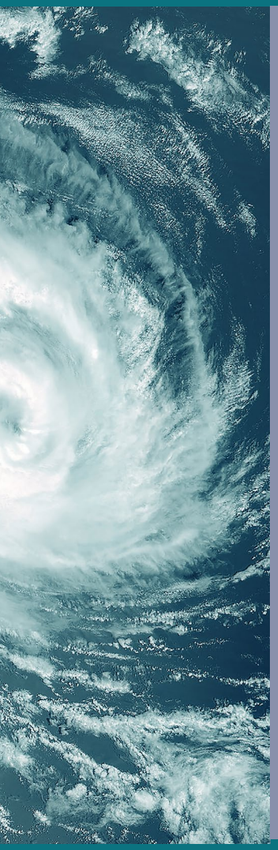
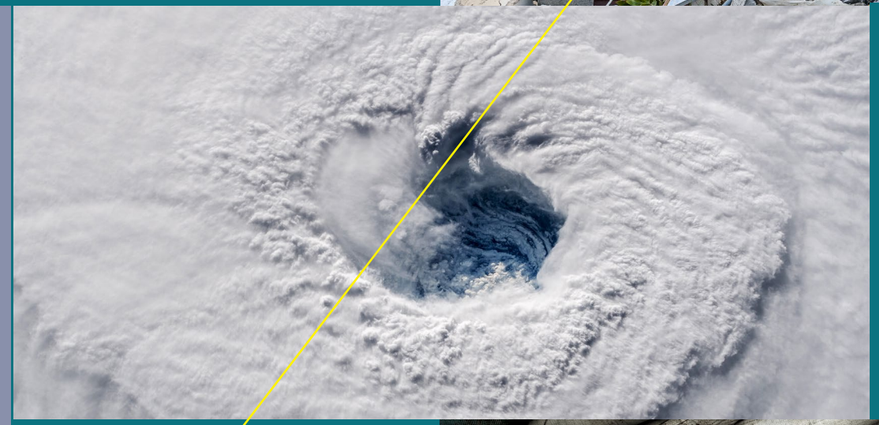
AXA XL Insurance

Hurricane preparedness plan

A Guide from AXA XL Marine



Hurricanes are among the most destructive of all natural catastrophes and can cause billions of dollars in damages. But weather forecasting systems and technology often provide enough lead-time to minimize damages when a storm strikes – if you plan ahead.



US hurricane season | June 1 - November 30

According to the National Weather Service, six hurricanes form in the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico during an average hurricane season. Over a typical two-year period, the U.S. coastline is struck by three hurricanes; one is usually classified as major (Category 3 or higher) with winds of 111 mph or greater.

Researchers note that storm seasons may become more severe in the future. Rising sea levels are contributing to more flooding, and the National Oceanic and Atmospheric Administration predicts that severe flooding may worsen.

NOAA's Climate Prediction Center says to expect between 14-21 named storms, including 6-10 hurricanes and 3-6 major hurricanes packing sustained winds of at least 111 miles per hour. The forecast points out that this year's forecast of 3-6 major storms represents a wide range and does not include predictions of where any hurricanes might land.

Improvements in computer-based numerical weather prediction models have led to better hurricane forecast accuracy by NOAA. Today's average 5-day track forecast by the National Weather Service is as good as the 3-day track forecast was 10 years ago.

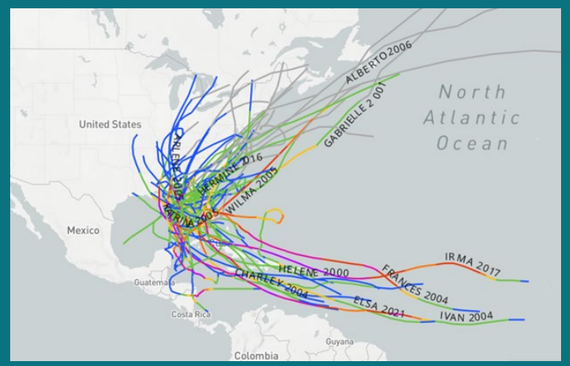
Regions affected

Hurricanes can make landfall in any of the Gulf Coast states (Texas, Louisiana, Georgia, Alabama, and Florida), as well as in any state along the East Coast — from Florida to Maine. Florida is by far the most hurricane-prone, followed by Texas, Louisiana, and North Carolina.

