Outline

Setting the Stage (00:00-00:45)
- Plotting Fixes
- Determining Initial Location, Intensity, and Size
- Send and receive model guidance

Creating the Forecast (00:45-02:00)
- Track
- Intensity
- Wind Radii
Outline

Forecast Coordination (02:00-02:15)
  • Coordinate U.S. and International Watches/Warnings
  • Coordinate rainfall and other TC hazards

Product Preparation (02:15-03:00)
  • Public Advisory
  • Discussion
# NHC Forecast Cycle

<table>
<thead>
<tr>
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<th>Event</th>
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| 00:00          | Issue Tropical Weather Outlook  
|                | Issue Intermediate Public Advisory (if necessary)  
|                | Synoptic time / cycle begins |
| 00:45          | Receive satellite fix data |
| 01:00          | Initialize models |
| 01:10          | Receive model guidance and *prepare forecast* |
| 02:00          | NWS / DOD hotline coordination |
| 03:00          | Advisory deadline |
| 03:15          | FEMA conference call |
| 06:00          | New cycle begins |
Synoptic time / cycle begins

Hurricane specialist analyzes available observations
Working Best Track through 1200 UTC

- TAFB Satellite - Blue Square
- SAB Satellite - Black Square
- Microwave - Green (Circle)
- Air Force Aircraft - Red Triangle
- NOAA Aircraft – Blue Triangle
NHC Advisory Composition Worksheet

Forecasters use worksheet to supplement the ATCF computer system.

<table>
<thead>
<tr>
<th>Cyclone Name</th>
<th>ATCF ID</th>
<th>Adv #</th>
<th>Special</th>
<th>Last</th>
<th>Date</th>
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Watches and Warnings

- Storm Surge
- Rainfall
- Tornadoes

Hazards Statements

- [ ] Special Soundings

Notes

---

### Forecast Table

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<th>Pres (mb)</th>
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- [ ] TCM
- [ ] TCD
- [ ] TCP
- [ ] TCV
- [ ] PWS
- [ ] WW Graphic
- [ ] ICAO
## NHC Advisory Composition Worksheet

Forecasters use worksheet to supplement the ATCF computer system.

### Worksheet Table

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### Watches and Warnings

- Storm Surge
- Rainfall
- Tornadoes

### Hazards Statements

- □ Special Soundings

### Notes

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<th>Forecast Date/Time (UTC)</th>
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Working Best Track in ATCF through 1200 UTC
000 NOUS42 KNHC 281430
WEATHER RECONNAISSANCE FLIGHTS
CARCAH, NATIONAL HURRICANE CENTER, MIAMI, FL
1030 AM EDT THU 28 AUG XXXX

SUBJECT: TROPICAL CYCLONE PLAN OF THE DAY (TCPOD)
VALID 29/1100Z TO 30/1100Z AUGUST XXXX
TCPOD NUMBER.....XX-089

I. ATLANTIC REQUIREMENTS
1. TROPICAL STORM AMS FLIGHT ONE -- TEAL 72
   A. 29/1800, 30/0000Z
   B. AFXXX 1007A AMS
   C. 29/1515Z
   D. 18.7N 79.9W
   E. 29/1700Z TO 30/0000Z
   F. SFC TO 10,000 FT

   FLIGHT TWO -- NOAA 49
   A. 30/0000Z
   B. NOAA9 1107A AMS
   C. 29/1730Z
   D. NA
   E. NA
   F. 41,000 TO 45,000 FT

   G-IV flight planned for 0000 UTC departing at 1730 UTC
Visible Satellite Loop
1145-1745 UTC
IR Satellite Loop
1145-1745 UTC
Water Vapor Loop 0645-1745 UTC
SSMIS Microwave Image 29/1318 UTC
analyze center and plot fix
Let’s enter the Microwave Fix
Let’s enter the Microwave Fix
Working Best Track with 1318 UTC SSMIS Fix
TRMM Microwave Image 29/1525 UTC
analyze center and plot fix

37 GHz Color Composite

85 GHz Color Composite
Let's enter the Microwave Fix
Let’s enter the Microwave Fix
Working Best Track with 1525 UTC TRMM Fix

29/1525 TRMM
29/1318 SSMIS
While we wait for the Aircraft and Satellite Fixes... let’s examine the 1200 UTC model guidance
GFS 6h fcst - 29/18z

