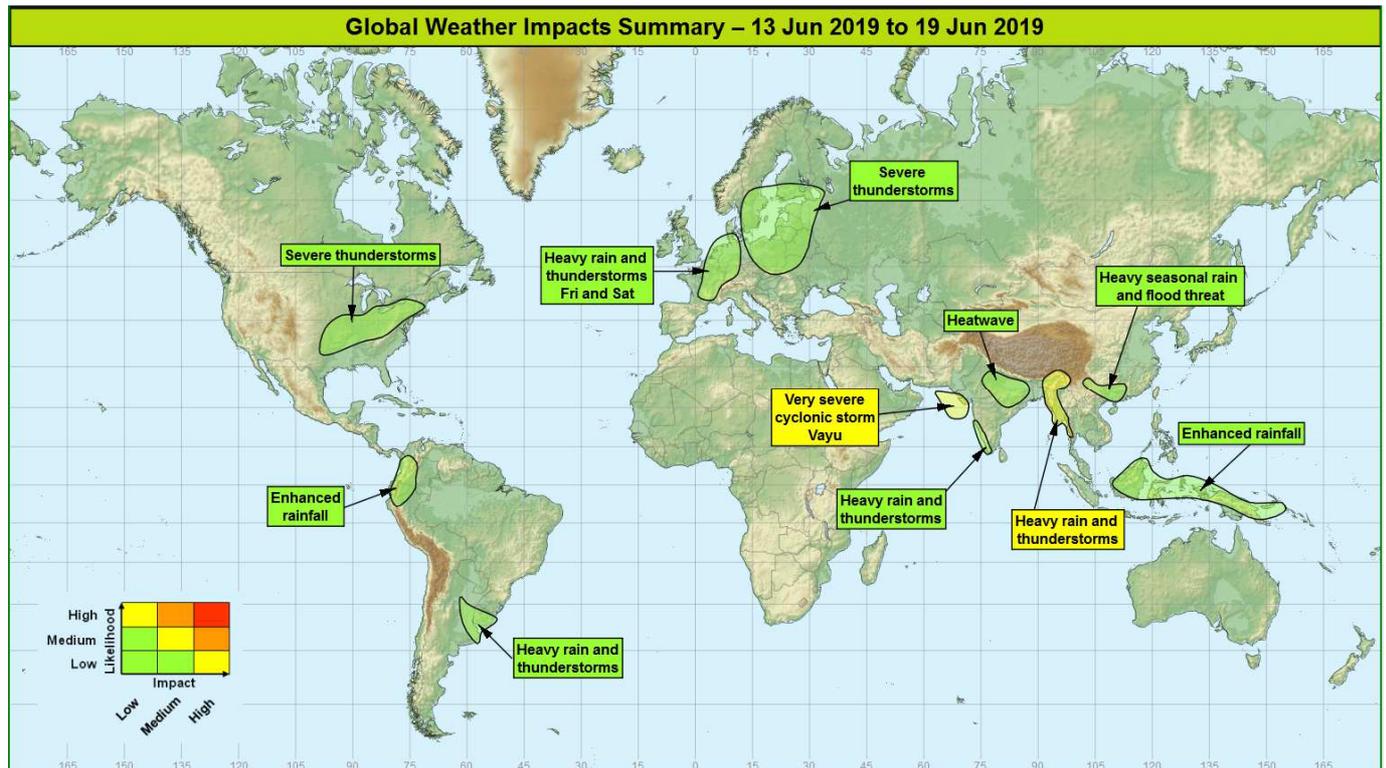


## Global Weather Impacts – Thursday 13<sup>th</sup> to Wednesday 19<sup>th</sup> June 2019

Issued on Thursday 13<sup>th</sup> June 2019

### HEADLINES

- Very severe cyclonic storm Vayu in the Arabian Sea impacting the Gujarat coast in India during today (Thursday).
- Heavy rain across coastal Myanmar and south-east Bangladesh.



### DISCUSSION

#### Tropical Cyclones

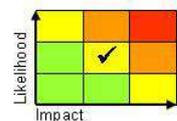
#### Very Severe Cyclonic Storm Vayu, Arabian Sea, including western India

##### Weather

Very severe cyclonic storm Vayu moved north-northwest overnight to be near the Gujarat coast, but is now expected to move westwards back out over the open Arabian Sea in the next few days. Vayu is expected to maintain very strong winds while tracking close to the Gujarat coast (80mph gusting 105mph) which will maintain dangerous, very rough seas. The heaviest rain is now likely to stay offshore, but 100-200mm is still possible over the far west of Gujarat over the next 2 or 3 days.

##### Discussion

Satellite imagery suggests Vayu has started to turn northwestwards and is now not expected to make landfall over Gujarat. This is a trend the bulk of model output and official guidance has now moved towards. With this more benign track, rain from the system across Gujarat is not expected to be as heavy. However, due to a change of track and with Vayu likely to persist over an area of high SSTs in the northern Arabian Sea, it is likely to maintain its intensity which will prolong dangerous sea conditions. The model consensus suggests Vayu will become slow-moving over the northern Arabian Sea before slowly weakening by early next week.



