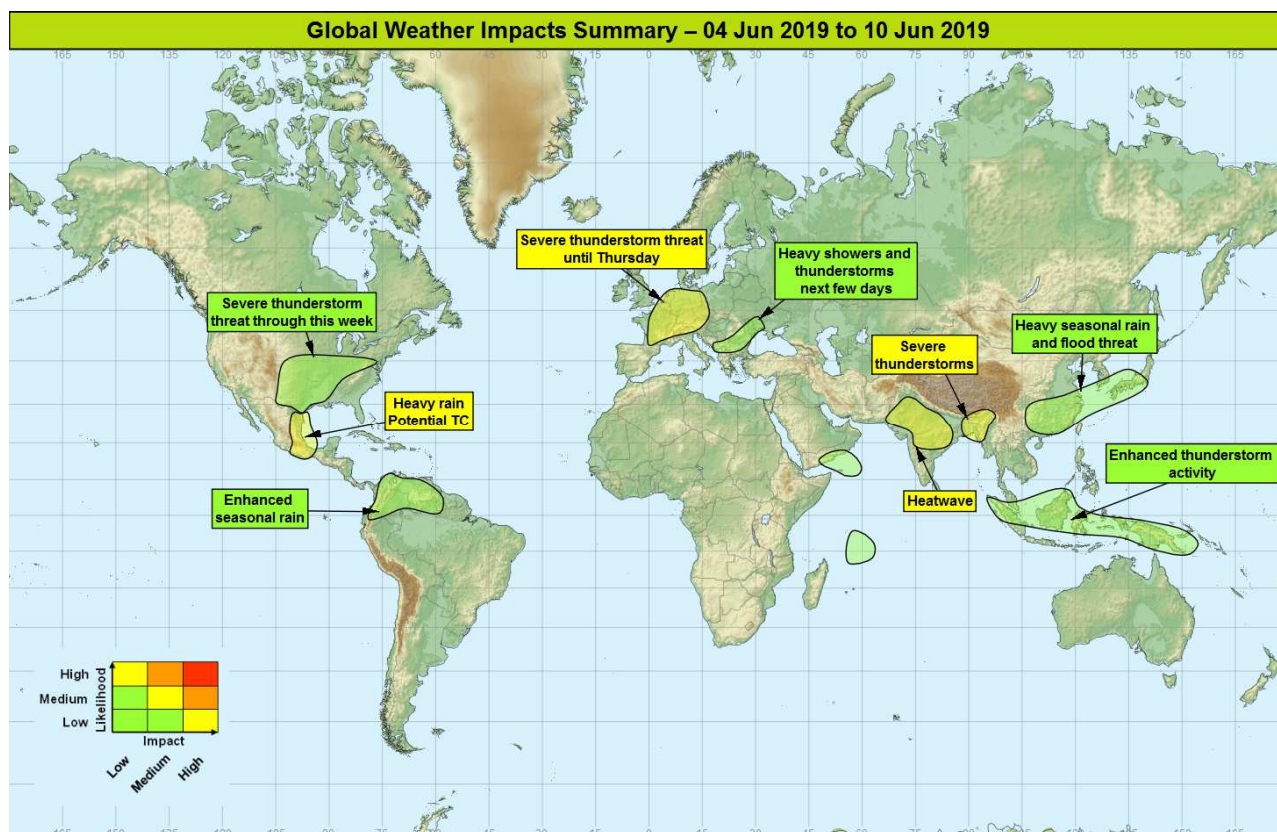


Global Weather Impacts – Tuesday 4th June to Monday 10th June 2019

Issued on Tuesday 4th June 2019

HEADLINES

- Severe thunderstorms and very heavy rainfall for northeast India and Bangladesh.
- Intense rainfall for Parts of Mexico and the southern USA.
- Threat of a tropical storm development off eastern Mexico on Tuesday.
- Pre-monsoon heatwave continuing across parts of India and Pakistan.
- Threat of severe thunderstorms in parts of continental Europe.



DISCUSSION

Tropical Cyclones

Western Gulf of Mexico and Eastern Mexico – see *North America* section

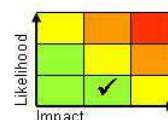
Indian Ocean, including Oman and Yemen

Weather

There is a low likelihood of a tropical storm development in the Arabian Sea that, if formed, could make landfall in southwestern Oman or southeastern Yemen late this week or through the weekend.

