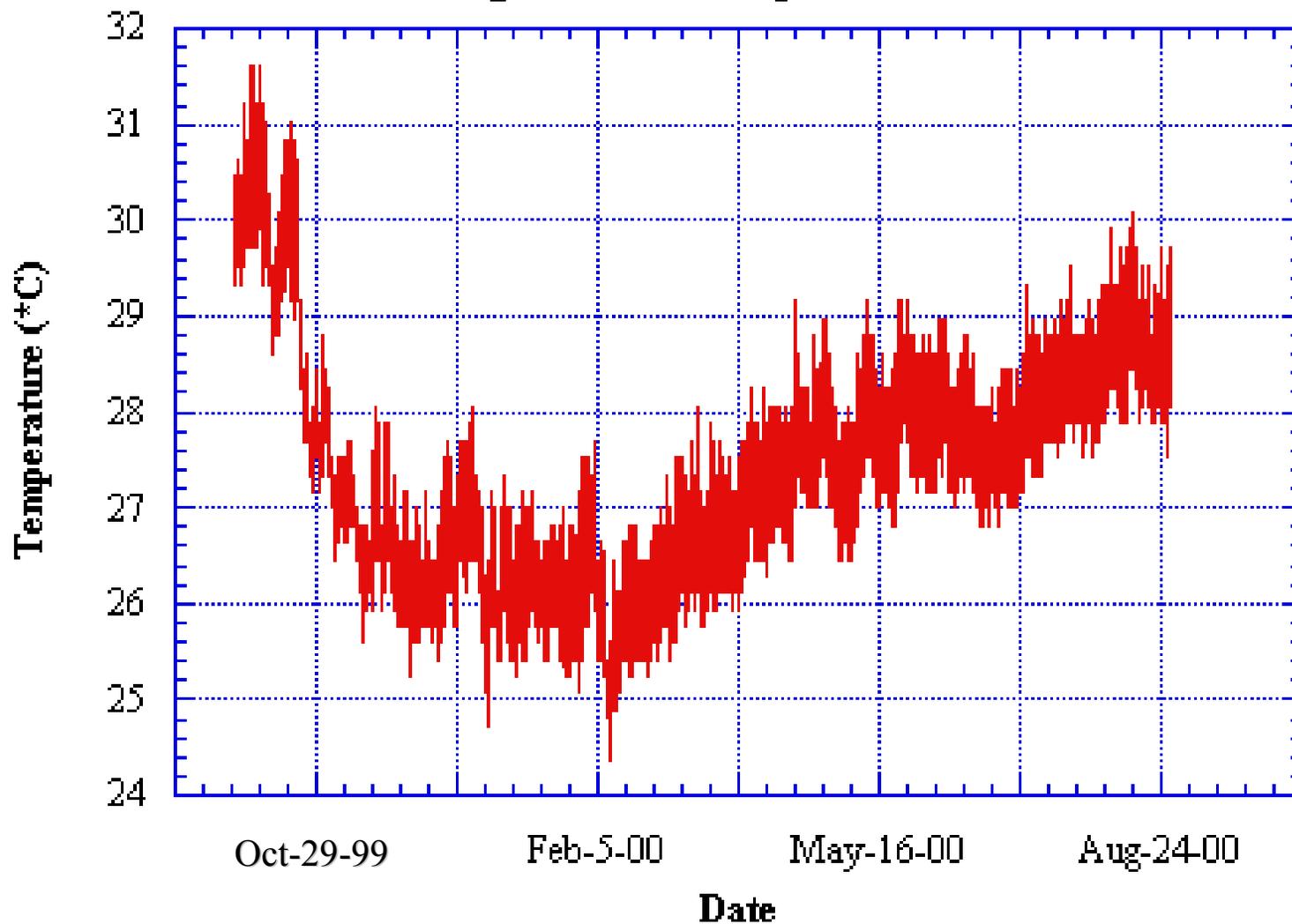


West End Marine Reserve

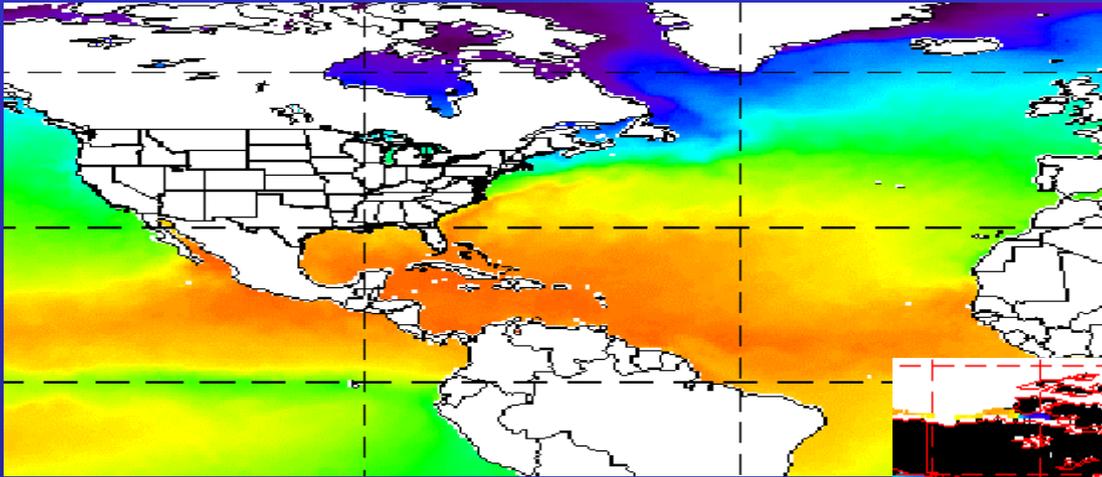
Cayos Cochinos Biological Reserve



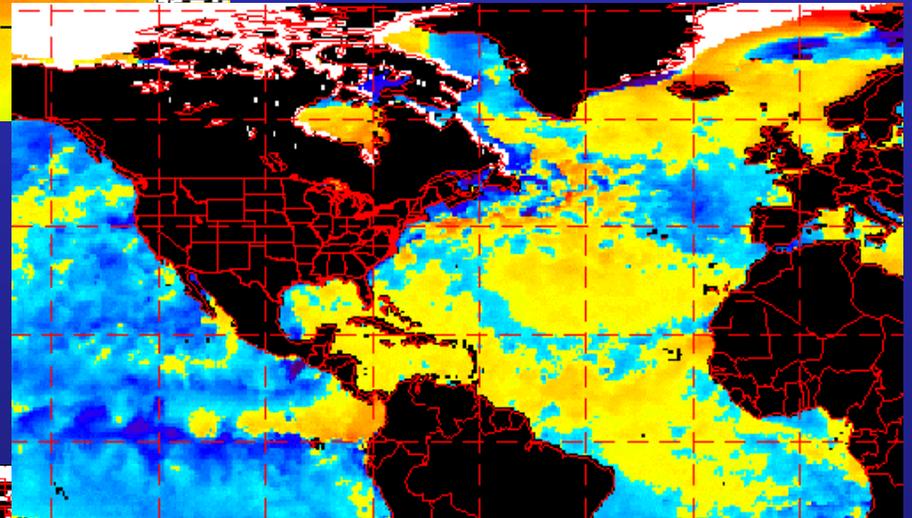
**Water Temperature at Shallow Reef site
Cayos Cochinos
August 1999 to September 2000**



