Severe Weather Advisory for the Caribbean and Florida - Hurricane Irma

Issued on Saturday, 9th September 2017 at 00:15 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.

Although Irma weakened slightly earlier today she remains an extremely dangerous Category 4 hurricane with mean wind speeds of 135kt (155mph). However, we should not focus too much on the intensity as the overall impacts remain unchanged. In addition, the difference between Irma's current strength and a category 5 is only 3mph.

Imagery shows Irma is close to the northern coast of Cuba and expected to track between Cuba and the south of the Bahamas overnight and during Saturday. Thereafter, Irma will head towards the southern tip of Florida during the first part of Sunday.

Irma is expected strengthen to become a Category 5 Hurricane once again between Cuba and the southern tip of Florida, and perhaps over the Florida Keys. However then weaken slightly to become a "top end" Category 4 Hurricane once again at landfall across Florida.

Irma is then expected to track across southwestern Florida and towards Georgia during Sunday and early Monday, though weakening to become a Tropical Storm during Monday once over Northern Florida. Irma is now less of a threat to the Carolina's than previously thought.

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.

The storm is now close to some outlying islands of the southern Bahamas but, unsurprisingly, there are no impact reports from these areas as yet.

1.3 million people have been told to evacuate southern Florida with thirteen counties are under mandatory or voluntary evacuation orders. Some are calling this "the largest mass evacuation in US history" Other parts of Florida and Georgia are likely to issue evacuation orders later.

Discussion

Hurricane Irma remains a highly destructive Category 4 hurricane and was located 195 miles E of Caibarien, Cuba and 345 miles SE of Miami, Florida at 08/2100UTC, moving west at 12 mph.

The environment is favourable for Irma to maintain its Category 4 status, though slight fluctuations in the intensity are possible in the next 48 hours. The interaction of the hurricane's circulation with Cuba will probably not result in any relevant change in intensity. Irma is expected to become temporarily a Category 5

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Hurricane between Cuba and the southern tip of Florida on early on Sunday, but then make landfall near south Florida as a Category 4 hurricane. After landfall, interaction with land and an increase in wind shear should induce gradual weakening.

Irma is expected to continue a west-northwest track for another 18 hours, which would take Irma close to the north coast of Cuba, and south of The Bahamas. After that time, Irma will begin to turn north-north-westward and northward. There remains some uncertainty to the precise moment it turns, and that is why we should not focus on the exact track of the centre. It should also be remembered that hurricane force winds extend some 70 miles out from the centre of the storm. The latest guidance from the National Hurricane Centre represents this track and would suggest that Irma will reach the Florida Keys early Sunday local time as a Category 5 Hurricane.

The latest National Hurricane Guidance now tracks Irma along the southwest coast of Florida on Sunday as a Category 4 Hurricane. The NHC report that this afternoon's NHC forecast was again adjusted a little bit westward following the trend of deterministic and ensemble models.

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 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. Only a few types of structures are capable of surviving intact. Virtually all trees are uprooted or snapped and some may be debarked, isolating most communities impacted.

Storm Surge & Flooding: Flooding, through a combination of torrential rainfall and storm surge is likely. The south-eastern and central Bahamas are most likely to see the highest storm surge of 4-6 metres which is higher than much of these islands. Therefore, severe storm surge damage is likely. A significant storm surge of 3 to 4 meters is also likely along the coast (especially southwest) of Florida.

Rainfall: The potential for the heaviest rainfall is when Irma begins to interact with the larger landmass of Cuba; here event totals could reach 500-700mm in some places this weekend. It should be noted that Irma is a large storm and torrential rain will extend a long way from the storm centre leading to flash flooding and mudslides. By Monday very heavy rainfall (up to 500mm) is expected across Florida, in additions to the hurricane force winds and storm surge, with Georgia, perhaps the southern Carolina's then at risk of this then weakening storm in the following days.

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.

