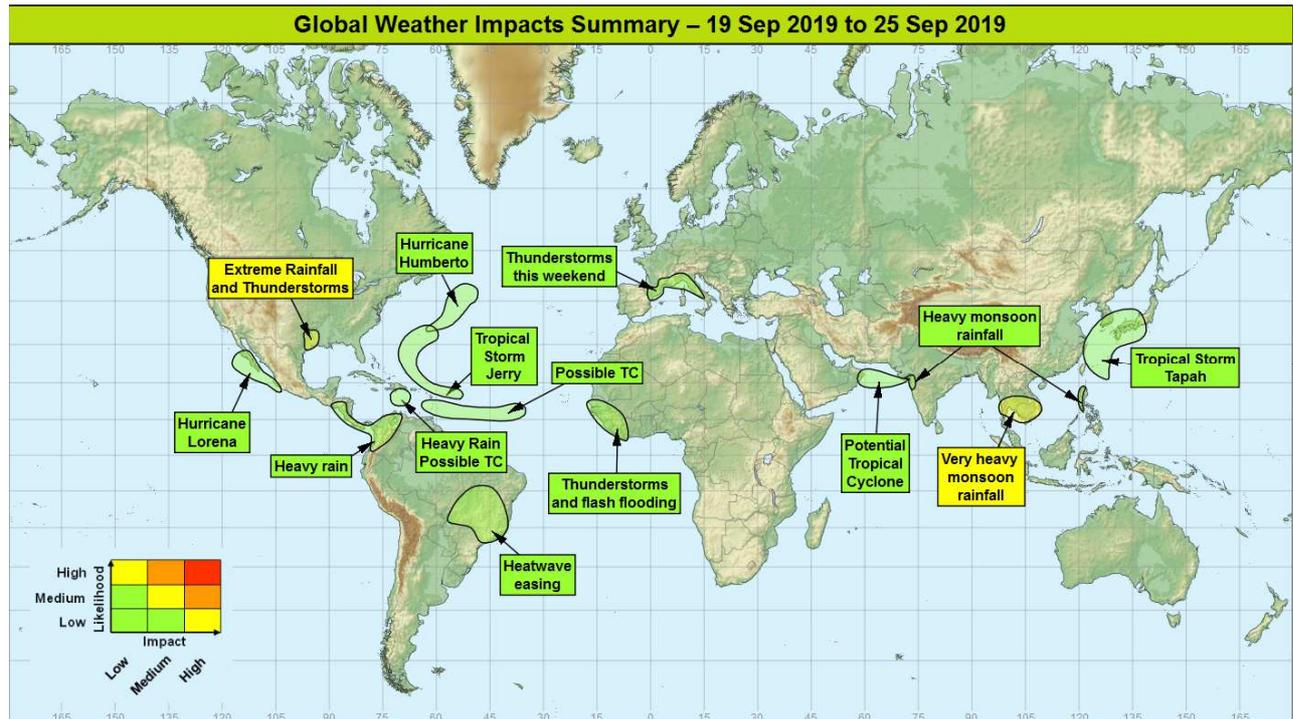


**Global Weather Impacts – Thursday 19<sup>th</sup> to Wednesday 25<sup>th</sup> September 2019**

Issued on Thursday 19<sup>th</sup> September 2019

**HEADLINES**

- Tropics very active with a number of named systems and areas of interest.
- Extreme rainfall for parts of Southern USA, associated with an ex-tropical system.
- Heavy monsoon rainfall continues over SE Asia, exacerbating ongoing impacts.



**DISCUSSION**

**Tropical Cyclones**

**Hurricane Humberto – North Atlantic Weather**

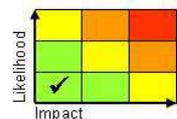
Having passed to just to the northwest of Bermuda overnight, Hurricane Humberto moving away from the islands out into the open Atlantic. Gradual weakening is expected over the coming day or so as Humberto completes its transition into a mid-latitude low pressure system across the North Atlantic Ocean.

