

Twelve Capital Event Update: Hurricane Michael

Update – Wednesday, 10 October 2018

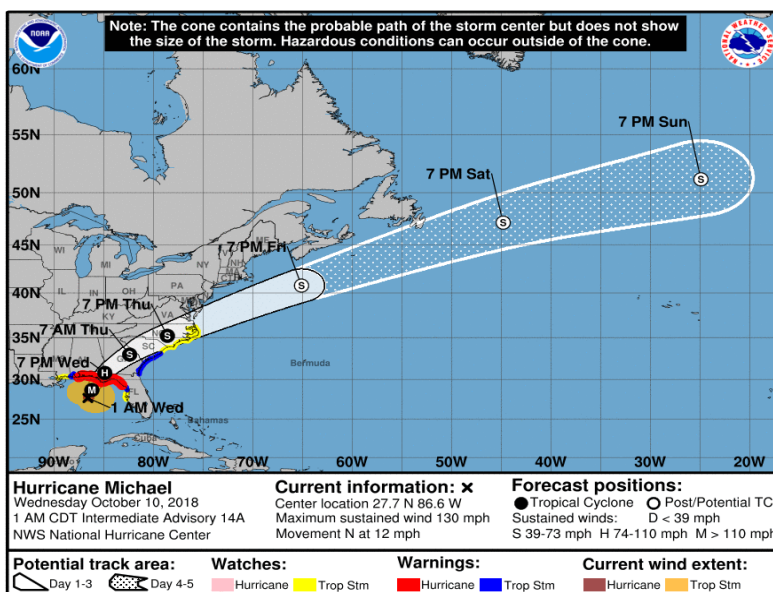
- Hurricane Michael has strengthened to a category 4 tropical cyclone and is expected to make landfall in Florida, east of Panama City, within the next twenty-four hours.
- This event is expected to cause damage from wind, storm surge and inland flooding.
- The population density at Hurricane Michael’s expected landfall location is relatively low, due to the proximity of the Apalachicola National Forest, which is uninhabited territory. Panama City itself has only 37,000 inhabitants.
- The potential impact on insurance-linked securities’ (ILS) portfolios is not yet clear. The low population density at the landfall location, and the fact that aggregate trigger structures have not suffered from meaningful prior attachment erosion this season will reduce the potential impact on Cat Bond and private ILS portfolios.
- AIR and RMS have published industry loss estimates for a category 3 hurricane in the range of USD 1.5 – 3bn. Given the recent strengthening of Michael to a category 4, these estimates might be too low. Using a blend of similar stochastic event and historic scenario analysis, Twelve Capital estimates insured industry losses at between USD 5 – 15bn. Please note that any estimate prior to landfall cannot be accurate and ultimate losses might be substantially different.

Event details

Hurricane Michael, currently located 290km south of Panama City (Florida) on the Gulf of Mexico, has strengthened to a category 4 hurricane. A US Air Force hurricane hunter aircraft has measured a minimal central pressure of 947mb and peak winds of around 210 km/h.

The Gulf of Mexico sea surface temperature in the area is currently around 29°C and remains conducive for some further potential strengthening before landfall. Landfall is expected to occur within the next twenty-four hours east of Panama City, Florida. After landfall, hurricane Michael is expected to weaken rapidly and to move further inland as a tropical storm.

Figure 1: NHC forecast for Hurricane Michael

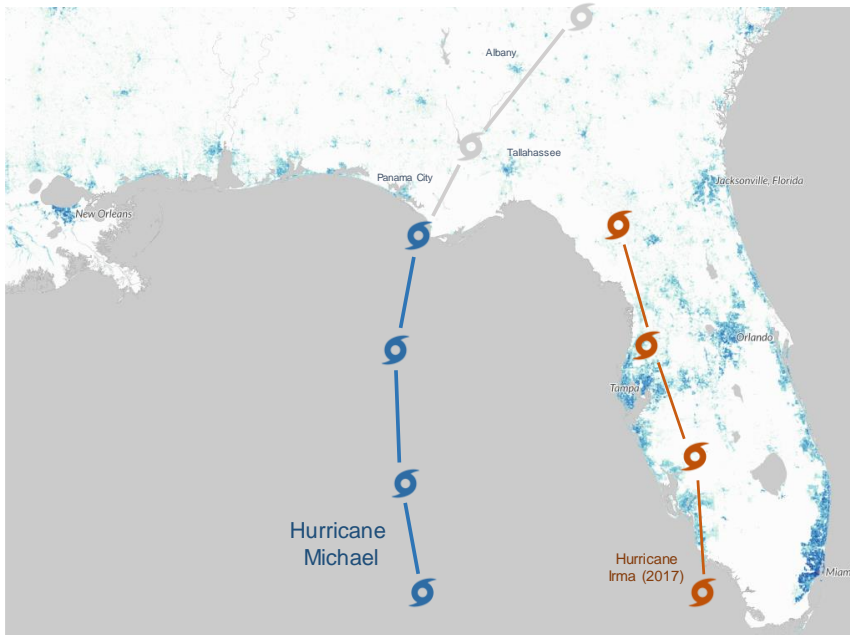


Source: NHC as at 10 October 2018.