POTENTIAL FOR HURRICANE LANDFALL

HIGHER THAN AVERAGE HURRICANE ACTIVITY

MOST HURRICANE ACTIVITY



NOAA's Historical Hurricane Tracks is a free online tool that allows users to track the paths of historic hurricanes.

Useful links:
https://coast.noaa.gov/hurricanes/#map=4/32/-80
https://www.arcgis.com/apps/mapviewer/index.html
https://oceanservice.noaa.gov/news/historical-hurricanes/

Definition of terms

COTP: The Captain of the Port

TROPICAL DEPRESSION: Tropical cyclone with maximum sustained winds of less than 39 mph.

TROPICAL STORM: Tropical cyclone with winds from 39 to 73 mph.

HURRICANE: Tropical cyclone with winds of 74 mph or more.

HURRICANE CONDITIONS: Storm classifications to indicate the speed of approach prior to landfall.

PORT CONDITIONS: Set by the COTP of specific region/area to efficiently communicate anticipated expectations regarding vessel traffic, transits, and cargo transfer. United States Coast Guard sets port conditions any time hurricanes or severe weather is expected ranging from Whiskey to Zulu.

- **WHISKEY:** Gale force winds (39-54 mph/34-47 knots) are expected to arrive at the port within 72 hours. Port remains open to all commercial traffic, but oceangoing ships and barges must report their intention to remain in port or depart. If they are departing, they must do so within 12 hours of gale-force winds.
- **X-RAY:** Gale force winds are expected within 48 hours. The rules are similar to port condition Whiskey.
- **YANKEE:** Gale force winds predicted within 24 hours. Vessels seeking to depart must arrange immediate departure. Cargo operations must cease with 18 km per hour (kph) winds. Transfer hoses must be disconnected with 22 kph winds. Ships seeking to arrive in port should seek an alternate destination.
- **ZULU:** Gale-force winds are predicted within 12 hours and the ports are closed.

Hurricane Conditions and Port Conditions exist simultaneously and are intended for different audiences. Both conditions will be usually provided simultaneously with specific requirements to port stakeholders via the Maritime Exchange, HOMEPORT, Urgent Marine Information Broadcast (UMIB) and Broadcast Notice to Mariners (BNM).

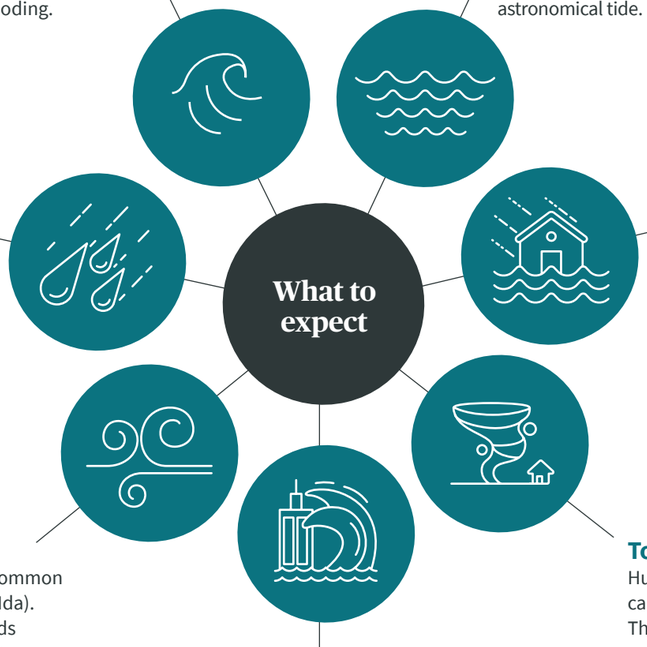
SAFFIR SIMPSON SCALE: The mechanism by which the National Hurricane Center classifies hurricanes, based on wind intensity, storm surge and potential damage. The Scale is subdivided into the following 5 categories:

