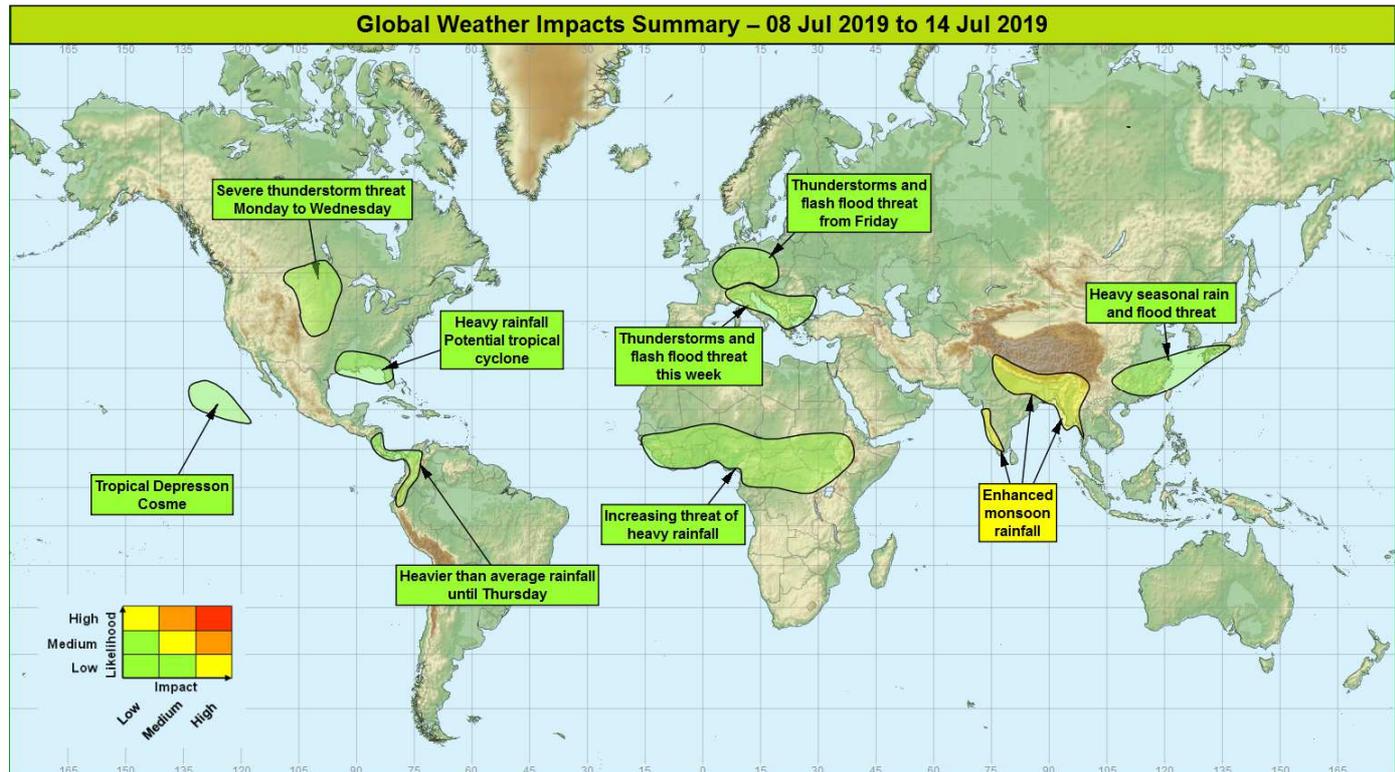


## Global Weather Impacts – Monday 8<sup>th</sup> to Sunday 14<sup>th</sup> July 2019

Issued on Monday 8<sup>th</sup> July 2019

### HEADLINES

- Heavy monsoon rains continue across many parts of southern and eastern Asia, including a significant threat for Cox’s Bazar in south-eastern Bangladesh.
- Increasing likelihood of tropical storm formation in the Gulf of Mexico later this week.



### DISCUSSION

#### Tropical Cyclones

#### Tropical Depression Cosme – eastern Pacific Weather

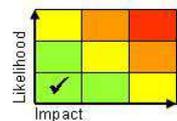
Cosme, which only formed as a tropical storm in the eastern Pacific Ocean during Saturday, weakened to a tropical depression through Sunday night, and will continue to weaken in the coming days as it continues to track northwestwards during the next few days, before becoming post tropical.

#### **Discussion**

A combination of cooler waters and higher wind shear will continue to weaken this system.

#### **Expected Impacts**

Any impacts will be limited to maritime activities.



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The following area is being monitored for possible tropical cyclone development:

## Gulf of Mexico

### **Weather**

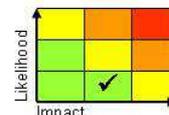
A disturbance, currently over Georgia in the south-east United States, is expected to drift erratically south-out over the Gulf of Mexico. As this process occurs, the associated thunderstorms are expected to become better organised, with the National Hurricane Center forecasting a 70% chance of a tropical depression forming in the next 5 days. If this happens, it could impact the Gulf coastline of Florida west to New Orleans. Regardless of development, increasingly heavy rain is expected to affect the region this week – see *North America section*.