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

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## Expected Impacts

Dangerous maritime conditions with large waves and fairly strong winds along the coastline of western India – mainly south-west Gujarat. Potentially damaging winds may be present as the centre of the cyclone tracks close to the coast during Thursday. The threat severe flooding is reduced but there remains a risk for the far west of Gujarat.

## Europe

### North-eastern Europe

#### Weather

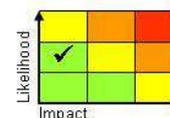
Further daily bouts of severe thunderstorms are likely across north-eastern Europe over the next couple of days, becoming organised at times within the highlighted area. Some places could see 75-100mm of rain within a few hours. Frequent lightning, large hail and strong gusty winds are also likely. Improved conditions should become established across much of this area by the weekend.

#### Discussion

A warm continental plume ahead of a waving frontal zone across central parts of Europe will be the focus for severe thunderstorms ahead of a major upper vortex across western Europe. Forecast profiles show large CAPE (in excess of 2000 J/Kg), with enough vertical wind shear to produce organised deep convection with MCS development likely (as seen over the last few days). Tornadoic developments are possible at times, mainly close to advancing cold front, but strong downdraught winds are more likely. As the CoG of the upper vortex shifts to the west of the UK by the weekend this will help this plume shift eastwards and become detached from upper forcing.

#### Expected Impacts

Flash flooding along with power outages and disruption to the transport networks (especially aviation) is possible. Hail is likely to cause disruption to transport and damage to crops, some buildings and vehicles.



### Western Europe (especially France, Low Countries and Germany)

#### Weather

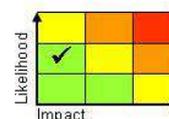
Heavy showers and thunderstorms will develop in the southeast of this area during Friday, extending northeastwards into the weekend. Some places will see 50-75mm of rain within a short period of time. There is the potential for severe, organised thunderstorms to develop bringing large hail, strong gusty winds and frequent lightning.

#### Discussion

As the CoG of the upper vortex currently over NW Europe becomes established to the W of the UK this will allow an upper trough to swing NE'wards over W'ern Europe. There is good agreement that this will engage a sub-tropical plume drawn N'wards over the highlighted areas with areas of heavy rain and thunderstorms likely to develop. With the likelihood of CAPE in excess of 2000 J/Kg and at least moderate bulk shear severe, potentially organised convection looks.

#### Expected Impacts

Flash flooding along with power outages and disruption to the transport networks (especially aviation) is possible. Hail is likely to cause disruption to transport and damage to crops, some buildings and vehicles.



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## North America

### Central and eastern USA

#### **Weather**

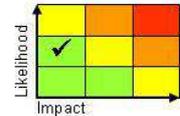
Heavy rain and thunderstorms will continue to affect the highlighted region through the next week at times. Some places could see over 50 mm in a 24 hour period, and in excess of 100mm over the week.

#### **Discussion**

Further plumes of warm moist air will be drawn northwards from the Gulf of Mexico and tropical Atlantic ocean into the southern and eastern United States. However with the Pacific North America (PNA) pattern now positive, the amplitude of the upper pattern across the region is much reduced. As a result only fairly modest organisation of convection is expected, with upper troughs and highest WBPT air often not co-located.

#### **Expected Impacts**

Flash flooding is the most likely impact, but frequent lightning, large hail, damaging winds and isolated tornadoes are also possible and may cause localised disruption and damage.



### Central America and Caribbean

Nil significant.

## South America

### North Peru, Ecuador and Colombia

#### **Weather**

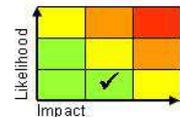
A continuation of the enhanced seasonal rains over north-west South America is expected, with a further 250-300mm likely in some places. The highest rainfall totals most likely over west facing slopes of the Andes mountains in Colombia.

#### **Discussion**

The ITCZ remains active in the areas, with a series of African Easterly Waves helping to maintain activity along it, and through this area for the next week. The Andes will likely aid lift, resulting in orographically focused rain totals.

#### **Expected Impacts**

Further flash flooding and landslides are likely in this region, along with the potential for river flooding.



### Uruguay and north-east Argentina

#### **Weather**

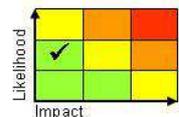
A repeating pattern of areas of heavy rain and thunderstorms associated with areas of warm, tropical air being drawn southwards is expected to affect this region over the next week. Some places could see 50 mm, locally 75 mm per day, with 150-200mm in some locations over the next week.

#### **Discussion**

The usual pattern of plumes of moist tropical air being drawn southwards and providing a focus for heavy rain and embedded, mostly elevated convection will take place over the next week. Upper forcing is relatively weak, although strong flow aloft will provide efficient exhaust for long lived and organised cells to develop.