This forecast may be amended at any time
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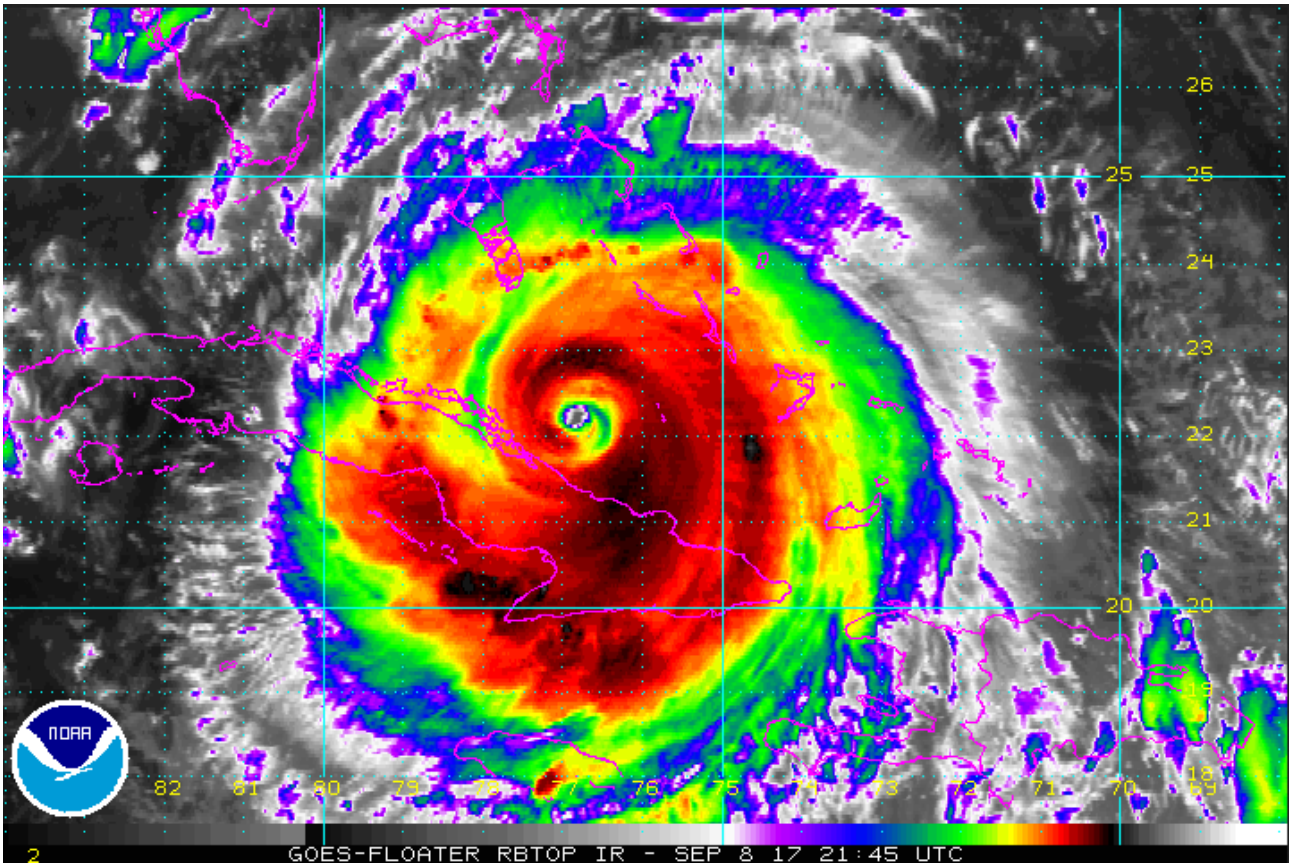

Figure 1: 08/2145 UTC IR satellite image.

