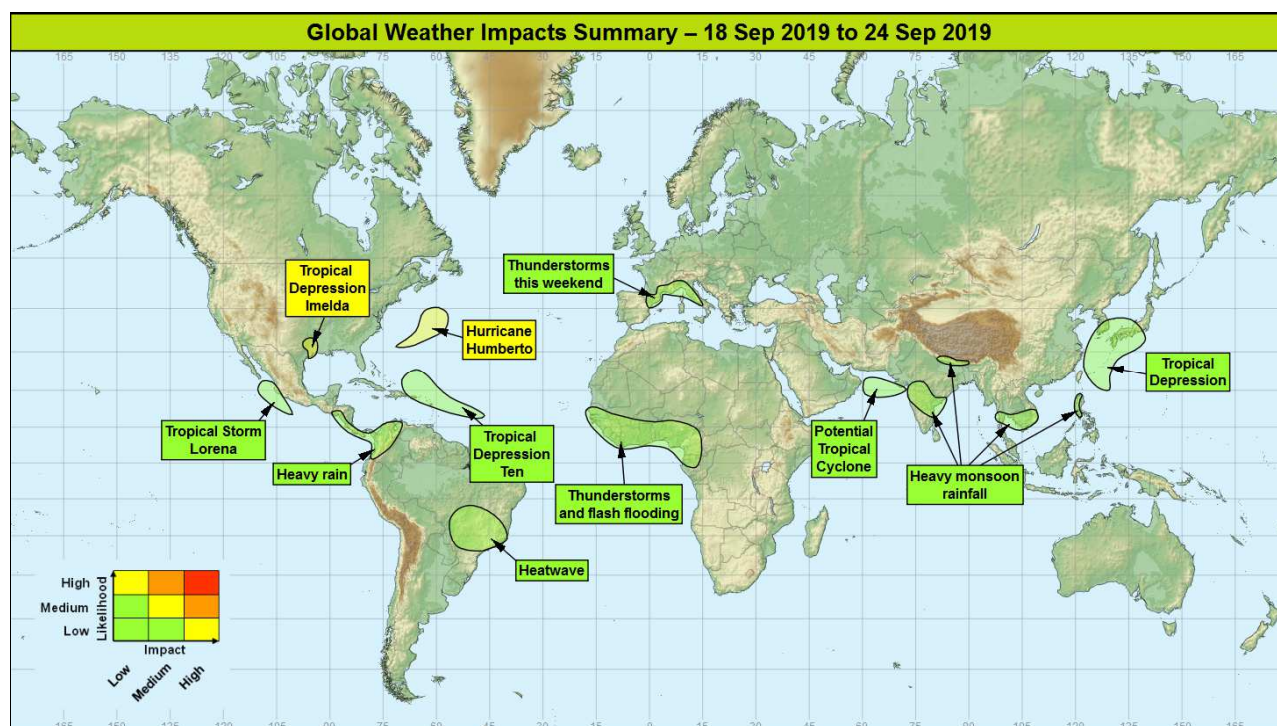


**Global Weather Impacts – Wednesday 18<sup>th</sup> to Tuesday 24<sup>th</sup> September 2019**

Issued on Wednesday 18<sup>th</sup> September 2019

**HEADLINES**

- Hurricane Humberto expected to pass close to Bermuda, late Weds/early Thurs.
- Tropical Storm Imelda likely to bring torrential rainfall to parts of Texas.
- Tropical Depression Ten has formed in the mid-Atlantic; it will gradually develop and is likely to pass close to the northern Leeward Islands as a hurricane on Friday.



