

VIA 2022 Schield Hurricane Ian NHC Forecasts 1

Hurricane IAN Cone Forecasts: National Hurricane Center

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Statistical Literacy Consultant: University of New Mexico
Past-President: National Numeracy Network

Sept. 28, 2022
[www.StatLit.org/pdf/
2022-Schild-Hurricane-Ian-NHC-slides.pdf](http://www.StatLit.org/pdf/2022-Schild-Hurricane-Ian-NHC-slides.pdf)

VIA 2022 Schield Hurricane Ian NHC Forecasts 2

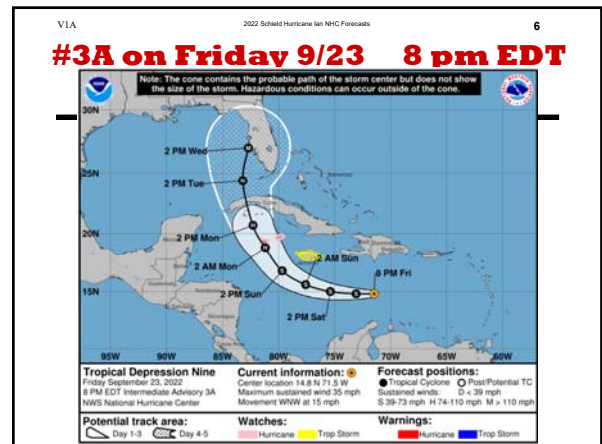
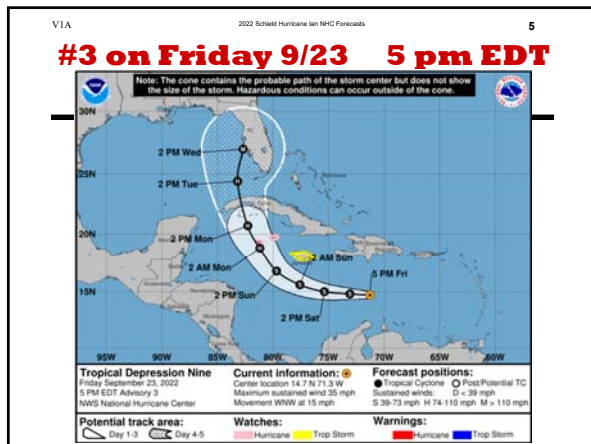
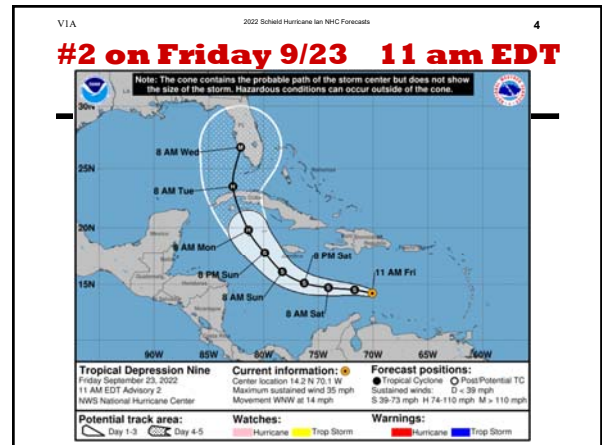
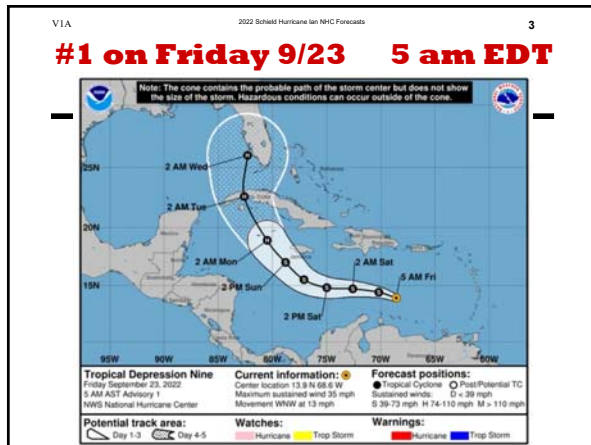
Forecasts Involve Uncertainty: Hurricane Forecasts

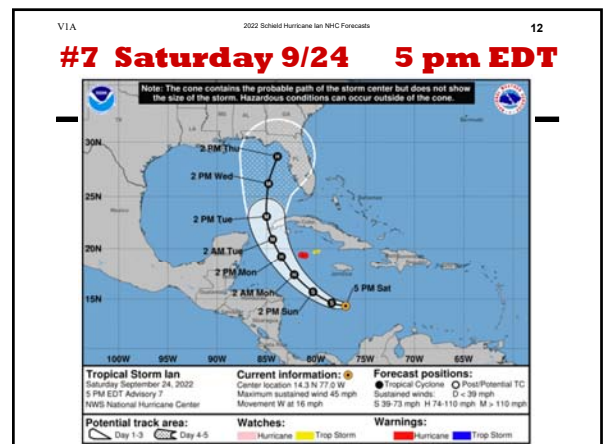
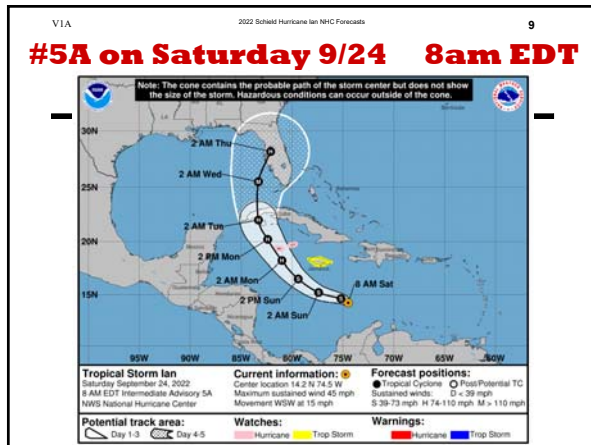
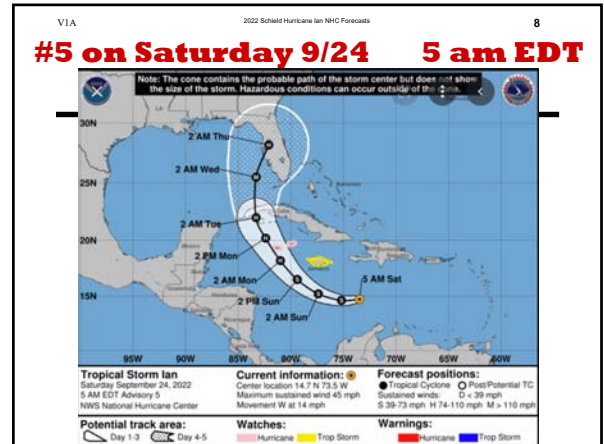
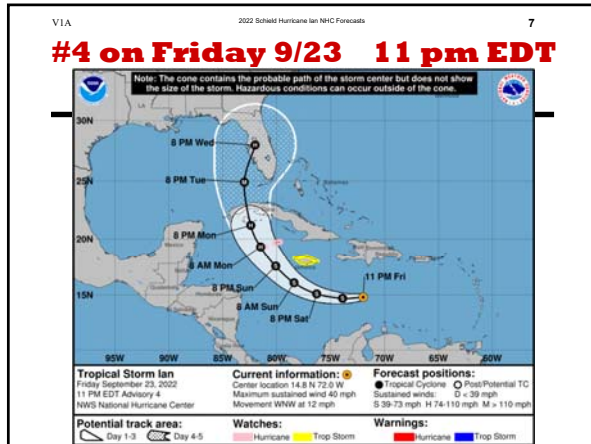
Forecasting a hurricane's future is uncertain:

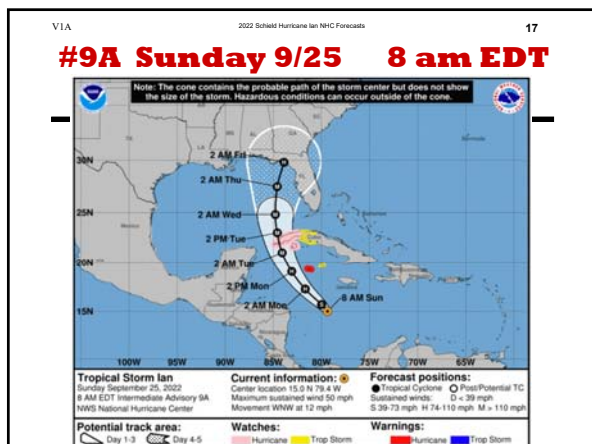
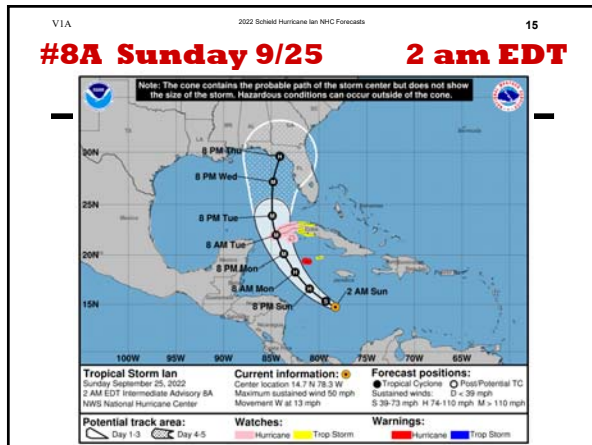
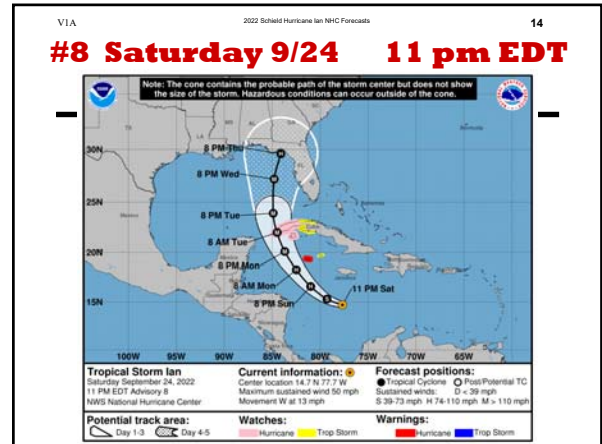
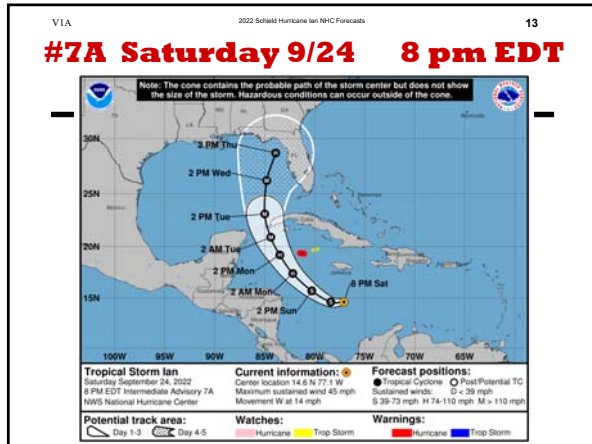
- Uncertainty in storm path and wind speed
- Uncertainty in storm surge (size and in or out).
- Uncertainty in **landfall**: where and when

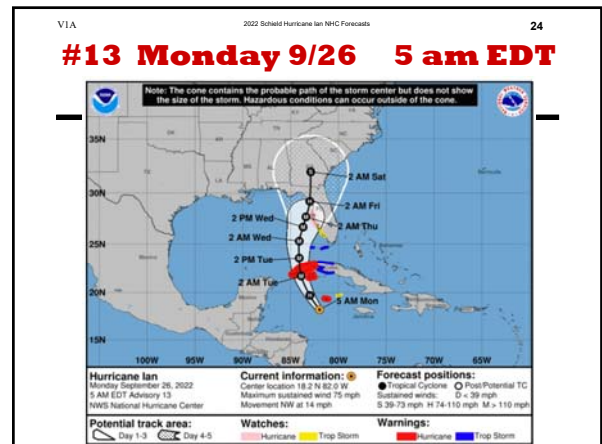
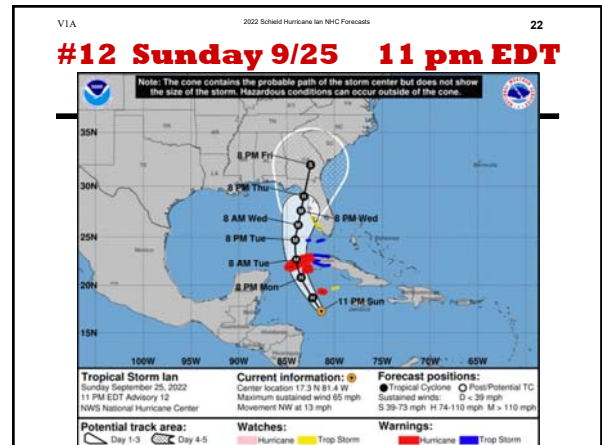
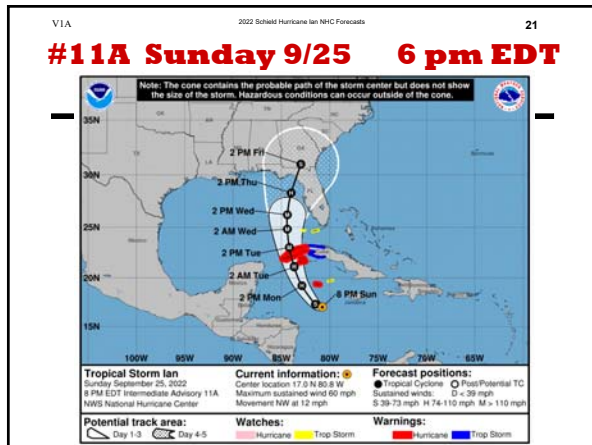
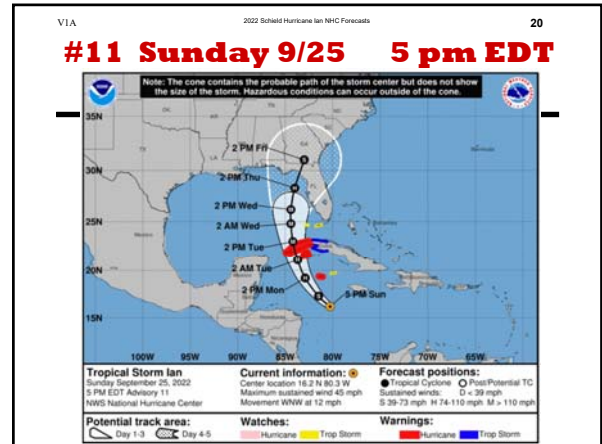
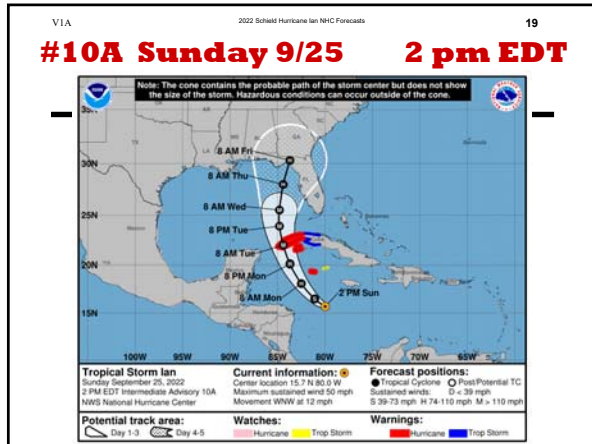
Solution: the 67% storm-path Probability Cone.
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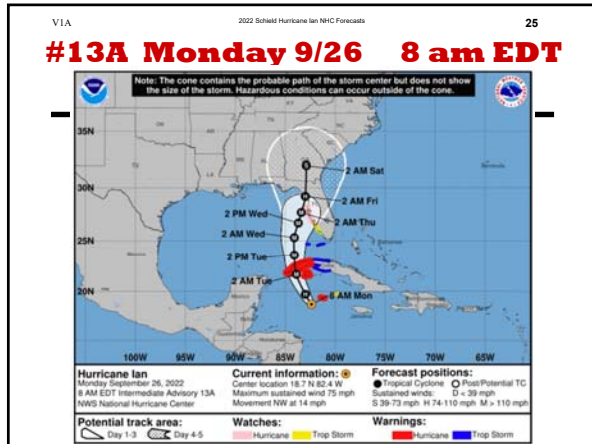
<https://www.nhc.noaa.gov/aboutcone.shtml>











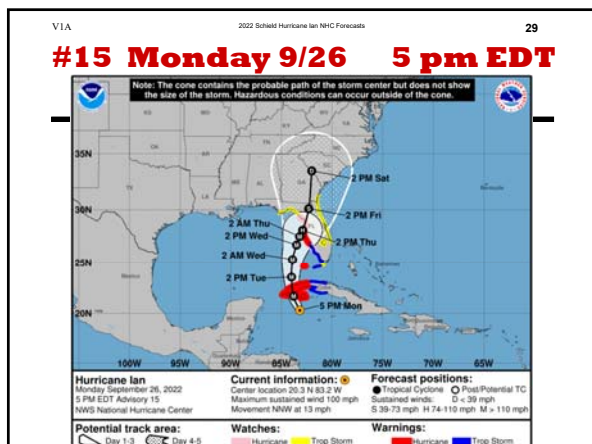
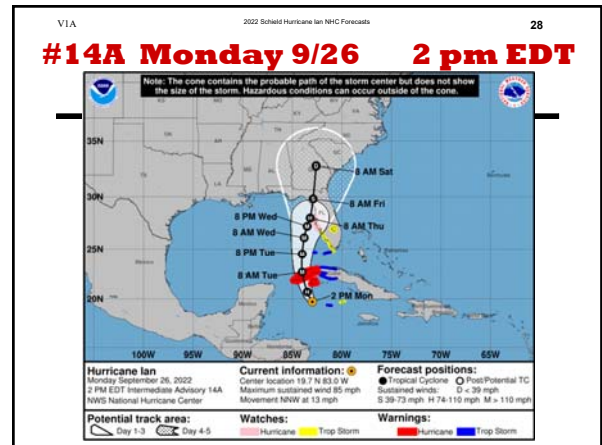
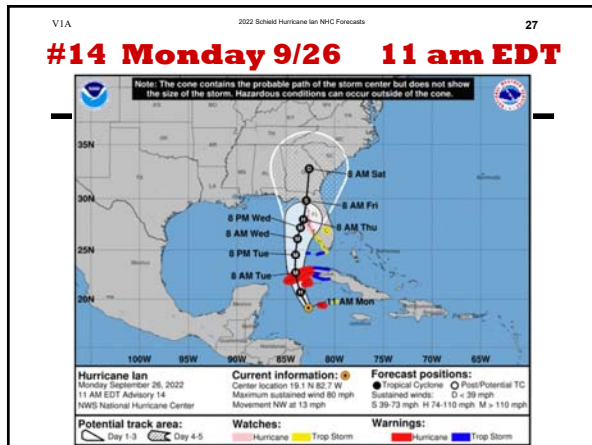
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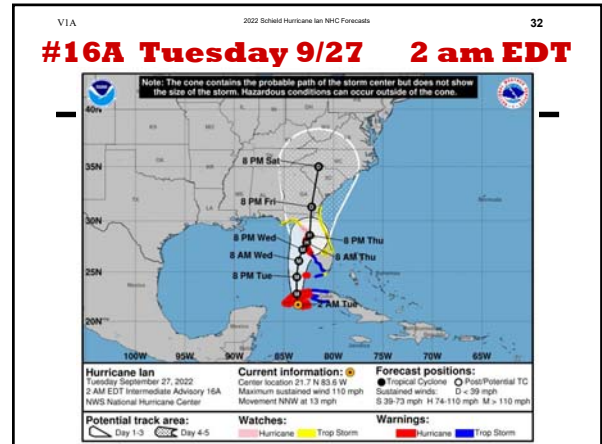
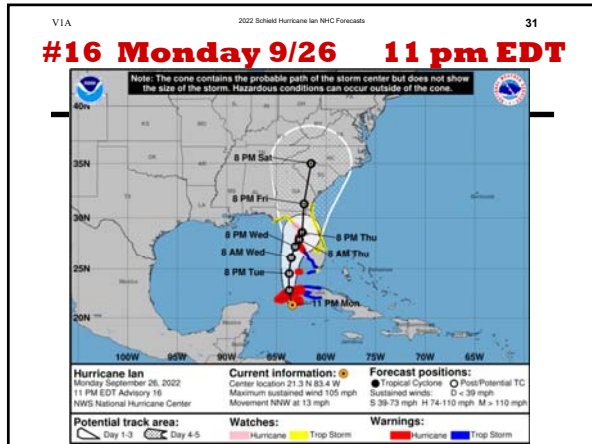
#13A Monday 9/26 8 am EDT Hurricane Watch/Warning

Sunday 09-25 A HURRICANE WATCH IS IN EFFECT FOR ENGLEWOOD TO THE ANCLOTE RIVER ... INCLUDING TAMPA BAY
<https://www.nhc.noaa.gov/archive/2022/ai09/ai092022.fstadv.013.shtml>

Sunday 9-25 midnight: **A HURRICANE WATCH HAS BEEN ISSUED FROM BONITA BEACH TO ENGLEWOOD. THE HURRICANE WATCH FROM ENGLEWOOD TO THE ANCLOTE RIVER...INCLUDING TAMPA BAY...HAS BEEN UPGRADED TO A HURRICANE WARNING. A HURRICANE WATCH HAS BEEN ISSUED FROM THE ANCLOTE RIVER TO THE SUWANNEE RIVER.**
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Anclote river: On gulf coast north of Clearwater/Tampa
Englewood: On gulf coast nw of Port Charlotte; South of Venice/Tampa.
Bonita Beach: South of Ft. Myers; North of Naples.





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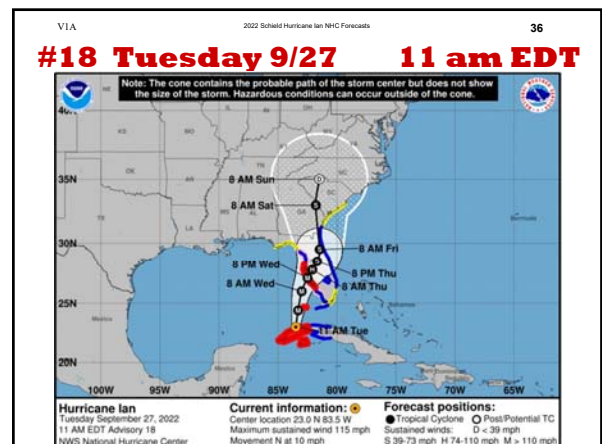
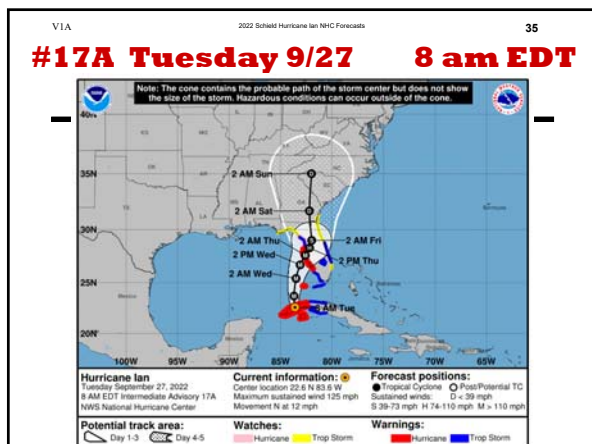
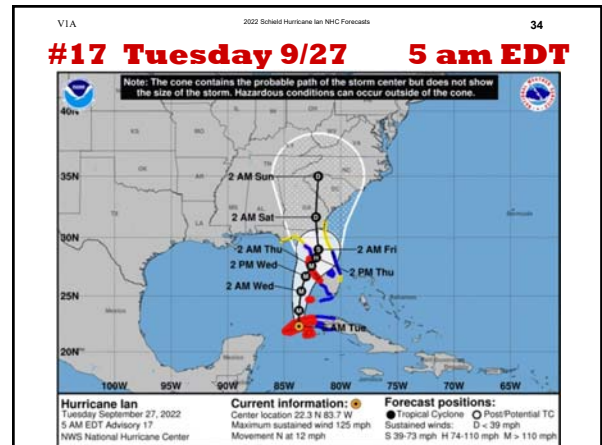
Hurricane Watch/Warning Monday 9/26 to Tuesday 9/27

Monday 9-26 2100 UTC. A HURRICANE WARNING IS IN EFFECT FOR...
* **ENGLEWOOD** TO THE ANCLOTE RIVER...INCLUDING TAMPA BAY
<https://www.nhc.noaa.gov/archive/2022/al09/al092022.fstadv.015.shtml>

Tues 09-27 0900 UTC. A HURRICANE WARNING IS IN EFFECT FOR...
* **BONITA BEACH** TO THE ANCLOTE RIVER...INCLUDING TAMPA BAY
<https://www.nhc.noaa.gov/archive/2022/al09/al092022.fstadv.017.shtml>

Tues 09-27 2100 UTC. A HURRICANE WARNING IS IN EFFECT FOR...
* **CHOKOLOSKEE** TO ANCLOTE RIVER...INCLUDING TAMPA BAY

=====
Anclote River: On gulf coast north of Clearwater/Tampa.
Englewood: On gulf coast north of Port Charlotte/Fort Myers.
Bonita Beach: On gulf coast, south of Fort Myers.
Chokoskee: On gulf coast, south of Marco Island/Naples