850 MB RVort, 500 MB Height, 200 MB Wind

Initial Time

ECMWF 6h fcst – 29/18z

UKMET 6h fcst – 29/18z

GFDL 6h fcst - 29/18z
GFS 18h fcst - 30/06z

ECMWF 18h fcst – 30/06z

UKMET 18h fcst – 30/06z

GFDL 18h fcst - 30/06z

850 MB RVort, 500 MB Height, 200 MB Wind

12h fcst
GFS 54h fcst - 31/18z

850 MB RVort, 500 MB Height, 200 MB Wind

48h fcst

ECMWF 54h fcst – 31/18z

GFDL 54h fcst - 31/18z

UKMET 54h fcst – 31/18z
GFDL and HWRF Track and Intensity Forecasts

**GFDL**

NCEP COUPLED GFDL HURRICANE MODEL FORECAST MADE FOR TROPICAL STORM

INITIAL TIME 12Z AUG 29

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**HWRF**

NCEP COUPLED HWRF HURRICANE MODEL FORECAST MADE FOR TROPICAL STORM

INITIAL TIME 12Z AUG 29

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Receive fix data

Hurricane specialist receives estimates of location and intensity via satellite imagery from 2 different agencies

Determine the center location
Determine past motion (6-12 h)
Determine the intensity/wind speed
Determine various wind radii
    34-, 50-, and 64-kt (when applicable)

18:00-18:45 UTC
Receive fix data

Thankfully, in this case we have reconnaissance aircraft, that provided a fix at 1721 UTC. Final fix with an outbound maximum flight-level wind of 62 kt, that equates to 56 kt (90%) at the surface.

12 KNHC 291748
VORTEX DATA MESSAGE
A. 29/172050Z
B. 18 deg 44 min N 079 deg 08 min W
C. 700 mb 2961 m
D. 57 kt
E. 300 deg 25 nm
F. 027 deg 048 kt
G. 300 deg 036 nm
H. 984 mb
I. 10 C/ 3048 m
J. 13 C/ 3044 m
K. 9 C/ NA
L. OPEN NE
M. C15
N. 12345/7
O. 0.02 / 1 nm
P. AF307 1007A
Q. OB 06 CCA
MAX FL WIND 48 KT NW QUAD 171040 Z
MAX OUTBOUND FL WIND 62 KT SE QUAD 173440Z
SURFACE WIND OBSERVED VISUALLY

Let’s enter the aircraft fix, while we wait for the Dvorak satellite intensity estimates.
Entering the Aircraft Fix

[Options]
- Satellite - Subj. Dvorak...
- Satellite - Obj. Dvorak...
- Microwave - SSMI, TRMM...
- Radar...
- Aircraft...
- Dropsonde...
- Analysis/Synoptic...

[OK button]
Entering the Aircraft Fix

MAX OUTBOUND FL WIND 62 KT SE QUAD 1735Z
Working Best Track with 1721 UTC Aircraft Fix
IR Satellite Image - 1745 UTC
BD Enhancement
18:30 UTC

TAFB and SAB Dvorak Satellite Fixes

Now it’s time to enter the Dvorak Fixes
Entering Dvorak Fixes

TAFB fix
Entering Dvorak Fixes

SAB fix
Now that we have all the 18z fixes, let’s determine the 18z best-track position and intensity.
Entering the 1800 UTC best-track information

1800 UTC best-track location 18.8N 79.2W

intensity and pressure
wind radii

1800 UTC best-track location 18.8N 79.2W
Determining Wind Radii from Aircraft Data

Wind Radii from 15z Advisory

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<tr>
<td>64</td>
<td>-</td>
<td>-</td>
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</table>
Determine value and radius of the outermost closed isobar from surface analysis.
What value and radius did you come up with?
Remember to insert the initial position, intensity and motion on the Worksheet?
Best-Track through 1800 UTC…
Finally ready to initialize the guidance.
Computing Tropical Cyclone Motion (Speed)

About 102 n mi during past 12 h yields 8-9 kt
Computing Tropical Cyclone Motion (Direction)

About 300 degrees

Previous Advisory Motion
295/7 kt
Initialize models

After determining the center, strength, motion, and size of the tropical cyclone, the hurricane specialist gives that information to a supercomputer to run the models.

18:45-19:00 UTC
Initialize models

Let’s check to make sure the information was entered correctly.

18:45-19:00 UTC
Initialize models

After determining the center, strength, motion, and size of the tropical cyclone, the hurricane specialist gives that information to a supercomputer to run the models.
Initialize models

Send Compute Data... and don’t forget to set-up the GFDL/HWRF models or your relief will not be happy!

18:45-19:00 UTC

Now we must wait a few minutes for the models to run.
19:00-19:10 UTC

Receive model guidance

Then analyze numerical model output and prepare track, intensity, and wind radii forecasts
Preparing the Track Forecast
29/1800 UTC Guidance
Before we begin, let’s examine recent model trends...
Recent model trends

29/1200 UTC Guidance
Recent model trends
TCVN 29 Aug 0000-1800 UTC

TCVN Consensus trending westward
OFCL 29 Aug 0000-1200 UTC

1200 UTC OFCL shifted northeastward

0000 and 0600 UTC OFCL Forecasts

1200 UTC OFCL Forecast
Let’s Begin
Making the 12 h forecast

No reason to change from OFCI

GPCE Climatology

GPCE Circle

GPCE circle smaller than climatology = higher than normal confidence
24 h forecast