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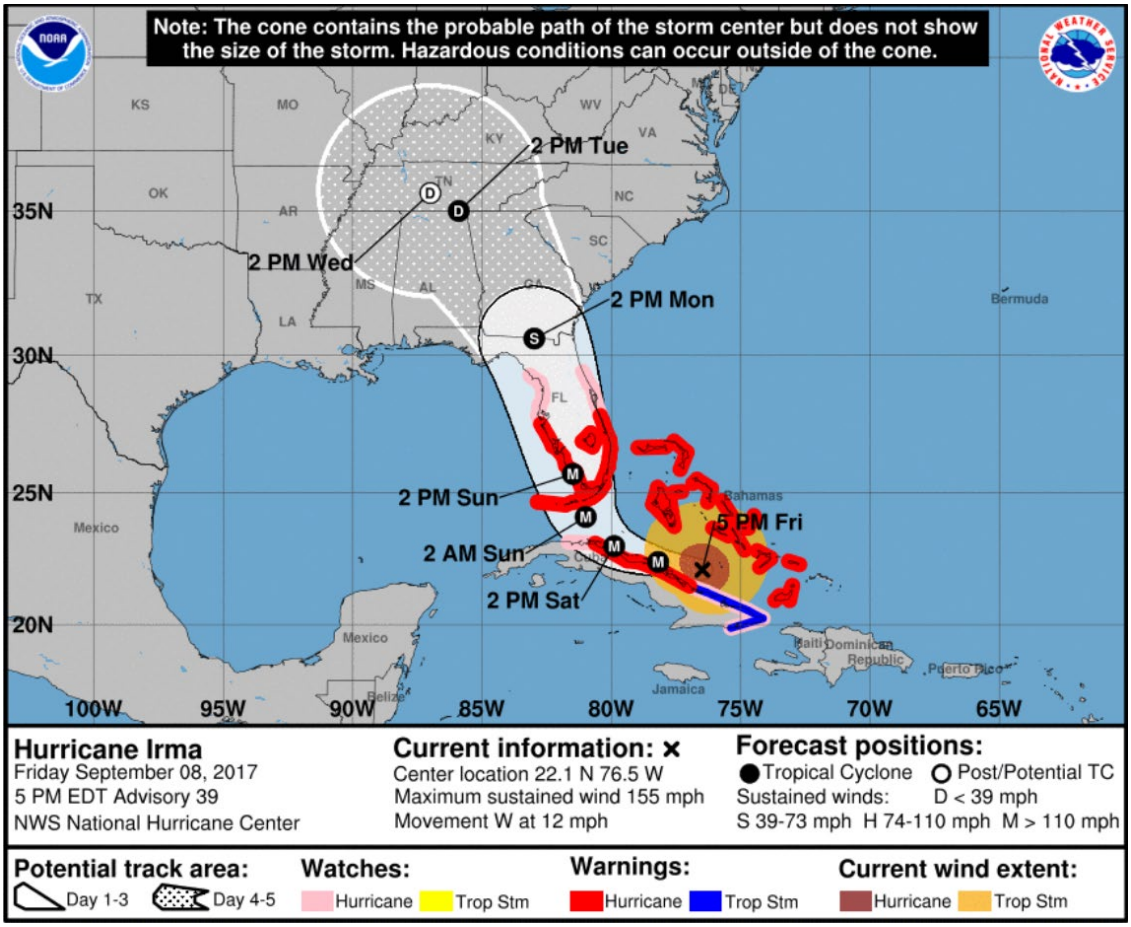

Figure 2: 08/2100 UTC official forecast track and cone of uncertainty for Hurricane Irma from the National Hurricane Centre. Times on the graphic are in AST (UTC-4).

This latest track is a little further east than the previous run and runs Irma more up the west coast of Florida than previously.

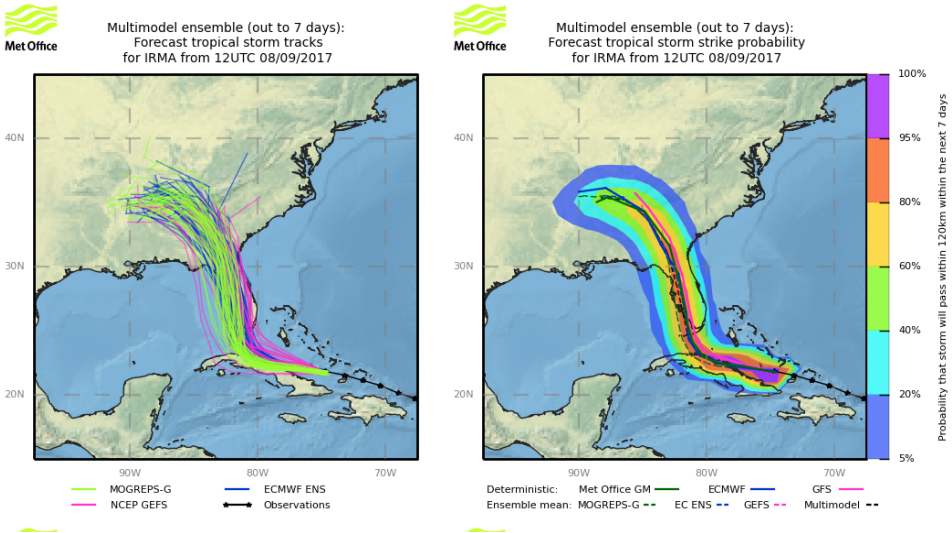

Figure 3: Latest Ensemble spread of tracks from the Met Office, ECMWF and NCEP.