### **Discussion**

Initially an upper vortex (which will track south from the southern USA) will lead to widespread destabilisation of the high WBPT airmass over the region and allow intense and long-lived thunderstorms to break out. Later in the week, as the vortex weakens and vertical wind shear drops, the formation of tropical storm is increasingly likely in the region, aided by warmer than average sea surface temperatures.

### **Expected Impacts**

Impacts mainly from heavy rainfall, with flash flooding the primary hazard. Wind damage and coastal flooding would occur if a storm develops.



## Europe

### Southern and south-eastern Europe

### **Weather**

Thunderstorms will form in places each day, especially across areas of high ground, producing up to 30-50 mm of rainfall in a few hours, along with large hail, gusty winds and frequent lightning. In general these storms will tend to transfer further south each day this week.

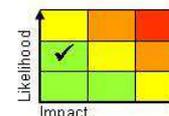
To the south of a slow-moving front temperatures will continue to be higher than average, but not reaching the heat wave levels of a week or so ago.

### **Discussion**

A cold front will slowly transfer south this coming week. A zonal flow aloft with embedded short-wave upper troughs will engage the front and the pre-frontal plume to produce a deep convective threat, especially with elevated heat source input. MCS events look unlikely, but there will likely be enough vertical wind shear to produce some organisation to the storms. Locally large (1500J/Kg) CAPE will produce a hail threat, with precipitable water around 40mm allowing for a flash flood threat.

### **Expected Impacts**

Flash flooding, large hail and damaging winds are possible where intense thunderstorms form.



## Central Europe

### **Weather**

Thunderstorms will affect this region from Friday, producing up to 30-50 mm of rainfall in a few hours, along with a threat of large hail, gusty winds and frequent lightning.

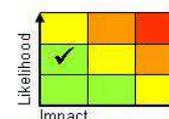
### **Discussion**

An upper vortex is expected to transfer southeast into central Europe by the end of this week, engaging a pre-existing plume to produce unstable profiles. Upper trough extensions south into the vortex through the weekend will maintain the unstable regime.

MCS events look unlikely, but there will likely be enough vertical wind shear to produce some organisation to the storms. There will be enough (1000J/Kg) CAPE to produce a hail threat, with precipitable water around 25-30mm bringing a risk of flash-flooding.

### **Expected Impacts**

Flash-flooding, large hail and locally, damaging winds, are possible where thunderstorms form. The extent of the storms across a populated part of Europe could impact the transport network, especially aviation.



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## North America

### Northern Plains of the USA and southern parts of central Canada

#### **Weather**

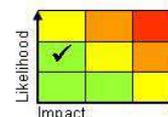
There is a threat of severe thunderstorms developing in this part of North America during the first part this week. These storms could produce 50-100 mm of rain in a few hours, along with frequent lightning, large hail and strong winds, with a tornado threat too.

#### **Discussion**

The combination of an eastward travelling upper trough and a significant northward push of very high WBPT air will result in a significant likelihood of severe storms, with forecast profiles showing up to 4000J/Kg of CAPE and large vertical windshear.

#### **Expected Impacts**

Flash flooding looks likely in places, with potential for power and aviation disruption too. There is also a low likelihood of structural damage from high winds or tornadoes.



### South-eastern USA and Gulf of Mexico

#### **Weather**

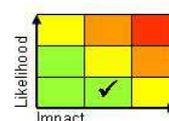
From Wednesday there is an increasing threat of widespread heavy showers and thunderstorms developing along the Gulf Coast of the south-eastern USA, producing the potential for up to 200 mm of rain in a few days, equivalent to the rainfall for the whole of July. There is also a low probability of a tropical storm development just offshore in the Gulf of Mexico – see *tropical cyclone section for more details*.

#### **Discussion**

There is a reasonably strong signal for heavy rainfall in this region from the middle of next week, probably as a result of a cut-off vortex engaging a warm plume over anomalously warm seas in the northeastern Gulf of Mexico. It is worth noting that there is now a stronger NWP signal for a tropical storm development in the region later this week.

#### **Expected Impacts**

Flash flooding is the most likely impact, but with the low likelihood of minor wind damage and coastal flooding if a tropical storm develops.



## Central America and Caribbean

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

## South America

### Western Colombia, Ecuador, Nicaragua, Costa Rica and Panama

#### **Weather**

Increased frequency of heavy showers and thunderstorms are expected in this region through the next 3 or 4 days, although Ecuador should see drier conditions from Tuesday. Up to a further 200 mm of rain could fall in places, which is in excess of the average monthly rainfall at this time of year in southern parts of Central America, and well above the average monthly rainfall further south, especially in Ecuador where it is now the drier season.

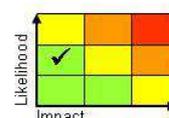
#### **Discussion**

The combination of an active MJO phase and the westward progression of African Easterly Waves will enhance seasonal rainfall in this region through the next few days. In addition the potential formation of Central American Gyre is signalled in southern parts of Central America, and these systems can lead to exceptional rainfall accumulations during the rainy season.