Again no reason to change from OFCI
36 h forecast

GPCE Circle

GPCE Climatology
36 h forecast

New Forecast Position

GPCE Circle

GPCE Climatology

36 h point nudged westward a tenth
48 h forecast

GPCE Circle

GPCE Climatology
48 h forecast

48 h point nudged a little westward
72 h forecast

72 h point moved about half degree west of OFCI

New Forecast Position

GPCE Circle

GPCE Climatology
96 h forecast

96 h point moved north-northwest of OFCI

GPCE Circle

GPCE Climatology

New Forecast Position
120 h forecast

120 h point moved a little north of OFCI

GPCE Circle

GPCE Climatology

New Forecast Position
Our new OFCL forecast track
Comparing the new OFCL vs. the previous OFCL

1800 UTC 120-h forecast

1200 UTC 120-h forecast
Did you remember to fill out the Advisory Composition Worksheet?

### National Hurricane Center
**Advisory Composition Worksheet**

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<thead>
<tr>
<th>Cyclone Name</th>
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#### Watches and Warnings

- ☐ Storm Surge
- ☐ Rainfall
- ☐ Tornadoes

#### Hazards Statements

- ☐ Special Soundings

#### Notes

- 

### Forecast Table

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<th>Lon ('W)</th>
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- ☐ TCM
- ☐ TCP
- ☐ TCV
- ☐ PWS
- ☐ WW Graphic

---

*Figure: Example of a hurricane advisory worksheet from the National Hurricane Center. The worksheet includes fields for date, time, location, wind speed, pressure, and various预警s and warnings.*
New Fix Data

New aircraft data has just arrived. The aircraft measured SFMR winds of 78 kt and a maximum flight-level wind of 71 kt. Is it a hurricane?

URNT12 5307 291920
VORTEX DATA MESSAGE
A. 29/191110Z
B. 18 deg 59 min N 079 deg 24 min W
C. 700 mb 2924 m
D. 78 kt
E. 082 deg 021 nm
F. 157 deg 071 kt
G. 073 deg 027 nm
H. 980 mb
I. 8 C/ 3049 m
J. 14 C/ 3045 m
K. 9 C/ NA
L. CLOSED
M. C25
N. 12345/ 7
O. 0.02 / 1 nm
P. AF307 1007A /1 OB 02
MAX FL WIND 71 KT NE QUAD 190240 Z
SURFACE WIND OBSERVED VISUALLY

position
max surface wind
max flight-level wind
minimum pressure
DATA FROM AN AIR FORCE RECONNAISSANCE AIRCRAFT INDICATE THAT WMODEMO HAS BECOME A HURRICANE WITH MAXIMUM WINDS NEAR 75 MPH...120 KM/HR.

$$
FORECASTER PASCH

NNNN
Preparing the Intensity Forecast
GFDL and HWRF Track and Intensity Forecasts

**GFDL**

<table>
<thead>
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### SHIPS and LGEM Guidance

#### Values of the predictors
- Intensity (kt)
- Predictors contributions to intensity change

#### Predictors contributions to intensity change

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#### Sub-Total Change
- 1.3

#### Total Change (kt)
- 1.3

**Atlantic RI Index**

08/29/18 UTC

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<th>Contribution</th>
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<td>Heat content (RJ/cm²)</td>
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Prob of RI for 35 kt RI threshold: 35% is 4.8 times the sample mean (7.3%)
Rapid Intensification Index
probability of RI during next 24 hour

** ATLANTIC RI INDEX **
08/29/ : 18 UTC **
( 25 KT OR MORE MAX WIND INCREASE IN NEXT 24 HR )

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<th>Val:</th>
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<td>1.4</td>
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<td>0.5</td>
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<td>0.8</td>
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<td>0.3</td>
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<tr>
<td>% area w/pixels &lt;-30 C</td>
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<td>0.2</td>
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<td>0.9/</td>
<td>1.2</td>
</tr>
<tr>
<td>Heat content (KJ/cm2)</td>
<td>114.0 Range: 0.0 to 132.0</td>
<td>0.9/</td>
<td>0.1</td>
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- **Prob of RI for 25 kt RI threshold= 46% is 3.7 times the sample mean(12.3%)**
- **Prob of RI for 30 kt RI threshold= 35% is 4.0 times the sample mean( 7.8%)**
- **Prob of RI for 35 kt RI threshold= 32% is 7.8 times the sample mean( 4.5%)**

## ANNULAR HURRICANE INDEX (AHI) 08/29. 18 UTC ##
## STORM NOT ANNULAR, SCREENING STEP FAILED, NFASS=3 NFAIL=4 ##
## AHI= 0 (AHI OF 100 IS BEST FIT TO ANN. STRUC., 1 IS MARGINAL, 0 IS NOT ANNULAR) ##
## ANNULAR INDEX RAN NORMALLY ##
Intensity Forecast Dialogue Box