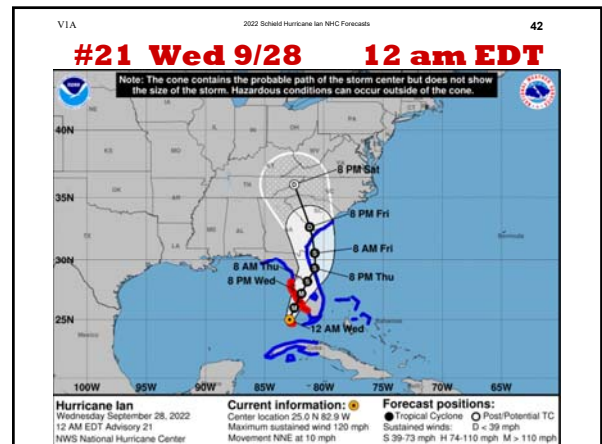
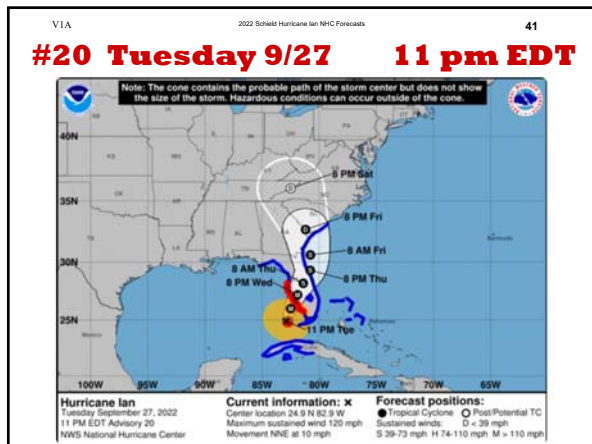
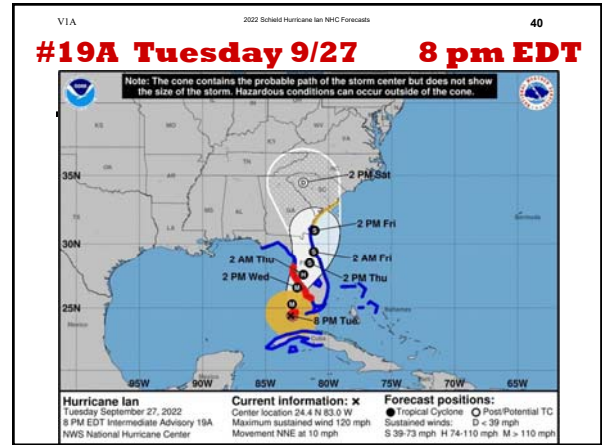
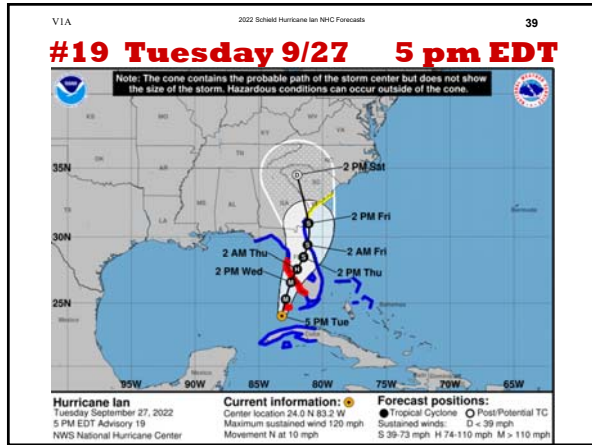
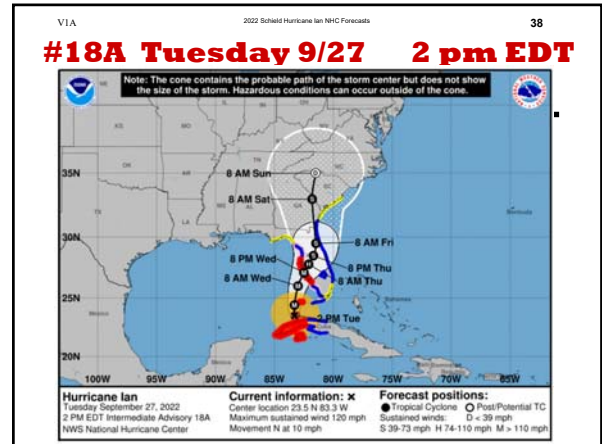
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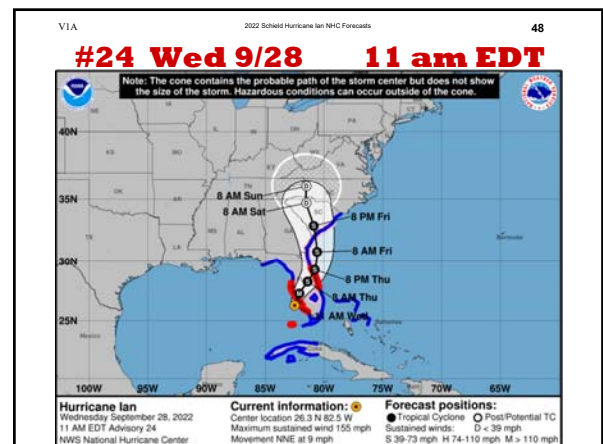
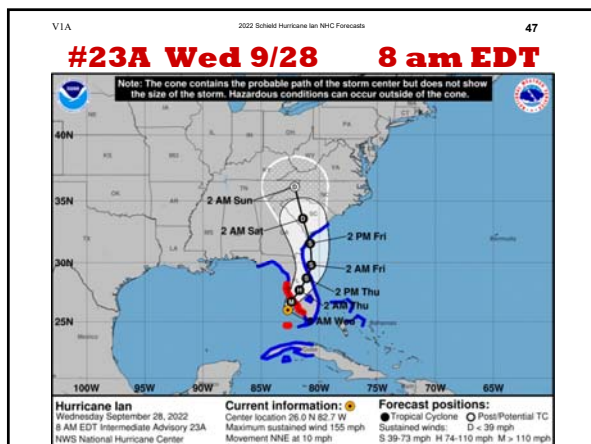
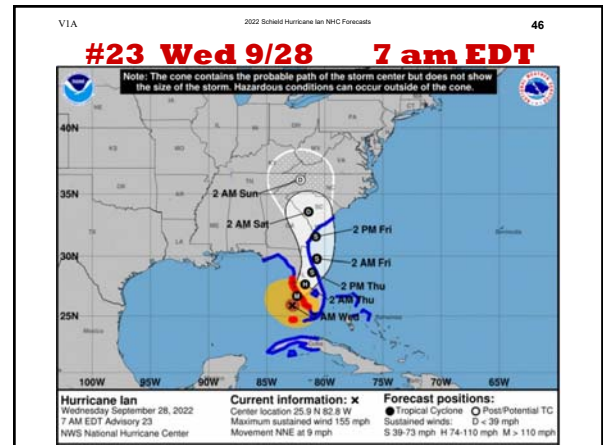
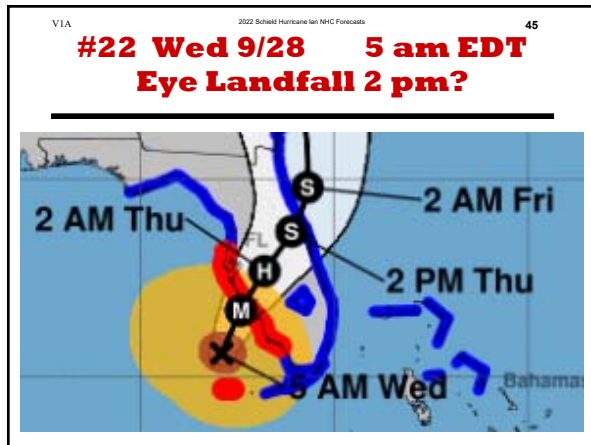
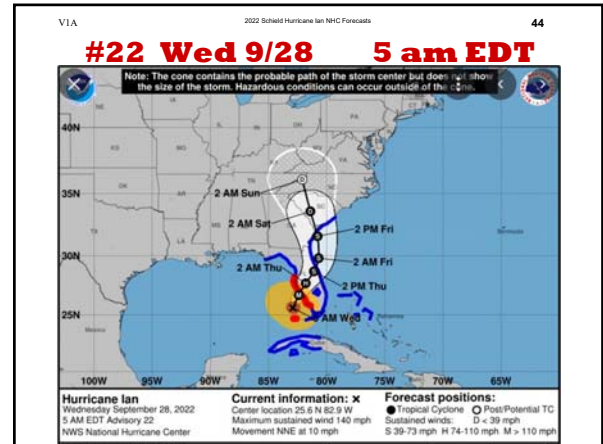
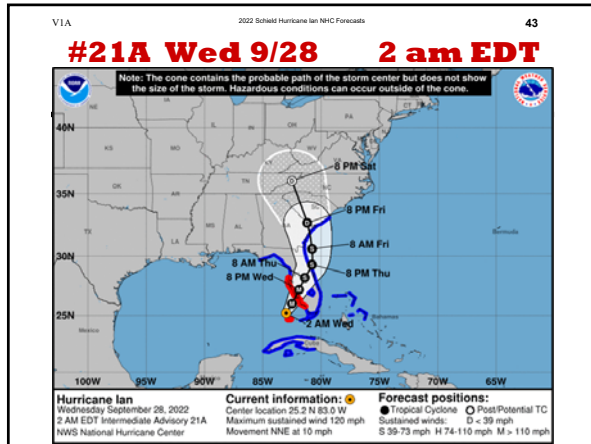
#18 Tuesday 9/27 11 am EDT Tropical Analysis and Forecast

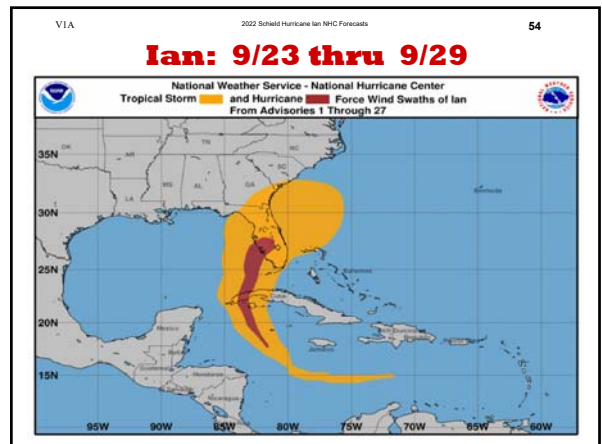
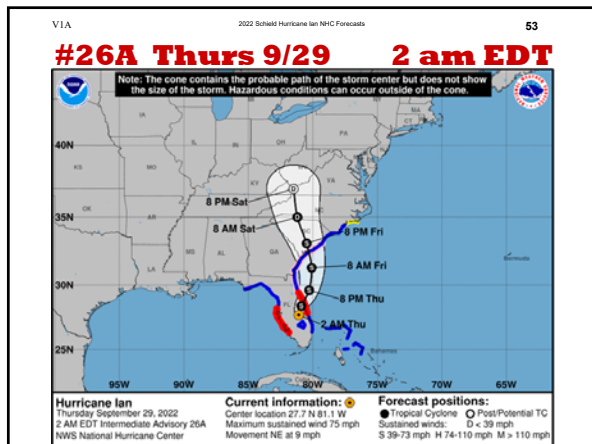
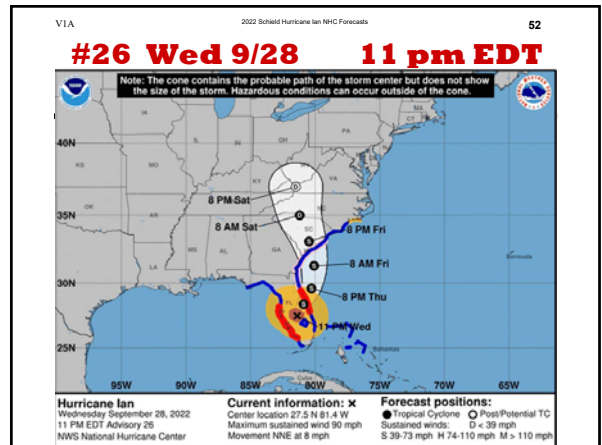
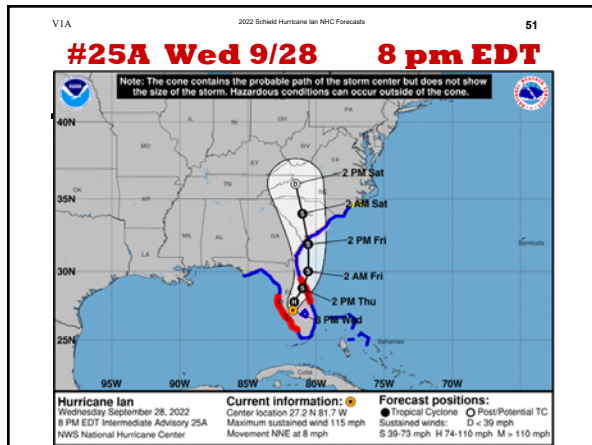
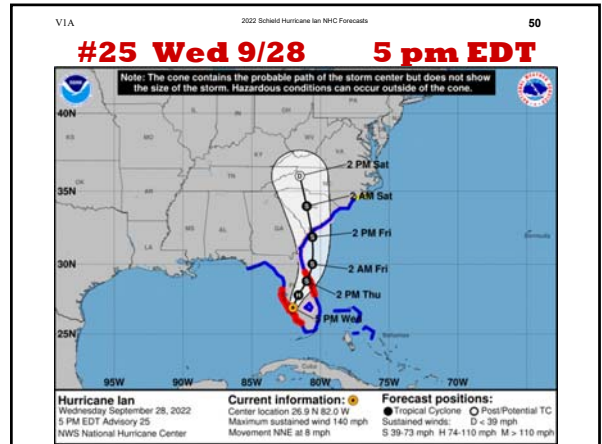
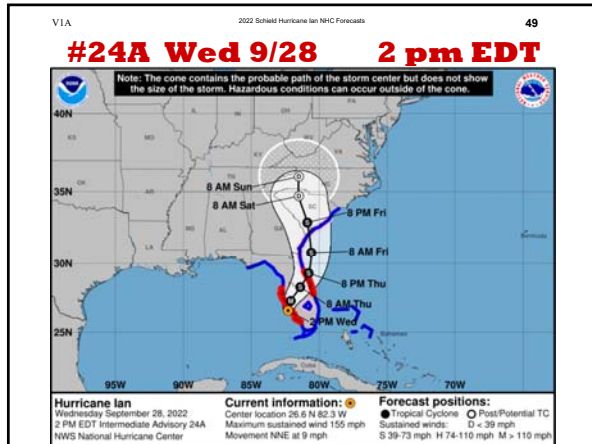
NOTE: Do not focus on the exact track. Impacts can occur well outside the area enclosed by the cone.

- Ian will continue toward the north with a slightly slower forward speed today, then turn NNE while slowing down on Wednesday
- Ian is expected to make landfall along the west coast of Florida peninsula along the coast **between Ft. Myers and Tampa**
- Track confidence is growing in the first 36 hours, although the roughly-parallel track makes it difficult to pinpoint exactly which areas will experience the most severe impacts
- Ian is expected to slow down as it nears the west-central Florida coast – this would prolong the storm surge, wind, and rainfall impacts along the affected portions of the west coast of Florida.

www.nhc.noaa.gov/uscg/USCG_District8/ian-uscgd8-sep27-1030CDT.pdf







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Hurricane Wind categories

Saffir-Simpson Wind Scale:
Category (Based on maximum sustained winds)

1: 73-95 mph	Very dangerous winds
2: 96-110 mph	Extremely dangerous winds
3: 111-129 mph	Devastating damage
4: 130-156 mph	Catastrophic damage
5: 157+ mph	Catastrophic damage

<https://news.yahoo.com/hurricane-ian-forecast-cone-may-090041402.html>

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Hurricane Wind categories: NHC Graphics

Category (Based on maximum sustained winds)

D: <39 mph	Tropical Depression
S: 39 - 73 mph	Tropical Storm
H: 74-110 mph	Hurricane
M: >110 mph	Major Hurricane

<https://www.nhc.noaa.gov/aboutnhcgraphics.shtml>

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US Hurricane Definitions

<https://www.nhc.noaa.gov/aboutgloss.shtml>

Hurricane Warning (condensed):
 Sustained winds of 74 mph or higher are **expected** somewhere within the specified area. Issued **36 hours** in advance of tropical-storm-force winds. Can remain in effect when dangerously high water continue.

Hurricane Watch (condensed):
 Sustained winds of 74 mph or higher are **possible** within the specified area. Issued **48 hours** in advance of the anticipated onset of tropical storm force winds.

Gale Warning (condensed):
 A warning of 1-minute sustained surface winds in the range 39 to 54 mph, either predicted or occurring and not directly associated with tropical cyclones.

High Wind Warning (condensed):
 Surface winds of 40 mph or greater lasting for 1 hour or longer, **or** winds gusting to 58 mph or more regardless of duration expected or observed over land.

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National Hurricane Center: Accessing Storm Graphics

- Go to the NHC archive: <https://www.nhc.noaa.gov/archive/2022/>
- Select the year and the storm/hurricane.
 The advisories and discussions shown are all just text.
- For graphics, select the 'Graphics-Archive' button at the top.
- On the 'Graphics-Archive' window, select 5-day with track.
 - Use the stop, left and right buttons to find the advisory you want.
 - Press the 'Save Image' button to copy or save the image.
 - Select Copy (to clipboard) or Save (as *.png).

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Forecasts Involve Uncertainty: Hurricane Forecasts

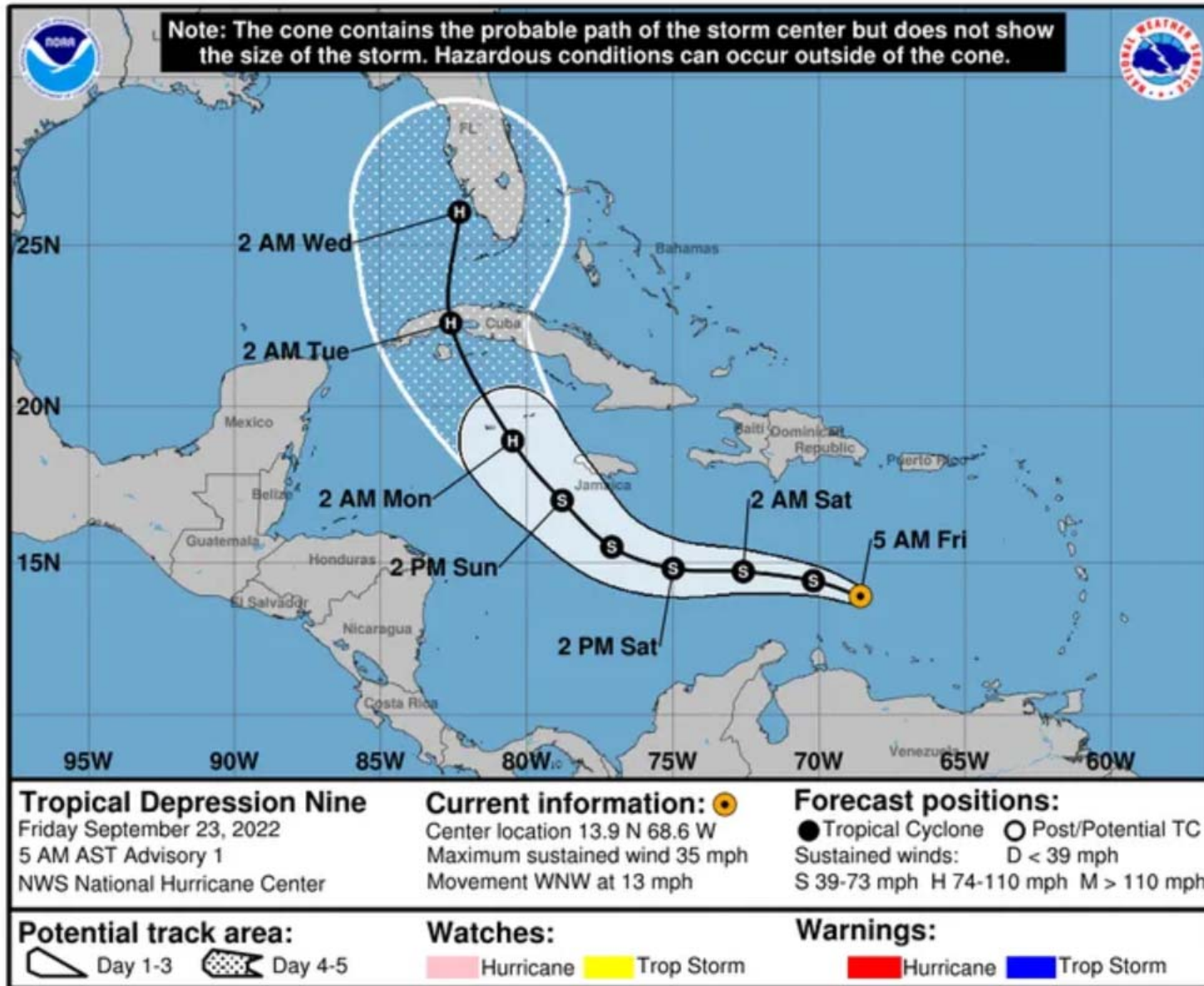
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- **Uncertainty in storm path and wind speed**
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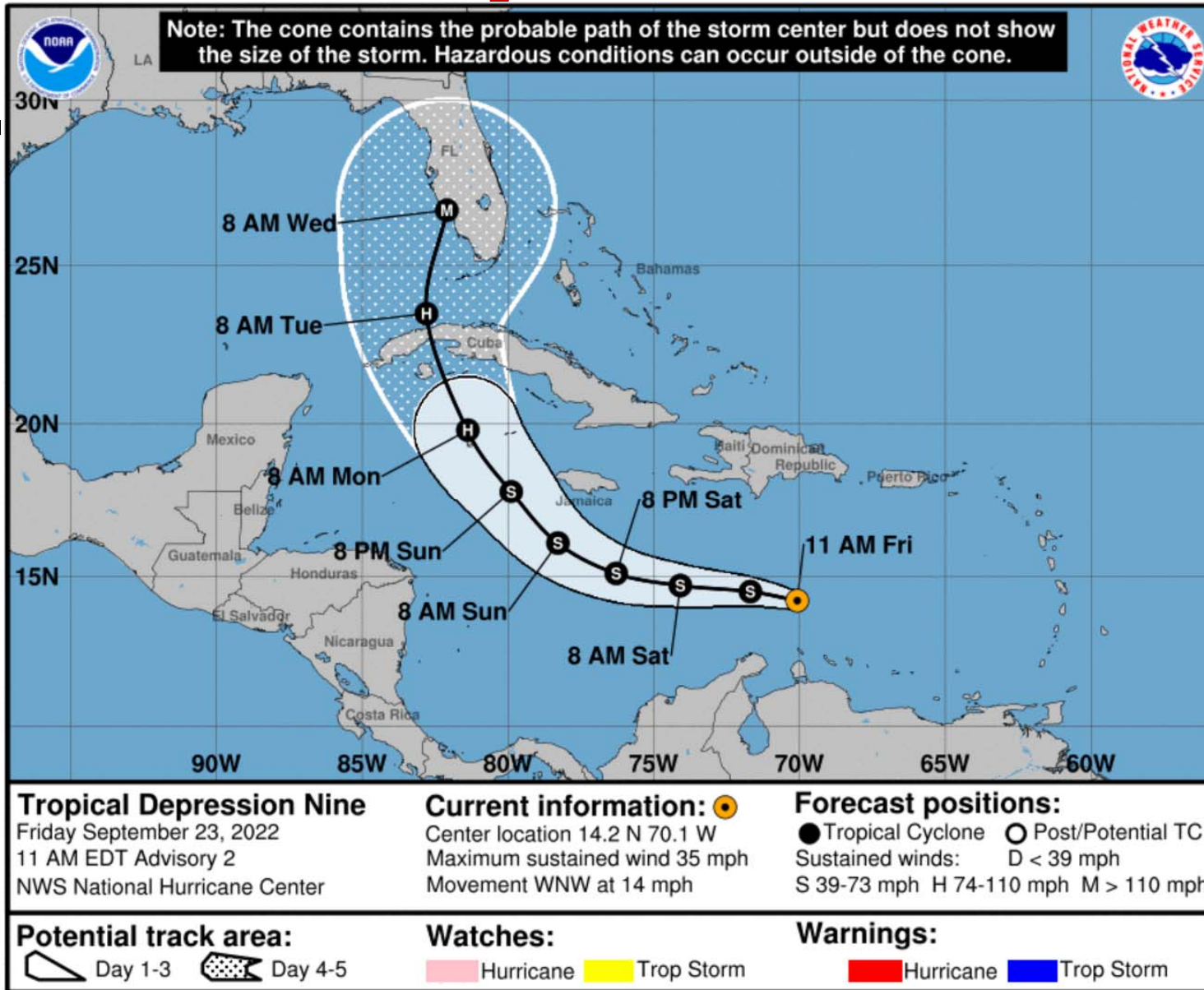
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#1 on Friday 9/23 5 am EDT