Even if a tropical storm does not form, a period of heavy rainfall is expected to affect southwestern Oman or southeastern Yemen and the island of Socotra from Friday to Sunday or Monday, with up to 250 mm of rain possible (the average June rainfall in this region is less than 40 mm).

There is also the potential for a tropical storm development in the Southwest Indian Ocean this weekend, but any system that does develop will likely remain offshore.



This forecast may be amended at any time

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Discussion

An Equatorial Rossby Wave, developed from the Indian Ocean MJO, will provide the potential for a tropical storm development to the north and south of the Equator later this week and through the weekend.

However, there is conflicting model signals that result in low confidence for either development. The more significant development will be the northern feature that will produce very heavy seasonal rainfall even if a tropical storm does not develop.

Expected Impacts

Flash flooding looks like the main threat, but with a lower likelihood of dangerous maritime conditions and damaging coastal winds.

Europe**Continental Europe****Weather**

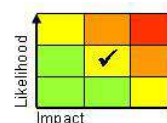
A threat of further severe thunderstorms will gradually transfer east from France, Belgium, Netherlands, Denmark and Germany into Poland, Belarus and the Baltic countries through the next 5 days. These storms could produce up to 50-75 mm of rain in a few hours, along with large hail, frequent lightning and very strong winds. However, many areas will not see these storms.

Discussion

A warm continental plume across central and western Europe will be engaged by short wave upper troughs again on Tuesday, before a longer wave upper trough moves in from the west from Wednesday and progresses eastwards. The result will be forecast profiles showing large CAPE (in excess of 3000 J/Kg), with enough vertical wind shear to produce organised deep convection, perhaps with isolated supercells over Germany on Wednesday and MCS. There are still differences between models regarding the exact timing and shape of troughs and where the favourable shear environment phases with CAPE, but there is enough evidence for a low likelihood of medium impacts from severe storms.

Expected Impacts

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

**North America****Central/southern USA and eastern Mexico****Weather**

Further heavy rain and thunderstorms will affect parts of eastern Mexico again on Tuesday, before the focus shifts north into Texas on Wednesday, before transferring east along the Gulf States through the rest of the week and weekend.

Some places will see up to 100-150 mm in a 24 hour period, with up to 200-300 mm accumulating during the event in a few spots of the southern USA. So some places could see up to twice the average June rainfall in a few days.

In the short term (Tuesday) there remains a 60% likelihood of a weak tropical storm developing just off eastern Mexico.

Discussion

An active convective regime remains in place, with a Central American Gyre being the focus for deep convection, but this feature will drift north during the next few days and be engaged by a low latitude disrupting upper trough. The result will be an area of very heavy rainfall and thunderstorms that will transfer east along the Gulf States through the rest of the week into the weekend.

Expected Impacts

Flash flooding is the most likely impact. Lightning will be an additional hazard, with a low likelihood of tropical storm impacts such as damaging winds and dangerous marine conditions.



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Central America and Caribbean**Eastern Mexico** – see *North America* section**South America****Ecuador, Colombia, Venezuela and Guyana****Weather**

A continuation of the enhanced seasonal rainfall over northwest South America with a further 250-300mm in some places over the coming week. The highest rainfall totals most likely over east facing slopes of the Andes mountains in Colombia and Venezuela.

Discussion

The ITCZ remains shifted a little south relative to normal, with the reduction in the usual wet seasonal rains withdrawing northwards from this region delayed. A series of African Easterly Waves will result in peaks of rainfall during the coming week. Largest rainfall amounts are likely to be on Andes, as elevated terrain and orographic lift provide the most reliable trigger mechanisms for convection.

Expected Impacts

Flash flooding and landslides are possible, along with the potential for river flooding with this region having already experienced an anomalously wet month.

**Middle East****Southwestern Oman and southeastern Yemen** – see *Tropical Cyclones* section**Asia****Northeast India, Bhutan and Bangladesh****Weather**

Daily rounds of severe thunderstorms are expected across this region through the next few days. As well as intense rainfall (up to 150 mm daily, although many areas will miss the heaviest rain), large hail and strong winds are possible. Towards the end of the week the thunderstorms will be less severe, with a lower likelihood of hail and strong winds, but a higher likelihood of intense rainfall, and the threat of heavy rainfall extending south to affect Cox's Bazar, bringing the first heavy rains of the monsoon season.