Click to View Graph of Intensity Guidance
Graph of Intensity Guidance (kt)

Intensity Guidance 29/1800 UTC
Making the Intensity Forecast

Enter your official forecast at each forecast interval (defaults to OFCI)

Table listing the various intensity guidance
Making the Intensity Forecast

Enter your official forecast at each forecast interval (defaults to OFCI)

Table listing the various intensity guidance
Making the Intensity Forecast

Our new Official Forecast
Did you record your intensity forecast on the worksheet?
Preparing the Wind Radii Forecast
Wind Radii Forecast Dialogue Box

- Enter your radii prediction (n mi) for each forecast period.
- Select forecast period. Radii forecasts only out to 72 h.
- Guidance.
- Summary of your radii forecasts.
Forecasters can use a graphical plot to complete radii forecasts.

Click on the graph to select the 34 kt wind radius.
Wind Radii Forecast Dialogue Box

Summary of your radii forecasts
Record your wind radii forecast on the worksheet

National Hurricane Center
Advisory Composition Worksheet

<table>
<thead>
<tr>
<th>Cyclone Name</th>
<th>ATCF ID</th>
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**Watches and Warnings**

- Storm Surge
- Rainfall
- Tornadoes

**Hazard Statements**

- Special Soundings

**Notes**

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**Wind Radii (nm)**

- NE: 130, 90, 40, 100
- SE: 60, 40, 0, 60
- SW: 60, 40, 0, 60
- NW: 90, 90, 60, 90

**Fast Hr**

- 0, 3, 12, 24, 36, 48, 72, 96, 120

**Status**

- TS, HU, MH

**Additional Information**

- TCM, TCP, TCV, PWS, ICAO, WW Graphic
Now let’s decide if watches or warnings are required
Definitions of Hurricane Watch/Warning

• **Hurricane Watch**: hurricane conditions are *possible* somewhere within the watch area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued **48 hours** in advance of the anticipated onset of tropical-storm-force winds.

• **Hurricane Warning**: hurricane conditions are *expected* somewhere within the warning area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane warning is issued **36 hours** in advance of the anticipated onset of tropical-storm-force winds.
Definitions of Tropical Storm Watch/Warning

- **Tropical Storm Watch**: tropical storm conditions are *possible* somewhere within the watch area within the next 48 hours.

- **Tropical Storm Warning**: tropical storm conditions are *expected* somewhere within the warning area within the next 36 hours.
Issuing Warnings

Orientation of the forecast track with respect to the coast plays a major role in the size of the warning area.

Warning Size is based on:

- Forecast Track
- Storm Size
- Known uncertainties in the forecasts

(AVERAGE 24-HOUR FORECAST ERROR IS NOW ~50 MILES)
RSMC=
Regional Specialized Meteorological Center;
RA-IV countries include Caribbean area, Central America, Mexico, Canada, and Bermuda.
Do we need watches or warnings?

Remember to consider forecast uncertainty

- **12 h forecast** - Don’t forget about the Cayman Islands
- **24 h forecast** - Western Cuba and the Isle of Youth?
- **36 h forecast** - Florida Keys and Dry Tortugas?
- **48 h forecast** - Still time for the Gulf Coast?
Better start calling Jamaica, the Cayman Islands, Cuba, and the National Weather Service Office in Key West...

If you run out of time to call NWS Key West, you can coordinate on the hotline call
Now type them up...
Now type them up...

WATCHES AND WARNINGS
CHANGES WITH THIS ADVISORY...
NONE.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...
A HURRICANE WARNING IS IN EFFECT FOR...
* THE CAYMAN ISLANDS
* THE WESTERN CUBAN PROVINCES OF ISLA DE JUVENTUD...PINAR DEL RIO...LA HABANA...AND CIUDAD DE LA HABANA.

A TROPICAL STORM WARNING IS IN EFFECT FOR...
* JAMAICA
* THE CENTRAL CUBAN PROVINCES OF MATANZAS...CIENFUEGOS...VILLA CLARA...SANCTI SPIRITUS...CIEGO DE AVILA...CAMAGUEY...AND GRANMA.
* THE LOWER FLORIDA KEYS FROM WEST OF KEY WEST WESTWARD TO DRY TORTUGAS

A TROPICAL STORM WATCH IS IN EFFECT FOR...
* THE LOWER FLORIDA KEYS FROM WEST OF THE SEVEN MILE BRIDGE TO KEY WEST
NWS / DOD Coordination Call

Coordinate and determine watches/ warnings

20:00 UTC
20:00 UTC

NWS / DOD Coordination Call

Coordinate and determine watches/ warnings
Coordinate storm surge, rainfall, tornado, rip current hazards
Advisory Composition

hurry up- you only have about 30-45 minutes to get it out
Finally, its time to create the advisory products

- Enter your initials
- Center Accuracy
- Forecast Type
- Minimum Pressure
Finally, its time to create the advisory products

Enter your initials

Center Accuracy

Forecast Type
Finally, it's time to create the advisory products.

