

Hurricane Preparedness

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Seamanship

"The time for taking all measures for a ship's safety is while still able to do so. Nothing is more dangerous than for a seaman to be grudging in taking precautions lest they turn out to have been unnecessary. Safety at sea for a thousand years has depended on exactly the opposite philosophy."

Admiral Chester W. Nimitz

Topics

- What is a Hurricane?
- What YOU Need To Do
- Preparing in Advance
- With Motivating Photos

Please ...

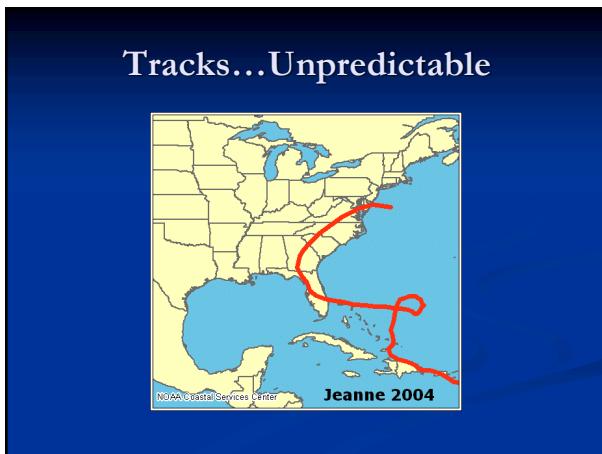
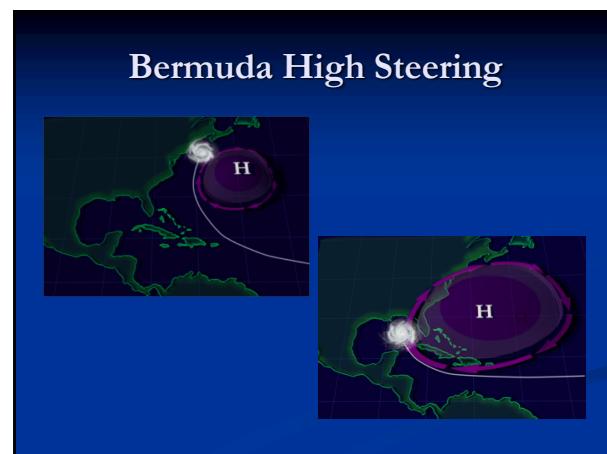
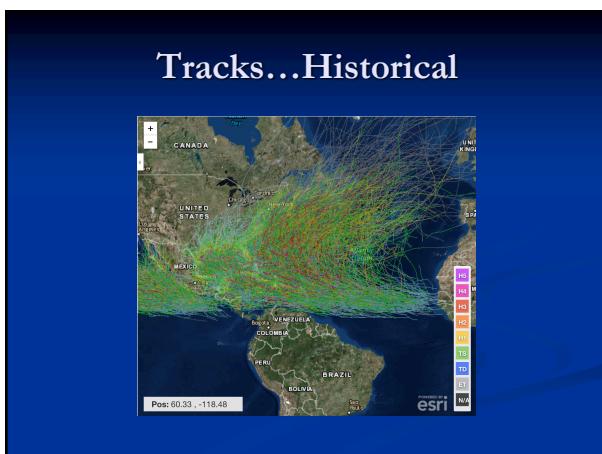
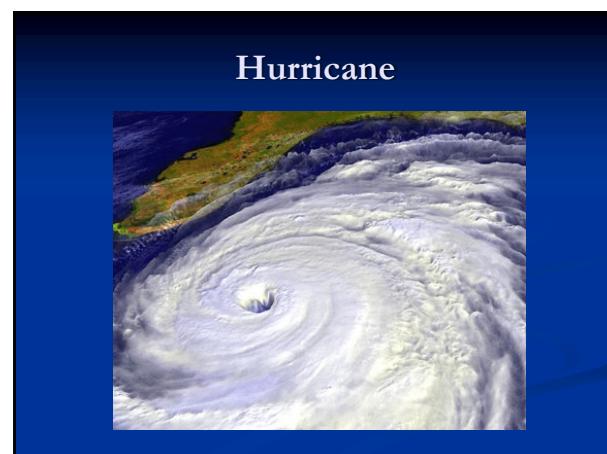
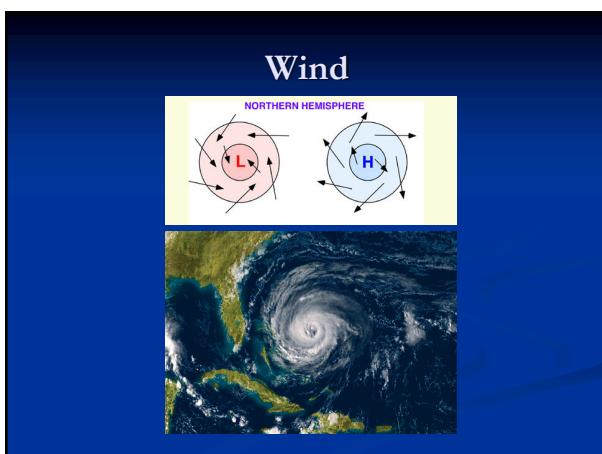
- Now ... interrupt and ask questions
- Afterwards ... Learn more online
- Soon ... Make a plan!