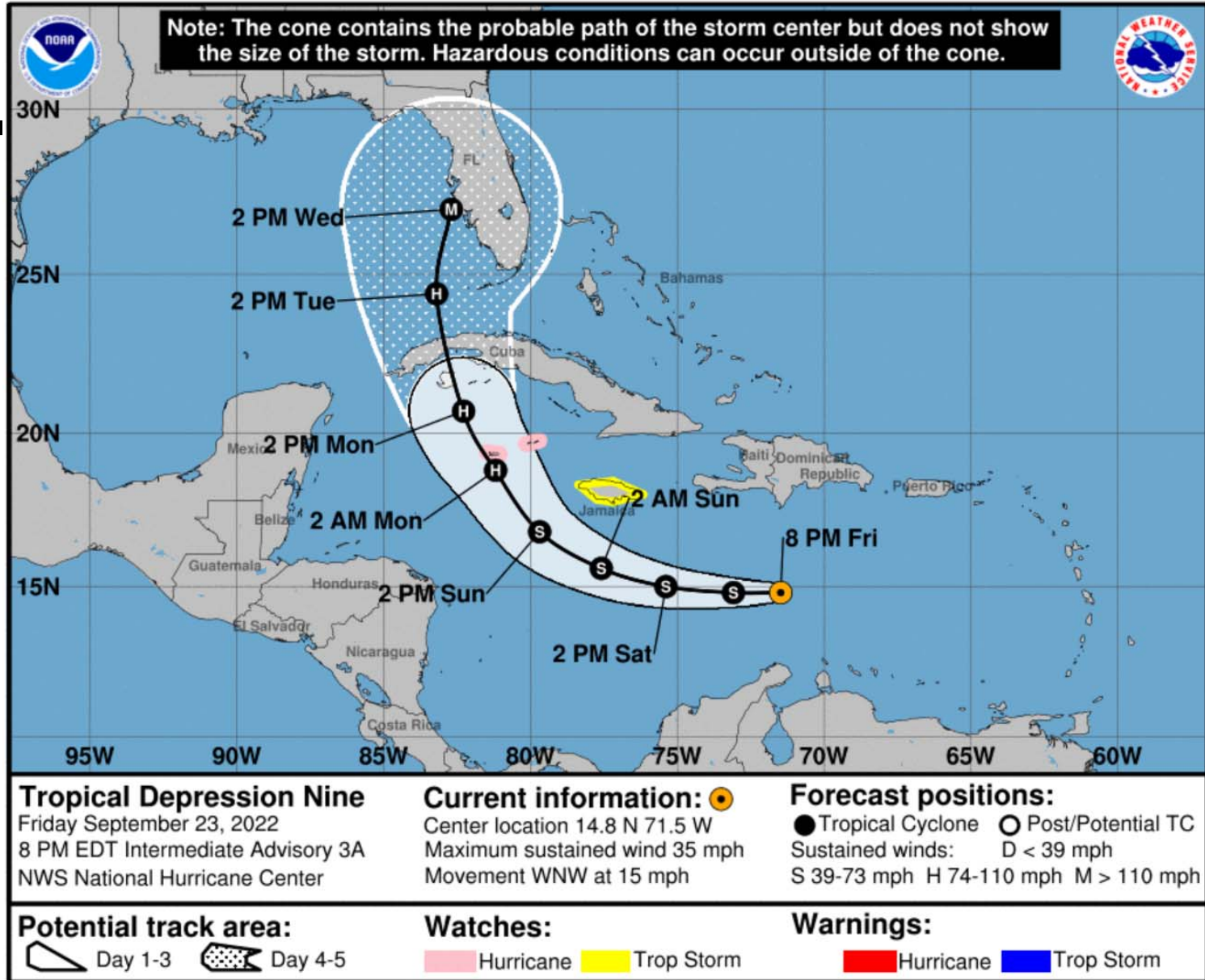
#2 on Friday 9/23 11 am EDT



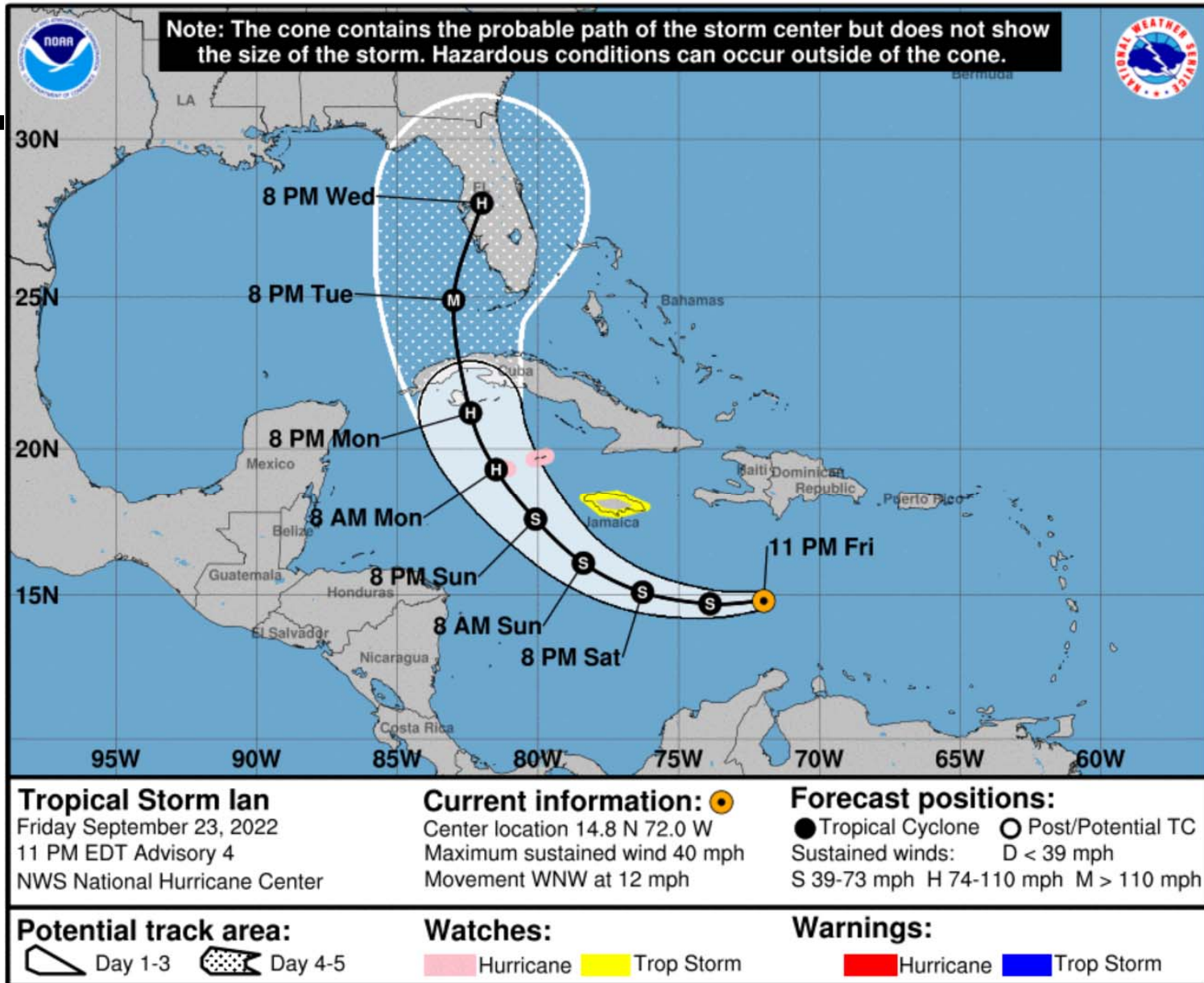
#3 on Friday 9/23 5 pm EDT



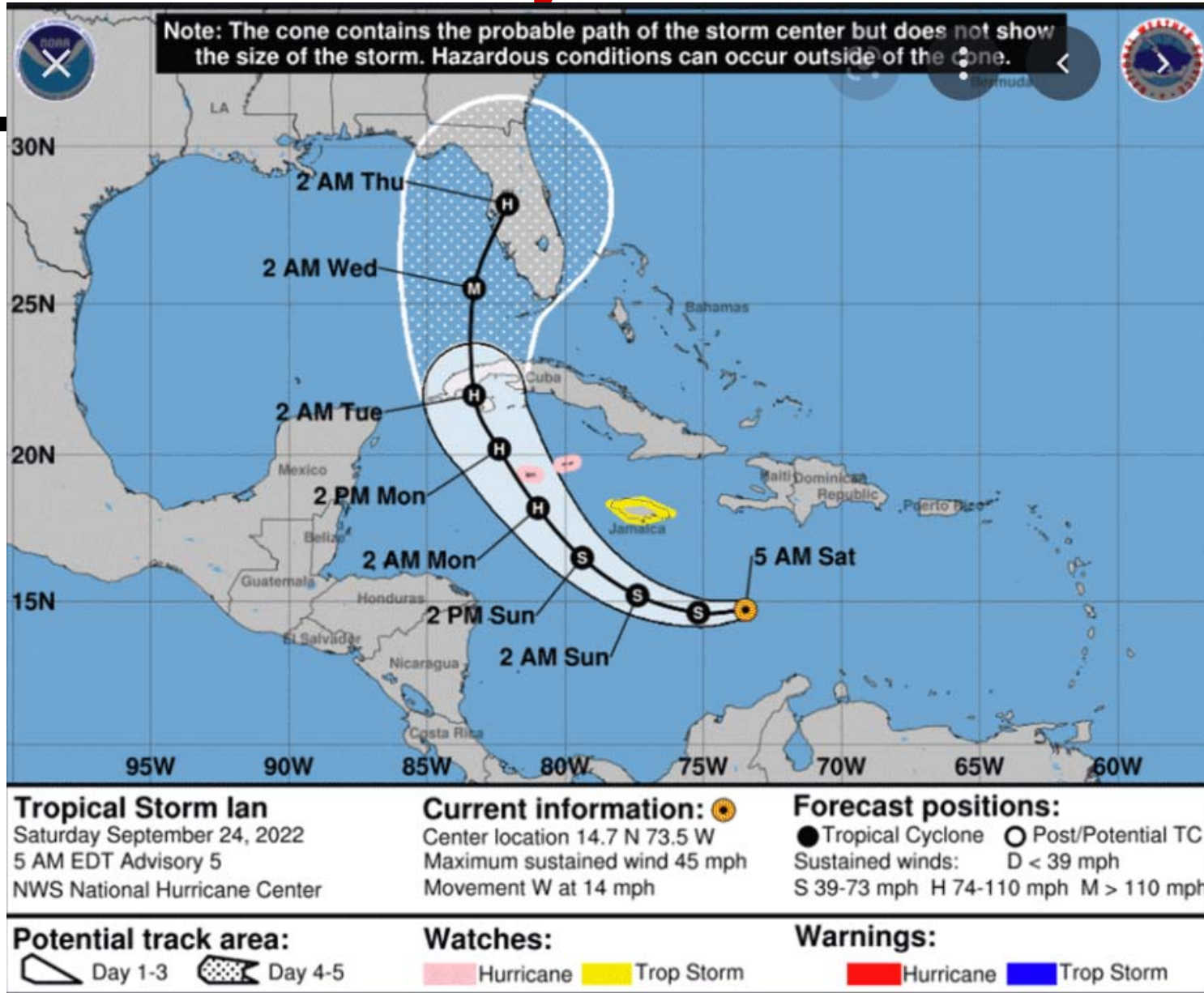
#3A on Friday 9/23 8 pm EDT



#4 on Friday 9/23 11 pm EDT



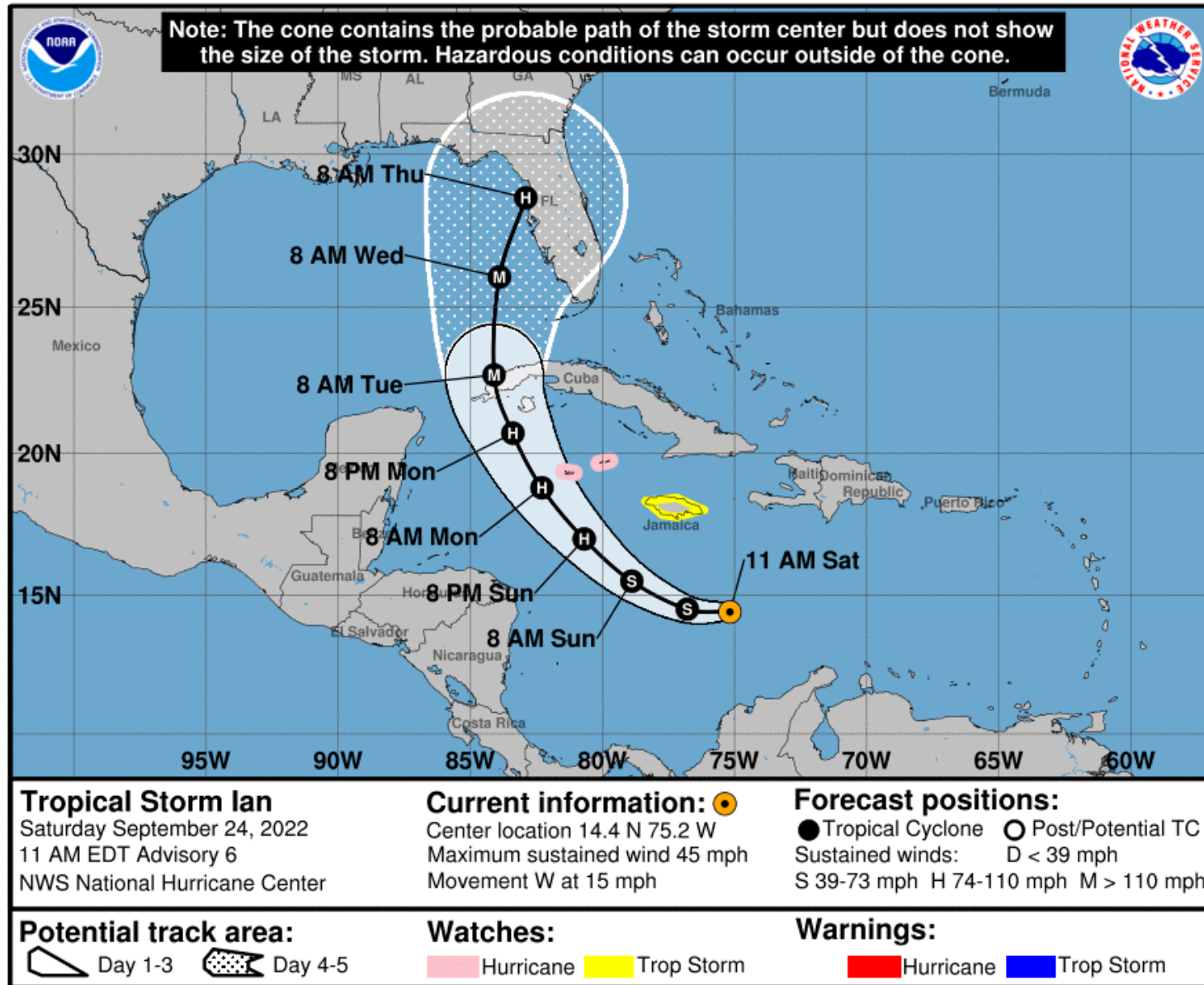
#5 on Saturday 9/24 5 am EDT



#5A on Saturday 9/24 8am EDT



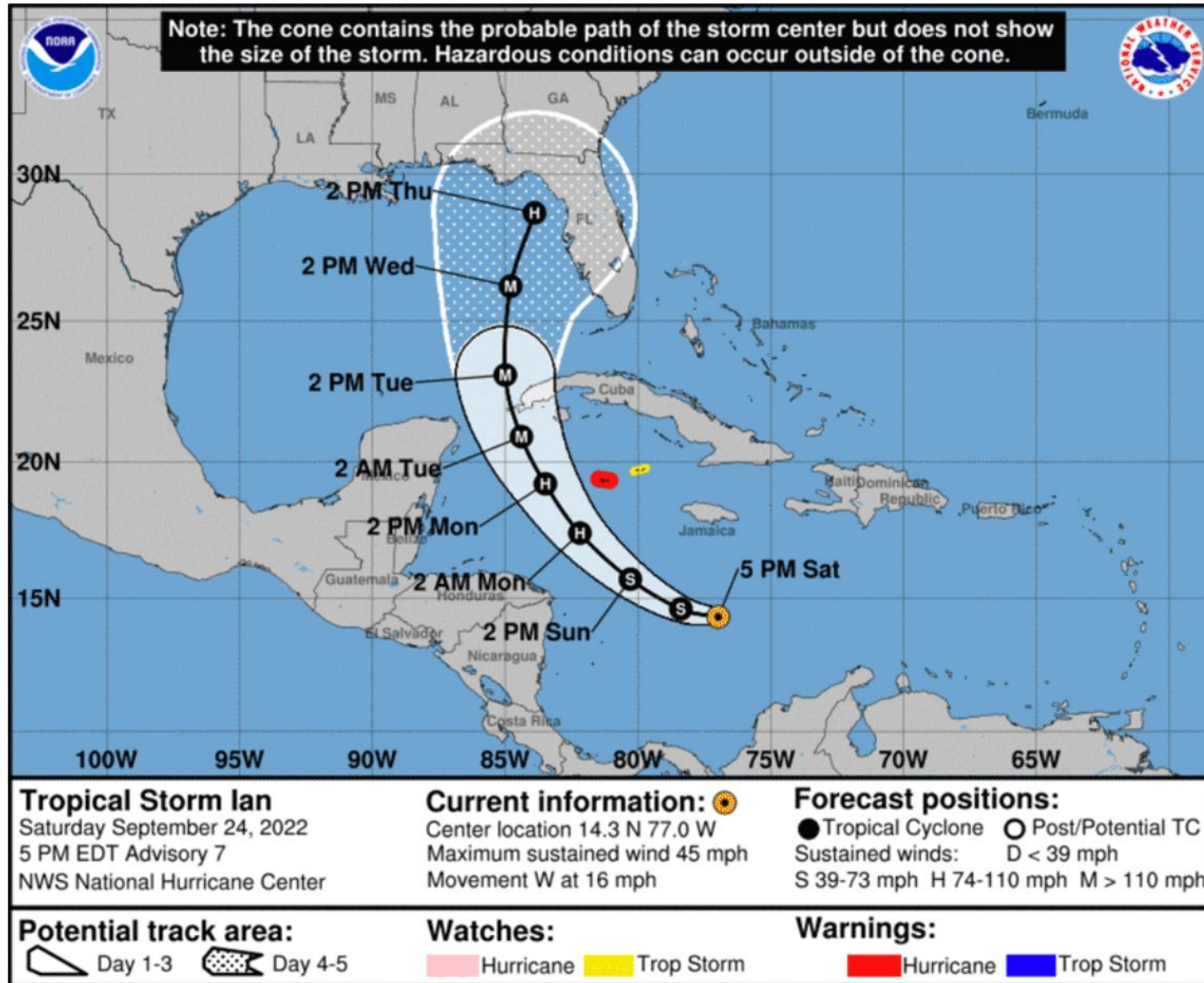
#6 on Saturday 9/24 11 am EDT



#6A Saturday 9/24 2 pm EDT



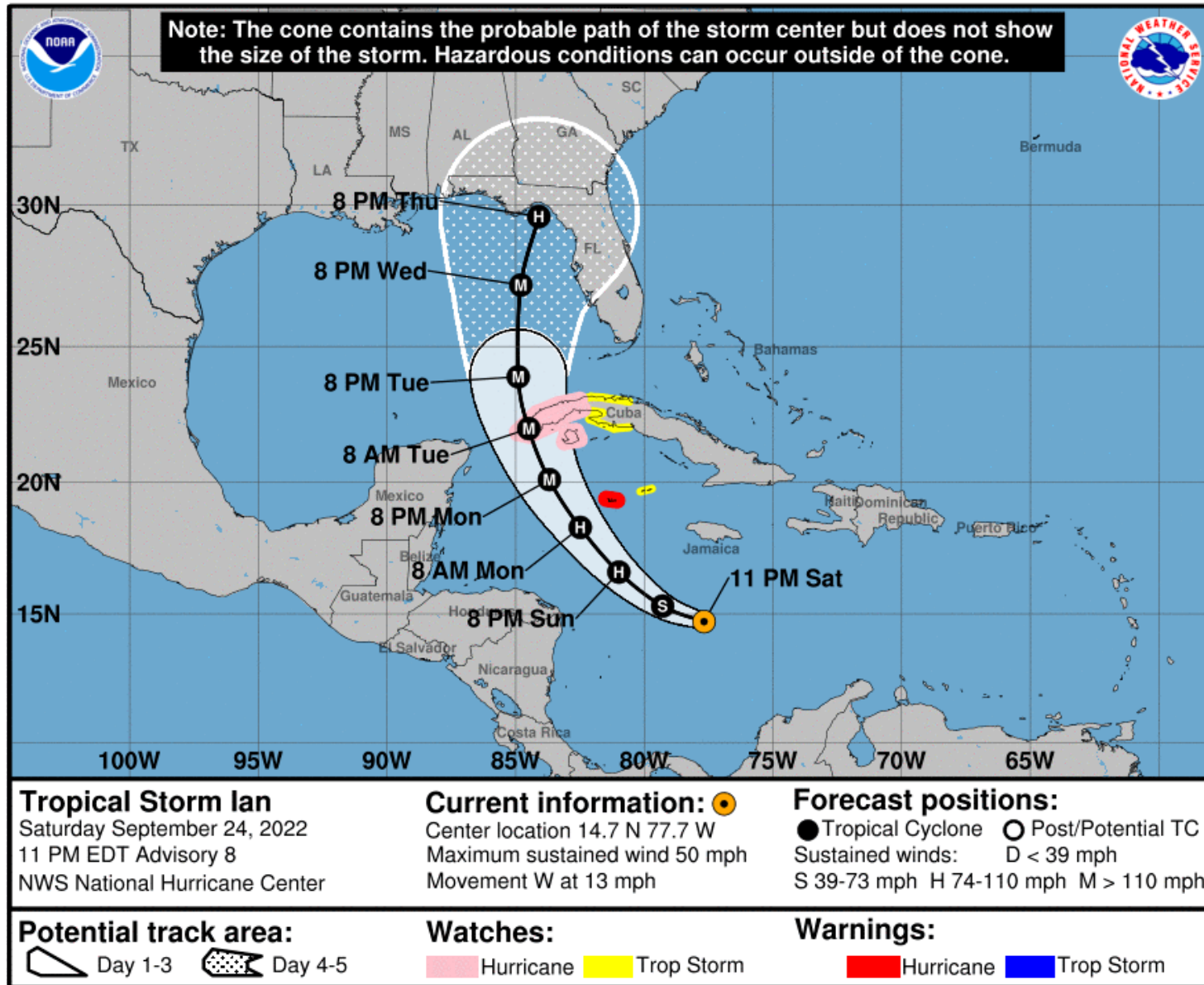
#7 Saturday 9/24 5 pm EDT



#7A Saturday 9/24 8 pm EDT

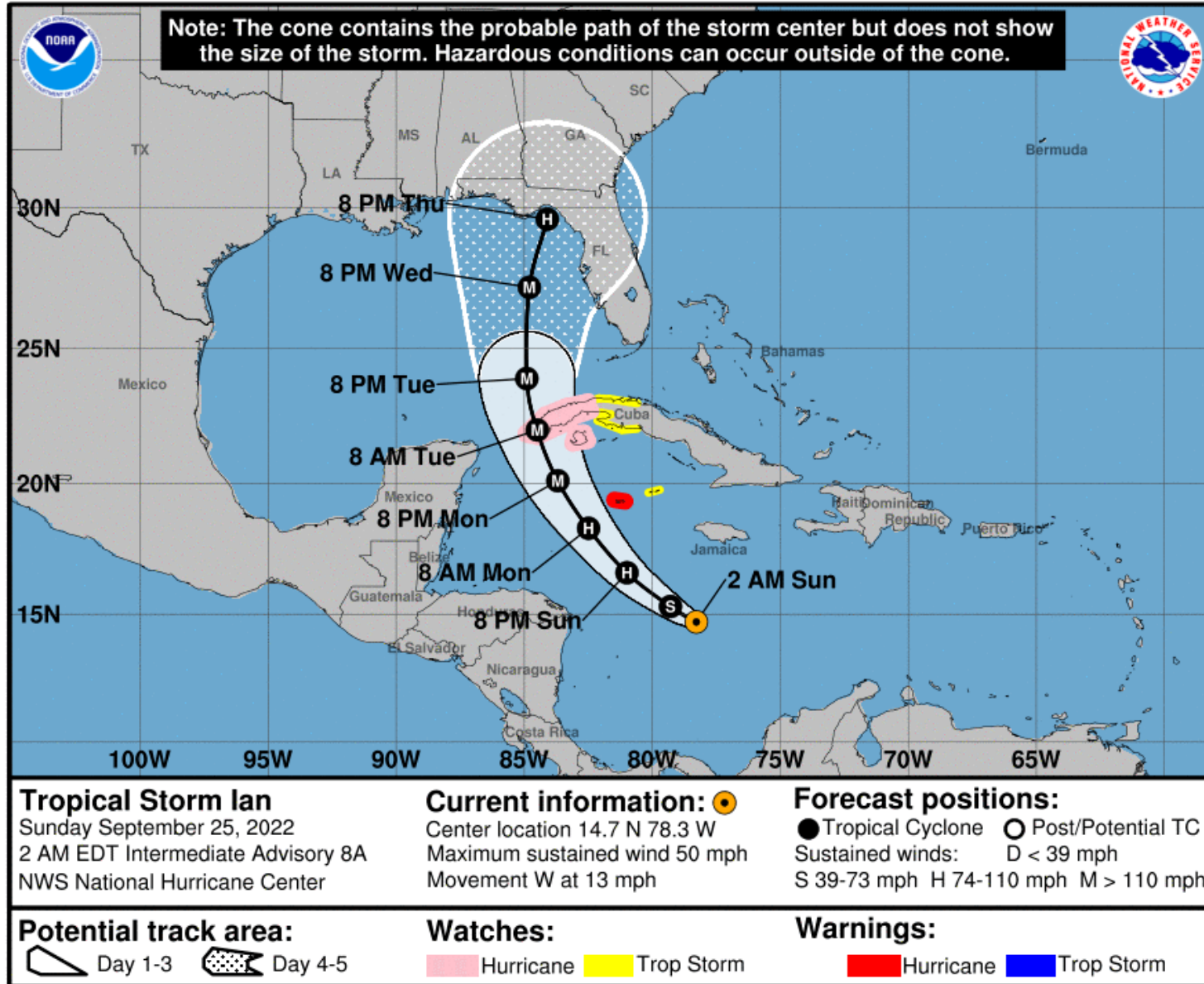


#8 Saturday 9/24 11 pm EDT



#8A Sunday 9/25

2 am EDT



#9 Sunday 9/25 5 am EDT



#9A Sunday 9/25 8 am EDT

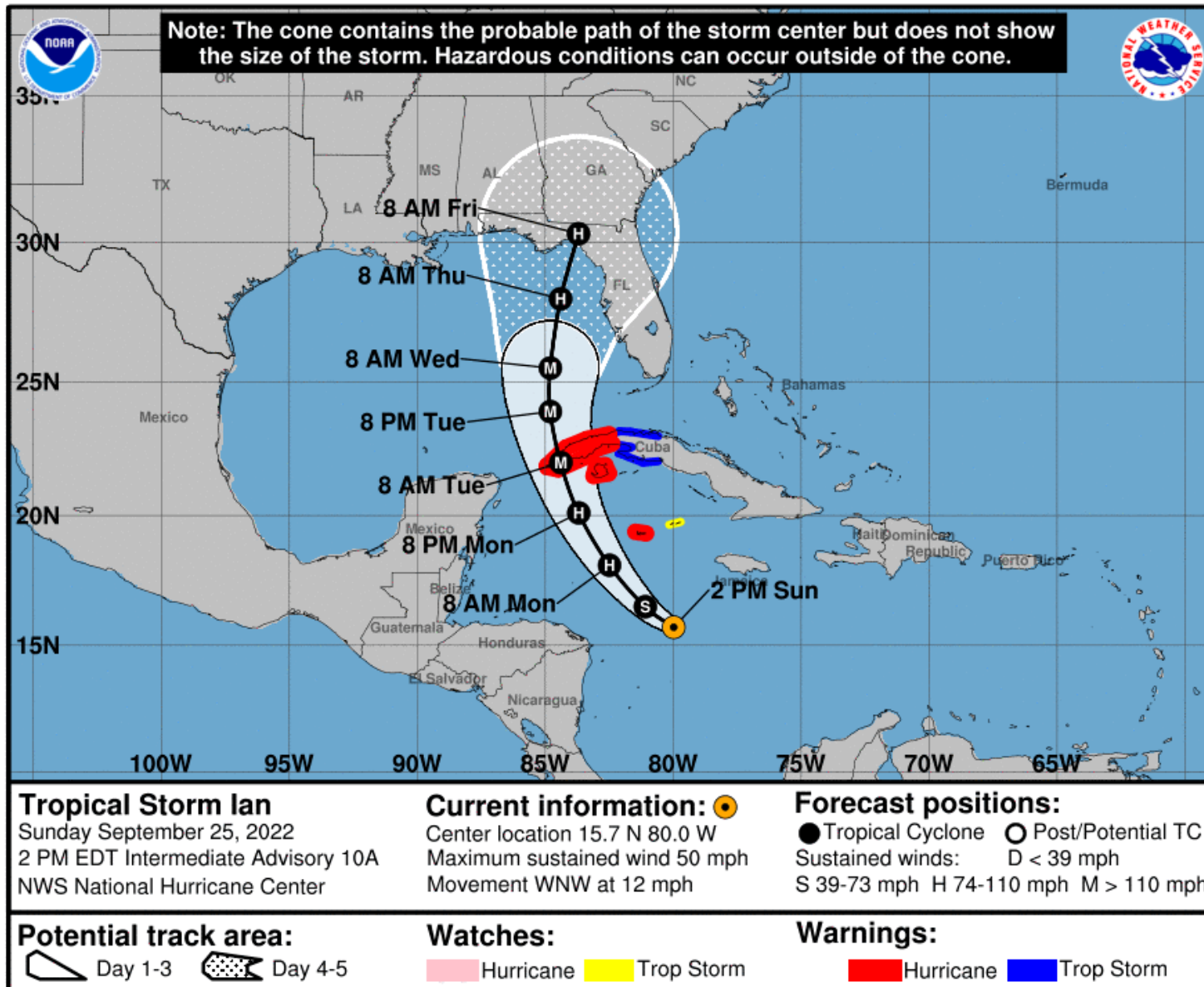


#10 Sunday 9/25 11 am EDT

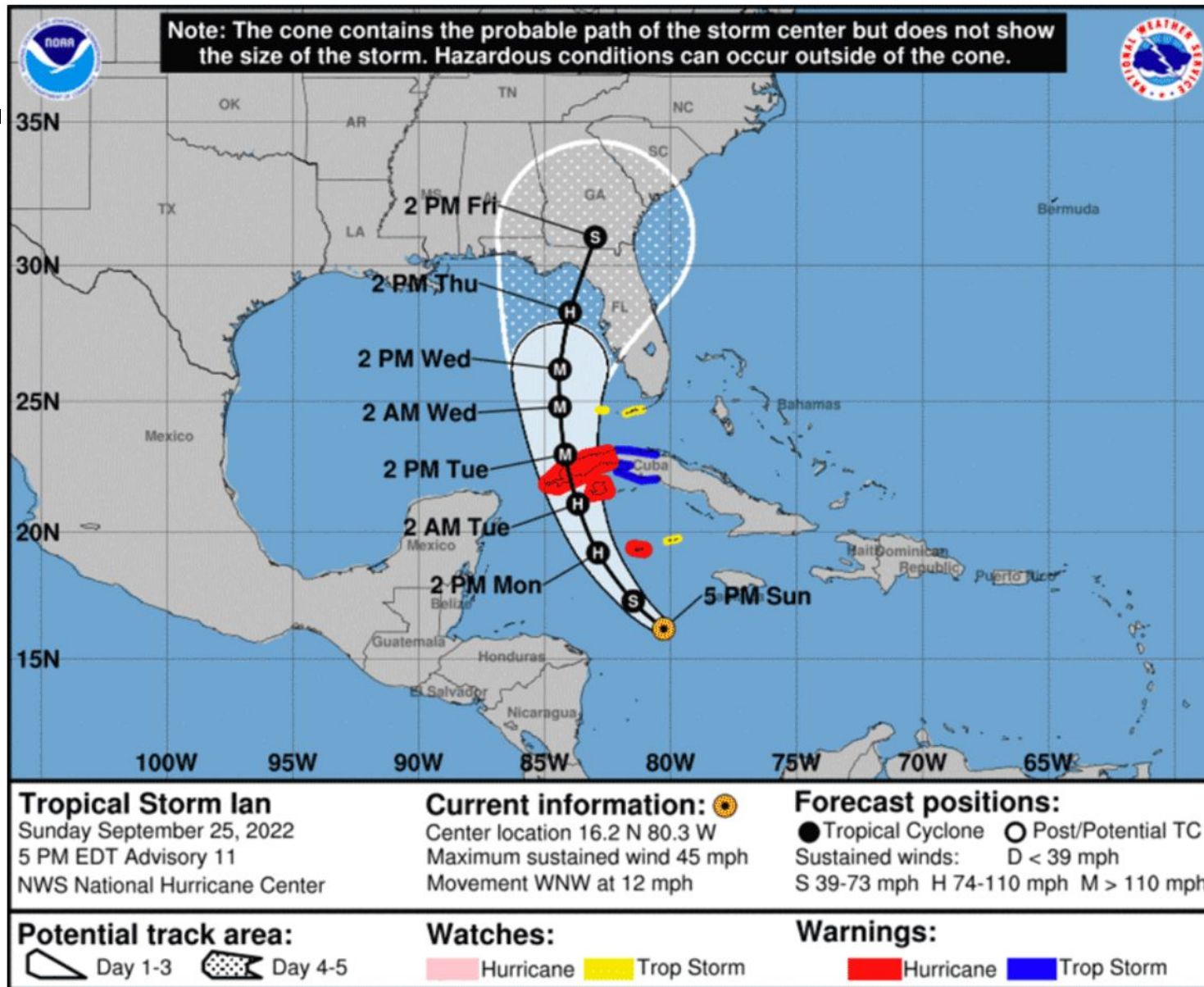


#10A Sunday 9/25

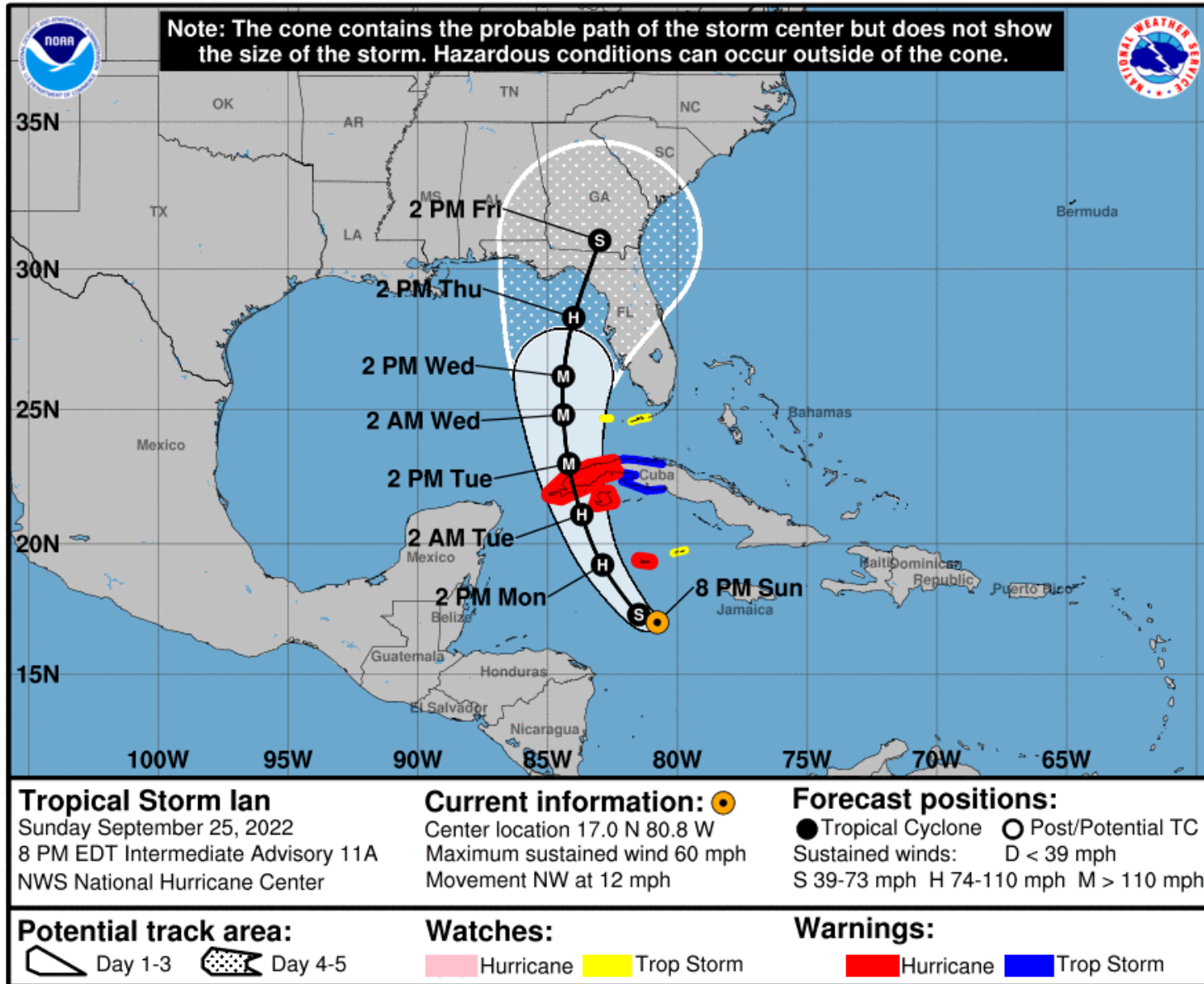
