

Severe Weather Advisory for the Caribbean and Florida - Hurricane Irma

Issued on Sunday, 10th September 2017 at 05:25 local time.

Headline

Extremely dangerous Hurricane Irma is one of the strongest hurricanes ever recorded in the Atlantic, and has resulted in widespread severe damage to a number of islands in the Caribbean since Wednesday.

Irma has fluctuated in strength in the last 12 hours and is currently a major Category 3 Hurricane, with mean wind speeds of 105kt (120mph), but remains a dangerous major hurricane as it is expected to strengthen as it moves north towards Florida today.

Latest imagery now shows that the “eye” of Irma is gradually moving north from the north Cuban coast in the last 6 hours. Irma is now expected to begin to track north-northwest towards the southern tip of Florida. Irma is expected to intensify a little as it moves north to make landfall across SW Florida around the middle of Sunday (local time) as a major Category 3 Hurricane. Prior to landfall but the outer bands of Irma are already affecting the south of Florida with locally heavy rain. There is the potential for some severe thunderstorms and perhaps tornadoes.

The National Hurricane Centre track of Hurricane Irma remains similar to the previous issue, though a little further west than previously. Irma is still expected to run parallel to the west coast of Florida during Sunday and into early Monday. Because of the hurricane's angle of approach to the west coast of Florida, it is extremely difficult to pinpoint exactly where the centre might move onshore. The latest guidance forecast Irma to remain close to the west coast of Florida longer than previously and coming inshore across Northwestern Florida during Monday. The weakening storm then northwards towards western Georgia later on Monday (local time) to become a Tropical Storm. On Tuesday and Wednesday Irma is expected to decay to become a Tropical depression across Alabama and then Tennessee.

Impact reports so far

Irma passed over Barbuda, Anguilla, Saint-Martin and the British Virgin Islands on Wednesday and Thursday, leading to severe damage to a high percentage of buildings, and resulted in a number of fatalities. Power, telecommunication and transport infrastructure on these islands were also severely impacted. There is now mandatory evacuation from Barbuda ahead of Hurricane Jose and as a direct response to Hurricane Irma.

Irma resulted in electricity supplies being cut off to almost a million people in Puerto Rico.

The storm crossed the Turks and Caicos Islands early Friday. The Turks and Caicos Islands government has declared a national shutdown amid reports of major devastation.

Some impacts are to be expected across the some of the outlying islands of the southern Bahamas but, unsurprisingly, there are no impact reports from these areas as yet.

Some significant impacts were reported across Cuba as Irma moved along the north coast on Saturday from the destructive hurricane force winds, torrential rain, significant storm surge and rough seas. This was the first Category 5 hurricane that made landfall across the county in 80 years.

Over 6 million people of Florida have been asked or told to evacuate ahead of Hurricane Irma by the Governor of Florida. Some are calling this “the largest mass evacuation in US history”. Hundreds of shelters were opened for people who stayed, with hotels filling up as far away as Atlanta, which is almost 500 miles north.

This forecast may be amended at any time

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Discussion

The latest estimate of the winds was based on reconnaissance aircraft flying across the Hurricane. Irma was located 30 miles NNE of Varadero, Cuba and 90 miles SE of Key West, Florida at 10/0300UTC, moving northwest at 6 mph.

Aircraft reconnaissance data would suggest that Hurricane Irma has not recovered from its interaction with Cuba in the last 24 hours. Irma's intensity has been conservatively lowered following recent reconnaissance flights. Irma has been slow to move away from the Cuban coastline, in the last 6 hours, but with Irma located near the western edge of the subtropical ridge it should turn north-northwestward very soon and accelerate near or along the west coast of Florida. There remains some uncertainty in the very near term, and as such we should not focus on the exact track of the centre. It should also be remembered that hurricane force winds extend some 50-70 miles out from the centre of the storm.

During this track Irma will move over warmer waters as it moves north towards the Florida Keys leading to some intensification in the next 12 to 24 hours, though shear may limit this re-intensification somewhat. Hurricane Irma is expected to be a major and dangerous Category 3 storm by the time it reaches or moves close to the Florida Keys and Florida Peninsula. Later on Monday Irma will be moving north inland across northwest Florida towards western Georgia and weakening as shear increases across the storm.

Model track guidance remains consistent with the majority of the models taking Irma across the Florida Keys and near or over the Florida Peninsula by the middle of Sunday (local time) as a major and dangerous Category 3 hurricane. The National Hurricane Centre latest forecast has edged the track a little further west, but is broadly similar to previous guidance. Because of the hurricane's angle of approach to the west coast of Florida, it is extremely difficult to pinpoint exactly where the centre might move onshore.