**Discussion**

Satellite imagery already shows Humberto is beginning to resemble an asymmetric mid-latitude low pressure system, as it encounters a baroclinic zone to the northwest and is engaged by a mid-latitude upper trough. However inspection of cyclone phase diagram shows the process of extratropical transition (completed by the loss of deep convection around the centre) suggests this may take a further 24 hours of so to complete. Beyond this point the system will have degenerated into a cold core mid latitude cyclone, and move east across the North Atlantic

**Expected Impacts**

Having brought impacts from strong winds, large waves and a modest surge to Bermuda overnight, the system will now remain over open ocean until its demise. As such the only ongoing impacts will be large swells generated that will continue to produce dangerous beach conditions for Bermuda and across the eastern coast of North America.



**This forecast may be amended at any time**

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**Tropical Storm Jerry – North Atlantic**  
**Weather**

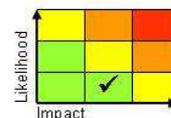
Tropical Storm Jerry is located around 625 miles east of the Leeward Islands. The system is expected to strengthen into a hurricane today (1-minute sustained winds of 75mph), and then maintain this intensity as it tracks west-northwest close to the northernmost Leeward Islands on Friday. The track beyond this is more uncertain, although it currently looks most likely to head out into the open North Atlantic towards Bermuda around the middle of next week.

**Discussion**

Jerry has been showing increasing organisation over the past 24 hours, and despite some shear evident cutting into the NW quadrant (from an upper low to the NW), is expected to undergo modest (at least) strengthening over the next 2-3 days as it passes by just to the N of the Leeward Islands. There remains an increasing spread in tracks beyond this in ensemble data but the majority of solutions suggest that Jerry will take a similar track to Humberto (although further E from the Bahamas), recurving towards Bermuda whilst maintaining or even possibly temporarily strengthening through baroclinic processes at it comes under the influence of at least two low-latitude upper troughs.

**Expected Impacts**

Low likelihood of tropical storm or weak hurricane impacts (heavy rain, strong winds, rough seas and a slight storm surge) across the northernmost Leeward Islands on Friday.



**Hurricane Lorena – Eastern Pacific**  
**Weather**

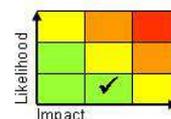
Lorena formed on Thursday afternoon around 200 miles off the south-western coast of Mexico. Lorena has since moved steadily northwest and strengthened into a very compact Cat 1 hurricane, and is currently hugging the west coast of Mexico near Manzanillo. It is likely to weaken to at least a tropical storm due interaction with the coastline, but then may re-strengthen as its trajectory take it away from land into open ocean. Finally as the system moves past Baja California on Saturday it will meet cooler seas and rapidly weaken.

**Discussion**

Lorena is a small cyclone, and within the proximity of the rugged Mexican coastline over the next couple of days. While a broad northwesterly track seems likely, there is significant uncertainty due to the potential for land interaction to limit or reverse any intensification. The system will then be steered northwest by a small ridge, with the loss of warm SSTs resulting in the demise of the system on Saturday.

**Expected Impacts**

Risk of torrential (200-300mm) rainfall to parts of the western coast of Mexico through today (Thursday), bringing flash flooding and risk of mudslides. Locally damaging winds possible near the coast. Heavy rain may affect Baja California over the weekend should Lorena track in this direction.



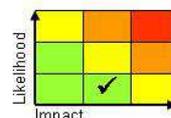
**Tropical Storm Tapah - Northwest Pacific.**  
**Weather**

Tropical Storm Tapah formed overnight and is then forecast to gradually track northwestwards across the East China Sea, possibly strengthening into a Typhoon (10-minute sustained winds of 74mph). Over the systems path strong winds and heavy rainfall are expected to skirt by eastern Taiwan and China, before more directly affecting Japan's southernmost islands on Friday, and then mainland parts of southern Japan and South Korea over the weekend where 150-300mm of rain is expected.

**Discussion**

An Equatorial Rossby Wave (ERW) has developed into a tropical depression in the Philippine Sea. As this tracks north environmental conditions are favourable for gradual development of the system into a tropical storm, then typhoon. As the system approaches the Sea of Japan it will be picked up by a sharp upper trough in the mid-latitude jet stream and undergo transition to an extra-tropical cyclone.

**Expected Impacts**



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Strong winds will generate rough seas in the East China Sea and later in the Sea of Japan, and perhaps cause some disruption across southern parts of Japan and South Korea. Heavy rain will enhance the risk of flooding and landslides where terrain is steep.