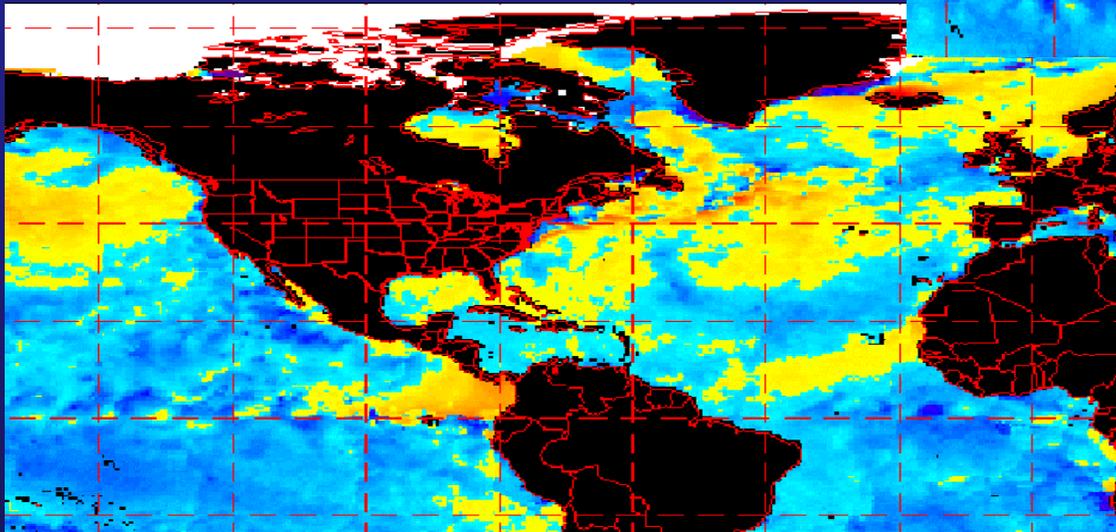
October 1998



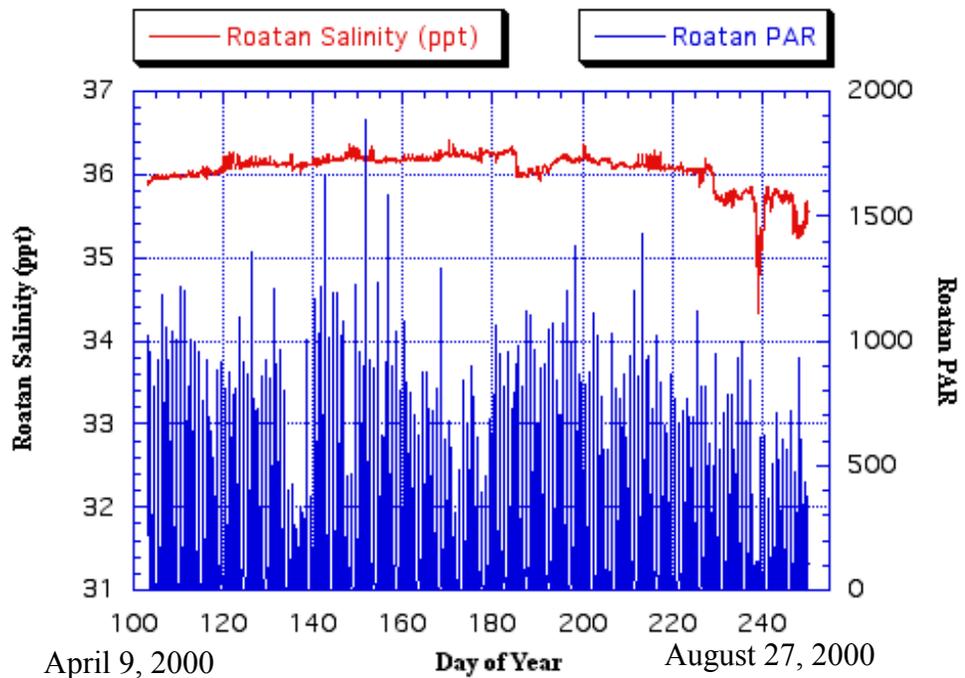
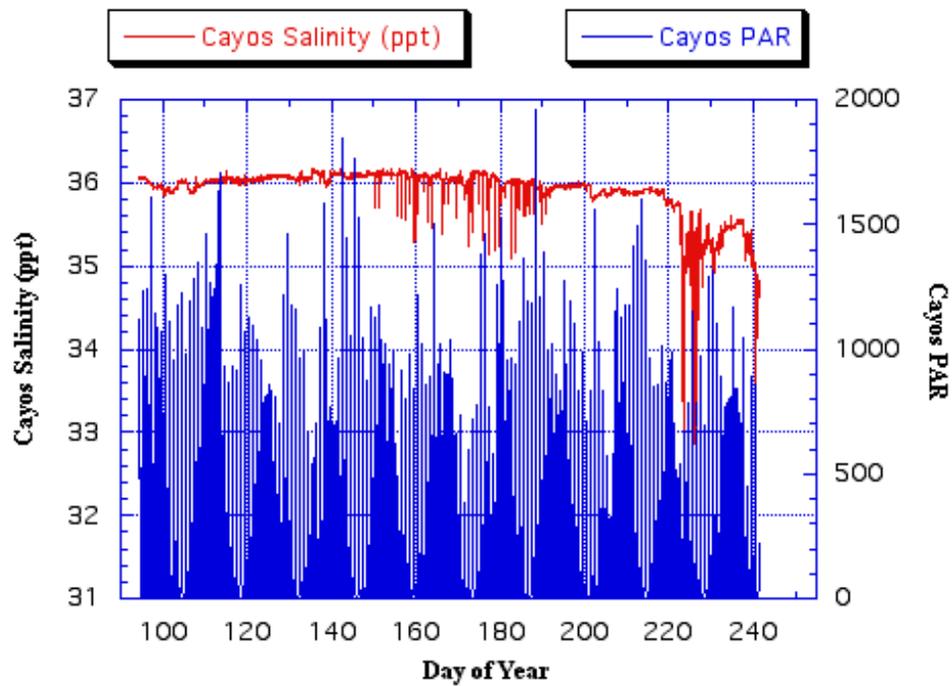
October 1999