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 Florida.

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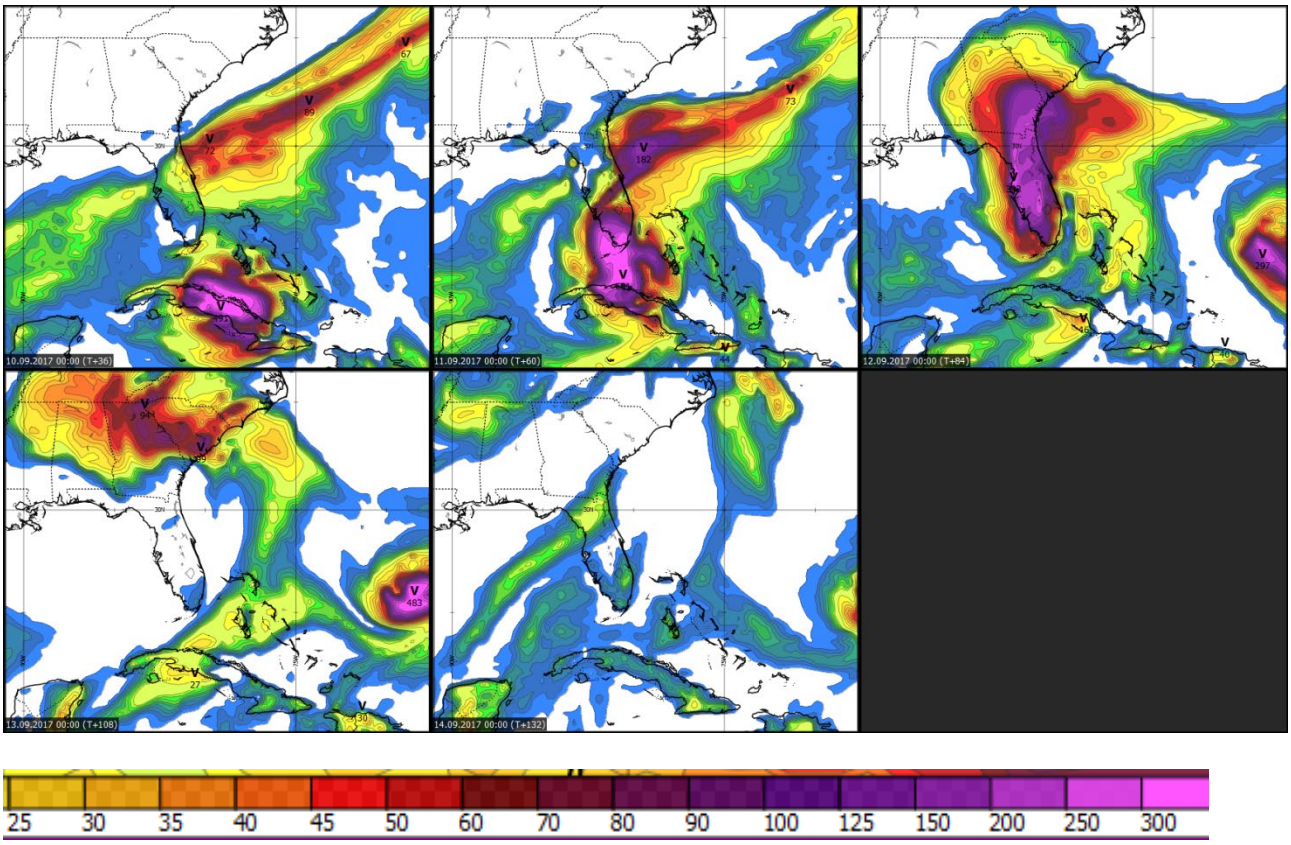

Figure 4: 08/12UTC UKGM 24 hour rainfall totals for the next 5 days. Accumulated precipitation up to next Wednesday in millimeters from the GM.

Note the risk of 250-450 millimeters per day along the track of Irma. This will result in a high risk of flash flooding and landslides.

Sources

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

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