**DISCUSSION**

**Tropical Cyclones**

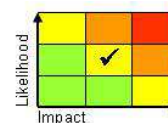
**Hurricane Humberto – Atlantic**

**Weather**

Hurricane Humberto is now located close to 31.5N, 70.0W, around 330 miles west of Bermuda, the system currently has sustained winds of 115 MPH. There is a consistent signal for Humberto to maintain hurricane strength over the next 24-36 hours and track eastnortheast, passing close to, but most likely just to the north of Bermuda. Impacts at Bermuda from hurricane force winds (mean speeds >73 MPH) are expected late Weds into early Thursday. The heaviest rain will remain to the northwest, with modest accumulations of 20-40mm expected over the island.

**Discussion**

There is good agreement for Humberto to track ENE through the next 24 hours after which spread in the model tracks begins to increase. An extending trough from the mid-latitudes looks set to accelerate its north-eastwards progress. The increased vertical wind shear should limit any further intensification with transition to a powerful extratropical cyclone likely to take place though Thursday.



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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter, Tel: +44(0)1392 884319

VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

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## Expected Impacts

Some minor flooding is possible across Bermuda. Winds, modest storm surge and large waves are likely to lead to some power outages and minor coastal flooding. *A recent comparable event is Hurricane Nicole which impacted Bermuda during October 2016.*

## Tropical Depression 10– Mid Atlantic Weather

Tropical Depression 10 formed on Thursday afternoon and is now located around 1000 miles east of the Leeward Islands. The system is expected to gradually strengthen and become named “Jerry”. As it tracks westnorthwest it will most likely become a hurricane by Friday, and be passing close to the northern end of the Leeward Islands at this time. The track beyond this point becomes more uncertain, with solutions ranging from a continued path in the approximate direction of the Turks and Caicos Islands, to the more probable northwards turn into the open North Atlantic.

### Discussion

An area of organised convection associated with a westward travelling African Easterly Wave (AEW) has developed, with a closed centre now evident. This system is expected to move over warmer sea surfaces in a favourable upper level environment. Although some dry air lies close to the system, and wind shear will become marginal at times some gradual strengthening is expected. The track of this system is fairly consistent through the next 60 hours, likely taking it close to the northern end of the Leeward Islands, thereafter spread increases

### 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 later this week.



## Tropical Depression Imelda – Gulf of Mexico

### Weather

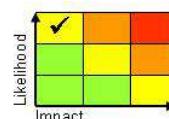
Imelda formed on Thursday afternoon just off the coast of Texas south of Freeport. Now inland over southern Texas winds associated with Imelda will quickly ease. However this slow moving system is likely to deliver huge amounts of rainfall to parts of Eastern Texas and western Louisiana through the next couple of days, with over 250 mm likely in places. For comparison Houston typically receives just over 100 mm on average in September.

### Discussion

Imelda is now inland and so winds associated with the system will quickly ease. However the remnants of Imelda will be slow moving allowing this system to deliver huge amounts of rainfall. It's possible that the remnants of Imelda could be picked up by an advancing mid latitude upper trough and spawn severe storms over the central plains by the weekend.

### Expected Impacts

The main impacts from Imelda will be from flash flooding. Some river flooding is likely as this rainfall enters the river systems later this week.



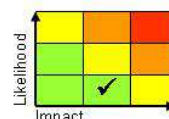
## Tropical Storm Lorena –Eastern Pacific

### Weather

Lorena formed on Thursday afternoon around 200 miles off the south-western coast of Mexico. Lorena is expected to continue to move steadily northwest through the next few days, passing close to the west coast of Mexico around Manzanillo on Thursday. The storm could bring torrential rainfall and damaging winds to this part of the Mexican coast.

### Discussion

Lorena is a small cyclone, and within the proximity of the rugged Mexican coastline over the next few days. While a broad northwesterly track seems likely, there is significant uncertainty as to how close to the Mexican coast Lorena will pass, the current track (just offshore) would allow a gradual development of the system (not quite expected to attain hurricane strength), whereas a track to the right would lead to greater land interaction and rapid weakening. Despite war seas and ample moisture, moderate vertical wind shear is likely to limit the development of the system.