October 2000





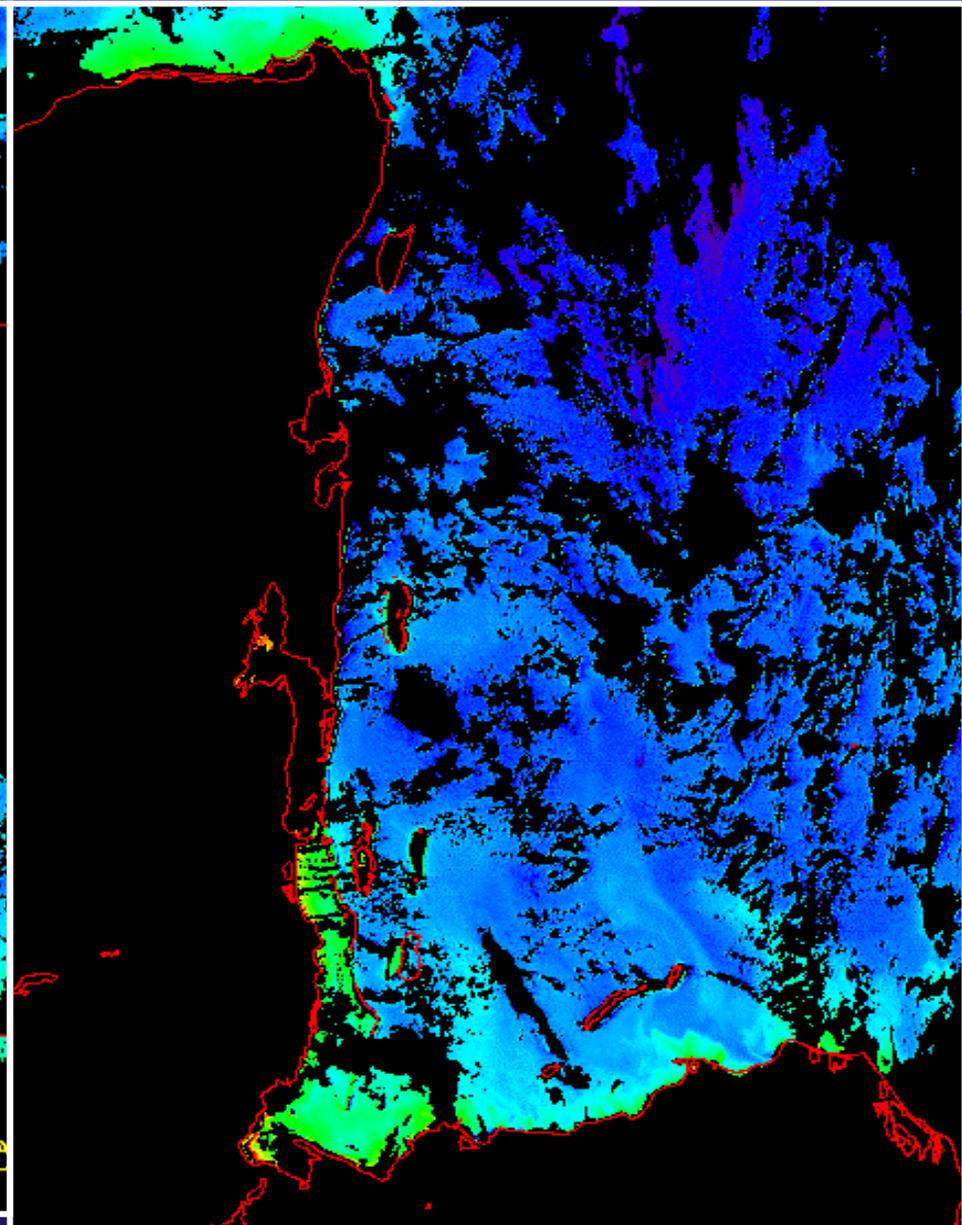