What is a Hurricane?

- Tropical (low pressure) wave comes off Africa
- Travels west over warm water.
- Heat of the ocean fuels the convection.
- Rotates counter-clockwise (northern hemisphere)
- Becomes tropical depression
- Becomes a tropical storm
- Becomes a hurricane

Tropical Waves





The Categories

- Category 1...64-82 knots..... 4-5 ft surge
- Category 2...83-95 knots..... 6-8 ft surge
- Category 3...96-113 knots..... 9-12 ft surge
- Category 4...114-135 knots..... 13-18ft surge
- Category 5...135+ knots.....18-25ft surge

Surge – the Biggest Danger

- Water is pushed up by the wind
- The low pressure “sucks” the water higher
- 0.1-0.2 inches per 10 millibars fall in pressure
- Labor Day storm - 888mb and 25ft surge



Boats on Moorings

- Mooring's scope can't cope with surge
 - You bow goes underwater, or your cleats pull out
 - Leaving your boat on a mooring is a way to sink
- CGSC policies and recommendations
 - Tried and true practices

Motivating Photo - Surge



What do YOU Need To Do?

Prepare for the Storm

- Know the CGSC rules
- Reduce windage
- Be prepared to move

Prepare for Your Situation

- Boats on Moorings
- Boats on Land

Getting Help

- CGSC will do what it can for you, but ...
- Do not ask or try to pay CGSC dock staff to take care of your boat – they have work to do.
- Your friends are useful, bribed if necessary, but ultimately ...
- Your boat ... Your responsibility

Boats on Moorings

Tropical Storm Watch (NOAA 48hrs out)

- By this time, recommended reduction of windage

Tropical Storm Warning (NOAA 36hrs out)

- By this time, mandatory reduction of windage; optional evacuation

Recommendation: Do these when a tropical storm is 72hrs away in the cone of uncertainty.

Boats on Moorings

Hurricane Watch (NOAA 48hrs out)

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Reducing Windage

- All sails down. Leave in the boat or at home
- Bimini and frame down, all canvas covers off
- Dingy and outboard off
- Secure all line ends (halyards)
- Replace dorades and cowl vents with covers
- Remove solar panels and windmills
- Remove “deck junk” - BBQs, Cushions, etc.
- You MUST do this!

Motivating Photo - Sails



Places to Move to

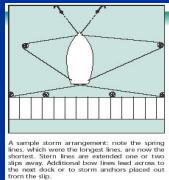
- Boatyards up the Miami River
- A slip in a marina, e.g., Dinner Key
- Coral Gables waterway (the mangroves)*
- Marine Stadium*
- Star Island
- Hurricane harbor, NoName harbor, Pines canal
- * CGSC hopes to be able to ferry you ashore

Boatyards

- E.g., Hurricane Cove, Oceanika
- Visit the yard in advance, check out the situation
- Befriend the dockmaster, find out what is needed
- Know the bridge schedule
- Go well in advance (before bridges lock down)
- BoatUS insurance pays half of haul-out

Boats in Slips – Tying Up

- Check your cleats and chocks
- Double all lines - bow, stern, springs
- Maximize line size
- Use snubbers and chafe gear
- Use fenders and fenderboards
- Don't tie too tight – cleats break
- Do not tie across other boats and docks



A sample secure arrangement: note the spring lines, which were the longest lines, are over the shortest. Stern lines are extended one or two steps back from the stern cleat to prevent the boat from the dock or to storm anchors placed out from the slip.