Category	Winds	Structural damage	Additional risks	Storm surge
1	74 to 94 mph	Minimal	▪ Mobile homes at risk ▪ Power lines, signs, tree branches blown down	4 to 5 feet
2	96 to 110 mph	Moderate (walls, roofs, windows)	▪ Mobile homes at greater risk ▪ Large homes at risk	6 to 8 feet
3	111 to 130 mph	Extensive	▪ Trees uprooted	9 to 12 feet
4	131 to 155 mph	Extreme		12 to 18 feet
5	> 155 mph (record max.185 mph)	Catastrophic		18 feet +

Waves
Can be expected. Waves and storm surges are responsible for severe flooding.

Storm tide
Water level rise during a storm due to the combination of storm surge and the astronomical tide.

Rainfall
Tropical cyclones often produce widespread, torrential rains in excess of 6 inches, which may result in deadly and destructive floods.



Flood
A major threat from tropical cyclones. Flash flooding, defined as a rapid rise in water levels, can occur quickly due to intense rainfall. Longer term flooding on rivers and streams can persist for several days after the storm.

High winds
Speeds of 70 to 130 mph are common but can reach up to 150 mph (Ida). The force created by such winds is tremendous and when wind speed doubles, the wind pressure quadruples. In practical terms it means that damage rate increases much faster than wind speed.

Storm surge
Water from the ocean that is pushed toward the shore by the force of the winds swirling around the hurricane. This advancing surge combines with the normal tides and can increase the water level by 30 feet or more. NOAA use a computer model called SLOSH to predict storm surge heights. The model depends critically on the hurricane'strack, intensity, and size.

Tornadoes
Hurricanes and tropical storms can also produce tornadoes. These tornadoes most often occur in thunderstorms embedded in rain bands well away from the center of the hurricane; however, they can also occur near the eyewall. Usually, tornadoes produced by tropical cyclones are relatively weak and short-lived, but they still pose a significant threat.

Storm preparation

Pre-hurricane season planning

- What are best sources of weather forecast and warning?
- Establish responsibilities within the company for:
  - Weather monitoring,
  - Emergency preparations
  - Mobilization/demobilization of manpower, including essential personnel. This may include the cancellation of leave that had already been approved.
- Aborting the site/projects/boats/barges
- Will there be any activities in the storm track potential area?
- Can my assets be affected? At sea, inland or in the port?
- Do I have procedures for securing mooring vessels, barges, and facilities?
- Are there any alternative locations to shelter the assets?
- What equipment is required? Fenders/mooring lines/piles/ fleeting areas?
- What action, and at which point of the time, shall the decision be made?
- Prepare emergency contact list and phone numbers (external and internal).

Initial preparations - Tropical storm phase

- For the duration of hurricane season, the person in charge of monitoring weather should be checking frequently on the progress of any tropical storms identified by the National Weather Service.
- If a storm looks like it has potential to develop and strike in your area, review hurricane plans and materials to be sure your team is ready to take an action.
- Take into consideration necessity of supply or keep a stock of water, fuel onboard.
- Don't plan or continue any maintenance, which either may not be completed prior landfall or have an impact on mobility and safety of the asset.
- Ensure that additional spools of line and fenders are on hand and in good conditions.
- Verify any loose items that will need to be secured or removed.
- Check availability of berths, jetties, or fleeting areas, where floating assets can be secured/sheltered.
- Take into consideration allowable loadings on wharves and piers
- Verify condition of wharves, fenders, and mooring points.
- All employees shall verify emergency contact details and keep them up to date and all email addresses on file are current.

NOAA use a computer model called SLOSH to predict storm surge heights. The model depends critically on the hurricane's track, intensity, and size.

Final storm preparations

72-48 hours before landfall | WHISKY

- At this point, it is hard to predict if the hurricane will affect your location. However, you can begin to take precautions that are not overly disruptive in case the hurricane changes course.
- Alert all crew/personnel about the storm.
- Remind employees of hurricane communication protocol and action plans, and what they can expect if the condition is upgraded to X-RAY.
- Notify and liaise with USCG regarding the movement of vessels to secure facilities (if required).
- Subject to size and mobility of the vessel/boat/tug, supply sufficient fuel and water.
- Provide additional spools of lines and fenders.
- Verify whether drainages on deck are clear.