The latest National Hurricane Guidance tracks Irma parallel to the west coast of Florida on Sunday as a Category 2 or 3 Hurricane, weakening as it moves north.

Latest information of track of Irma can be found here <http://www.nhc.noaa.gov/#Irma>. The National Hurricane Centre is the official agency for issuing forecasts and warnings for tropical storms and hurricanes in the North Atlantic basin. Decision making should be based on these official forecasts.

Impacts

Impacts will be typical of a major hurricane and include destructive winds, dangerous waves, storm surge, torrential rains and an enhanced risk of landslides. A combination of these hazards will lead to a risk of fatalities and significant impacts to local infrastructure and transport links. Total and extremely long-lived power outages and water losses are to be expected.

Winds: Winds within 50-70 miles of the centre of the hurricane will be strong enough to cause complete roof failure on many residences and industrial buildings, and some complete building failures with small buildings blown over or away. Trees could be uprooted or snapped and some may be debarked, isolating most communities impacted. Very strong and gusty winds are associated with any severe thunderstorms and tornadoes ahead of Irma making landfall.

Storm Surge & Flooding: Flooding, through a combination of torrential rainfall, storm surge and heavy surf is likely. The south-western coastline of Florida is expected to see the highest storm surge of 3-5 metres. Therefore, severe storm surge damage is likely. Miami is expected to see a storm surge of 0.5 to 1 metre.

Rainfall: Irma is a large storm with its associated torrential rain extending a long way from the storm centre leading to flash flooding and mudslides. Locally severe thunderstorms are already affecting Florida, with 200-400mm of rain expected on Sunday and Monday across Florida. Georgia, Alabama and Tennessee then at risk of some heavy rain fall (100-200mm) as the then weakening storm moves across the region early next week.

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Context

The most recent category 5 hurricanes to affect the North Atlantic basin and make landfall are Andrew (1992), Dean (2007) and Felix (2007). In this region of the Caribbean the last comparable storm was Hurricane Georges in 1998 which caused widespread major impacts across the region - https://en.wikipedia.org/wiki/Hurricane_Georges. However, Irma remains a stronger hurricane than Georges, and is also the longest duration tropical cyclone attaining speeds of 160 knots anywhere across the globe (previous record holder was Typhoon Haiyan in 2013). It is also one of the longest lasting category 5 Atlantic hurricane in recorded history.

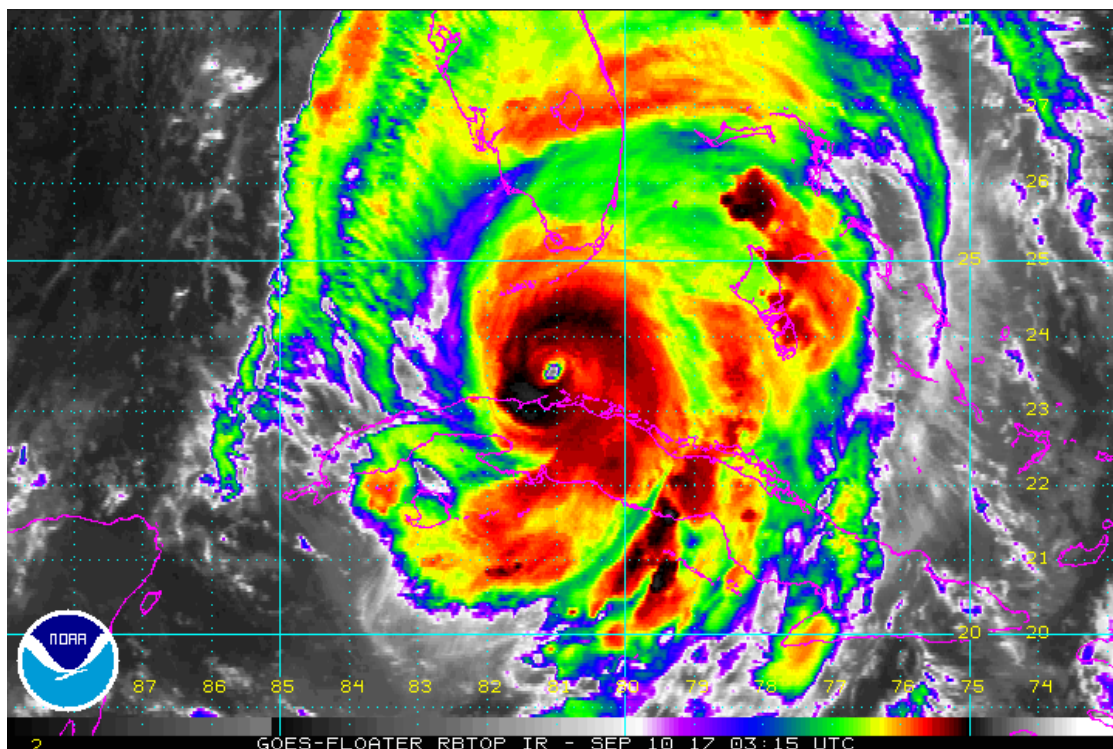


Figure 1: 10/0315UTC IR satellite image. The shows Hurricane Irma now moving north away from the Cuban coastline.

