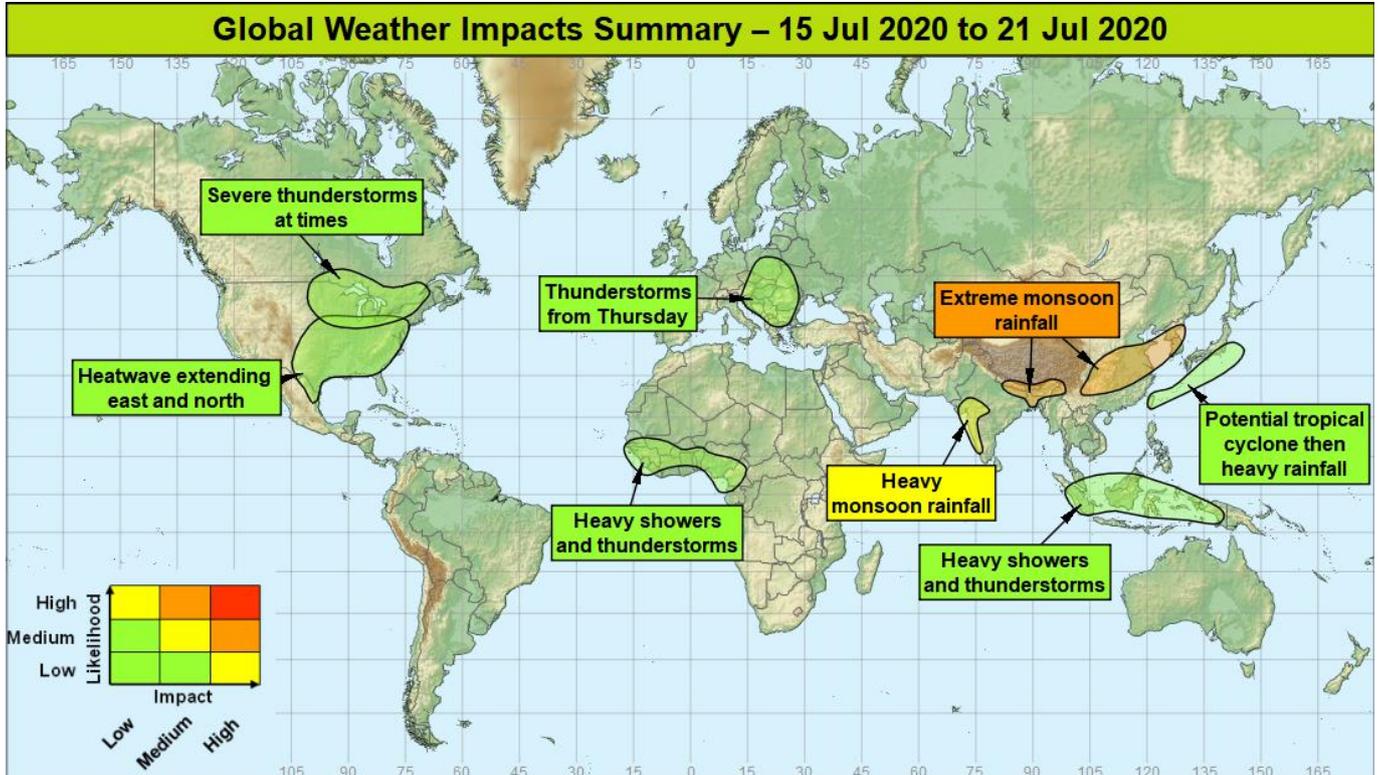


## Global Weather Impacts – Wednesday 15<sup>th</sup> July to Tuesday 21<sup>st</sup> July 2020

Issued on Wednesday 15<sup>th</sup> July 2020

### HEADLINE

- Extremely heavy monsoon rainfall will continue in parts of South and East Asia.



### DISCUSSION

#### Tropical Cyclones

There are no active tropical cyclones. The following area is being monitored for potential development:

#### Western North Pacific, Taiwan, southeast Japan

##### Weather

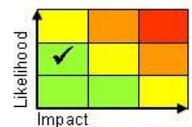
A tropical disturbance tracked north into Taiwan through Tuesday, and there is still a small chance it may briefly strengthen sufficiently to become a tropical storm today. This system is then expected to accelerate north-eastwards to combine with another system as it brushes past Japan, bringing the threat of 50-100 mm of rain to southeast Japan on Thursday and Friday.

##### Discussion

An ERW and high SSTs combined to help this tropical depression form close to Luzon a few days ago. There has been little development since then as it tracked north into Taiwan, and through Wednesday this system will encounter increased vertical wind shear as it continues NE towards Japan, likely injecting added moisture into the Baiu frontal system and pushing this monsoon front north close to southeast Japan later this week to bring the threat of heavy rain and thunderstorms for a time.

##### Expected Impacts

Localised flash flooding possible in southeast Japan, perhaps including Tokyo, later this week.