48-24 hours before landfall | X-RAY

- The National Hurricane Center (NHC) issues a hurricane watch when hurricane conditions (sustained winds of 74 mph and higher) are possible for a specific area.
- Alert crew about hurricane watch and decide on minimum manning.
- Depending upon the ferocity of the storm, conduct periodic roving watches to detect potential flooding or other storm-induced problems.
- Additional mooring lines shall be deployed and/or cables as appropriate. Redundancy of mooring lines and the use of multiple bitts shall be taken into account.
- Mooring lines securing arrangements for all vessels/barges/boats shall be verified and approved by responsible person.
- Check securing of anchors.
- If cranes are being installed on barges, assess current risks, and make plans to prepare them for a storm event. Booms can be laid down or hooked to the structure at a low point.
- Remove and secure any remaining equipment from deck.
- Install desiccant or moisture absorbers inside bridge/accommodation and next to switchboards, navigational/communication/electronic equipment.
- Cover moisture-sensitive equipment with plastics sheets and tarps.
- If applicable, ensure that batteries are fully charged.
- Store, remove, or secure any hazardous materials.
- Continually track storm progress.

24-12 hours before landfall | YANKEE

- The issuance of a hurricane warning by the NHC indicates that hurricane force winds (sustained winds of 74 mph or higher) are expected in an area within 24 hours. At this point, the storm is likely to affect your site.
- Alert your crew/personnel to final storm preparation plans. Suspend all activities and maintenance, focus efforts on final preparations.
- Communicate to non-essential personnel to return or remain at home.
- All exterior entry points, air vents, ventilation ducts are to be secured.
- Ensure all spaces are as watertight as practical prior to the arrival of the storm.
- Check all lines. Add additional spring, bow and stern lines, if required.
- If feasible, disconnect power and remove temporary connections susceptible to damage.
- If applicable, engines are ready to maneuver; searchlights are energized; safety lines are rigged for weather deck rounds or response to storm-induced threats.
- Reduce wind loadings.

Less than 12 hours before landfall | ZULU

- The issuance of a hurricane warning by the NHC indicates that hurricane force winds (sustained winds of 74 mph or higher) are expected in an area within 24 hours. At this point, the storm is likely to affect your site.
- Stand-by the storm.

Post storm recovery

- When it's safe to return to the port/fleeting area after the storm is over, begin assessing damage and start clean-up.
- Upon the passage of the storm, conduct the assessment of the vessel(s)/barge(s)/boat(s) by a thorough inspection of the hull, external decks and accessible below-deck spaces.
- Inspect tanks and void spaces against cracks, indents and deformation of scantlings.
- The crew shall also inspect the surrounding waterway to determine if it is safe to transit. The local COTP will require that the navigability of the waterways be determined before permitting any vessels to transit a section of waterway. Accordingly, any evidence that the waterway is navigable or obstructed shall be reported as soon as practicable to the local COTP
- Document damages using photos or videos.
- Alert appropriate crew/personnel about when they can return to the work.
- Pump out water as quickly as possible in case there was an ingress into interiors (hull, tanks, bridge, accommodation). Begin using fans and dehumidifiers to dry out the interiors of floating assets.
- If the assets appear to have sustained damage from the storm, notify your broker and AXA XL Claims.

At sea

Tropical storms

If a tropical storm is in the vicinity, the Master must:

- Ensure that regular forecasts are received and monitored.
- Continue to plot the tropical storm regularly in relation to the vessels position.
- Record the barometer readings at hourly intervals to assist in determining the approach of the tropical storm.
- Switch from autopilot to manual steering (if applicable).
- Be aware of available fuel and water supplies.
- Avoid staying in proximity of shallow waters and navigational hazards.

Avoiding tropical storms

It is of vital importance to avoid passing within 80 nm of the centre of the storm. The Master should make every effort to keep outside a distance of 250nm and more. The vessel shall navigate away from the centre, keeping in mind the tendency of tropical storms to recurve towards N and NE in the Northern Hemisphere, and intend to stay in navigable semicircle.