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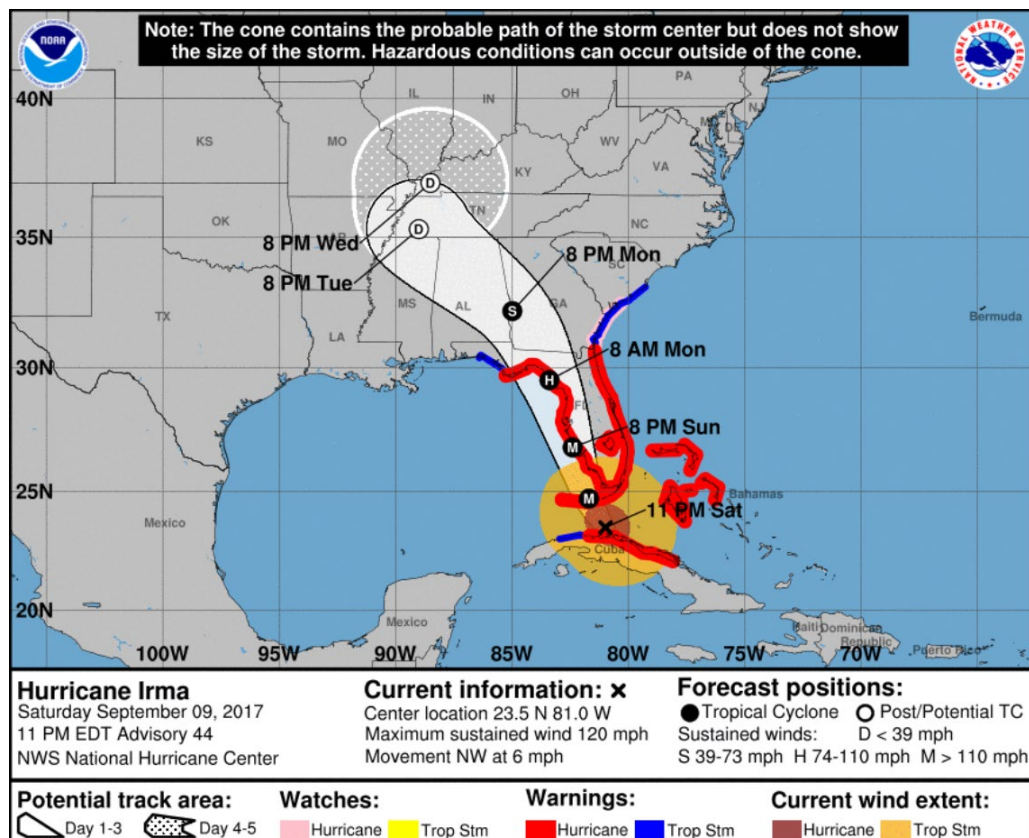


Figure 2: 10/0300 UTC official forecast track and cone of uncertainty for Hurricane Irma from the National Hurricane Centre. Times on the graphic are in AST (UTC-4).

Very similar to the previous track.