- Enter your initials
- Center Accuracy
- Forecast Type
- Minimum Pressure
- Pick Geographical Reference Points

**Advisory Composition Dialog - AMS al792010**

- Tropical Cyclone al792010
- Time of advisory 06:00
- Daylight Time
- Subtropical
- Surface Pressure 880 mb
- Center Accuracy 15 nm
- Eye Diameter 0 nm
- Geography Reference: 19.3N 81.2W GRAND CAYMAN
- Geography Reference: 21.8N 82.8W THE ISLE OF YOUTH
- Public advisory frequency: 6 hourly, 3 hourly, 2 hourly
- Last Advisory

**Options:**
- Advisory Data...
- Edit Warning...
- Help
- OK
- Cancel
Finally, its time to create the advisory products

Review the Advisory Data

Enter your initials

Center Accuracy

Forecast Type

Minimum Pressure

Pick Geographical Reference Points
Finally, it's time to create the advisory products.

Review the Advisory Data

Enter your initials

Center Accuracy

Forecast Type

Review each forecast time
Don’t forget to make the cyclone a hurricane at synoptic & advisory time

Enter your initials

Center Accuracy

Forecast Type

Review the Advisory Data

Make it a hurricane - 65 kt
Record the Advisory Information

Update the initial & synoptic intensity (65 kt), wind radii, pressure

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- TCM
- TCP
- TCV
- PWS
- WW Graphic
- ICAO
Now say OK to create the products

- Enter your initials
- Center Accuracy
- Forecast Type
- Review the Advisory Data
- Minimum Pressure
- Pick Geographical Reference Points
Forecast/Advisory

Remember, this is the product that drives everyone’s tracking and plotting software!
### Wind Speed Probabilities

Provides chances of 34-, 50-, and 64-kt winds at individual locations.

Numbers outside parenthesis give the chance that winds of that magnitude or greater will start within the time period listed above.

Numbers inside parenthesis give the cumulative chance the winds of that magnitude or greater occurring between the initial advisory time and the time listed above.

Cumulative Chance over the next five days—also shown on the NHC probability graphics.

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Let’s create the public advisory
Example of Public Advisory

**SUMMARY OF 1000 PM CDT...0300 UTC...INFORMATION**

LOCATION...25.5N 88.4W
ABOUT 580 ML...930 KM ESE OF CORPUS CHRISTI TEXAS
ABOUT 470 ML...760 KM ESE OF GALVESTON TEXAS
MAXIMUM SUSTAINED WINDS...100 MPH...160 KM/HR
PRESENT MOVEMENT...WNW OR 290 DEGREES AT 10 MPH...17 KM/HR
MINIMUM CENTRAL PRESSURE...945 MB...27.91 INCHES

**WACHES AND WARNINGS**

**CHANGES WITH THIS ADVISORY...**

A HURRICANE WARNING HAS BEEN ISSUED FROM MORGAN CITY LOUISIANA TO BAFFIN BAY TEXAS.

A TROPICAL STORM WARNING HAS BEEN ISSUED FROM SOUTH OF BAFFIN BAY TO PORT MANSFIELD TEXAS.

**SUMMARY OF WATCHES AND WARNINGS IN EFFECT...**

A HURRICANE WARNING IS IN EFFECT FOR...
* MORGAN CITY LOUISIANA TO BAFFIN BAY TEXAS

A TROPICAL STORM WARNING IS IN EFFECT FOR...
* EAST OF MORGAN CITY TO THE MISSISSIPPI-ALABAMA BORDER...INCLUDING THE CITY OF NEW ORLEANS AND LAKE PONCHARTRAIN
* SOUTH OF BAFFIN BAY TO PORT MANSFIELD

A HURRICANE WARNING MEANS THAT HURRICANE CONDITIONS ARE EXPECTED SOMEWHERE WITHIN THE WARNING AREA. A WARNING IS TYPICALLY ISSUED 36 HOURS BEFORE THE ANTICIPATED FIRST OCCURRENCE OF TROPICAL-STORM-FORCE WINDS...CONDITIONS THAT MAKE OUTSIDE PREPARATIONS DIFFICULT OR DANGEROUS. PREPARATIONS TO PROTECT LIFE AND PROPERTY SHOULD BE RUSHED TO COMPLETION.
DISCUSSION AND 48-HOUR OUTLOOK

AT 1000 PM CDT...0300Z...THE CENTER OF HURRICANE IKE WAS LOCATED NEAR LATITUDE 25.5 NORTH...LONGITUDE 88.4 WEST. IKE IS MOVING TOWARD THE WEST-NORTHWEST NEAR 10 MPH...17 KM/HR. A GENERAL WEST-NORTHWEST TO WESTWARD MOTION IS EXPECTED OVER THE NEXT DAY OR SO...AND THE CENTER OF IKE SHOULD BE VERY NEAR THE COAST BY LATE FRIDAY.