*The following areas are being monitored for potentially impactful developments through the forecast period:*

**Caribbean Sea/Central Atlantic**  
**Weather**

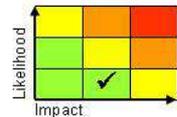
Two further potential cyclone development areas have been identified, with both only having fairly low chances of development due to the forecast of unfavourable environmental conditions in their vicinity. The first feature located just south of Hispaniola, will likely bring heavy rainfall to the island over the coming couple of days with locally 100-150mm possible, the second currently over the Central Atlantic should pass close to Lesser Antiles early next week and likewise may bring heavy rainfall and strong gusty winds.

**Discussion**

Two AEW moving westwards across this region are associated with areas of enhanced convection. Both features are expected to be affected by forecast strong vertical windshear, which should inhibit development of each feature. However both need watching carefully as any reduction in forecast windshear would see both systems lay in significantly more favourable development areas for tropical cyclones.

**Expected Impacts**

Locally strong gusts winds and heavy rainfall is likely to be associated with each feature. Most notably in the short term impacts from flooding and landslides will be probable across southern parts of Hispaniola.



**Arabian Sea**  
**Weather**

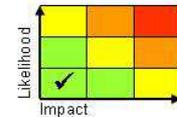
There is a risk of tropical storm formation over the Arabian Sea early next week off the coast of Gujarat, in northwest India. Any development is likely to track west into the Arabian Sea, perhaps toward Oman late in this forecast period.

**Discussion**

The monsoon low affecting parts of central India is likely to exit into the Arabian Sea this weekend. Some longer range model output, notably ECMWF suggest this may then spawn the formation of a tropical cyclone.

**Expected Impacts**

A moderate risk of strong winds generating rough seas in the northern Arabian Sea, and a low risk that these winds accompanied by heavy rainfall may approach Oman early next week.



**Europe**  
**Northeast Spain, southern France and northwest Italy**  
**Weather**

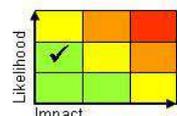
There is the potential for some severe thunderstorms to develop in these areas during the coming weekend. These could produce 50-75 mm of rainfall in a few hours, along with frequent lightning, large hail and gusty winds.

**Discussion**

Although there are differences between models, all suggest a plume of very warm air will be engaged by an upper trough across this region next weekend, with the potential for some severe storms to develop.

**Expected Impacts**

The main impacts would be from flash flooding. Large hail and frequent lightning are possible, perhaps disrupting travel and power supplies.



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**North America**

**Remnants of Tropical Depression Imelda – Southern USA**

**Weather**

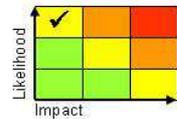
Imelda formed on Thursday afternoon just off the coast of Texas south of Freeport. It quickly moved inland and has since dissipated. However the moisture footprint of this slow moving system is likely to deliver extreme rainfall to parts of Eastern Texas and western Louisiana through the next couple of days, with over 250 mm likely in places. For comparison Houston typically receives just over 100 mm on average in September.

**Discussion**

As discussed above the moisture footprint associated with the remnants of Imelda is exceptional, with precipitable water of the order of 65mm. Profiles in the region support a continual release of deep skinny CAPE convection, with is highly efficient at producing heavy precipitation. This region will only slowly move inland, meaning exceptional rainfall totals are likely to occur within this small region.

**Expected Impacts**

The main impacts from remnants of Imelda will be from flash and fluvial flooding.



**Central America and Caribbean**

**Hispaniola and Northern Lesser Antilles** – See *Tropical Cyclones* section.

**Panama, Costa Rica and Nicaragua** – See *South America* section.

**South America**

**Brazil**

**Weather**

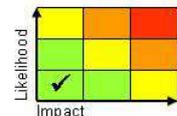
Heatwave conditions continue across parts of eastern Brazil, likely persisting into this weekend before easing. Temperatures have widely been recorded as 5 to 10°C above average, reaching the mid-to-upper 30s°C and exceeded 40°C in several places. This spell of hot weather is unusual being early in the season. For context the average daily maximum temperature in Sao Paulo for September is around 26°C. Temperature records for September could be broken.