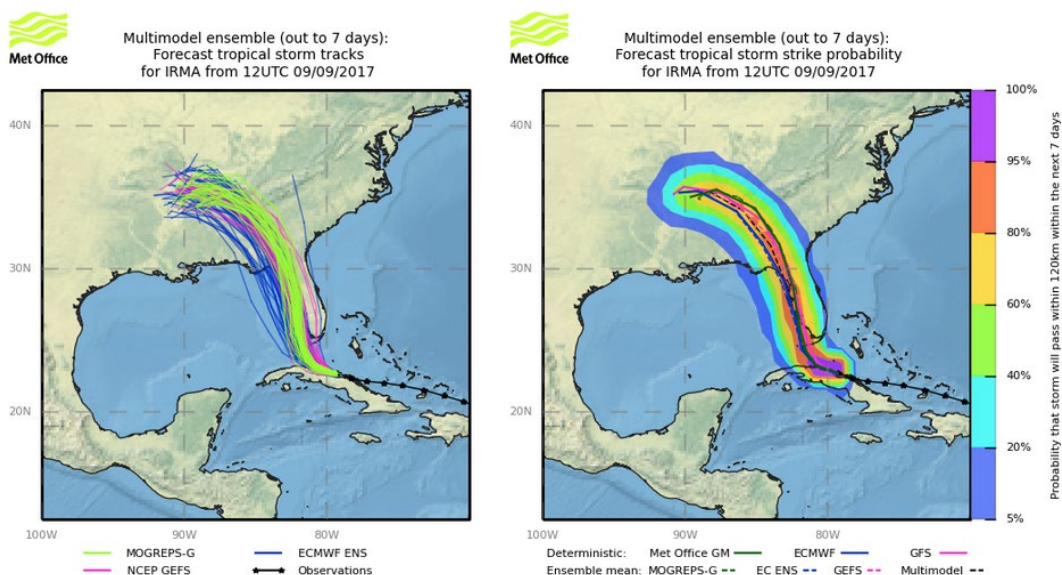


Figure 3: Latest Ensemble spread of tracks from the Met Office, ECMWF and NCEP. This shows the range of possibilities for the track of Irma during the next 7 days. Note the continued strong signal for a track north across western Florida.

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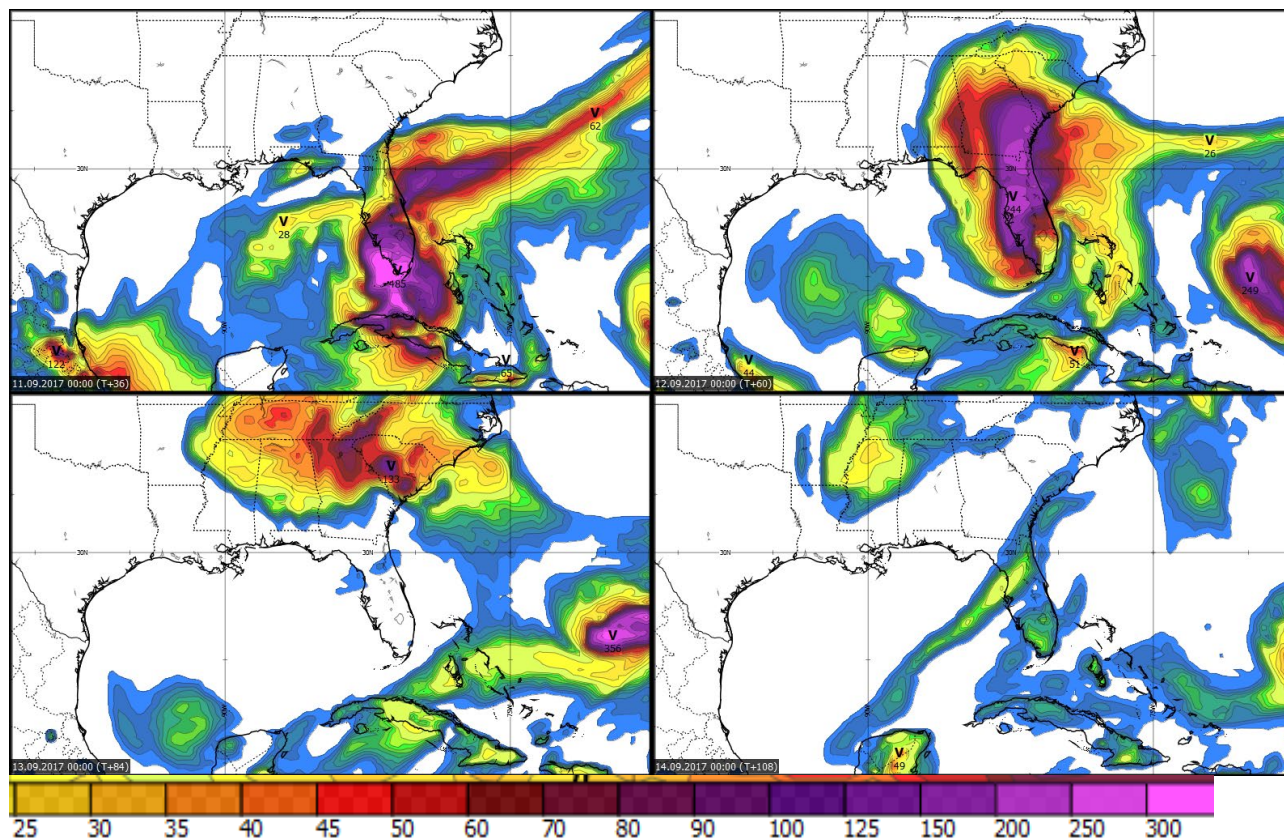


Figure 4: 09/12UTC UKGM 24 hour rainfall totals for the next 4 days. Accumulated precipitation up to next Wednesday in millimeters; Sunday (top left) to Wednesday (bottom right).

Sources: NHC, UK Met Office, ECMWF, NCEP, and various media reports.

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