MAXIMUM SUSTAINED WINDS ARE NEAR 100 MPH...160 KM/HR...WITH HIGHER GUSTS. IKE IS A CATEGORY TWO HURRICANE ON THE SAFFIR-SIMPSON SCALE. IKE IS FORECAST TO BECOME A MAJOR HURRICANE PRIOR TO REACHING THE COASTLINE.

IKE REMAINS A VERY LARGE TROPICAL CYCLONE. HURRICANE FORCE WINDS EXTEND OUTWARD UP TO 115 MILES...185 KM...FROM THE CENTER...AND TROPICAL STORM FORCE WINDS EXTEND OUTWARD UP TO 275 MILES...445 KM.

THE LATEST MINIMUM CENTRAL PRESSURE REPORTED BY A NOAA HURRICANE HUNTER AIRCRAFT WAS 945 MB...27.91 INCHES.

HASARDS AFFECTING LAND

STORM SURGE...STORM SURGE WILL RAISE WATER LEVELS AS MUCH AS 10 TO 15 FT ABOVE GROUND LEVEL ALONG THE COAST WITHIN THE HURRICANE WARNING AREA...WITH LARGE AND DANGEROUS BATTERING WAVES...NEAR AND TO THE EAST OF WHERE THE CENTER OF IKE MAKES LANDFALL. STORM SURGE WILL RAISE WATER LEVELS AS MUCH AS 5 TO 7 FEET ABOVE GROUND LEVEL ALONG THE COAST WITHIN THE TROPICAL STORM WARNING AREA ALONG THE NORTHERN GULF COAST. THE SURGE COULD PENETRATE AS FAR INLAND AS ABOUT 10 MILES FROM THE SHORE WITH DEPTH GRADUALLY DECREASING AS THE WATER MOVES INLAND.

WIND...BECAUSE IKE IS A VERY LARGE TROPICAL CYCLONE...WINDS WILL DETERIORATE ALONG THE COASTLINE LONG BEFORE THE CENTER REACHES THE COAST. HURRICANE CONDITIONS ARE EXPECTED TO REACH NORTHEASTERN GULF COAST WITHIN THE WARNING AREA FRIDAY AFTERNOON. WINDS ARE EXPECTED TO FIRST REACH TROPICAL STORM STRENGTH FRIDAY MORNING...MAKING OUTSIDE PREPARATIONS DIFFICULT OR DANGEROUS. PREPARATIONS TO PROTECT LIFE AND PROPERTY SHOULD BE RUSHED TO COMPLETION.

RAINFALL...IKE IS EXPECTED TO PRODUCE RAINFALL AMOUNTS OF 5 TO 10 INCHES ALONG THE CENTRAL AND UPPER TEXAS COAST AND OVER PORTIONS OF SOUTHWESTERN LOUISIANA...WITH ISOLATED MAXIMUM AMOUNTS OF 15 INCHES POSSIBLE. RAINFALL AMOUNTS OF 1 TO 2 INCHES ARE POSSIBLE OVER PORTIONS OF THE YUCATAN PENINSULA.
Let’s Make a Public Advisory

Think of a good headline

Summary information pre-formatted for complete advisories

Remember this was typed in earlier.

Check to make sure it is correct. May have to insert watch/warning definitions

---

SUMMARY OF 500 PM EDT...2100 UTC...INFORMATION

LOCATION...20.1N 79.6W

ABOUT 165 MI...265 KM E OF GRAND CAYMAN

ABOUT 270 MI...435 KM SE OF THE ISLE OF YOUTH

MAXIMUM SUSTAINED WINDS...70 MPH...113 KM/HR

PRESENT MOVEMENT...ENE OR 60 DEGREES AT 5 MPH...8 KM/HR

MINIMUM CENTRAL PRESSURE...1003 MBS...29.62 INCHES

WACHES AND WARNINGS

CHANGES WITH THIS ADVISORY...

NONE.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

A HURRICANE WATCH IS IN EFFECT FOR...

* THE CAYMAN ISLANDS

* THE WESTERN CUBAN PROVINCES OF ISLA DE JUVENTUD...Pinar del Rio...

* LA HABANA...AND CIUDAD DE LA HABANA.

A TROPICAL STORM WARNING IS IN EFFECT FOR...

* JAMAICA

* THE CENTRAL CUBAN PROVINCES OF MATANZAS...Cienfuegos...Villa Clara...Sancti Spiritus...Ciego de Avila...Camaguey...And Granma.

* THE LOWER FLORIDA KEYS FROM WEST OF KEY WEST WESTWARD TO DRY TORTUGAS

A TROPICAL STORM WATCH IS IN EFFECT FOR...