**Discussion**

A strong and persistent surface and upper ridge has allowed temperatures at the surface to rise, mainly through strong subsidence and cumulative sensible heating. 1000-850hPa partial thickness have exceeded 144dm quite widely. This will reduce through the weekend, with temperatures in the more populated regions returning to nearer normal values over the weekend.

**Expected Impacts**

Disruption to travel and power outages are possible. Heat stress will increase especially for vulnerable groups in the general population. The heat may also exacerbate ongoing issues with forest fires in the region.



**Colombia, Costa Rica, Panama and Nicaragua**

**Weather**

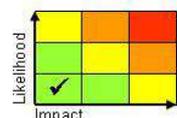
Showers and thunderstorms will be more widespread, frequent and intense than usual over the region during the next week. Daily accumulations of around 75-125 mm are possible, with up to 350 mm over the course of week in places.

**Discussion**

The MJO is expected to cross South America over the next week enhancing rainfall across the ITCZ, especially across western parts of the continent.

**Expected Impacts**

Increased incidents of flash flooding with perhaps an increase in the risk of landslides.



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**Africa**

**West Africa**

**Weather**

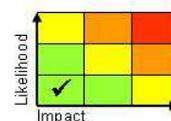
Much of this region has seen above average rainfall during the past 2-4 weeks courtesy of an unusually active West African Monsoon season, with reports of major flooding in several countries. Further heavy rainfall is expected with many locations experiencing periods of enhanced thunderstorm activity followed by a few days of quieter conditions. In the heaviest showers, 50-80 mm could fall in an hour, perhaps as much as 150 mm in a few hours.

**Discussion**

African Easterly Wave activity will continue to bring organised areas of deep convection/MCS activity westward through the next week, contributing to a further period of above average rainfall across parts of West Africa.

**Expected Impacts**

Ongoing enhanced risk of flash flooding and high river levels. Some further damage to property and infrastructure is possible. In regions of steep terrain the risk of landslides will also be heightened.



**Middle East**

**Oman** – See *Tropical Cyclones* section.

**Asia**

**Parts of northwestern India**

**Weather**

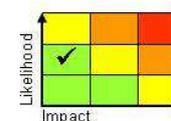
Further heavy monsoon rains are likely through today. A further 50-100mm of rain may fall within the highlighted area, adding to the accumulations seen earlier in the week. Much of this area typically receives 150-200 mm during September.

**Discussion**

Another shallow monsoon depression will continue west and exit the coastline of northwestern India into the Arabian Sea on Thursday. As it does so one further day of torrential downpours accompanied by gusty winds will likely occur.

**Expected Impacts**

Further flooding of homes, businesses, and impacts on agriculture. Damage to roads/rail transportation links.



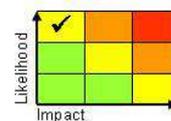
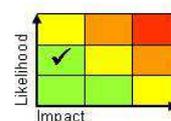
**Parts of Southeast Asia**

**Weather**

Above average rainfall is expected over the coming days associated with enhanced monsoonal flow in a broad region stretching from the southern Bay of Bengal through the South China Sea and into the western Philippines. Over the coming week the wettest locations could see a further 200-300mm of rainfall, with this likely exacerbating ongoing flooding across Thailand, Cambodia and Vietnam.

**Discussion**

The north-easterly monsoon appears to have become quickly re-established across the South China Sea, this further encouraged by a broad monsoon depression centred over the NW Pacific. Along the southern flank a strong southwest monsoonal flow extends from the Bay Bengal across the South China Sea and into the Philippines. Along this monsoon front rainfall will be heavy and persistent through this week.



*For Thailand,  
Cambodia and  
Vietnam*

**Expected Impacts**

Flash flooding events possible, especially if showers affect a large urban centre such as Manila. As the week progresses an increasing likelihood of small river flooding and landslides, with these issues adding to the reported ongoing flooding across Thailand, Cambodia and Vietnam.

**This forecast may be amended at any time**

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**Australasia**

Nil.

**Additional information**

Nil.

**Issued at:** 190855 UTC

**Meteorologists:** Nick Silkstone / D J Harris

**Global Guidance Unit**

**This forecast may be amended at any time**

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