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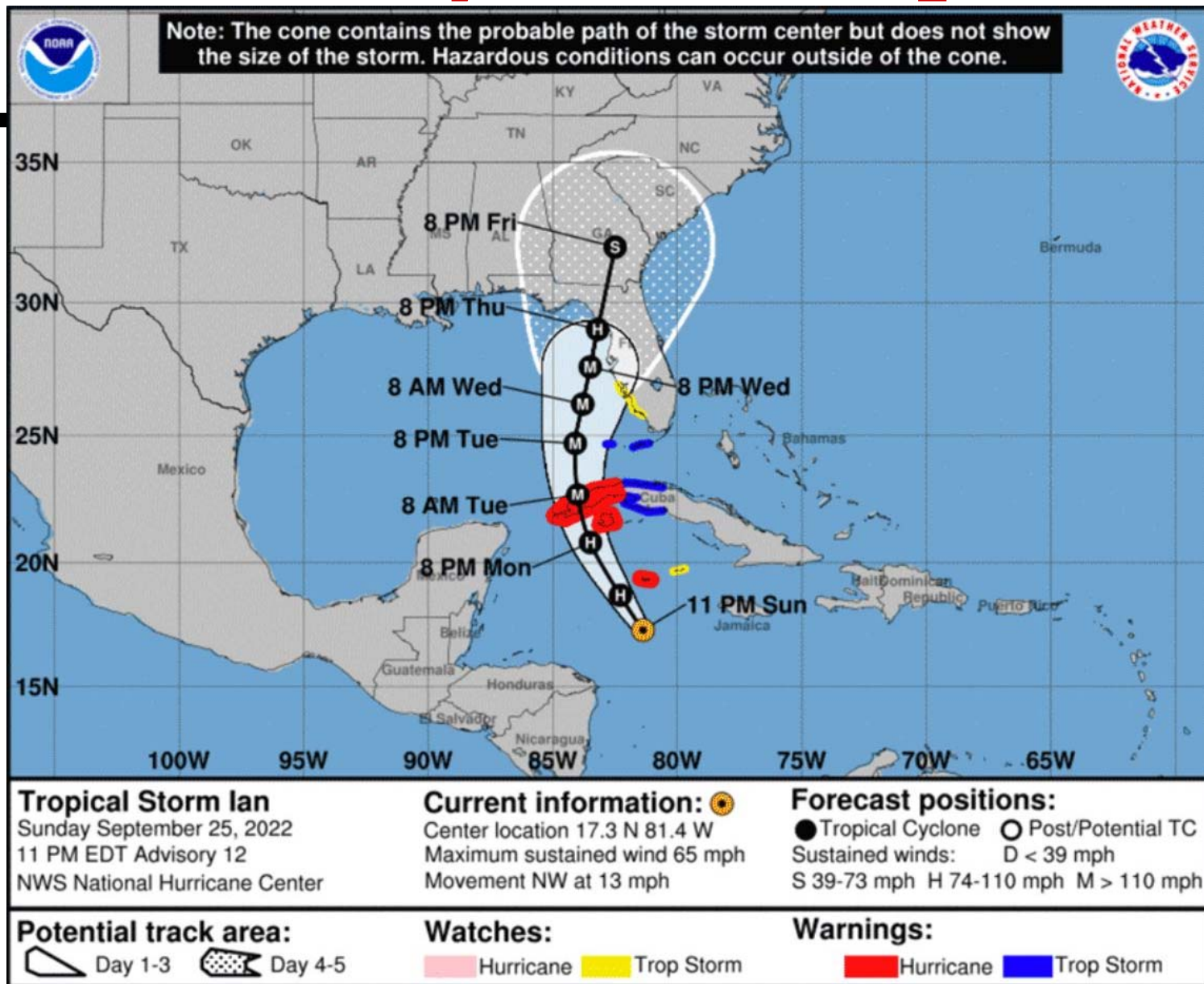
#11 Sunday 9/25 5 pm EDT



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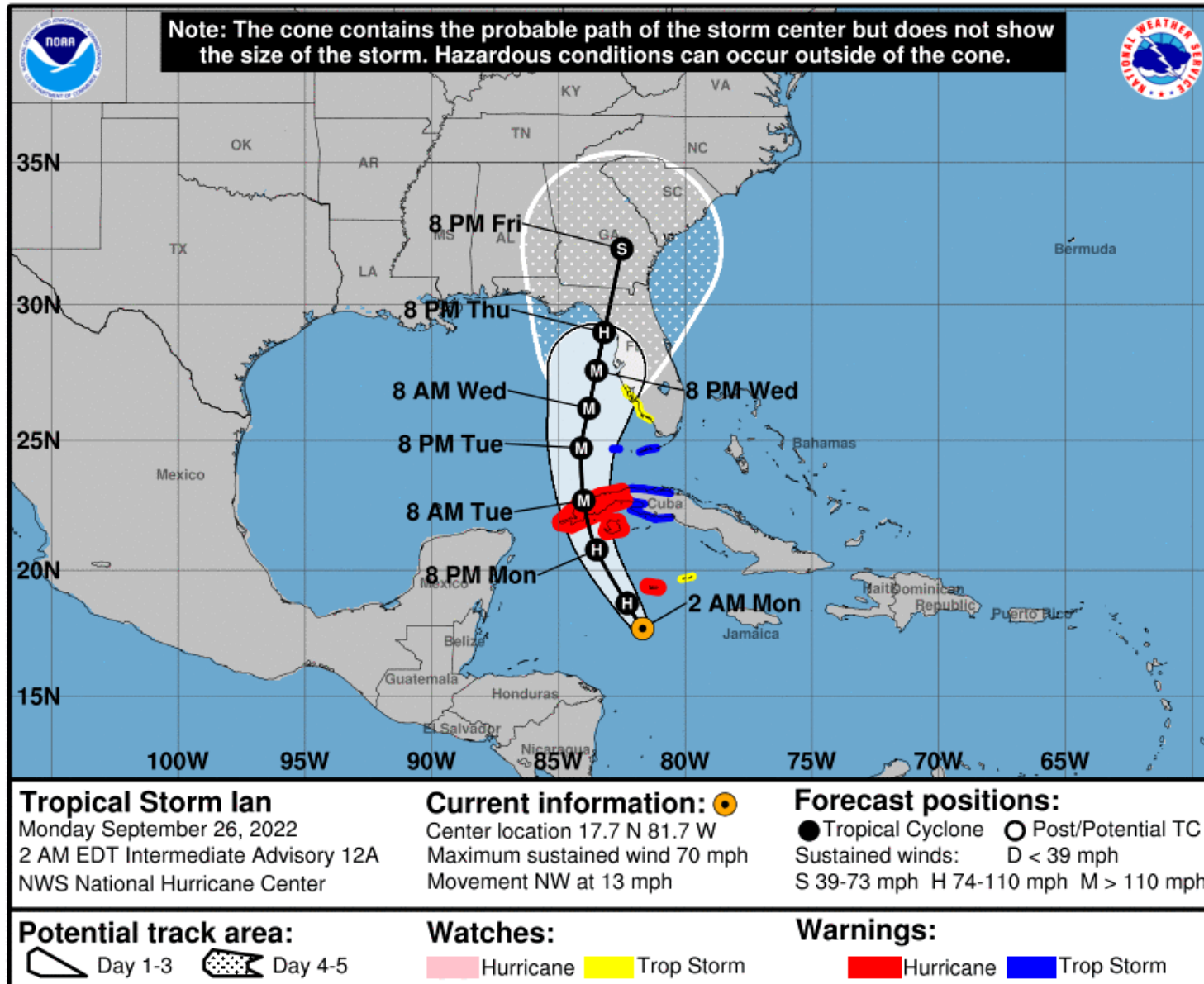


#12 Sunday 9/25 11 pm EDT

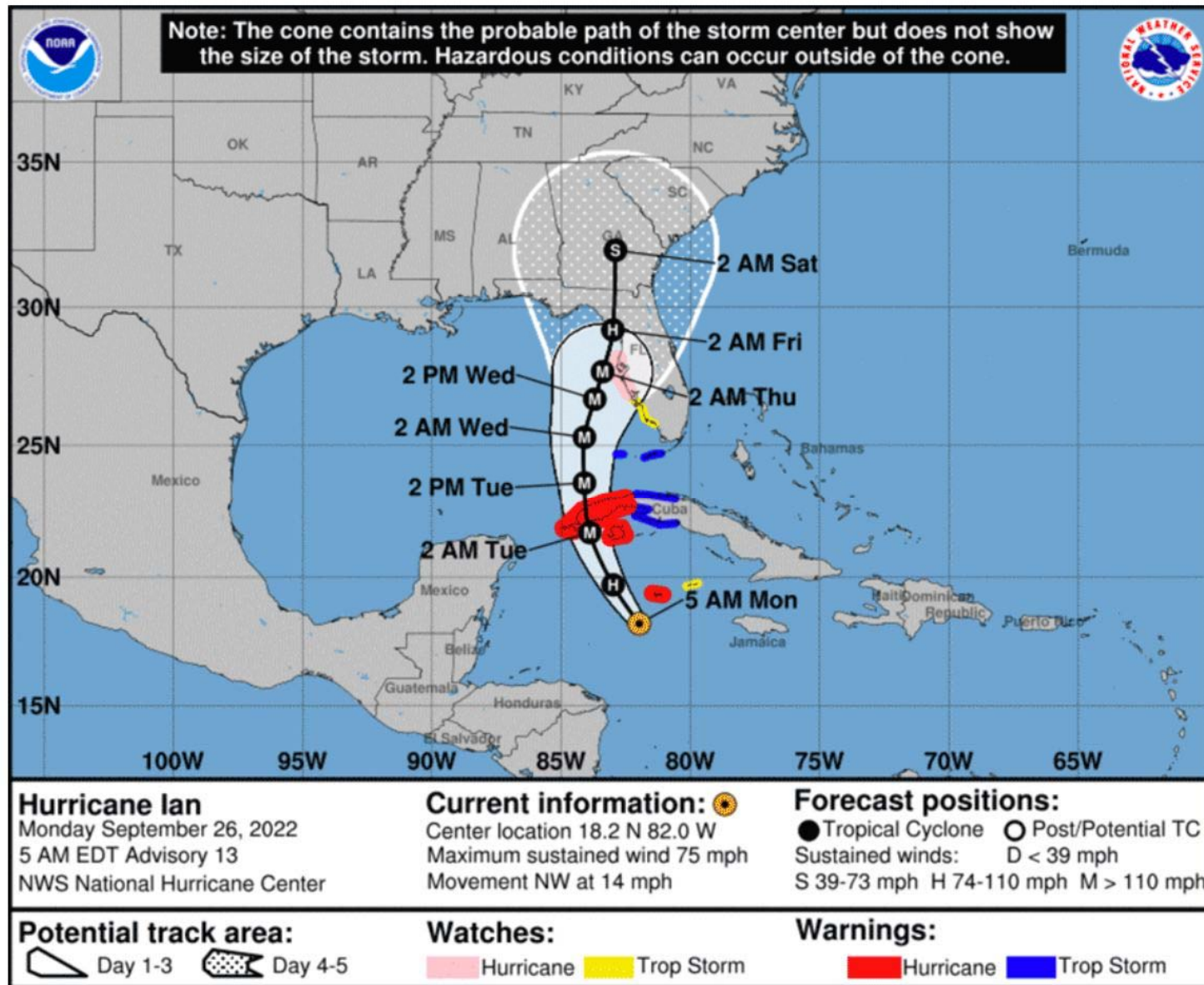


#12a Monday 9/26

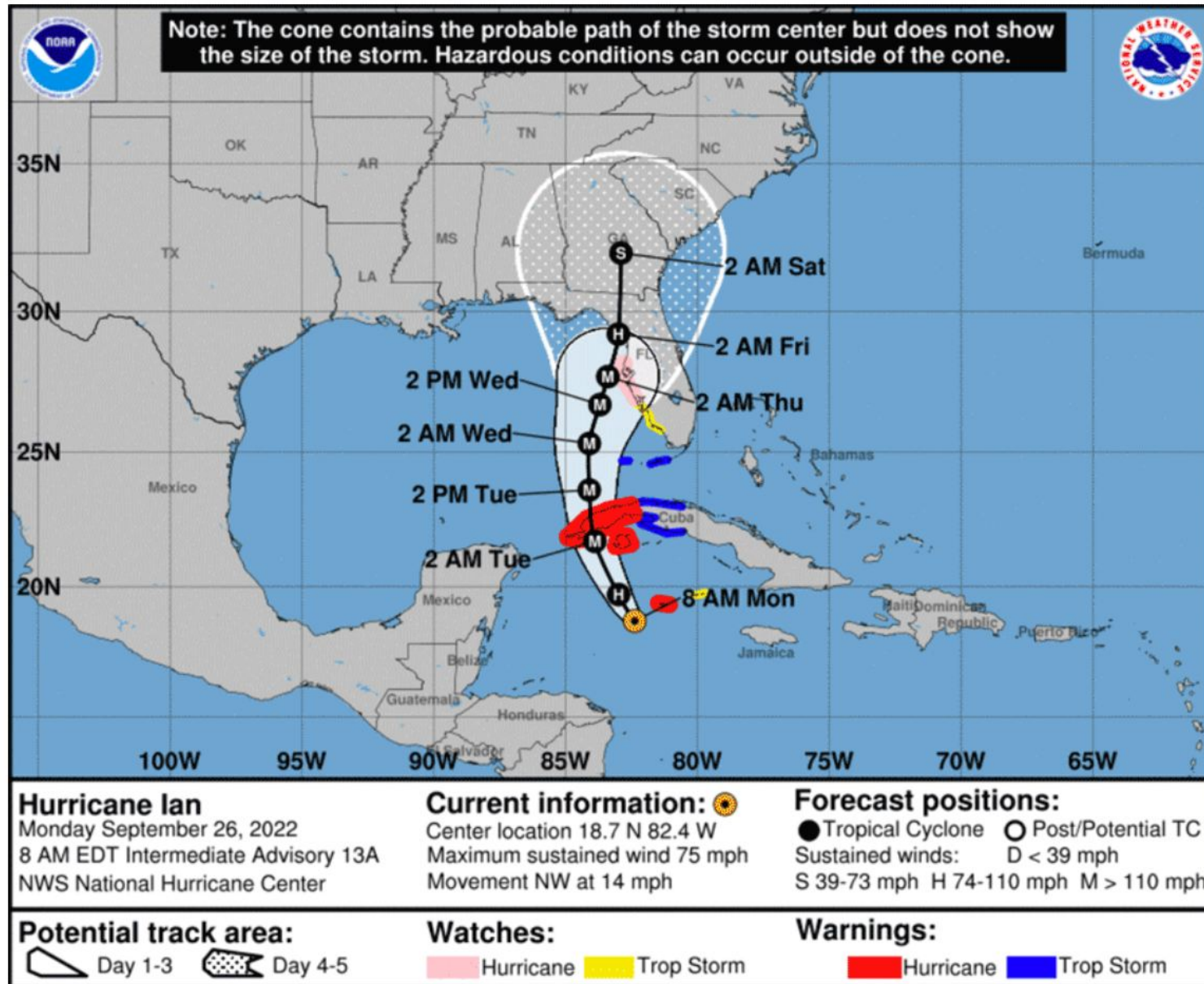
2 am EDT



#13 Monday 9/26 5 am EDT



#13A Monday 9/26 8 am EDT



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Hurricane Watch/Warning

Sunday 09-25 A HURRICANE WATCH IS IN EFFECT FOR ENGLEWOOD TO THE ANCLOTE RIVER ... INCLUDING TAMPA BAY

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Sunday 9-25 midnight: *A HURRICANE WATCH HAS BEEN ISSUED FROM BONITA BEACH TO ENGLEWOOD. THE HURRICANE WATCH FROM ENGLEWOOD TO THE ANCLOTE RIVER...INCLUDING TAMPA BAY...HAS BEEN UPGRADED TO A HURRICANE WARNING. A HURRICANE WATCH HAS BEEN ISSUED FROM THE ANCLOTE RIVER TO THE SUWANNEE RIVER.*