#### **Expected Impacts**

Flash flooding, impacts mainly low, but a low potential of greater impacts should this heavy rain affect urban areas such as Buenos Aires and Montevideo.



## Africa

Nil.

## Middle East

Nil.

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## Asia

### Central and northern India

#### **Weather**

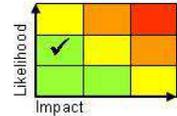
The pre-monsoon heat wave continues across parts of central and northern India as well as eastern Pakistan. Maximum temperatures will be widely in the mid to high 40s of Celsius each day and may exceed 50 °C very locally. In the hottest areas this around 5-10°C above average. Overnight temperatures will remain in excess of 30°C across much of this area. Over the coming days the hottest conditions will become more confined to north and northeast India.

#### **Discussion**

The arrival of the monsoon rains into India are currently around 10 days slower than average, but may well jump northwards over the next week due to both MJO propagation, and enhanced southwest flow due to Vayu tracking north in the Arabian Sea.

#### **Expected Impacts**

Significant threat of sun and heat stress, especially affecting elderly and vulnerable groups. A detrimental effect on agriculture and power failures.



### Western India

#### **Weather**

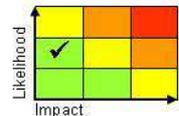
Enhanced south-westerly winds in the wake of cyclonic storm Vayu will draw persistent moist maritime air with heavy rain and thunderstorms to coastal regions of western India. Widely 100-200mm, and in places 300-500 mm could fall over the next 5-7 days.

#### **Discussion**

Enhanced flow on the S flank of Cyclonic Storm Vayu will bring heavy persistent rainfall to western coastal areas of India. Profiles support the release of deep and moist convection with limited CAPE, which is very efficient at producing heavy precipitation. Many factors such as frictional convergence, surface heating, and chiefly orographic uplift will allow the continual release of deep instability in this region.

#### **Expected Impacts**

Flash, as well as the flooding of some smaller river catchments, is probable across parts of western India, although this is not unusual in the context of the progressing Indian Summer Monsoon, and felt to be very early in the wet season for these precipitation totals to cause major impacts.



### Eastern Bangladesh, western Myanmar and far northeast of India

#### **Weather**

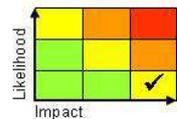
Intense showers and thunderstorms are expected in the coming days. Initially the heaviest rainfall is likely to fall just south of Cox's Bazar, over western facing slopes of Myanmar. However, over the coming weekend, there is increasing evidence to suggest heavy rains will spread further north to affect a wider area of southern Bangladesh, including Cox's Bazar. Some places could see over 500 mm over the next few days.

#### **Discussion**

Strong southwest winds will draw moisture northeast into Bangladesh and Myanmar leading to a threat of frequent thunderstorms and torrential rain over coast and inland mountains over the next few days. There is a weak signal for organisation around a monsoon depression on Tuesday, this may have the impact of temporarily reducing activity in the vicinity of Cox's Bazar, but heavy showers will likely return northwards later in the week increasing the risk of impacts here once again.

#### **Expected Impacts**

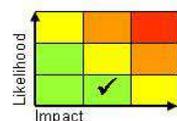
Flash flooding looks like the main impact, with a risk for vulnerable populations within the Cox's Bazar district.



### Southern China

#### **Weather**

Heavy rain and thunderstorms will affect southern China over the next 5 days. Up to 300 mm of rain could fall in a few days and there is also the potential for severe thunderstorms that could produce hail and strong winds.



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**Discussion**

Strong convergence along the monsoon frontal zone and heating of the high terrain in the moist air to its south will continue to produce heavy precipitation in the form of showers and thunderstorms. Although shear is fairly modest for mid-latitudes, in the tropics this is seemed easily sufficient for the organisation of cells.

**Expected Impacts**

Both fluvial and flash flooding are likely to be the main impacts (especially in urban areas), with the additional enhanced risk of landslides in mountainous terrain. Disruption to transport and infrastructure is also likely in what is a densely populated area.

**Maritime Continent****Weather**

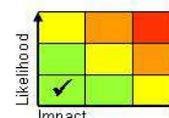
Heavier than normal rainfall is expected across this broad region over the next week, with more widespread than usual diurnal shower and thunderstorm development. Where showers occur, 25-50mm of rain in a few hours is likely, with some locations seeing over 200 mm of rain through the coming week.

**Discussion**

The MJO has moved into the region, bringing a broad environment conducive to more widespread than average convection. Strong and consistent model signal for above average precipitation in this location.

**Expected Impacts**

Localised flash flooding and increased risk of landslides in the more mountainous terrain.

**Australasia**

Nil significant.

**Additional information**

Nil.

**Issued at:** 130700 UTC **Meteorologists** Chris Bulmer / Jason Kelly

**Global Guidance Unit**

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