However, the MJO progression into the Indian Ocean will allow for a weakening of the rainfall later in the week

#### **Expected Impacts**

An enhanced threat of flash flooding and landslides will be the most likely impacts this week.



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## Africa

### Central parts of Africa

#### **Weather**

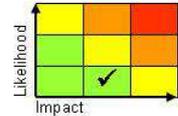
There will be an increasing likelihood of more widespread heavy showers and thunderstorms as we go through the coming week across these central latitudes of Africa. Up to 75-100 mm of rain could accumulate in just a few hours, with a threat of strong winds. The strong winds could lift dense dust storms on the northern edge of this active shower region which still has a dry ground state.

#### **Discussion**

The advance of the MJO will likely act to enhance the convective rainfall across central latitudes of Africa along the ITCZ. This will result in more frequent and / or active African Easterly Waves, as well as a higher likelihood of large MCS events.

#### **Expected Impacts**

Flash flooding is the most likely impact, with a lower likelihood of wind damage. Dense dust storms on the northern edge of this region will produce hazardous air quality.



## Middle East

Nil.

## Asia

### Northern India, Nepal, Bangladesh, Bhutan and western / northern Myanmar

#### **Weather**

There is a significant threat of very heavy monsoon rainfall in this region during the coming week, with up to 500-750 mm of rain (which will see many places seeing the equivalent of a month's worth of rain within a week) accumulating in places during this period. Most places will see over 200-300 mm during this time. The rain will come in the form of very heavy showers and thunderstorms, and could produce 100 mm of rain in a few hours. From midweek drier conditions are expected to slowly move northwards across India.

#### **Discussion**

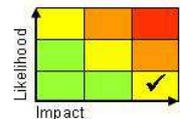
A monsoon low pressure system will track slowly westwards across northern India through the next 3 or 4 days, inducing an anomalously strong very moist and unstable southwest monsoon flow. The combination of the monsoon low pressure system and enhanced south-westerly flow will account for the active monsoon pulse.

Models are in good agreement for this series of events, with Cox's Bazar humanitarian camps at risk of disruptive rainfall. However, totals offered by global models differ significantly, with the GM signalling twice as much rainfall as other models. Regardless, the risk of disruptive rainfall is maintained.

Later in the week the monsoon low pressure system will weaken across north-western India, with the south-westerly flow easing, all consistent with an MJO that is expected to move into the Indian Ocean, heralding a break period in the monsoon into next week.

#### **Expected Impacts**

There is an increased threat of flooding and landslides in this region, which includes Cox's Bazar humanitarian camps. The vulnerability of these camps is thought to be much reduced compared to 12 months ago, due to the actions of international organisations (thanks to the relocation of people from the more hazardous areas, re-vegetation programs to improve land stability, improved drainage/water supply, and making materials available to improve shelters). As a result, the likelihood of international resources (additional to those already present) being required to assist with the impacts of this event is assessed to be low.



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## Western India

### **Weather**

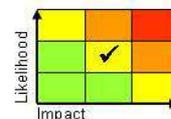
The heavy monsoon rain that has affected this region for the past week or so is expected to ease through the coming week. However, up to 400 mm of rain could fall in places up to midweek, which is still 50% of the average July rainfall.

### **Discussion**

The active phase of the Indian Summer Monsoon is expected to cease from, midweek due to the MJO progression across Africa. This signal is supported by all models.

### **Expected Impacts**

Torrential rain will increase the threat of flooding and landslides up to midweek.



## Southern China and south-western Japan

### **Weather**

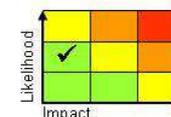
Torrential rain and severe thunderstorms associated with the seasonal rains will affect this region through much of the week ahead, with 150-250 mm widely, locally as much as 500 mm falling. This is around a month to two month's worth of rain for some locations.

### **Discussion**

Strong convergence along the Mei-yu/Baiu front will continue to provide a focus for intense rainfall and a threat of severe storms. A succession of upper troughs will engage the northern edge of the monsoon frontal plume through much of the coming week, resulting in persistent, heavy rains in places.

### **Expected Impacts**

Both fluvial and flash flooding is possible, with an additional risk of landslides in mountainous areas. Disruption to transport and infrastructure is likely in what is a densely populated area due to the slow moving seasonal heavy rainfall.



## Australasia

Nil.

### **Additional information**

Parts of southern and central Alaska are experiencing a significant heat wave with temperatures in some places reaching the low to mid 30's of Celsius – Bethel Airport in the far southwest reported a maximum of 35°C on Saturday. Temperatures are expected to continue running at 15 to locally 20°C above normal during the next few days, with further maxima into the low to mid 30's. The heat may trigger some thunderstorms, and brings a significantly increased risk of wildfires. However, temperatures are expected to slowly return closer to, but still above, normal through the next week.

**Issued at:** 080700 UTC **Meteorologists** Paul Hutcheon / Jason Kelly

**Global Guidance Unit**

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