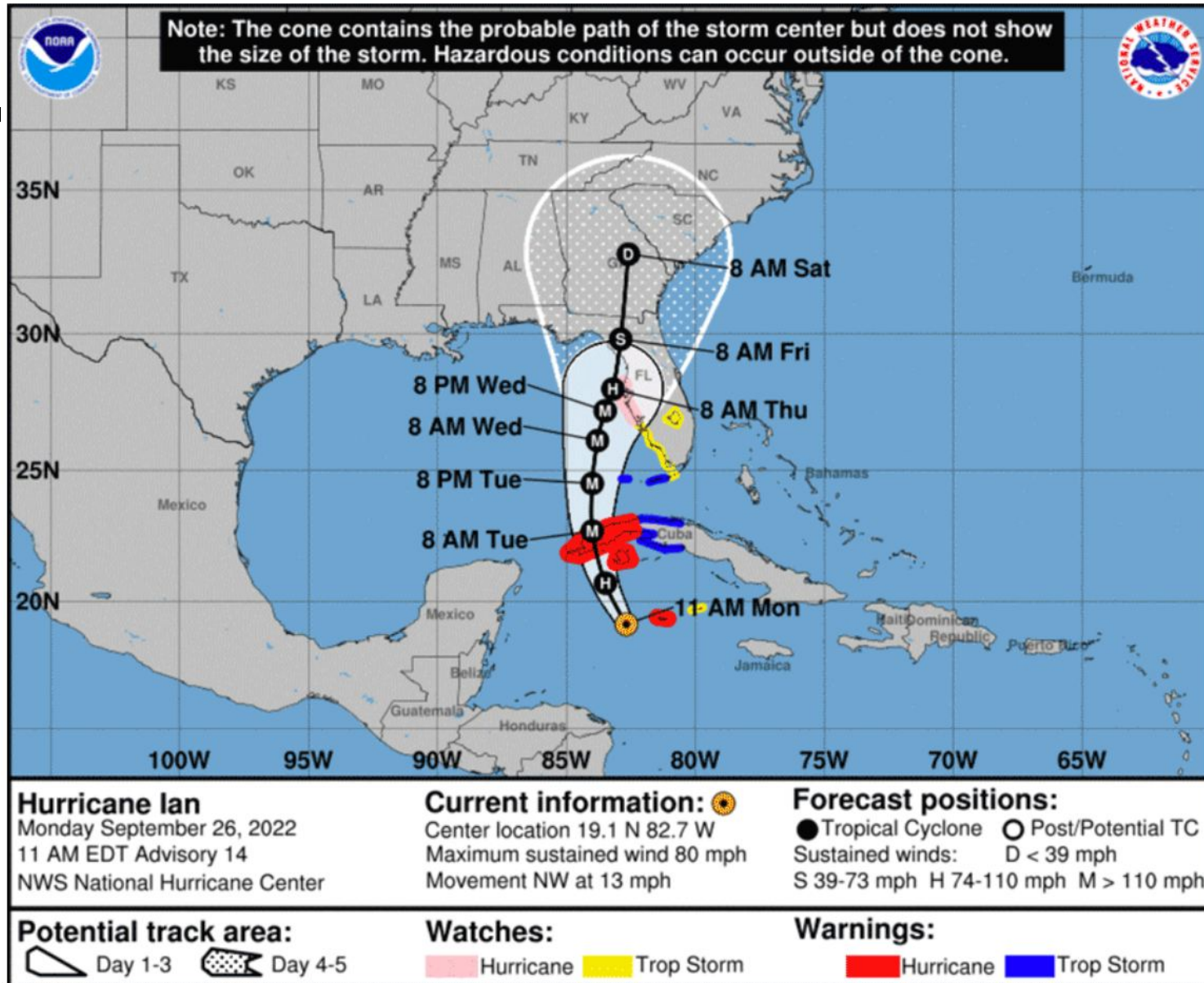
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Anclole river: On gulf coast north of Clearwater/Tampa

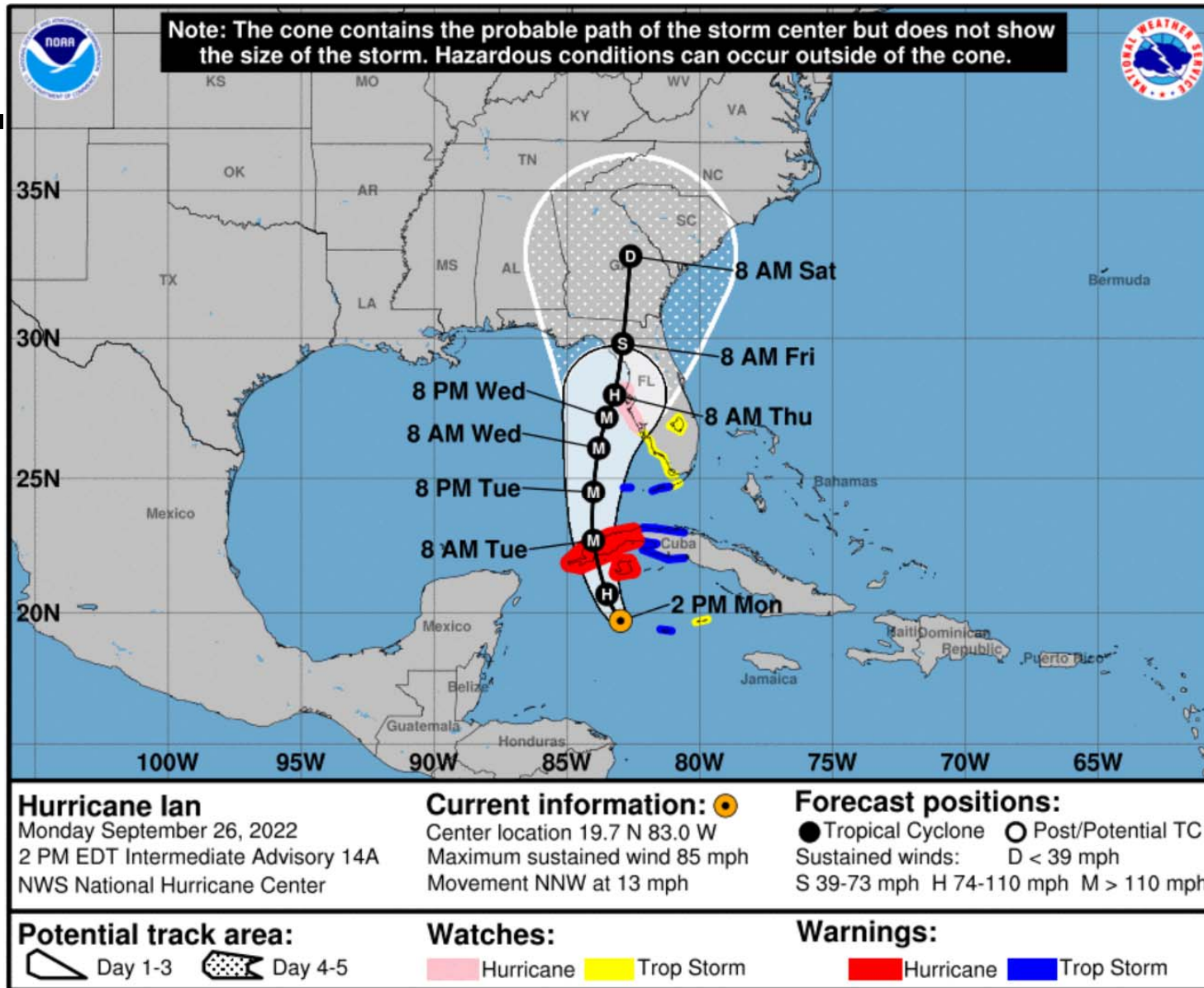
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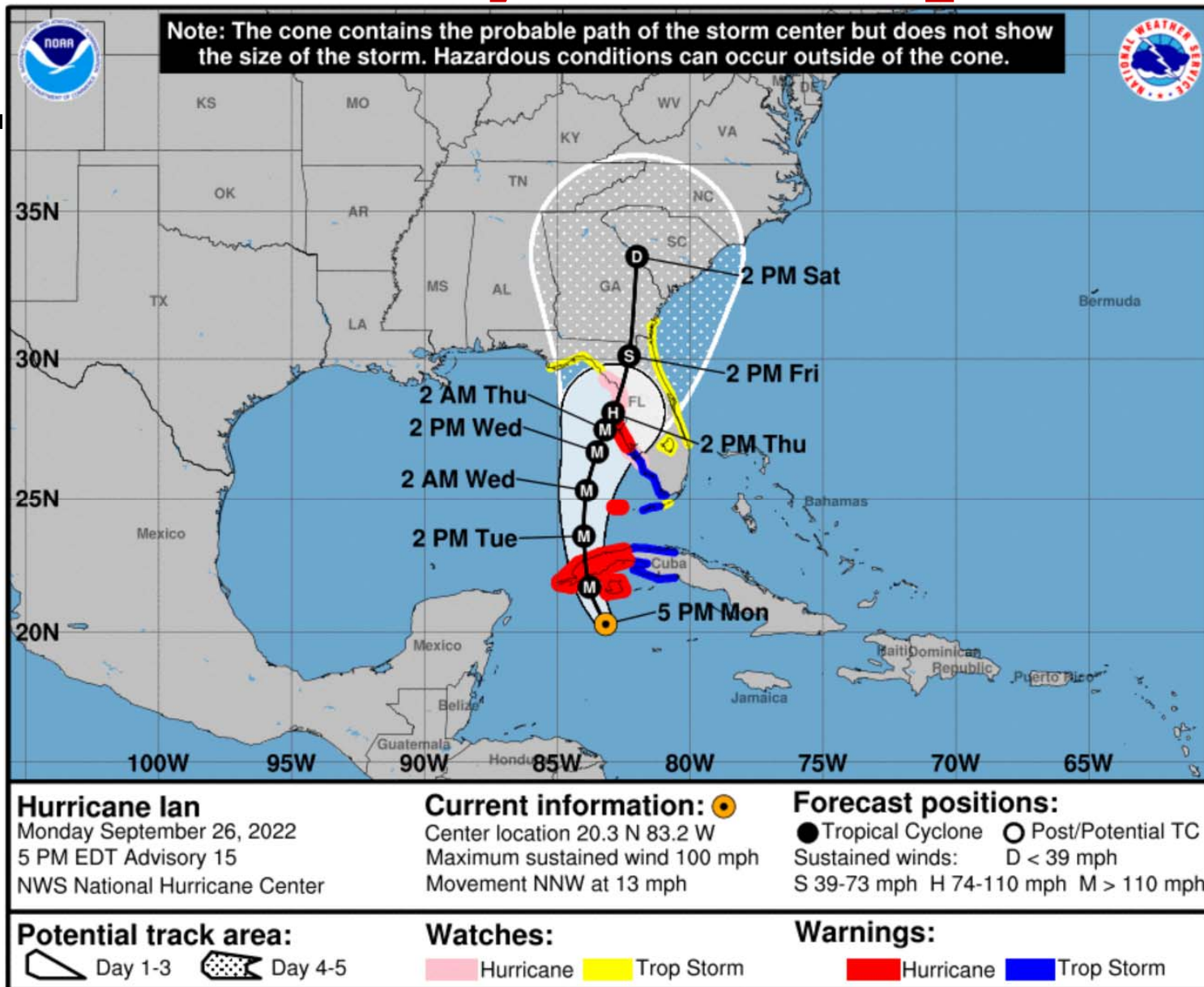
#14 Monday 9/26 11 am EDT



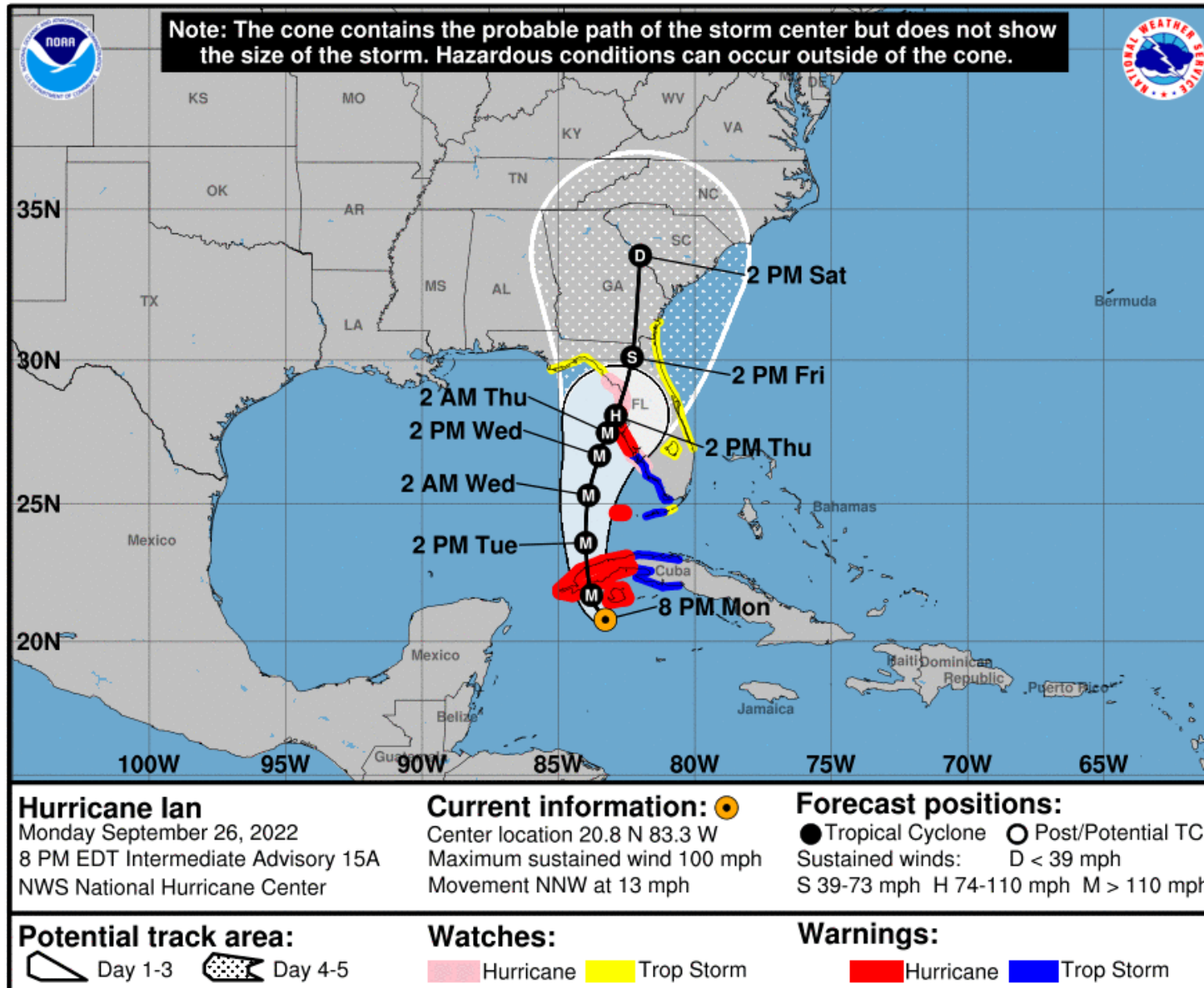
#14A Monday 9/26 2 pm EDT



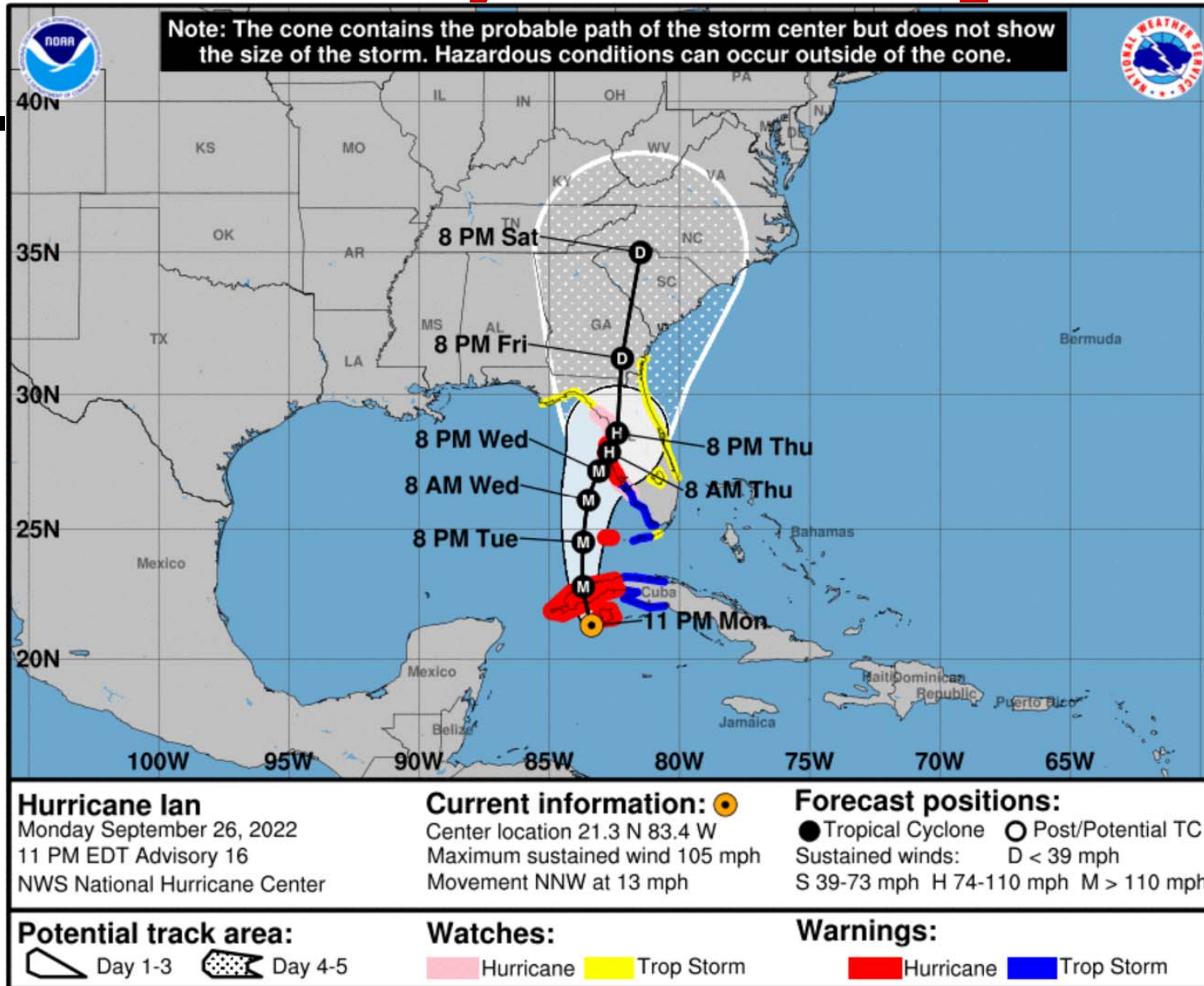
#15 Monday 9/26 5 pm EDT



#15A Monday 9/26 8 pm EDT



#16 Monday 9/26 11 pm EDT



#16A Tuesday 9/27 2 am EDT



Hurricane Watch/Warning

Monday 9/26 to Tuesday 9/27

Monday 9-26 2100 UTC: A **HURRICANE WARNING** IS IN EFFECT FOR...
* **ENGLEWOOD** TO THE ANCLOTE RIVER...INCLUDING TAMPA BAY
<https://www.nhc.noaa.gov/archive/2022/al09/al092022.fstadv.015.shtml?>

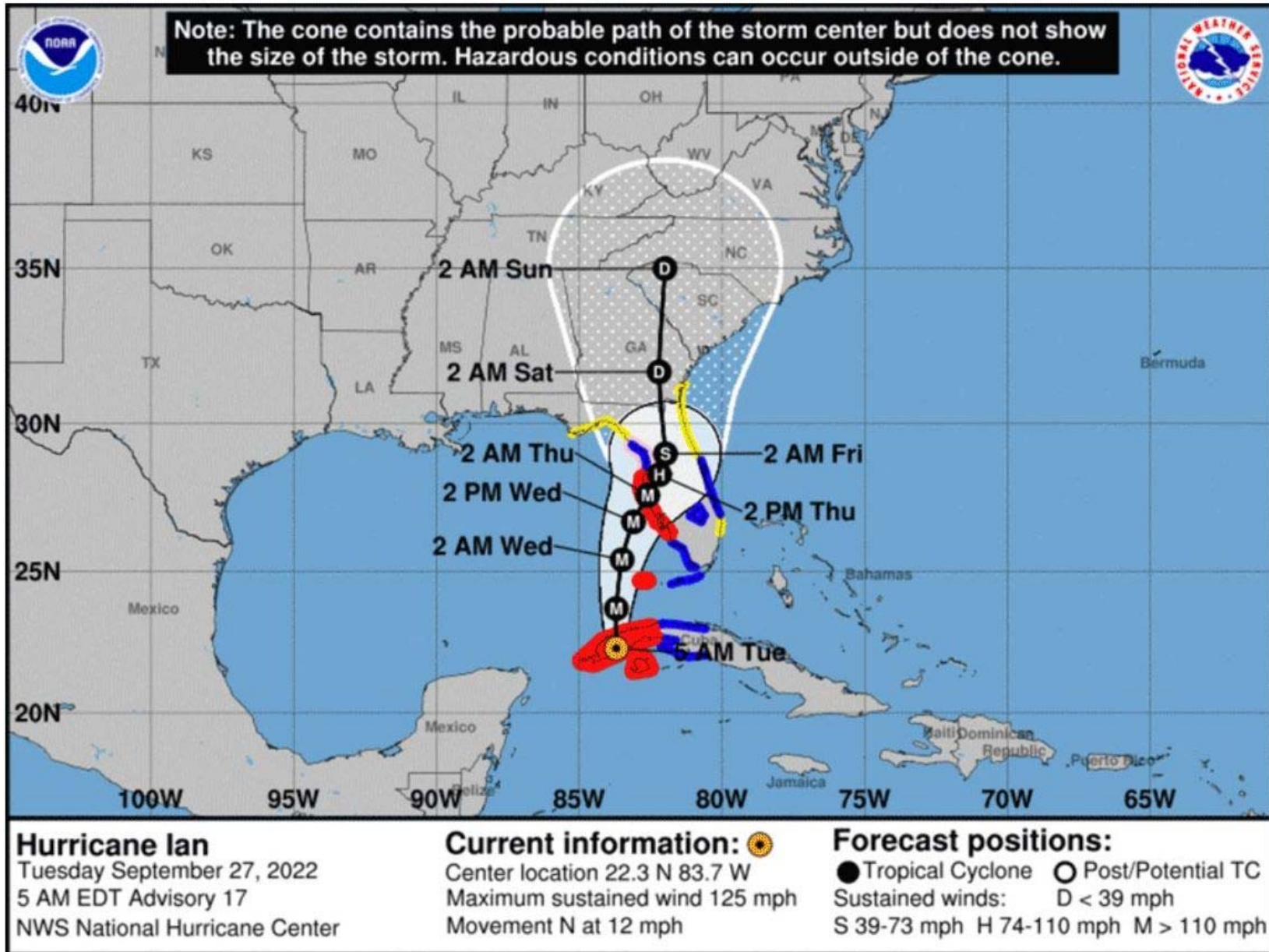
Tues 09-27 0900 UTC. A **HURRICANE WARNING** IS IN EFFECT FOR...
* **BONITA BEACH** TO THE ANCLOTE RIVER...INCLUDING TAMPA BAY
<https://www.nhc.noaa.gov/archive/2022/al09/al092022.fstadv.017.shtml?>