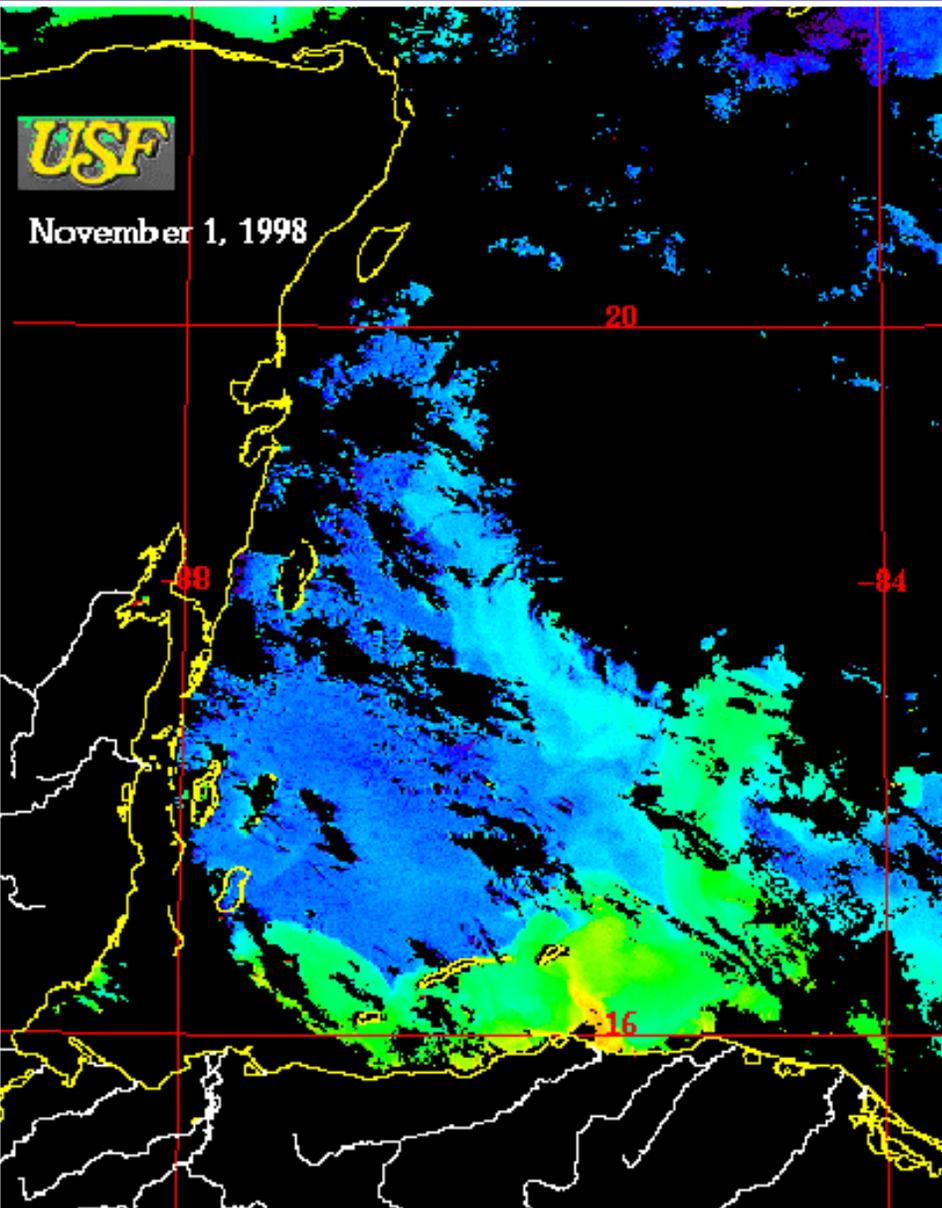