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

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## Europe

### East and southeast Europe

#### Weather

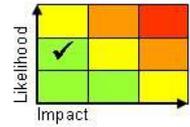
Thunderstorms will develop later this week across parts of the highlighted region. As a worst case, thunderstorms could bring short-period heavy rain (30-50mm in 2-3 hours in places), with around 75-100mm in some areas over the course of 3 or 4 days, which is roughly equivalent to a month's worth of rain. Thunderstorms will also bring frequent lightning and large hail.

#### Discussion

A cold front will move SE across Europe, likely becoming slow-moving across E/SE Europe, whilst the driving upper trough disrupts to form a cut-off vortex. There has been significant run variation in the details of this process, which lead to lesser or greater amounts of rain on the front, depending on phasing with the disrupted upper trough elements. What is more reliable however is the idea of intense thunderstorms breaking out within the high WBPT air ahead of the front, as upper cold pool(s) move across it.

#### Expected Impacts

There is a chance of flash flooding, with secondary impacts related to lightning strikes, such as interruptions to power supplies, also possible.



## North America

### Much of central and eastern USA

#### Weather

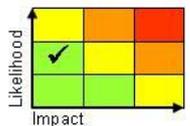
The very hot and humid airmass that has been in residence across the south and southwest of the USA for several days is expected to gradually extend east and northeast through the coming week. This will result in temperatures rising 10°C above average, allowing maxima to reach 40°C in places with very warm nights too.

#### Discussion

Sustained and deep advection of hot, moist Gulf of Mexico air, combined with summertime insolation and modest adiabatic compression via dynamical subsidence, has generated a very hot air mass across much of the south and southwest of the USA. A marked build of contour heights are expected through the coming week across the central and eastern parts of the USA, allowing the heat to expand across central and eastern parts through the next week, affecting large population centres.

#### Expected Impacts

The heat combined with high humidity and oppressively warm nights will result in high heat stress that will affect vulnerable demographics and can be lethal without adequate precautions. Transport and power networks may also be affected.



### Areas of the USA and Canada around the Great Lakes

#### Weather

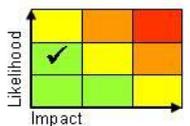
There will be the threat of severe thunderstorms at times through the next 7 days, with intense rainfall (50-100 mm), large hail, very strong winds and tornadoes all possible.

#### Discussion

A succession of upper trough will run east across Canada through the coming week, with significant upper forcing engaging with pulses of the very warm plume responsible for the growing USA heatwave to produce large CAPE storms that will see enough vertical wind shear to produce long lasting MCS storms. There may be enough low level shear at times to produce a tornado threat.

#### Expected Impacts

Flash flooding is likely in places, with a lower likelihood of damage from tornadoes and large hail. However, damage from strong winds looks likely at times from some storms, with frequent lightning possibly impacting power and transport networks.



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## Central America and Caribbean

Nil.

## South America

Nil.

## Africa

### Parts of West Africa

#### **Weather**

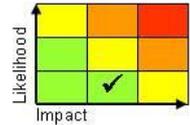
Heavy showers and thunderstorms are likely to be more frequent than usual through much of this week across parts of West Africa, producing 50-100mm of rain in just a few hours in places. The heaviest rainfall is likely to affect the western part of this region (Sierra Leone, Guinea and northern Liberia) where up to 350mm of rain could accumulate (average monthly rainfall in this region is 400-600mm).

#### **Discussion**

More active or more frequent African Easterly Waves are likely to affect West Africa through the coming week, producing above average rainfall in places, especially close to the Atlantic coastline.

#### **Expected Impacts**

Increased likelihood of flash flooding and landslides.



## Middle East

Nil.

## Asia

### Northeast India, eastern Nepal, northern Bangladesh, Bhutan, and northern Myanmar

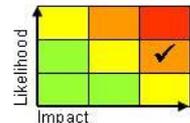
#### **Weather**

Following extreme rainfall across the hills and mountains in this region through the past few weeks, we are now in a less active monsoon phase, with rainfall amounts having returned to normal levels for the monsoon season. This still means that there will be heavy showers and thunderstorms each day (many places seeing 25-50 mm most days), with some locally very large daily rainfall amounts (locally 100-200 mm). Another active period of monsoon rainfall is expected to develop across the region from Saturday, with more widespread daily rainfall totals of 50-100 mm being seen and peak daily rainfall totals of up to 200-350 mm in a few upland areas. Widespread 7 day totals of 150-250 mm are expected, with peak totals in some upland areas reaching 1000 mm. The typical average at this time of year of 300-500 mm per month across low lying regions, and 1000-2000 mm per month over the mountain sites. The recent extreme monsoon rainfall is moving down the large river systems and now causing flooding to the south of the extreme rainfall region.

