

To: John Marr, Director, CMRC
From: Jim Hendee, NOAA/AOML
Subject: Monitoring Site Selection Report
Date: July 12, 2000

Introduction

From June 28 through June 30, 2000, an exploratory group of us traveled to CMRC to determine which site we felt would be the best for the deployment of a meteorological and oceanographic monitoring station in waters near CMRC. The present report, written with the assistance and input of all members of the group, contains recommendations based upon our findings. The station will initially monitor wind speed, wind direction, wind gusts, air speed, barometric pressure, sea temperature and salinity. The station is being funded under NOAA FY2000 funds (Administrative Discretionary Fund) as a “ramp-up” effort to the more ambitious FY2002 initiative called Coral Reef Watch, originally conceived of by Al Strong of NESDIS, and myself. Al Strong’s primary emphasis of research is on satellite detection of conditions conducive to coral bleaching (especially abnormally warm sea water), and mine is on *in situ* conditions. The new station will actually help in both regards, as the *in situ* data will also be extremely valuable for ground-truthing Al Strong’s satellite data; however, the purchasing, installation and oversight of the station will primarily be my responsibility. This effort has since grown to include other offices in NOAA, including NURP, and we look forward to a very successful association in the years to come.

Our exploratory group consisted of the following members::

Dr. Jim Hendee	NOAA/OAR/AOML	Co-PI
Dr. Al Strong	NOAA/NESDIS/ORA	Co-PI
Dr. Maggie Tuscano	NOAA/NESDIS/ORA	Post-Doc
Captn. Chris Humphrey	Florida Institute of Oceanography	SEAKEYS Field Manager
Dr. Craig Dahlgren	CMRC	Fisheries Director

When we first met Craig, who served as our guide and boat captain, at LSI, he told us he saw the site selection as requiring three considerations, to which we agreed. These are scientific, logistical, and political.

Scientific Considerations. It would be best to place the station at a site that has decades of monitoring observations, preferably exhibits high coral and other species diversity, and would likely gain from decades more of physical monitoring data.

Logistical Considerations. It is important that the station is easy to access and not too distant from CMRC. For our initial station, it would probably be best to place it at a relatively protected area, not only for the safety of the person or crew who maintains it, but also so that it will not suffer damage under conditions of heavy surf action. The station should also not be a hazard to navigation; however, it might in fact be stationed so as to be an aid to navigation, or to keep boats away from sensitive coral reef areas. Finally, the site should be located at a spot that is easy for the pile-driving barge, which jacks itself up on stanchions so that it can remain perfectly still, to get into.

Political Considerations. Our foremost political consideration should be whether or not the site we choose is acceptable to the Bahamian government, and whether or not they will even let us drive any pilings. Thus, we have prioritized the sites with the hope that they will accept our recommendation. An issue the Bahamians may want to consider is how this station might enhance ongoing monitoring activities of their own, for instance lobster and/or conch spawning, mating or migration studies. They may also especially be keen to have the site serve as a navigational aid, if it would be possible to meet our mutual interests. Finally, you may want to consider the opinions of those who inhabit neighboring islands, for instance, whether or not the station may detract from their view.

Following are sites we considered, arranged in approximate order of priority. Each site has key considerations (both positive and negative) as bullets. Latitudes and longitudes, which should be double-checked, were derived from our onboard GPS and are given in parentheses.

Middle Normans (23° 47.32' N, 76° 8.10' W)

- High coral diversity.
- Long history of monitoring, and still continuing.
- Exposure to both Exuma Sound water (probably greater influence) and Bahama Bank water.
- High current during mid-tide.
- Probably exposed to some high surf during storms, but probably some protection from nearby islands.
- Possible land shadow effect, but station would probably be up higher than adjacent land.
- Possible concerns by Leaf Cay owner, whom you may want to query.
- Actual piling(s) should be slightly east of traditional monitoring site, in *Thalassia* meadow, so that barge can jack up its stanchions without destroying corals.

Rainbow Gardens (“Conch Meadows”, 23° 47.43' N, 76° 8.90' W)

- Area slightly west (~0.5 mi) of Rainbow Gardens (“Conch Meadows” [named by Chris Humphrey]) preferred so as to be out of line of boat traffic, and somewhat removed from study site so as not to disturb it.
- Long history of monitoring, and still continuing.
- Exposure to both Exuma Sound water and Bahama Bank water (probably greater influence).
- High current during mid-tide.
- Potential aid or hazard to navigation in the area.
- If navigation hazard, can be moved south to a spot near Normans Pond Point (23° 47.30' N, 76° 8.90' W).

South Normans (Shark Rock vicinity, 23° 45.52' N, 76° 7.55' W)

- Probably easiest to maintain during times of storms.
- Much greater influence of Bahama Bank Water, thus water probably warmer in summer, and cooler in winter than Exuma Sound Water.
- History of monitoring, but apparently not as extensive as that of Rainbow or Middle Normans.
- Low coral cover and diversity.
- Possible land shadow effect, but station would probably be high enough to counter this effect.

Palmata Reef (23° 46.86' N, 76° 6.24' W)

- Good coral cover, moderate diversity.
- Some history of monitoring.
- Station would have to be extremely sturdy (hence, more expensive), because of high surf during times of storms.
- Dangerous and problematic to maintain during any inclemency.
- Probably very little or no influence of Bahama Bank water; hence, highest sea temperature signals in summer might be missed.

Habitat Reef (23° 47.02' N, 76° 6.52' W)

- Probably too deep, and current too strong, for initial station deployment.
- Dangerous and problematic to maintain during any inclemency.
- Reduced coral cover and diversity (at least where we dove).

We would like for you to review our evaluations and make the final decision yourself, since it will be your crew who will be responsible for maintaining the station, and their safety is the paramount concern. You may wish to discuss these sites with others who have studied in the area. After you make your decision, it would probably be best if your office began the initial negotiations with the Bahamians concerning whether pilings can be driven in your chosen area, and whatever permits might be required. I will be happy to help you with this, if you need me to; however, I will in the mean time be spending most of my time acquiring the instrumentation and testing it.

Some other considerations coming up include:

- 1) Arranging transfer of the station from our lab to yours.
- 2) Making reservations for our crew (possibly three to five of us) to spend up to possibly a week installing the station.
- 3) Training your crew in the maintenance of the station (can be done during the installation).
- 4) Turning on the switch!

Please let me know if you have any questions or concerns.

Cheers,

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