Motivating Photos - Docks

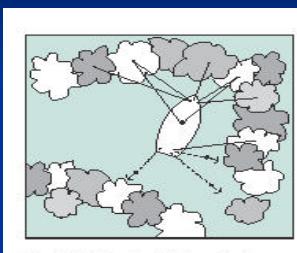
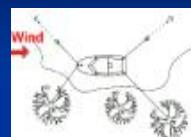


US Coast Guard Digital

Coral Gables Waterway



Tying to the Mangroves

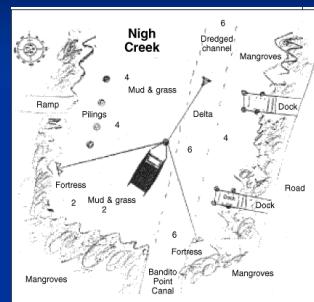


One boat that survived Hurricane Andrew was secured in a mangrove channel with eight 58' lines to shore and three large anchors: a 60-lb. Danforth; a 37-lb. Fortress; and a 45-lb. Bruce. Each of the lines had 10' of slack to allow for the tidal surges.

Marine Stadium



Triple Anchors



Principles of Anchoring

Triple Anchoring Procedure

- Marine Stadium is 10ft - use 70ft rode plus chain
- All lines over the anchor roller (not side chocks)
- Put tag buoys on anchors
- Drop primary anchor, reverse hard to set
- Go 120ft perpendicular to expected wind
- Drop secondary anchor, reverse hard to set
- Fall 120ft off primary and secondary anchors
- Drop tertiary anchor, reverse hard to set
- Bring all rodes to 70ft plus chain, add kellets, lash helm
- And don't use wimpy anchors

Motivating Photo - Anchoring

Take Inventory

- Take photographs of your preparations
 - Onboard
 - From all sides
- Inventory inside
 - Make a list and take photographs
 - Especially electronics and other valuables
 - List anything you take off

Leave Your Information

- Leave the following information in a ziplock taped in the cockpit (required in waterway)
 - Boat name
 - Year, Make/Model, Length of vessel
 - HIN number, FL # or USCG Doc #
 - Full name and date of birth
 - Phone numbers and Email addresses
 - Physical address

Preparing in Advance

- Explore and practice at all the areas and anchorages beforehand
- Get anchors, chain, shackles, rodes, floats, and chafe protection
- Test the engine, check the prop, have clean fuel and filters
- Check cleats
- Close all seacocks
- Prepare information cards, and take inventory
- Get insurance, especially towing
- Not using the boat or leaving town? ... reduce windage
- Check the weather web pages every day
- Read club emails when a storm is coming
- Be able to complete the task without assistance

Motivating Photo - Prop



Final Word - Get Friends to Help

- Teams of three or four help each other
- Useful if you (or they) might be away
- Practice with team in advance (bribes help)
- Be able to cope if they bail on you

Prepare and practice, it'll be OK!

Motivating Photo - Martini



The End

Any (more) Questions?

Equipment - Anchors

■ 46 lb Bruce	1900 lbs
■ 47 lb CQR	3300 lbs
■ 30 lb Danforth	2200 lbs
■ 18 lb Guardian	3900 lb
■ 21 lb Fortress	7600 lbs

Mechanics of Wind Speed

■ 15 knots (sailing)	1lb/sqft	700 lbs
■ 30 knots (anchor)	4lbs/sqft	600 lbs
■ 60 knots	16lbs/sqft	2400 lbs
■ 100 knots	32lbs/sqft	4800 lbs
■ 120 knots	64lbs/sqft	9600 lbs
■ Holding force of a ??? weight Delta		1500 lbs

Equipment - Rodes

Dock Line Working Strains in Pounds				
Taken from the American Boat & Yacht Council's Safety Standards.				
Size of Line (inches)	Nylon 3 Strand	Nylon Braided	Dacron 3 Strand	Dacron Braided
1/4	182	420	182	390
5/16	281	680	281	560
3/8	407	960	407	730
1/2	704	1630	704	1400
5/8	1144	2800	1100	2400
3/4	1562	3600	1274	3000
7/8	2200	5300	1980	4800
1	2750	6200	2400	5600

Equipment - Chain

- 5/16 chain (high test) 2600 lbs
- 3/8 chain BBB 2600 lbs
- 3/8 chain (high test) 5400 lbs