Tues 09-27 2100 UTC. A **HURRICANE WARNING** IS IN EFFECT FOR...
* **CHOKOLOSKEE** TO ANCLOTE RIVER...INCLUDING TAMPA BAY

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Anclole River: On gulf coast north of Clearwater/Tampa.
Englewood: On gulf coast north of Port Charlotte/Fort Myers.
Bonita Beach: On gulf coast, south of Fort Myers.
Chokoskee: On gulf coast, south of Marco Island/Naples

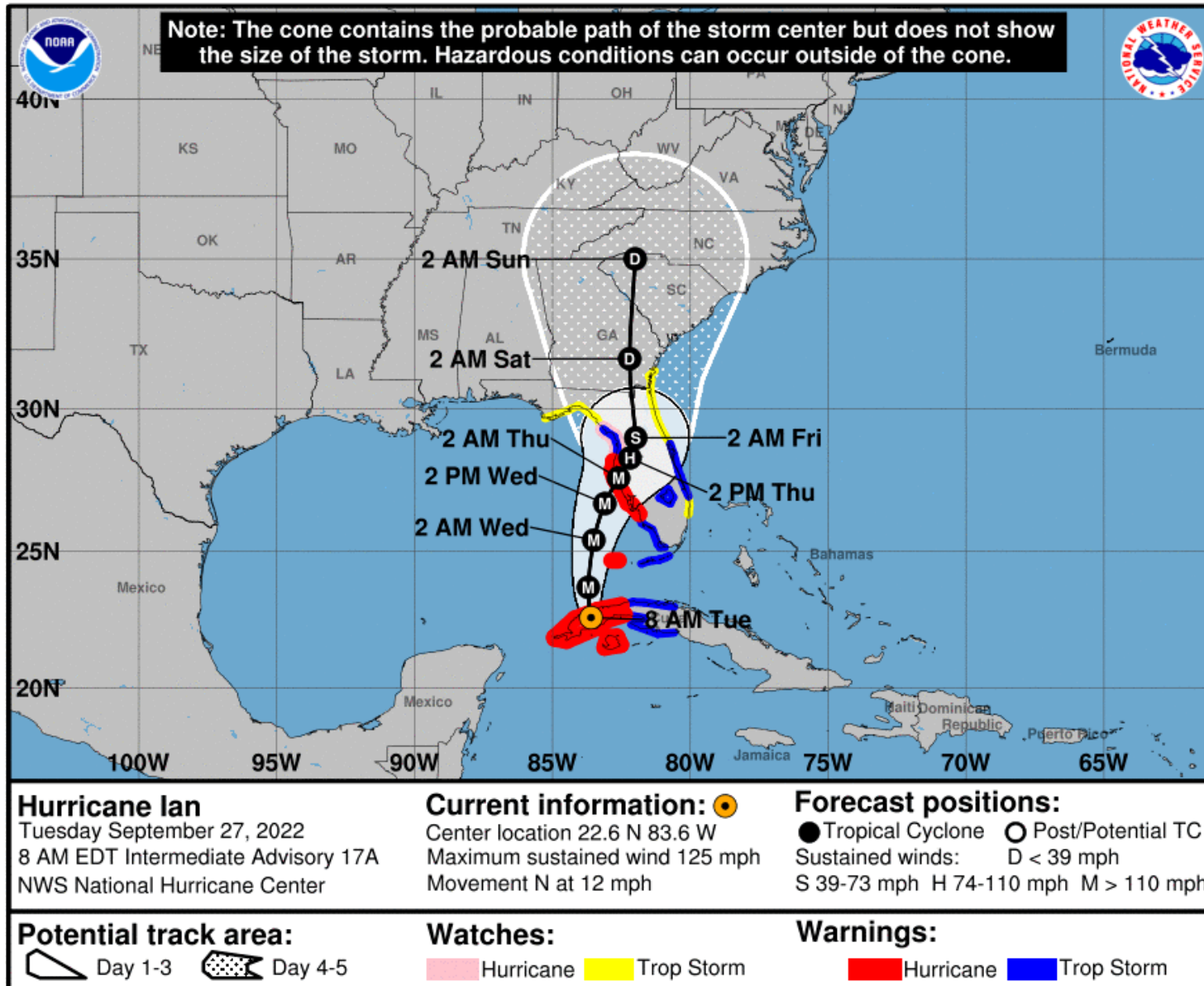
#17 Tuesday 9/27

5 am EDT



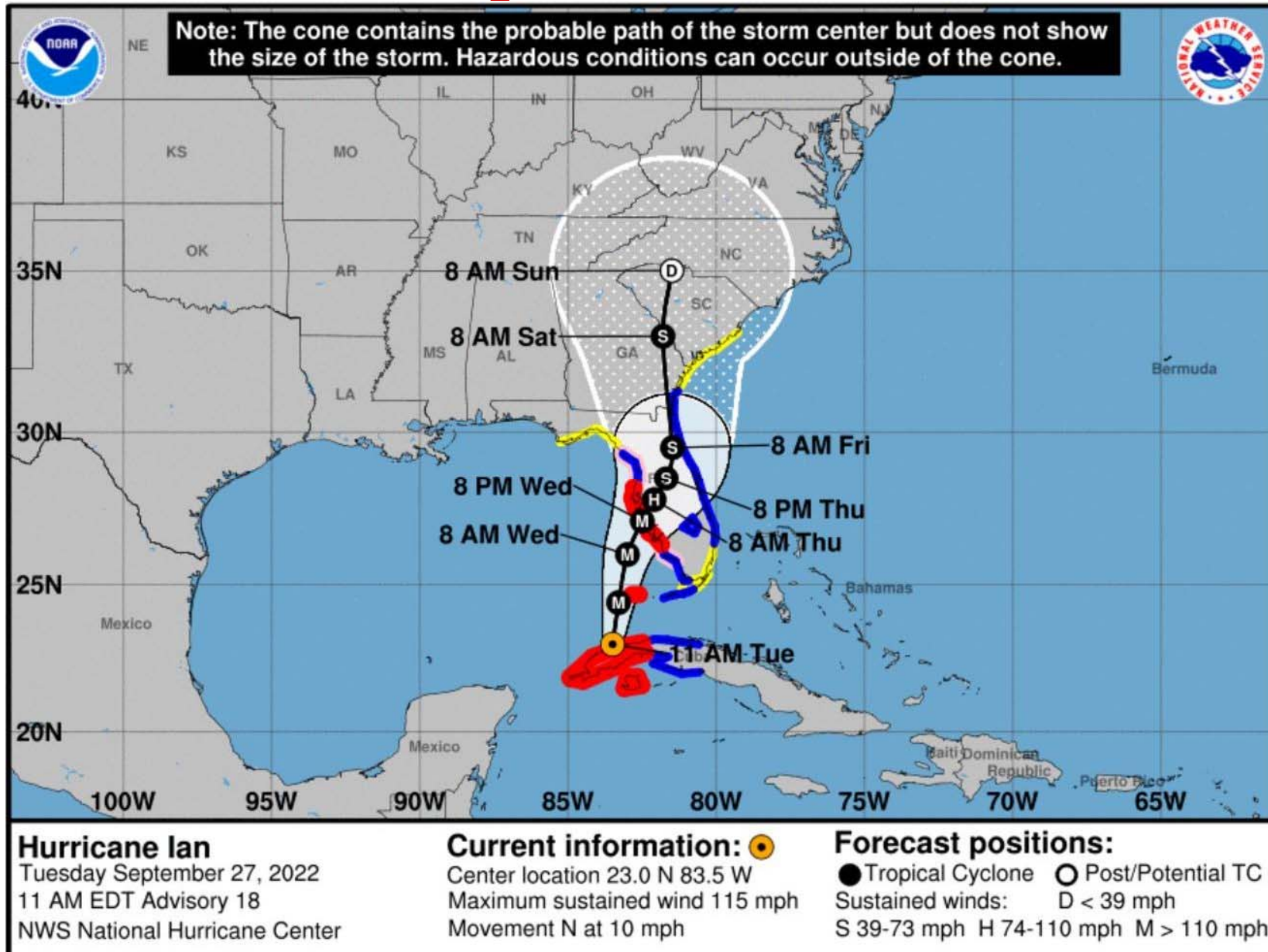
#17A Tuesday 9/27

8 am EDT



#18 Tuesday 9/27

11 am EDT



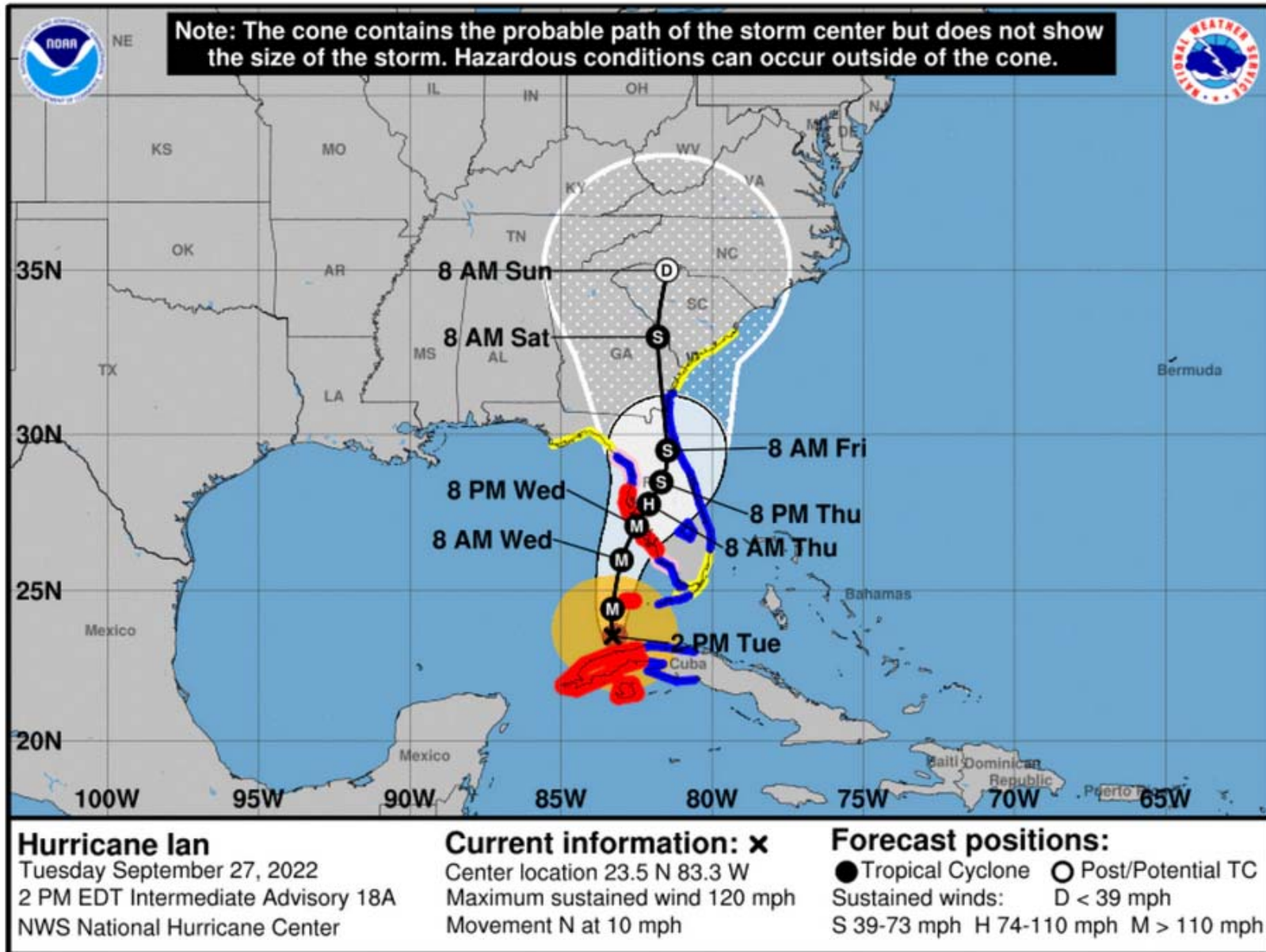
#18 Tuesday 9/27 11 am EDT

Tropical Analysis and Forecast

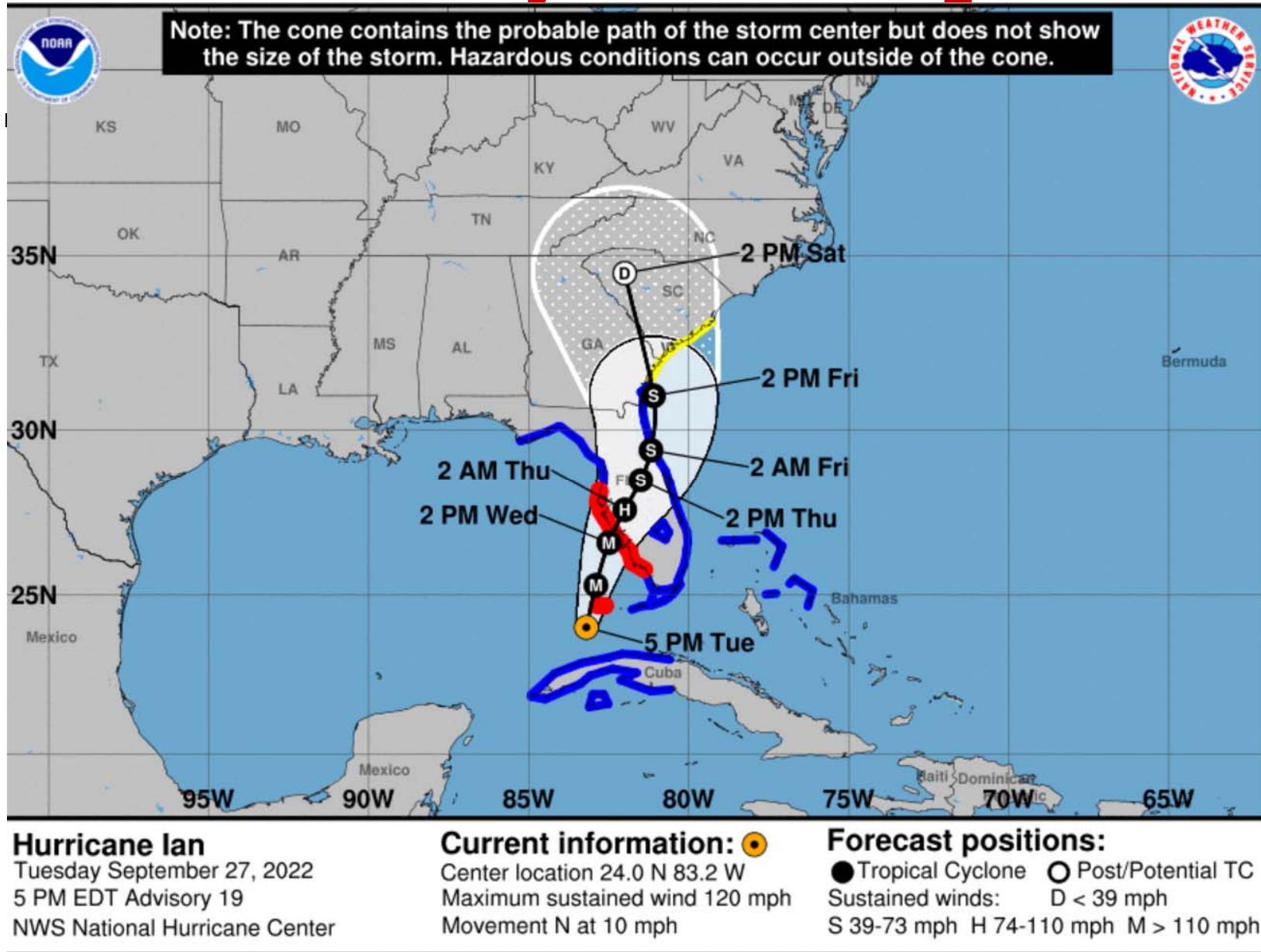
NOTE: Do not focus on the exact track. Impacts can occur well outside the area enclosed by the cone.

- Ian will continue toward the north with a slightly slower forward speed today, then turn NNE while slowing down on Wednesday
- Ian is expected to make landfall along the west coast of Florida peninsula along the coast **between Ft. Myers and Tampa**
- Track confidence is growing in the first 36 hours, although the roughly-parallel track makes it difficult to pinpoint exactly which areas will experience the most severe impacts
- Ian is expected to slow down as it nears the west-central Florida coast – this would prolong the storm surge, wind, and rainfall impacts along the affected portions of the west coast of Florida.