* THE LOWER FLORIDA KEYS FROM WEST OF THE SEVEN MILE BRIDGE WESTWARD TO KEY WEST

A HURRICANE WARNING MEANS THAT HURRICANE CONDITIONS ARE EXPECTED SOMEWHERE WITHIN THE WARNING AREA. A WARNING IS TYPICALLY ISSUED 36 HOURS BEFORE THE ANTICIPATED FIRST OCCURRENCE OF TROPICAL-STORM- FORCE WINDS...CONDITIONS THAT MAKE OUTSIDE PREPARATIONS DIFFICULT OR DANGEROUS. PREPARATIONS TO PROTECT LIFE AND PROPERTY SHOULD BE RUSHED TO COMPLETION IN THE CAYMAN ISLANDS AND CUBA.

A TROPICAL STORM WARNING MEANS THAT TROPICAL STORM CONDITIONS ARE EXPECTED SOMEWHERE WITHIN THE WARNING AREA WITHIN THE NEXT 36 HOURS.

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM CONDITIONS ARE POSSIBLE SOMEWHERE WITHIN THE WARNING AREA WITHIN THE NEXT 48 HOURS.

FOR STORM INFORMATION SPECIFIC TO YOUR AREA OUTSIDE THE UNITED STATES...PLEASE MONITOR PRODUCTS ISSUED BY YOUR NATIONAL METEOROLOGICAL SERVICE. FOR STORM INFORMATION SPECIFIC TO YOUR AREA IN THE UNITED STATES...PLEASE MONITOR PRODUCTS ISSUED BY YOUR LOCAL NATIONAL WEATHER SERVICE FORECAST OFFICE.

DISCUSSION AND 48-HOUR OUTLOOK

AT 500 PM EDT...2100 UTC...THE CENTER OF HURRICANE AM2 WAS LOCATED NEAR LATITUDE 19.1 NORTH...AM2 IS MOVING TOWARD THE NORTHWEST NEAR 15 MPH...24 KM/HR... AND THIS MOTION IS EXPECTED TO...

MAXIMUM SUSTAINED WINDS ARE NEAR 75 MPH...120 KM/HR...WITH HIGHER GUSTS. AM2 IS A CATEGORY ONE HURRICANE ON THE SAFFIR-SIMPSON HURRICANE WIND SCALE. SOME STRENGTHENING IS FORECAST DURING THE NEXT 24 HOURS. XXXXXXXXXXXXXXXXXXXX
Let’s Make a Public Advisory

Discussion and Outlook Section

Add information about the forecast motion

Add information about the forecast intensity change

Discuss hazards or impacts, for this case we should discuss storm surge, wind, and rainfall

Previous hazard information is available for cut and paste!
Public advisory ready to be issued

DISCUSSION AND 48-HOUR OUTLOOK

AT 500 PM EDT...2100 UTC...THE CENTER OF HURRICANE AMS WAS LOCATED NEAR LATITUDE 19.1 NORTH...AMM IS MOVING TOWARD THE NORTHWEST NEAR 12 MPH...19 KM/H...AND THIS MOTION IS EXPECTED TO CONTINUE DURING THE NEXT COUPLE OF DAYS...ON THIS TRACK...THE CENTER OF AMS WILL PASS NEAR OR OVER THE CAYMAN ISLANDS TONIGHT...OVER THE WESTERN PORTIONS OF CUBA ON MONDAY...AND INTO THE SOUTHERN GULF OF MEXICO ON MONDAY NIGHT OR TUESDAY.

MAXIMUM SUSTAINED WINDS ARE NEAR 75 MPH...120 KM/H...WITH HIGHER GUSTS. AMS IS A CATEGORY ONE HURRICANE ON THE SAFFIR-SIMPSON HURRICANE WIND SCALE. STRENGTHENING IS FORECAST DURING THE NEXT COUPLE OF DAYS...AND AMS COULD BECOME A MAJOR HURRICANE NEAR THE TIME IT Crosses WESTERN CUBA.

HURRICANE FORCE WINDS EXTEND OUTWARD UP TO 30 MILES...45 KM...FROM THE CENTER...AND TROPICAL STORM FORCE WINDS EXTEND OUTWARD UP TO 160 MILES...250 KM.

ESTIMATED MINIMUM CENTRAL PRESSURE IS 984 MB...29.06 INCHES.

HAZARDS AFFECTING LAND

STORM SURGE...COASTAL STORM SURGE FLOODING OF 2 TO 5 FEET ABOVE NORMAL TIDE LEVELS IS POSSIBLE IN THE CAYMAN ISLANDS...WITH 6 TO 13 FEET POSSIBLE NEAR WHERE THE CENTER OF AMS CROSSES WESTERN CUBA...INCLUDING ISLA DE JUVENTUD.

WIND...HURRICANE CONDITIONS ARE EXPECTED TO REACH THE CAYMAN ISLAND TONIGHT...AND THE ISLE OF YOUTH AND WESTERN CUBA TOMORROW AFTERNOON. WINDS ARE EXPECTED TO FIRST REACH TROPICAL STORM STRENGTH IN THE CAYMAN ISLANDS WITHIN THE NEXT FEW HOURS AND EARLY TOMORROW MORNING IN WESTERN CUBA...MAKING OUTSIDE PREPARATIONS DIFFICULT OR DANGEROUS.