Landfall location and loss expectations

This event is expected to cause insured losses from wind damage, storm surge and inland flooding. The population density at Hurricane Michael’s forecast landfall location and forward track is relatively low, which should reduce the potential for damage significantly. The map below (Figure 2) compares Michael’s expected track to that of Hurricane Irma in 2017, which moved across several highly populated areas causing USD 21bn of insured damage, according to the latest Property Claim Services (PCS) numbers. Also visible is the location of the Apalachicola National Forest East of Michael’s track (white area on the map), which is not inhabited and where insured damages should be minimal.

Figure 2: Population density and expected track of Michael compared to Irma (2017)



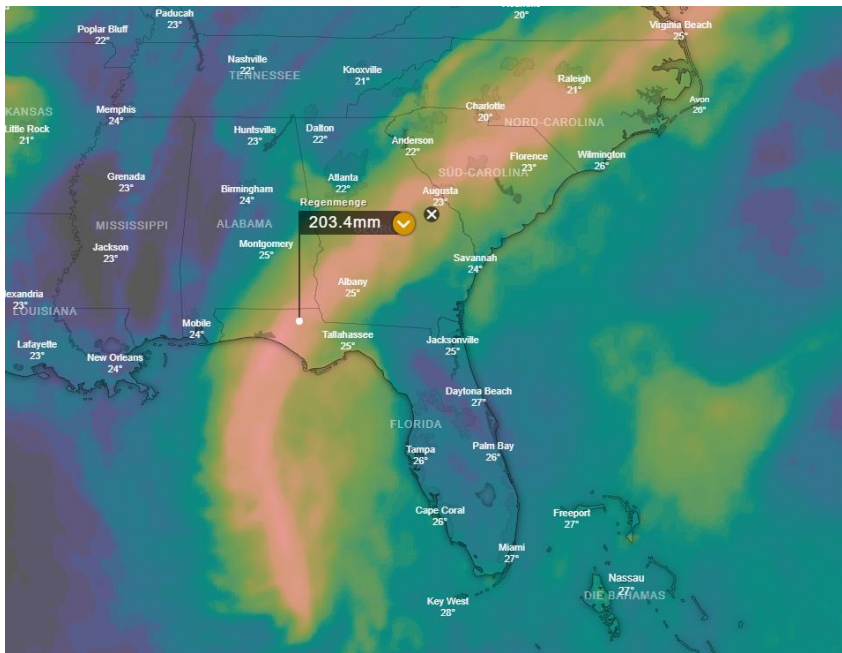
Source: Twelve Capital, National Hurricane Center, <http://luminocity3d.org> as at 10 October 2018.

Unlike Hurricanes Harvey in 2017 or Florence in September 2018, this event should cause less damage from inland flooding because Hurricane Michael is expected to continue to move forward after landfall. In contrast, the other two events stalled and dropped significant amounts of precipitation over a limited area.

Based on the ECMWF¹ forecast model, Hurricane Michael is expected to cause cumulative rainfall of up to 22cm across a band from North West Florida up to South Carolina over a period of five days. This compares to more than 50cm experienced recently with Hurricane Florence in North Carolina. Furthermore, many homeowner policies insuring against tropical storm risk do not cover flood damages caused from rainfall, so the majority of these flood losses will be absorbed by the US National Flood Insurance programme (NFIP).

¹ European Centre for Medium-Range Weather Forecasts.