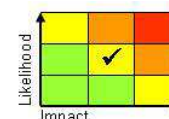
Some places in central and northern Bangladesh could see as much as 1000 mm of rain during the next week, this equivalent roughly twice the average monthly rainfall for this time of year. Further south up to 250 mm of rain could fall (about 30% of the June average).

Discussion

Shortwave upper troughs in the sub-tropical jet will transfer east over northern India and Nepal to lead to destabilisation of the very warm and moist airmass, and the development of diurnal thunderstorms during the next few days. High CAPE and vertical wind shear will aid the development of severe, long-lasting storms, with hail and strong winds additional hazards. Later this week contour heights will build, with a strengthening southwesterly monsoon flow expected to develop, bringing lower CAPE, higher precipitable water convection to southern Bangladesh.

Expected Impacts

Localised flash flooding and increased chance of landslides in mountainous areas bringing a danger to life. Large hail, strong winds and frequent lightning are additional hazards during the next few days which may cause damage to property and disruption to transport and utilities. Increased but still very low likelihood of impacts for vulnerable populations within the Cox's Bazar district.



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Central and northern India, along with eastern Pakistan

Weather

The pre-monsoon heat wave continues across parts of India and Pakistan with maximum temperatures widely into the mid to high 40s of Celsius and locally into the low 50s Celsius, around 5 to locally 10°C above average. Jacobabad in southern Pakistan recorded 50.1C yesterday – the fourth day in a row that temperatures exceeded 50C.

It is likely that temperatures will lower back towards what is usual for June across Pakistan and northwest India later this week, at least for a time.

However, in the longer term (rest of June) this event could become more significant in northern areas due to the late arrival of the monsoon rains.

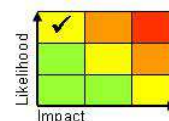
Discussion

There are signals that the arrival of the monsoon rains into India will be around a week later than usual. This will allow for an extended period of day on day temperature rises that could result in a prolonged pre-monsoon heat wave.

However, some temporary relief could be found across Pakistan and northwest India, at least for a time, as an upper trough extends southeast from Afghanistan, inducing a westerly flow that will lower temperatures towards climatology.

Expected Impacts

Significant threat of heat stress and power failures.



Southern and central China, Taiwan, western Japan and South Korea

Weather

A pulse of heavy rainfall will extend east from central China across western Japan and South Korea from midweek, developing a deep low in the East China Sea. Later in the week and through the weekend the heavy rainfall will transfer south into southern China and Taiwan.

As much as 250 mm is possible in places over 24 hours. In some areas this could lead to event totals of 350-400 mm. This would be over the average monthly rainfall for June (which is 150-300 mm). This rainfall is associated with active pulses of the seasonal Mei-yu / Baiu rains. In addition, severe thunderstorms could produce large hail, very strong winds and frequent lightning.

Discussion

There is good model agreement for upper troughing to engage a surface warm plume and the seasonal monsoon (Mei-yu / Baiu) front during the next week. This will destabilise the low-level plume, resulting in large CAPE/vertical wind shear profiles bringing the threat of severe convection. There is also a model signal for a deep depression to form in the East China Sea for a time later this week.

Expected Impacts

Flooding and flash flooding are likely to be the main impacts, especially in urban areas. Disruption to transport and infrastructure is also likely in what is a densely populated area. Lower likelihood of dangerous sea conditions in the East China Sea later in the week.



Indonesia, Brunei, Malaysia, Singapore and Papua New Guinea

Weather

A period of enhanced thunderstorm activity will bring accumulations of up to 80-120 mm per 24 hours to some parts of this area. This could lead to accumulations over a few days of 300 mm. (For comparison the May/June average is around 200 mm).

Discussion

The MJO now in Phase 2 over the Indian Ocean is likely responsible for the enhanced rainfall signature over the next week or so. Activity probably increasing as the MJO moves E over the Indian Ocean.

Expected Impacts

Flash flooding and landslides in steeper terrain are likely to be the main impacts.



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Daily Global Weather Impacts Assessment

Australasia

Nil significant.

Additional information

Nil.

Issued at: 040715 UTC **Meteorologist:** Paul Hutcheon / Neil Armstrong **Global Guidance Unit**

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