RAINFALL...AMS IS EXPECTED TO PRODUCE TOTAL RAINFALL ACCUMULATIONS OF 6 TO 12 INCHES ACROSS JAMAICA...THE CAYMAN ISLANDS...AND WESTERN CUBA...WITH ISOLATED MAXIMUM AMOUNTS OF UP TO 25 INCHES POSSIBLE. THESE RAINS WILL LIKELY PRODUCE LIFE-THREATENING FLASH FLOODS AND MUD SLIDES. RAINFALL ACCUMULATIONS OF 2 TO 4 INCHES ARE POSSIBLE OVER SOUTHERN CUBA.

NEXT ADVISORY

NEXT INTERMEDIATE ADVISORY...800 PM EDT
NEXT COMPLETE ADVISORY...1100 PM EDT

$$
FORECASTER YOUR NAME HERE
NNNN

Don’t forget the discussion
Create Your Discussion

ECSC HURC DAT4 ALL
TTACG0 HURC DOCRMN
HURRICANE ANS DISCUSSION NUMBER 10
HMS TPC/NATIONAL HURRICANE CENTER MIAMI FL AL792010
500 PM EDT SUN AUG 29 2010

FORECAST POSITIONS AND MAX WINDS

INITIAL  29/2100Z 15.1N  79.6W  65 KT
12HR VT  30/0600Z 20.1N  80.9W  75 KT
24HR VT  30/1800Z 21.7N  82.8W  90 KT
36HR VT  31/0600Z 23.4N  84.6W  100 KT
48HR VT  31/1800Z 25.2N  86.8W  110 KT
72HR VT  01/1800Z 28.0N  90.0W  105 KT
96HR VT  02/1800Z 30.5N  92.5W  85 KT...INLAND
120HR VT 03/1800Z 32.0N  94.0W  55 KT...INLAND

$$
FORECASTER YOUR NAME HERE

INNNN
Objective of the Discussion

Explain the reasoning behind the analysis and the forecast
  • include the prognostic reasoning
  • indicate objective techniques used
  • describe other meteorological decisions
  • plans for watches and warnings

Best opportunities to convey the degree of confidence in the forecast; particularly important if the level of confidence is low

Product has a wide spectrum of users with varying levels of sophistication
  • professional meteorologists
  • meteorology students and professors
  • the media
  • emergency managers
  • general public
Final NHC Discussion

How does yours compare?
Advisory deadline
Quick Issue the Graphics - the media is calling
Advisory deadline
Quick Issue the Graphics- the media is calling
Tropical Storm Force Wind Speed Probabilities
For the 120 hours (5 days) from 2 PM EDT Fri Aug 29 to 2 PM EDT Wed Sep 3

Probability of tropical storm force surface winds (1-minute average \(\geq 39\) mph) from all tropical cyclones

- Indicates HURRICANE center location at 2 PM EDT Fri Aug 29

Color Legend:
- 5%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%
50-knot Wind Speed Probabilities
For the 120 hours (5 days) from 2 PM EDT Fri Aug 29 to 2 PM EDT Wed Sep 3

Probability of 1-minute average 50-knot (58 mph) or greater surface winds from all tropical cyclones

◊ indicates HURRICANE  center location at 2 PM EDT Fri Aug 29

Legend:
- 5% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Hurricane Force Wind Speed Probabilities
For the 120 hours (5 days) from 2 PM EDT Fri Aug 29 to 2 PM EDT Wed Sep 3

Probability of hurricane force surface winds (1-minute average >= 74 mph) from all tropical cyclones

◊ indicates HURRICANE

center location at 2 PM EDT Fri Aug 29

- 5%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%
How did the track guidance change in subsequent runs?
29/1800 UTC Guidance

Remember it was trending westward
30/0000 UTC Guidance

Consensus moves back eastward
Tightly clustered guidance shifts a little eastward, but slower
30/1200 UTC Guidance

Bifurcation of solutions at days 4 and 5
31/0000 UTC Guidance
How did the NHC forecast for this case verify?
- Actual track (white) along the right side of the guidance envelope.

- Correct decision to remain right of the model consensus.
NHC forecast errors for this forecast were lower than the long-term (2002-06) average.

Longer range track errors were mostly along track – NHC forecasts too slow.

Models that showed hurricane slowing down were incorrect.

### Avg. NHC Track Error (2002-06) (n mi) vs. This Forecast (n mi)

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<th>Time</th>
<th>Average NHC Track Error (2002-06)</th>
<th>This Forecast</th>
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<tr>
<td>120 hour</td>
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- Gustav rapidly intensified

- Made landfall as Category 4 hurricane (135 kt) in western Cuba a little over 24 hour after this forecast was issued

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