*This is our data...now how do
we correlate our data with
what happened during
Hurricane Mitch.*

- 1) We utilize our current data and remote sensing techniques.
- 2) We take remote sensing data acquired during Hurricane Mitch and compare with our current data.
- 3) We then make implications as to severity of impacts caused by fresh water inputs to Cayos Cochinos region.

Post Hurricane Mitch—11/1/1998

9/2/2000—Gulf of Honduras



Coral Reef Recovery after Mitch

Black Band Disease



Coral-Algal Competition



Brown Alga

Increasing Problems in Bay Islands



Encrusting Sponge



Mat Tunicates

Future Plans

- Continue to support development of GIS lab at Cayos Biological Reserve
- One final visit (?) to sites, including Guanaja in early spring 2001
- Continue video and still documentation
- Possible meeting with coral reef scientists in Roatan (spring 2001; organized by Enoc Burgos Bennett, Ministry of Tourism)
- Continue education on how to operate equipment and download data
- Acquisition of precise GPS positioning throughout Cayos Cochinos to aid in the geo-rectification of aerial photography
- GIS products will follow geo-rectification

Anticipated Accomplishments

- **Provide monitoring instruments for future collection of salinity, temperature and light**
- **GIS products:**
 - **geo-rectified maps of Cayos Cochinos region**
 - **Benthic habitat maps around Cayos**
 - **Location of study sites with accompanying data from instruments**
 - **Photography**
- **Two complete years of surface water data and photo documentation of reefs**
- **Documentation of post-Hurricane Mitch**
 - **Fact Sheet**
 - **Detailed report with maps, data, photographs**
 - **Clearinghouse Website**

JOB HAZARDS!!!