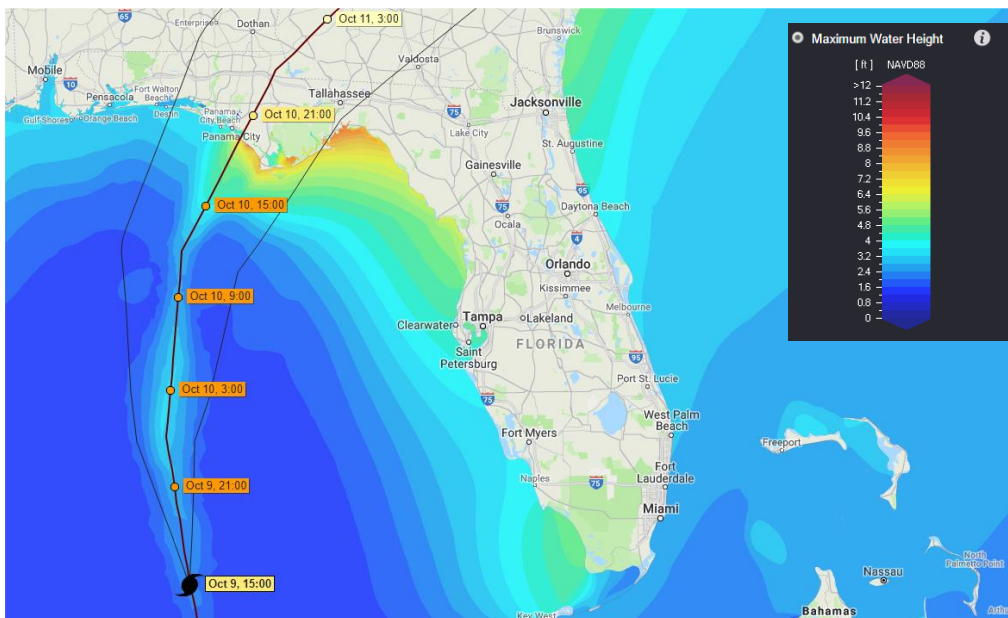
Figure 3: ECMWF model cumulative five day rainfall



Source: Twelve Capital, ECMWF, windy.com

Hurricane Michael is expected to cause a storm surge of up to 10 feet along the Florida coast. Due to the shape of the Western Floridian coast (which curves by a degree of almost 90° south of Tallahassee), a storm surge is also possible outside the path of the hurricane, as indicated below.

Figure 4: Storm surge forecast



Source: Twelve Capital, Coastal Emergency Risk Assessment, NOAA as at 10 October 2018.

Potential impact for insurance-linked securities market

At this stage, with landfall still several hours away, it is extremely challenging to provide a base case for what the impact of Hurricane Michael might have on the ILS market in general and on the Twelve Capital managed portfolios in particular.

Several variables are explored below:

1. Risk coverage across the Cat Bond universe

Tropical cyclone risk in Florida is covered by the majority of Cat Bonds in the investable universe. This includes indemnity as well as PCS-linked trigger structures, with both occurrence and aggregate layers. A number of instruments are therefore potentially at risk from this event, however, ultimately we expect only a small number of positions to have a realistic probability of suffering a loss.

2. PCS-linked structures

Hurricane Michael would be the first major hurricane this year to cause significant insured losses. Given that aggregate deductible limits across most bonds have not suffered from any erosion post their annual resets, the loss absorption capacity of these structures protecting the insured layer is near or at its annual maximum. In addition, many PCS-linked Cat Bond structures exhibit lower pay-out factors in Florida compared to other states. The payout factor is part of the formula which determines the loss attributable to an individual Cat Bond.

For example, the Galileo 2017-1A Cat Bond features a payout factor for all US states (excluding Florida) of 0.48%, however, for any damage in Florida, the factor is of only 0.28%. In practice, this means that a hypothetical USD 50bn event occurring in Florida would cause substantially less attachment erosion compared to an event causing the same USD 50bn in insured losses elsewhere.

	Florida	Other US states
Hypothetical PCS event loss	USD 50bn	
Bond attachment	USD 360m	
Pay-out factor	0.28%	0.48%
Attachment erosion (USD)	50bn x 0.28% = USD 140m	50bn x 0.48% = USD 240m
Attachment erosion (%)	38.9%	66.7%

For the vast majority of PCS-linked Cat Bonds with aggregate structures, we do not therefore expect any write-downs from this event given that little or no prior attachment erosion has occurred. As always, any event loss above the franchise deductible would, however, result in a temporary attachment erosion reducing the buffer available for additional events occurring before the annual reset date.

3. Indemnity structures

As always, indemnity structures are the most difficult transactions to evaluate. The calculation of ultimate net losses will be highly dependent on any geographic or client segment concentration in the underlying portfolio of homeowner policies. Generally speaking, however, most sponsors tend to have higher concentrations in the Miami or Tampa regions and are less exposed in the Florida panhandle. At this point, prior to landfall, we do not have reliable estimates available to share given the uncertainty to exact landfall location, strength and timing. However, we expect a better loss experience for indemnity structures compared to Hurricane Irma, given the lower population density in the expected affected areas.

4. Valuations can differ from fundamentals

As also witnessed with hurricane Florence recently, secondary market valuations used to calculate fund performance are likely to differ from the actual expectation of ultimate defaults, as situations like these might result in temporary spread widening. Hence, investors should expect to see some additional levels of volatility in the near future.

Outlook

Twelve Capital continues to monitor the situation extremely closely and will provide further updates as the situation becomes clearer, particularly post-landfall.

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