#18A Tuesday 9/27 2 pm EDT

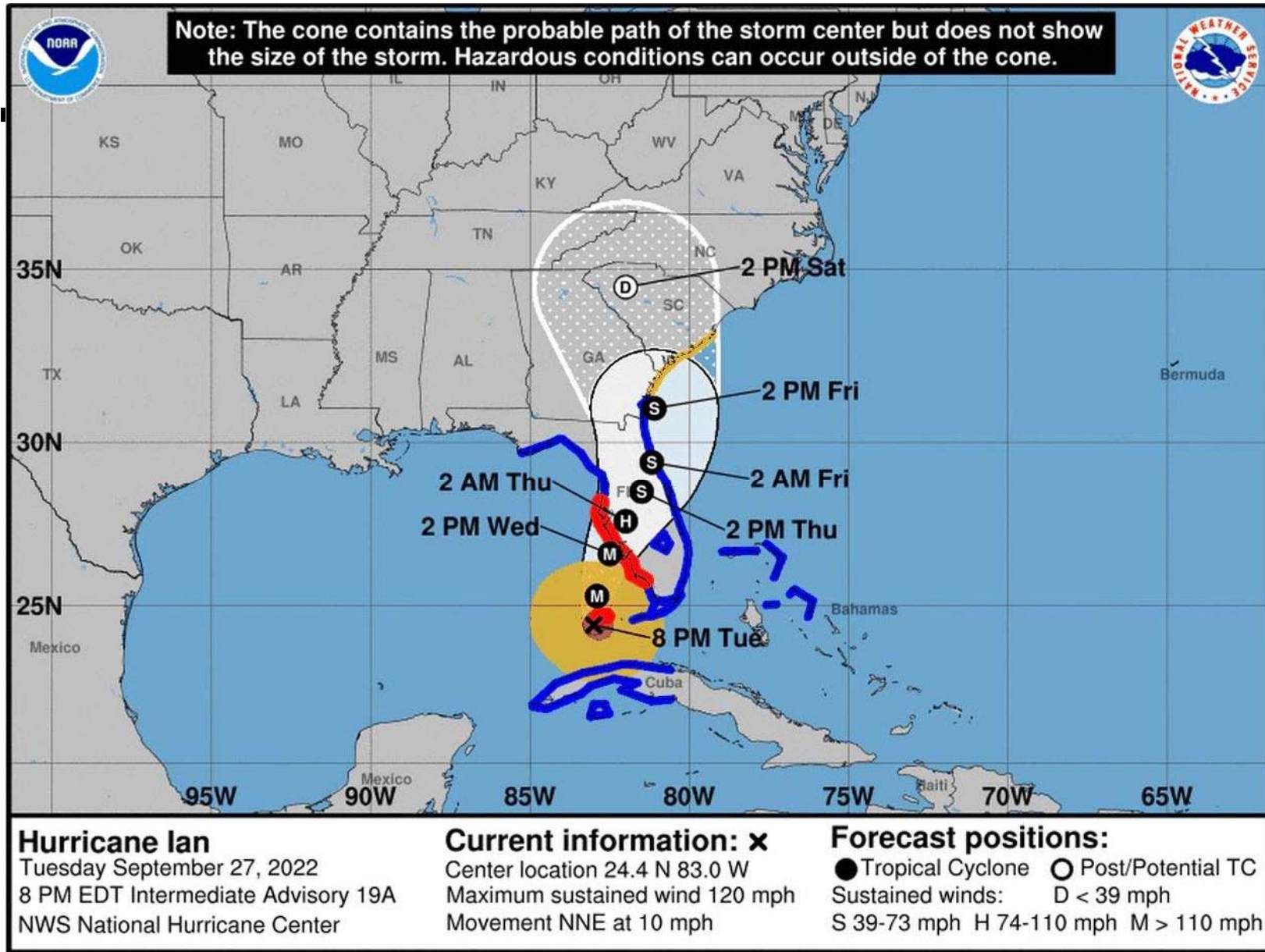


#19 Tuesday 9/27 5 pm EDT



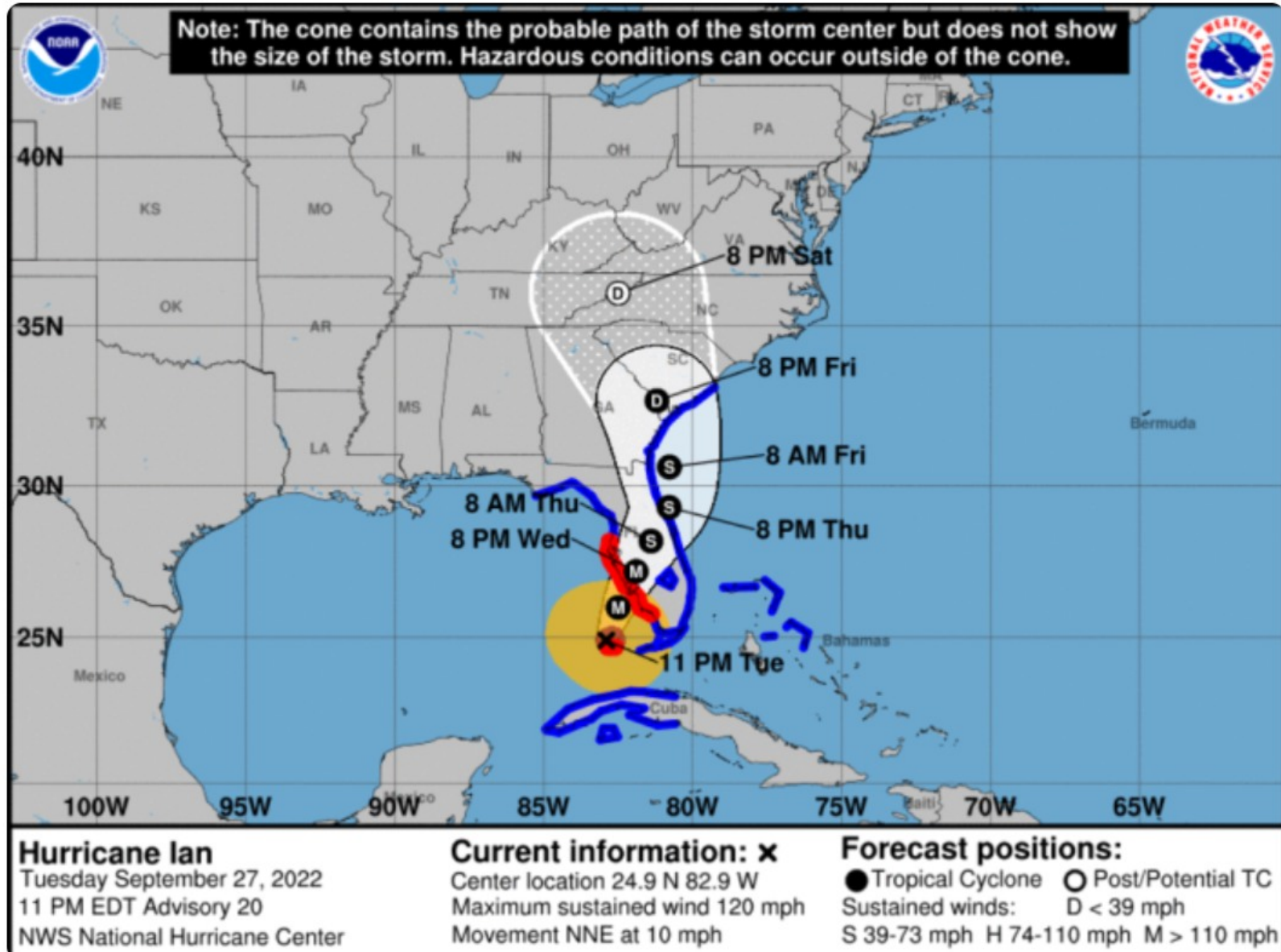
#19A Tuesday 9/27

8 pm EDT

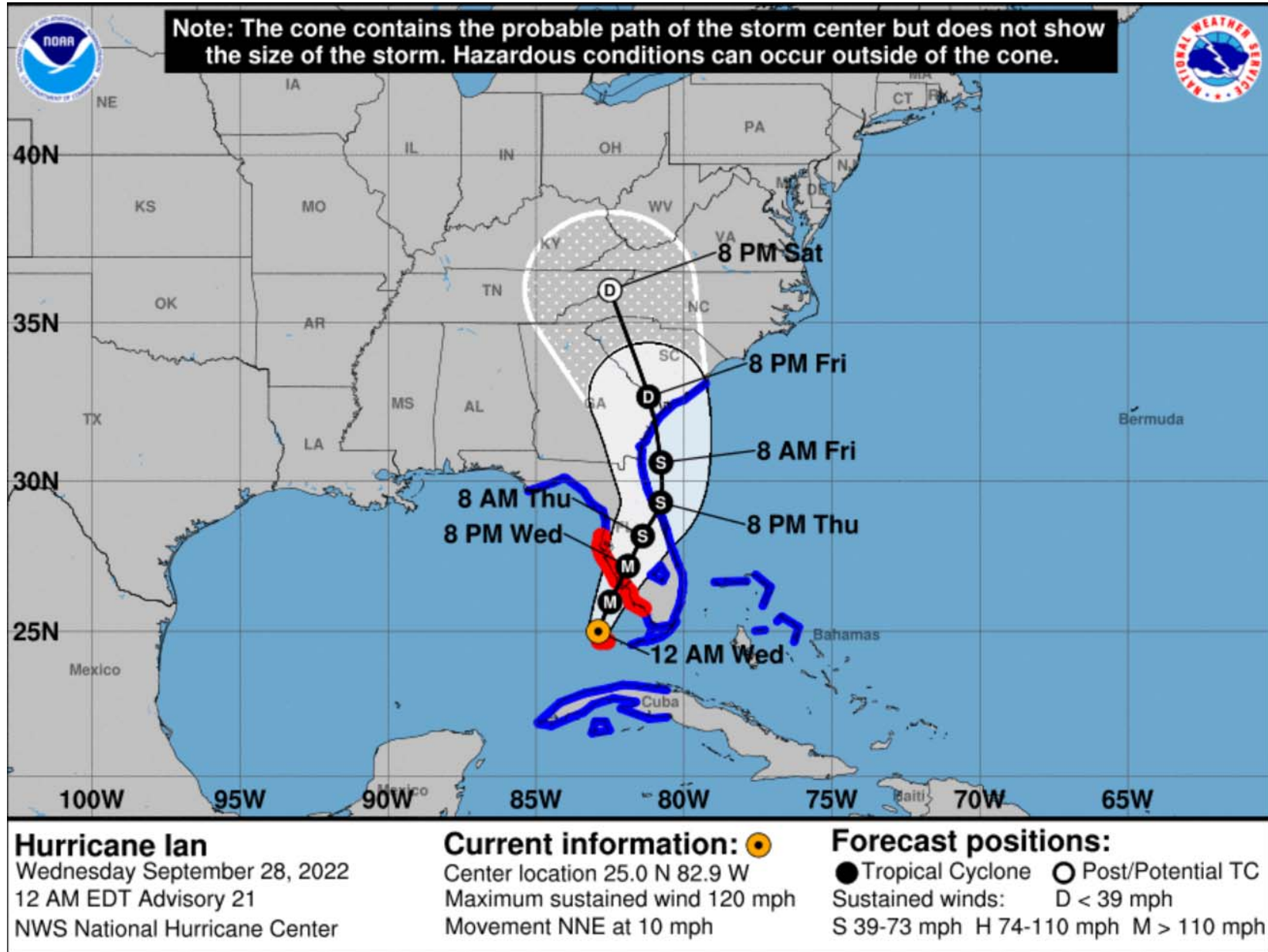


#20 Tuesday 9/27

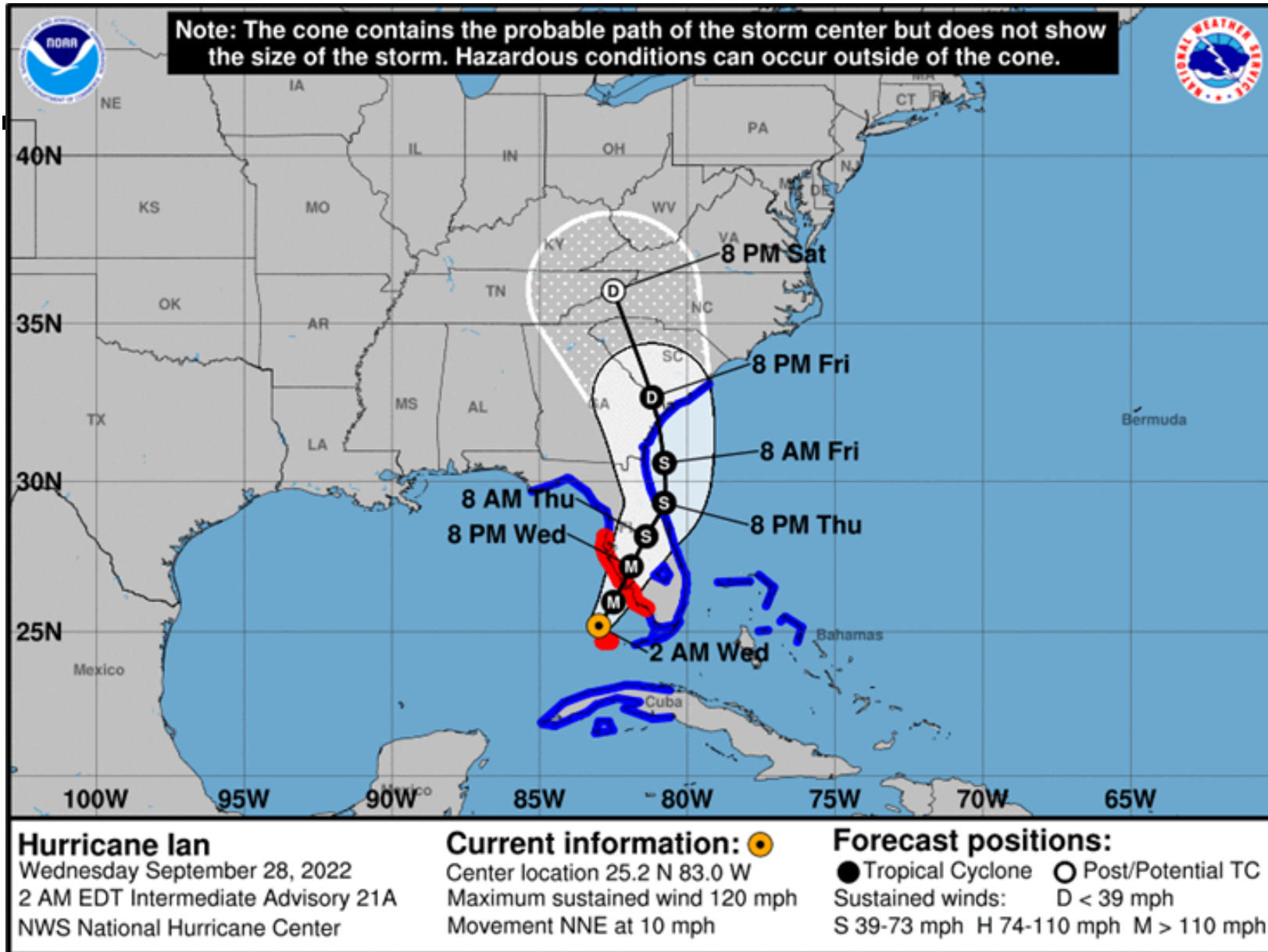
11 pm EDT



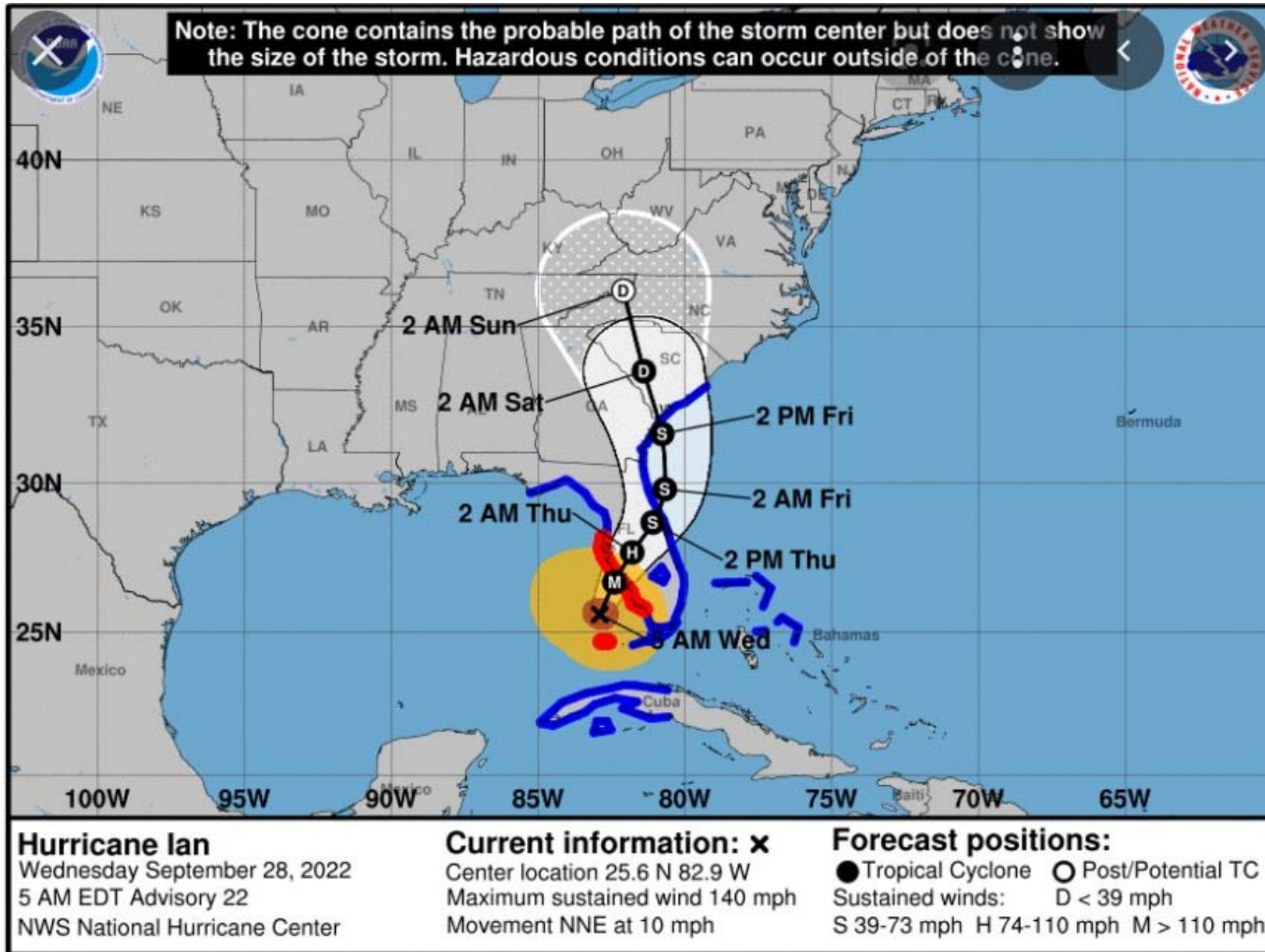
#21 Wed 9/28 12 am EDT



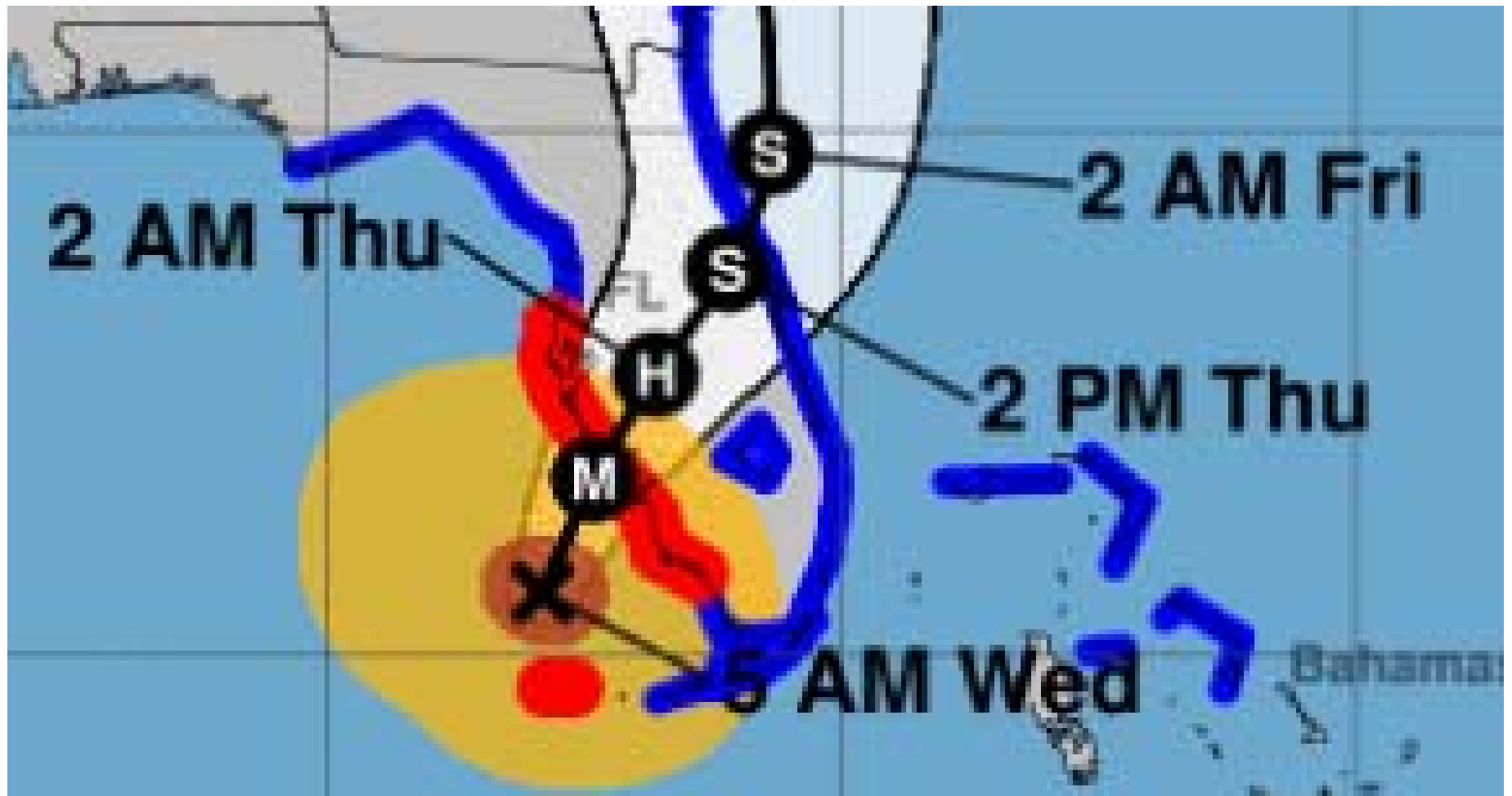
#21A Wed 9/28 2 am EDT



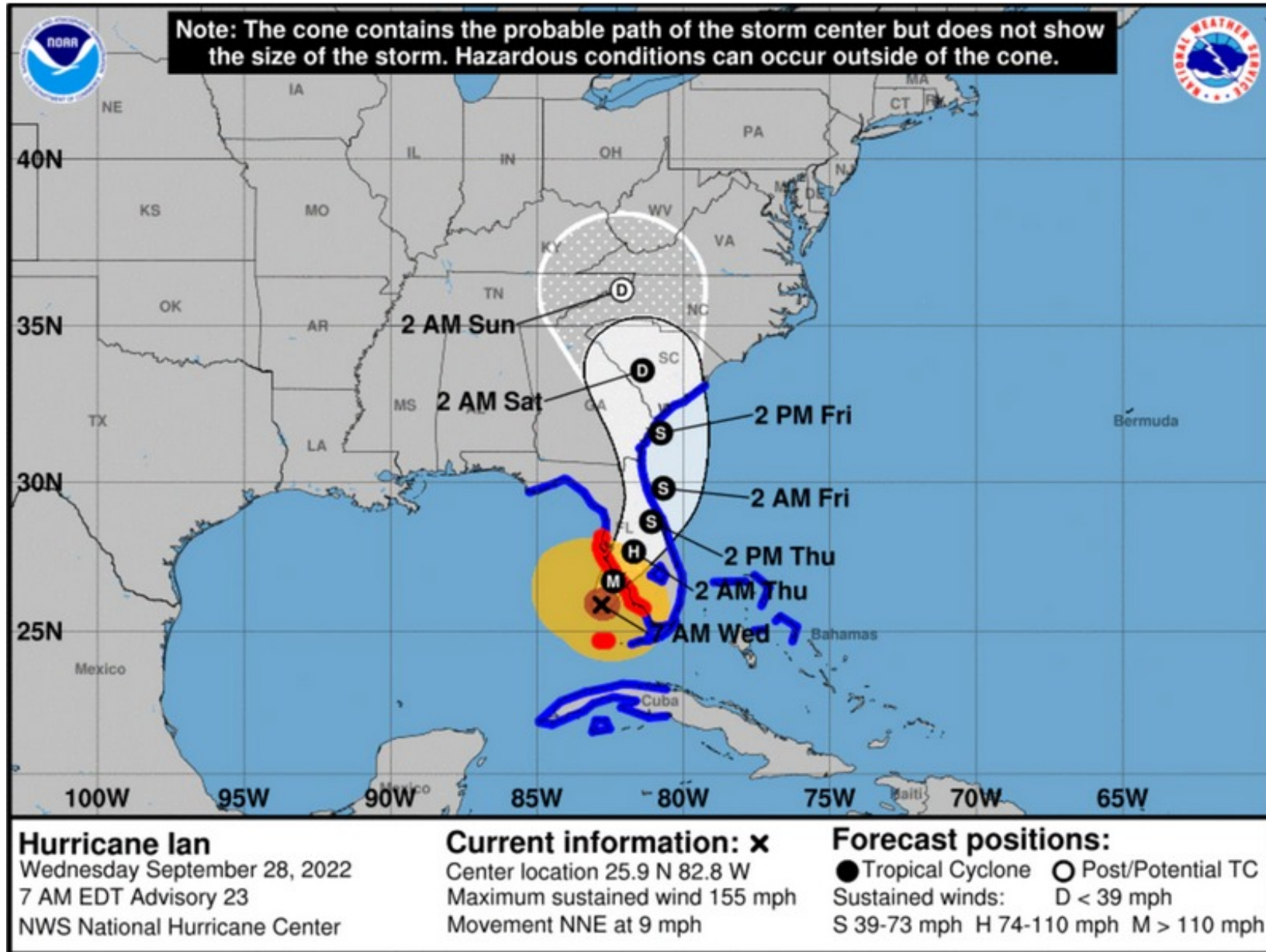
#22 Wed 9/28 5 am EDT



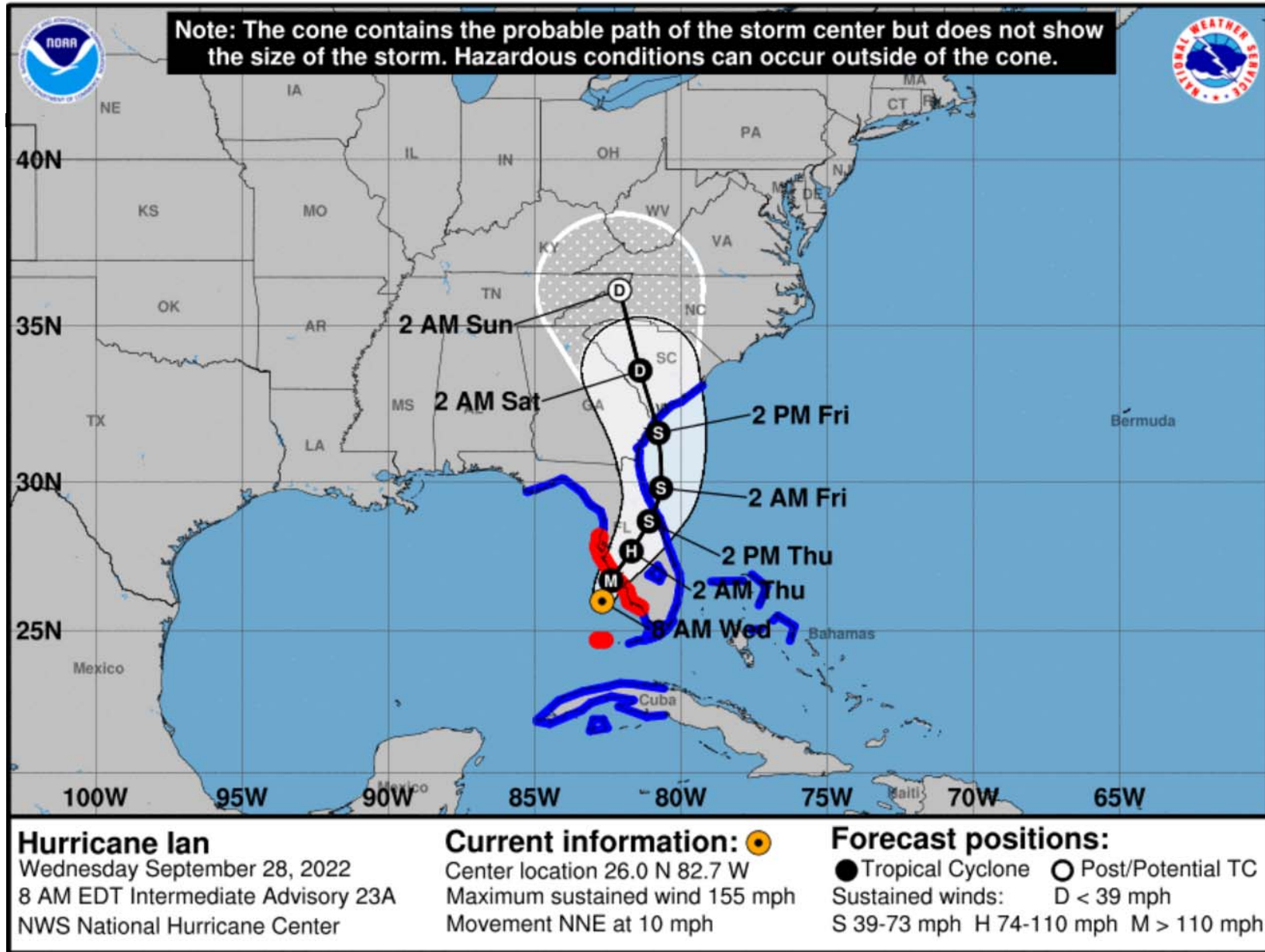
#22 Wed 9/28 5 am EDT Eye Landfall 2 pm?