#### **Discussion**

The development of a Monsoon low pressure system (LPS) cross central India has cut off the moist SW'ly monsoon flow to this region. The LPS will track west-northwest in the coming days to extend this rather subdued monsoon rainfall period across this region until the end of the week. However, a renewed surge of moist SW'ly winds will return to the region from the weekend, resulting in further widespread, deep, moist convection and another peak rainfall period for the region. With rivers (including the Brahmaputra) already high/in flood, and numerous significant impacts reported, the situation is likely to remain serious through the quieter rainfall period through the rest of this week and then become more serious next week. The river systems that continue south through Bangladesh are already flooding, extending the impacts south of where the heaviest rainfall has fallen.

#### **Expected Impacts**



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Flooding and fatalities, as well as widespread population displacement has already been widely reported, and continued significant river flooding is expected to affect the region. There is also a very high threat of further landslides in the higher terrain. The impact region has been extended south to cover the existing and forecast river flooding in Bangladesh.

## Central and eastern China, along with much of the Korean Peninsula

### Weather

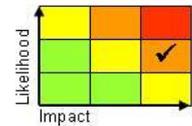
Following exceptional rainfall across central and eastern China over recent weeks, the Mei-yu monsoon front is expected to become increasingly active again through the next 4 or 5 days, with further pulses of intense rain and thunderstorms. Another 100-200mm of rain is expected widely across this region, with peak accumulations over the hills and mountains are likely to be in the region of 300-500mm across parts of central China. Through the weekend the intense rain and thunderstorms is expected to extend across much of the Korean Peninsula, but then may ease across China next week.

### Discussion

The southerly winds associated with the monsoon are drawing very warm and moist flow across this region with extremely high values of PWAT (>75mm). This moisture will combine with increased upper forcing (due to a strengthening zonal flow) to produce another active period of monsoon rainfall. This will generate further torrential downpours from rain, showers and thunderstorms, with the mountains seeing the highest totals. Flooding and widespread population displacement has already been widely reported, with many rivers and some lakes recording record water levels in and around the Yangtze Basin. An upper trough will sweep a Mei-yu frontal wave eastwards across the Korean Peninsula this weekend, likely producing impacts here.

### Expected Impacts

Widespread surface and continued significant river and lake flooding affecting the region, and likelihood of landslides in the higher terrain.



## Western India

### Weather

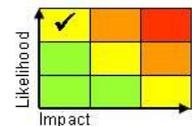
A period of heavy monsoon rainfall (intense showers and thunderstorms) is expected through the next 3 or 4 days, with up to 600mm of rain falling (50-75% the average July rainfall). From the weekend the shower and thunderstorms are expected to become less frequent, with rainfall totals decreasing back to or below normal levels.

### Discussion

A deep, strong and moist SW'ly airflow will be enhanced during the next few days as a monsoon low pressure system (LPS) tracks west-northwest across central India (bringing locally intense rainfall through frequent thunderstorms). This regime will produce an active period of monsoon rainfall for this part of India through until the end of the week. From the weekend the SW'ly flow will ease and deep convection become less widespread.

### Expected Impacts

Increased likelihood of flash flooding and landslides until the end of the week.



## Parts of Malaysia, Indonesia and Papua New Guinea

### Weather

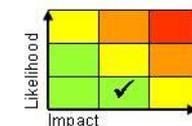
Above average rainfall will continue across this region in the form of heavy showers and thunderstorms. These will be capable of locally bringing 50-100 mm of precipitation in a short duration, with some locations likely to see 150-250 mm through the coming days. Average precipitation accumulations at this time of year across this region is around 250 mm per month.

### Discussion

Strong and consistent signal from NWP for enhanced rainfall across this region no doubt aided by positive SST anomalies of 1 to 2C. In addition, a number of tropical waves are likely to move east across the area through the coming week, with evidence for enhanced low level convergence from a significant SE'ly flow from northern Australia.

### Expected Impacts

An increased risk of flash flooding and landslides in regions where terrain is steep.



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**Taiwan, southeast Japan** – see *Tropical Cyclones* section

**Australasia**

Nil.

**Additional Information**

**Cox's Bazar, southeast Bangladesh**

The rest of this week will see much less frequent heavy showers and thunderstorms than in recent days, lowering the flash flood risk. However, from the weekend, a general increase in shower and thunderstorm activity is expected once more, increasing both flash flooding and landslide risk once more.

**Yemen**

Through the rest of the week showers or thunderstorms will be fairly well scattered and mostly fairly short lived (5-10mm of rainfall per day typically, locally 15-20mm). However showers will likely become more widespread from the weekend and into next week, likely producing an increased threat of local flash flood events, especially in the Western Highlands.

**Sudan/South Sudan**

Rainfall activity is expected to be above average over the coming week across South Sudan and the far south of Sudan (especially from Friday) due to more frequent/widespread heavy showers and thunderstorms across the region. Over the next week the wettest spots could see 125-175 mm accumulate, which is around the average rainfall for the whole of July. So there will be a higher likelihood of flash flooding than usual.

**Issued at:** 150700 UTC

**Meteorologist:** Paul Hutcheon / Mark Sidaway

**Global Guidance Unit**

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

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