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## Expected Impacts

Risk of torrential (200-300mm) rainfall and damaging winds to parts of the western coast of Mexico through Thursday. Flash flooding is possible.

## Northwest Pacific

### Weather

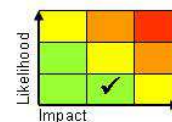
A tropical depression currently designated as "a" is forecast to intensify over the next two days with a tropical storm likely forming just east of Taiwan. This system is then forecast to gradually track northwestwards across the East China Sea, and may strengthen further into a Typhoon. As the system crosses into the Sea of Japan, it is likely to transition into a strong extratropical cyclone. Over the systems path strong winds and heavy rainfall are forecast to Japans southernmost islands on Friday, then the mainland parts of southern Japan and South Korea over the weekend where 150-300mm 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

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:*

## Arabian Sea

### Weather

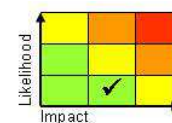
There is a risk of tropical storm formation over the Arabian Sea early next week off the coast of Gujarat, in northwest India. Any development is likely to track west into the Arabian Sea, perhaps toward Oman late in this forecast period.

### 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

**Gulf Coast & Bermuda, central plains of the USA** – See *Tropical Cyclones* section.

## Central America and Caribbean

**Northern Caribbean** – See *Tropical Cyclones* section.

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

## South America

### Brazil

#### **Weather**

Heatwave conditions continue across parts of southern and eastern Brazil, likely persisting into this weekend. Temperatures are widely expected to be 5 to 10°C above average, reaching the mid-to-upper 30s°C and likely 40°C in a few 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 will allow temperatures at the surface to rise, mainly through strong subsidence and cumulative sensible heating. By the middle of next week 1000-850hPa partial thickness will exceed 145dm quite widely.

#### **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.



## 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 countries such as Nigeria, Niger, Mali and Mauritania. 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.



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**Middle East**

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

**Asia****Central and southern India****Weather**

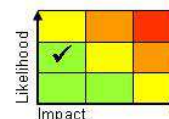
Further heavy monsoon rains are likely through the next few days. 50-80mm of rain will fall widely within the highlighted area with as much as 200 in places by the end of the week when the rains are expected to ease. Much of this area typically receives 150-200 mm during September.

**Discussion**

Another shallow monsoon depression will continue west across central parts India during the next few day helping to enhance and focus rainfall. Torrential downpours accompanied by gusty winds, are expected to continue. The low then exits into the Arabian Sea, where it may aid tropical cyclone development.

**Expected Impacts**

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

**Northeast India as well as Nepal and Bhutan****Weather**

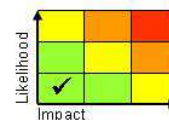
One further day of persistent and at times heavy monsoon rainfall is expected in this region, with potential for 50-100mm. Thereafter rainfall will return to near climatological values.

**Discussion**

For one final day moist southerly winds, drawn northwards from the Bay of Bengal will see scattered showers and thunderstorms triggered by both surface convergence and uplift over the foothills of the Himalayas.

**Expected Impacts**

Risk of localised flash and river flooding, landslides in areas of steeper terrain.

**Parts of Southeast Asia****Weather**

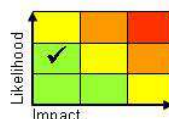
Above average rainfall is expected over the coming days associated with enhanced monsoonal flow in a broad region stretching from the southern Bay of Bengal through the South China Sea and into the western Philippines. Over the coming week the most exposed parts of the west Philippines could see up to 500 mm of rain, with some locations seeing in excess of 100mm within 24 hours.

**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, with western facing slopes most prone to the heaviest rainfall.

**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.

**Australasia**

Nil.

**Additional information**

Nil.

**Issued at:** 180835 UTC

**Meteorologists:** Mark Sidaway and Nick Silkstone

**Global Guidance Unit**

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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter, Tel: +44(0)1392 884319

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