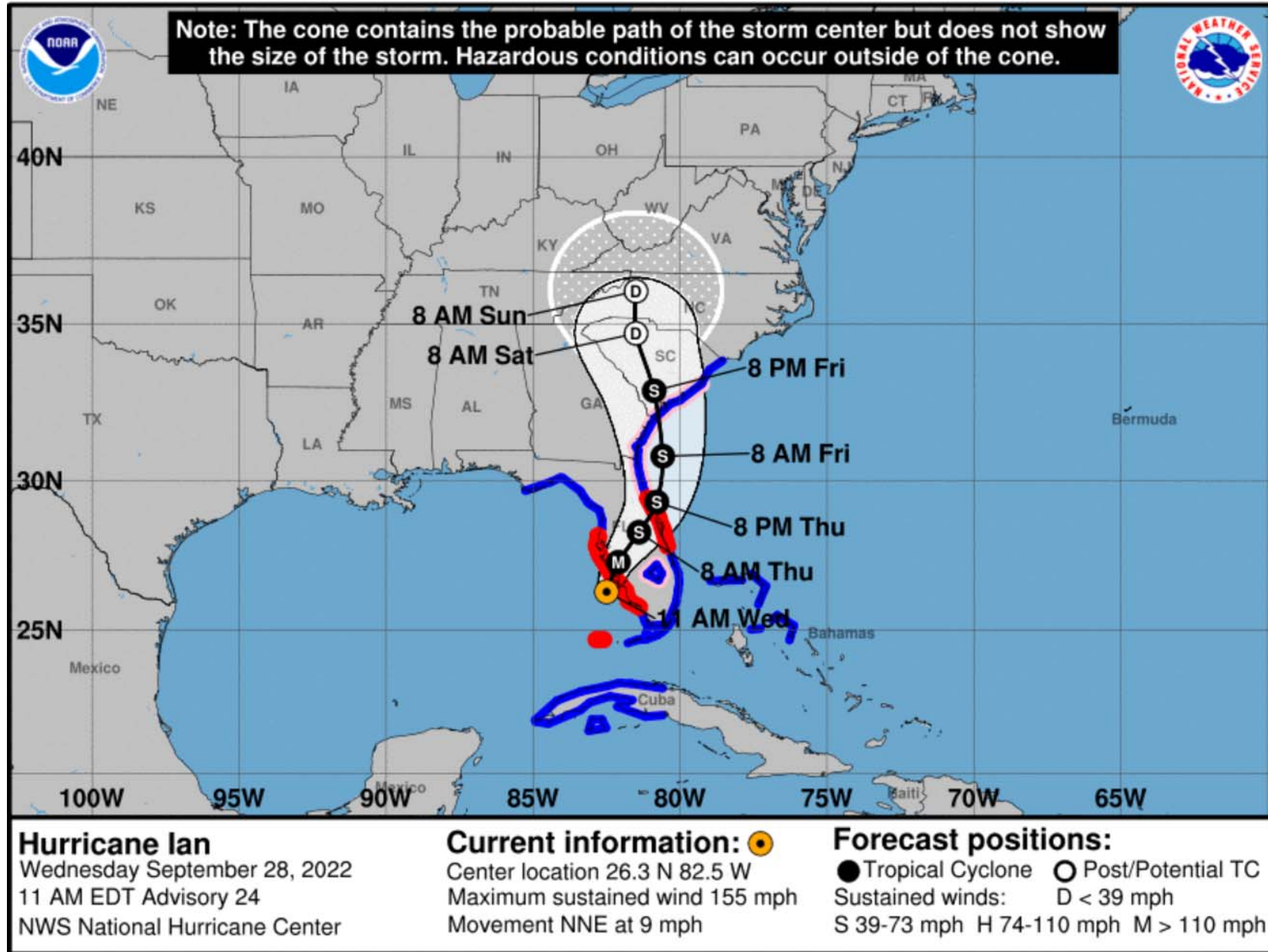
#23 Wed 9/28 7 am EDT



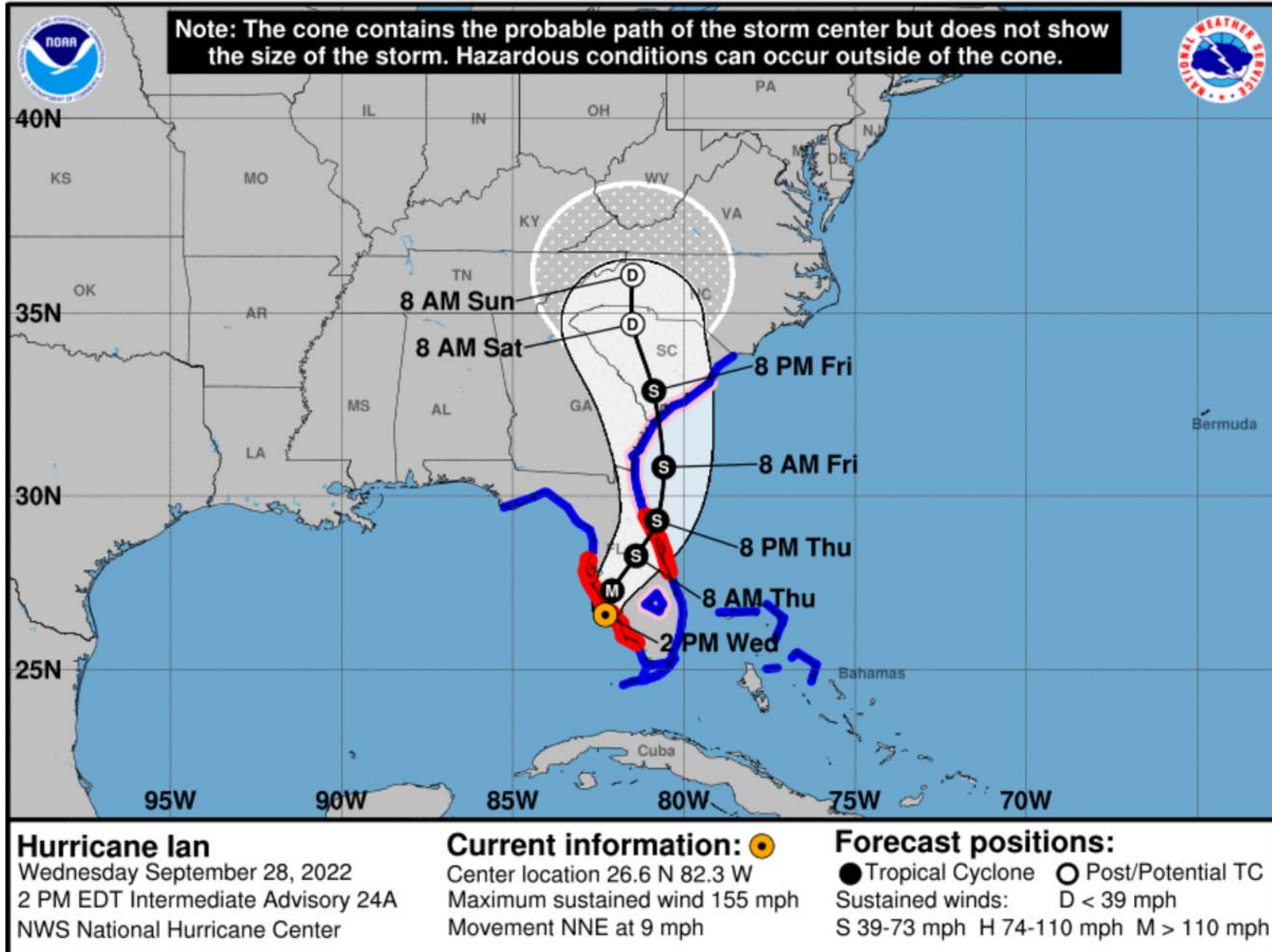
#23A Wed 9/28 8 am EDT



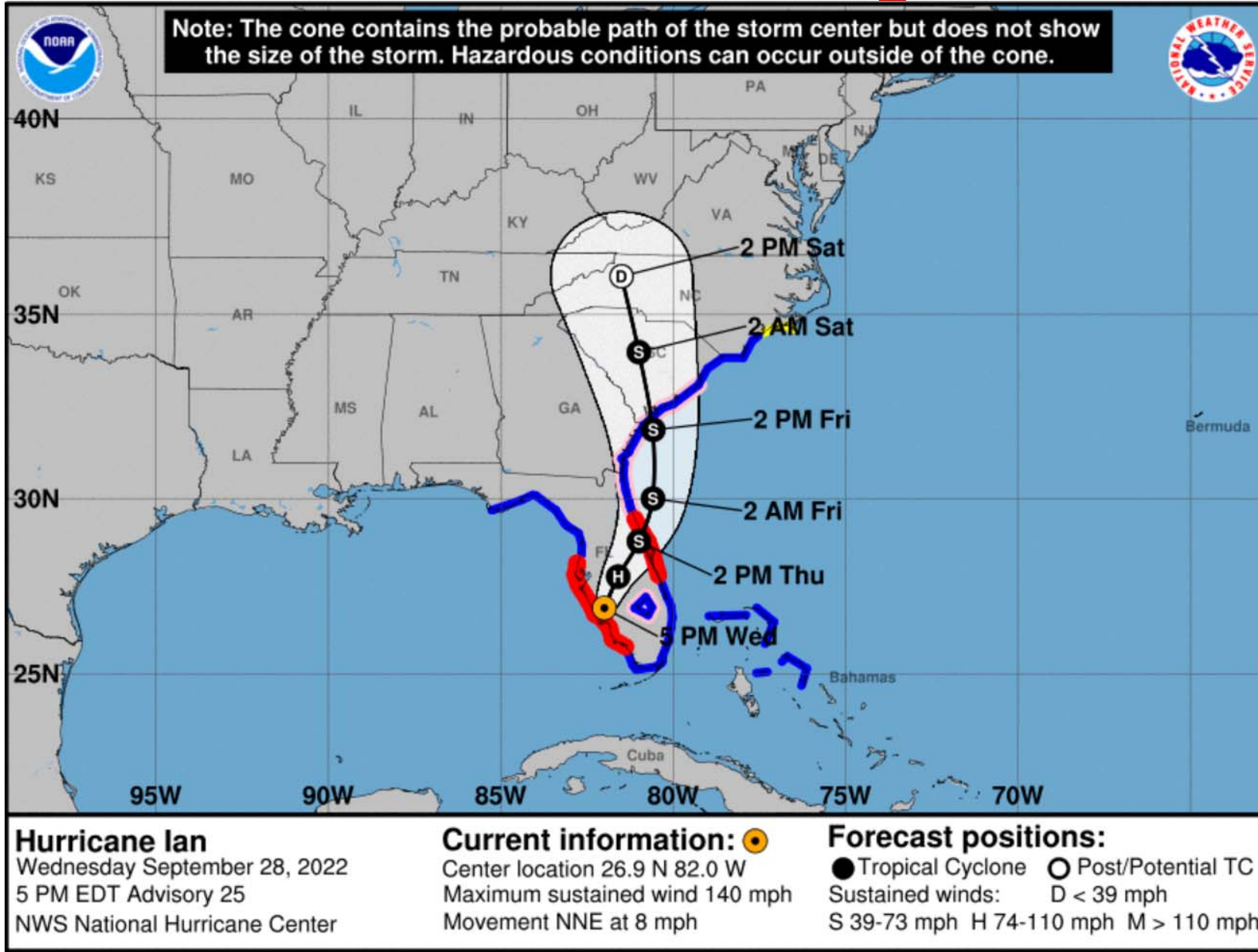
#24 Wed 9/28 11 am EDT



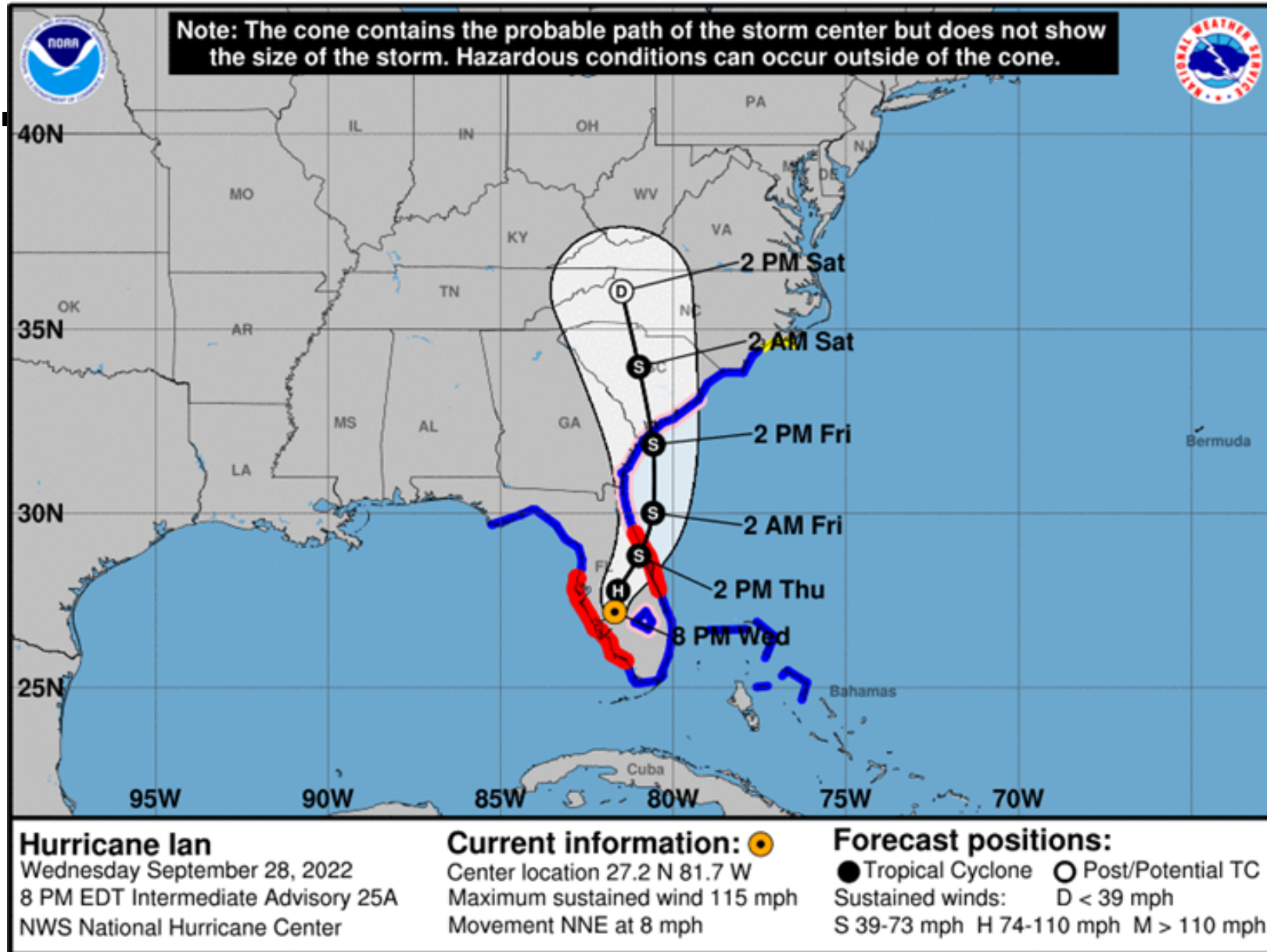
#24A Wed 9/28 2 pm EDT



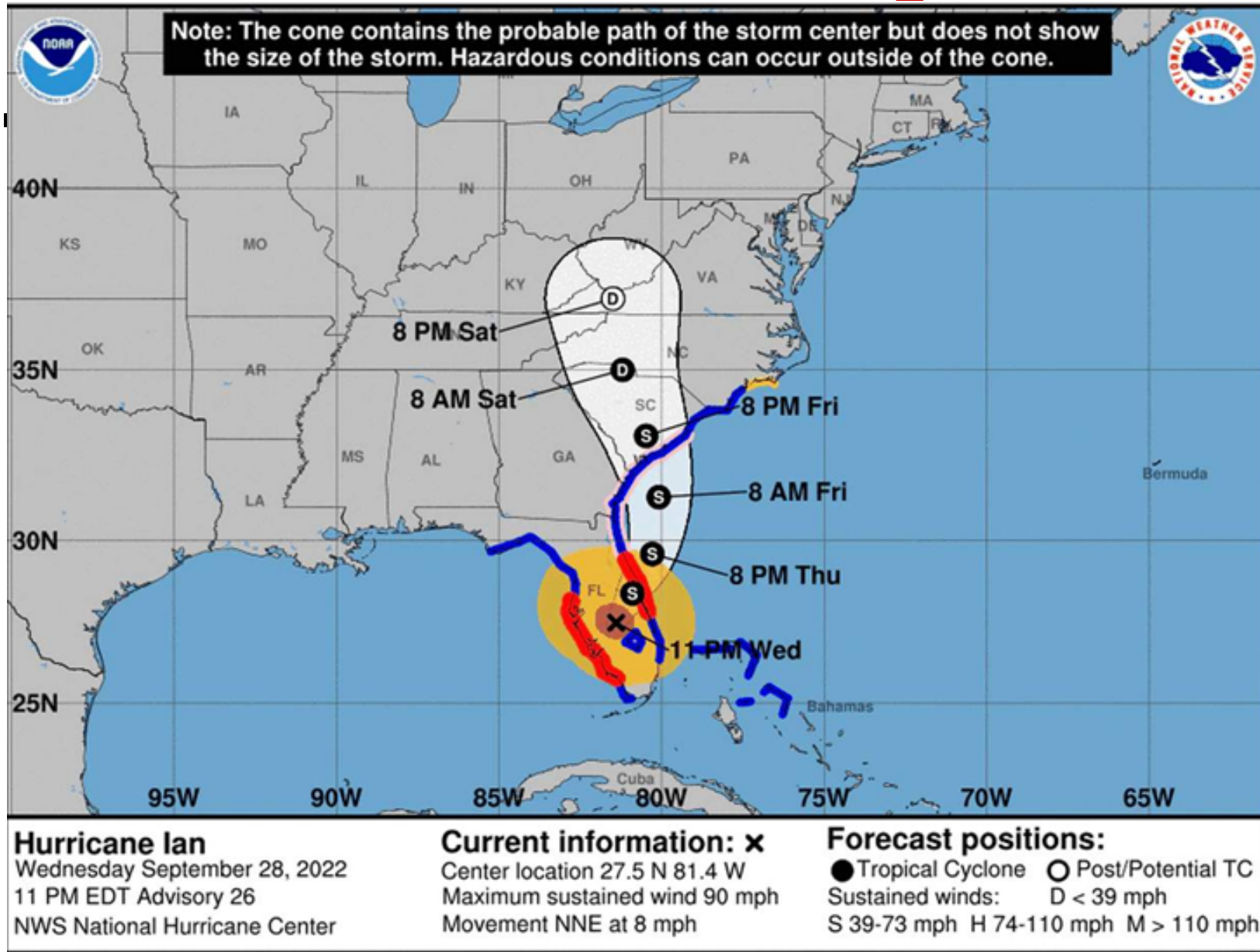
#25 Wed 9/28 5 pm EDT



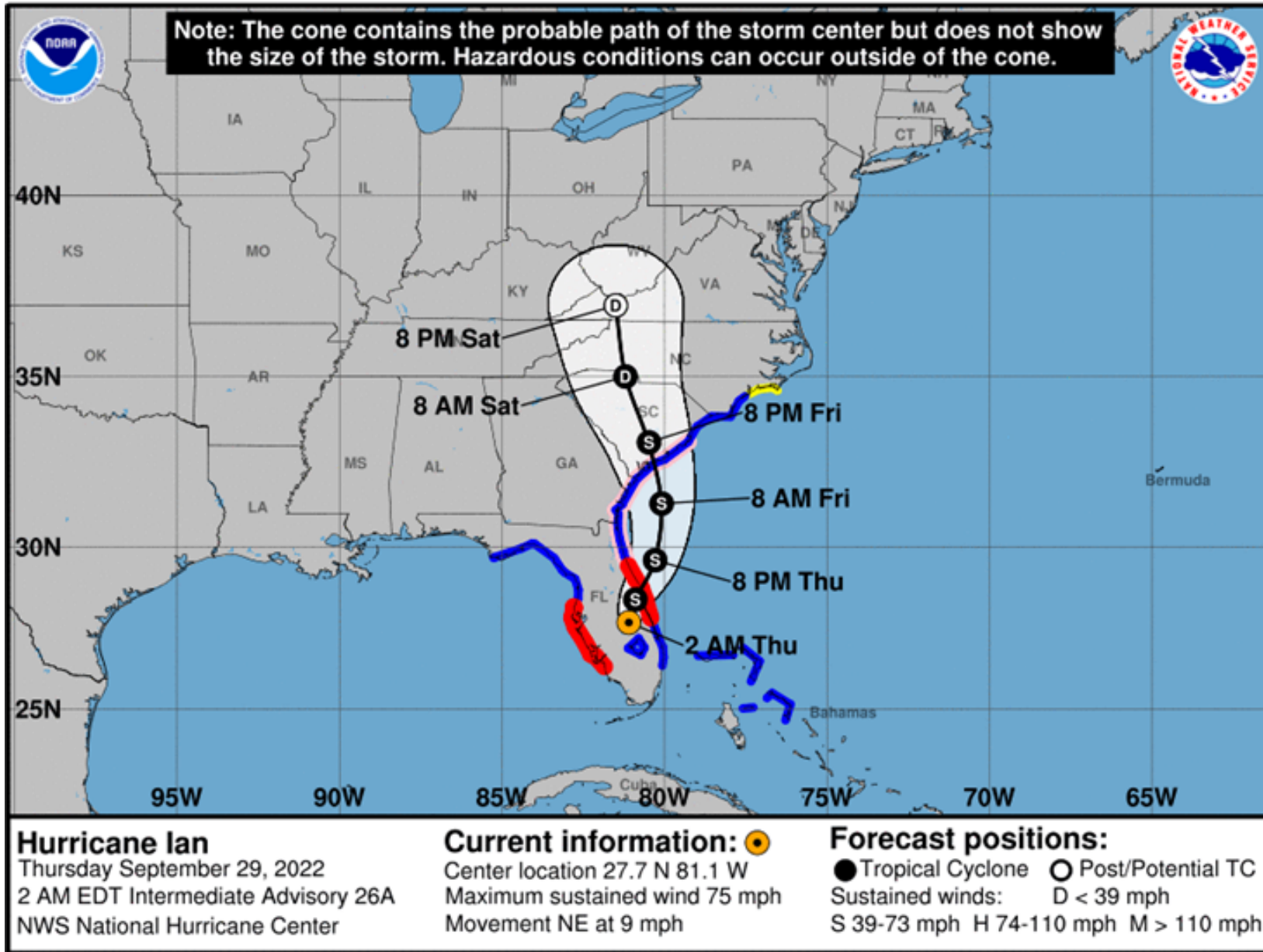
#25A Wed 9/28 8 pm EDT



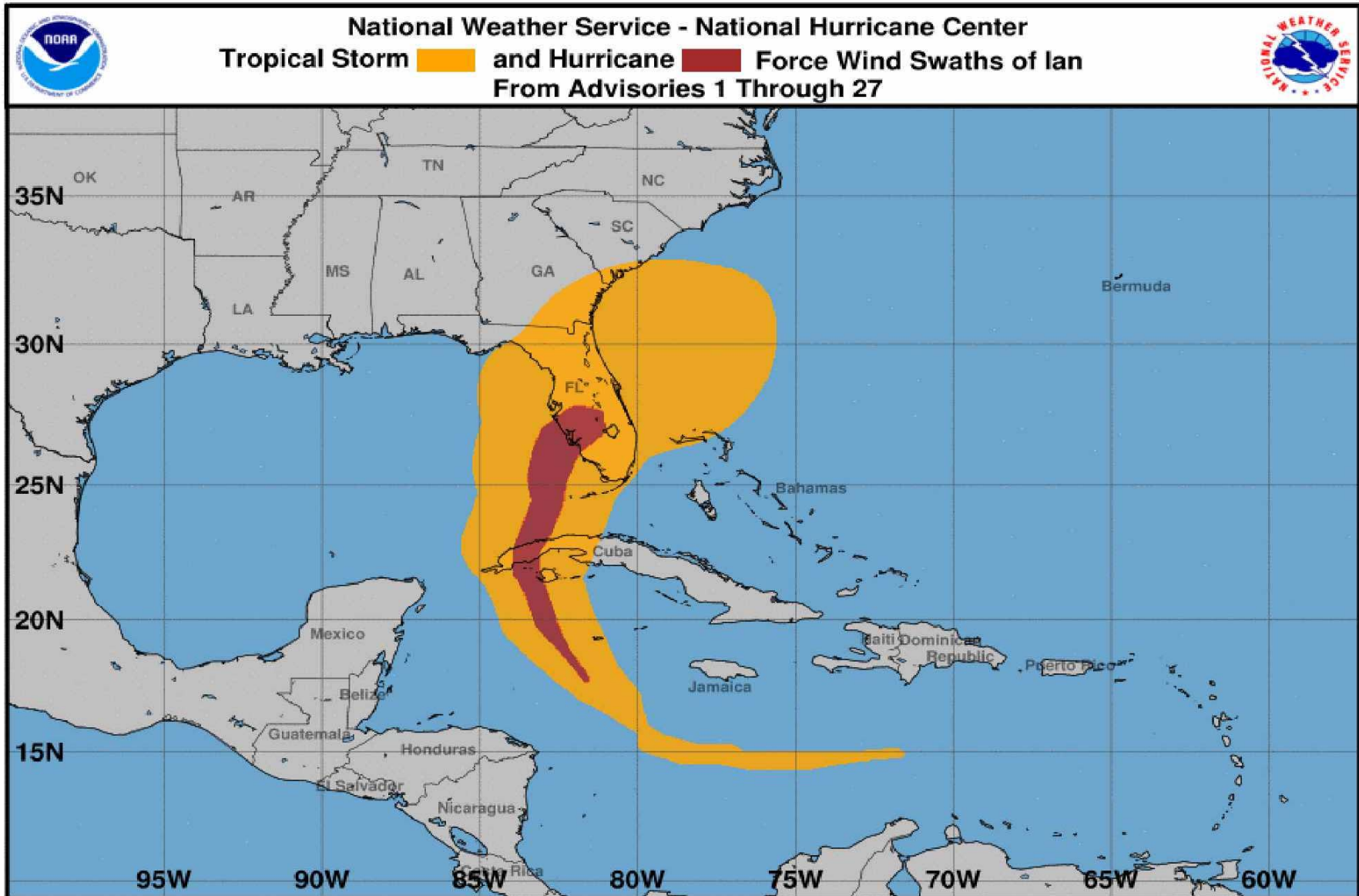
#26 Wed 9/28 11 pm EDT



#26A Thurs 9/29 2 am EDT



Ian: 9/23 thru 9/29



Hurricane Wind categories

Saffir-Simpson Wind Scale:

Category (Based on maximum sustained winds)

1: 73-95 mph	Very dangerous winds
2: 96-110 mph	Extremely dangerous winds
3: 111-129 mph	Devastating damage
4: 130-156 mph	Catastrophic damage
5: 157+ mph	Catastrophic damage

<https://news.yahoo.com/hurricane-ian-forecast-cone-may-090041402.html>

Hurricane Wind categories: NHC Graphics

Category (Based on maximum sustained winds)

D: <39 mph Tropical Depression

S: 39 - 73 mph Tropical Storm

H: 74-110 mph Hurricane

M: >110 mph Major Hurricane

<https://www.nhc.noaa.gov/aboutnhcgraphics.shtml>

US Hurricane Definitions

<https://www.nhc.noaa.gov/aboutgloss.shtml>

Hurricane Warning (condensed):

Sustained winds of 74 mph or higher are **expected** somewhere within the specified area. Issued **36 hours** in advance of tropical-storm-force winds. Can remain in effect when dangerously high water continue.

Hurricane Watch (condensed):

Sustained winds of 74 mph or higher are **possible** within the specified area. Issued **48 hours** in advance of the anticipated onset of tropical storm force winds.

Gale Warning (condensed):

A warning of 1-minute sustained surface winds in the range 39 to 54 mph, either predicted or occurring and not directly associated with tropical cyclones.

High Wind Warning (condensed):

Surface winds of 40 mph or greater lasting for 1 hour or longer, **or** winds gusting to 58 mph or more regardless of duration expected or observed over land.

National Hurricane Center: Accessing Storm Graphics

1. Go to the NHC archive: <https://www.nhc.noaa.gov/archive/2022/>
2. Select the year and the storm/hurricane.
The advisories and discussions shown are all just text.
3. For graphics, select the ‘Graphics-Archive’ button at the top.
4. On the ‘Graphics-Archive’ window, select 5-day with track.
 - a. Use the stop, left and right buttons to find the advisory you want.
 - b. Press the ‘Save Image’ button to copy or save the image.
 - c. Select Copy (to clipboard) or Save (as *.png).