

Issued on Monday 29<sup>th</sup> July 2019

- Further intense monsoon rainfall for parts of the Indian sub-continent this week.
- Tropical cyclone development likely impacting northern Vietnam and the far south of China.

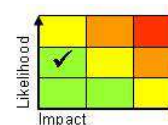


**Tropical storm Erick (eastern North Pacific and perhaps Hawaii)**

Tropical storm Erick was located around 1400 miles east-southeast of Big Islands, Hawaii at 0300 UTC. Erick is expected to strengthen into a hurricane this morning as it tracks westwards. By the end of Wednesday, Erick is likely to strengthen to a Cat 3 hurricane, with sustained winds of 115 mph. During this time Erick will remain across the sea. Later in the week Erick will likely pass just south of Hawaii, but by this time it is likely to only be a weak tropical storm, bringing a threat of heavy rain (100-200 mm in 24 hours) to Big Island.

The official guidance from the National Hurricane Center is for a strengthening system through the next few days as it tracks westwards. This is supported by the main deterministic models, with the GM sitting in the middle of the multi-model EPS spread. All models and EPS output agree on the weakening of Erick as it tracks just south of Big Island Hawaii, influenced by increased vertical wind shear from a low latitude upper trough and less warm SSTs.

Erick is likely to remain over open water during the most active phase of this system. However it may produce large swells in Hawaii later this week and produce a threat of flash flooding to Big Island, Hawaii late in the week.



This forecast may be amended at any time

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*The following areas are being monitored for development:*

## **Likely hurricane development (Flossie) (Eastern North Pacific)**

### **Weather**

A tropical depression some 700 miles south of Baja California is likely to be named “Flossie” later this morning. The system currently has sustained winds of 35 mph, but is expected to undergo strengthening through the rest of today, likely attaining hurricane strength by Tuesday. The system is then expected to become a high-end Cat 2, perhaps Cat 3, hurricane by Wednesday, though all the while remaining over open water.

### **Discussion**

There is strong model agreement for the track and development of the storm through the coming days. Again, an African Easterly Wave is the main factor in this development, aided by a low vertical wind shear environment and warm SSTs.

### **Expected Impacts**

Nil.



## **South China Sea (northern Vietnam, northern Philippines and far south of China)**

### **Weather**

An area of showers and thunderstorms has the potential to become organised into a tropical cyclone by the middle of this week. This system that develops will likely track across or close to the island of Hainan and then into northern Vietnam by or through the weekend.

Up to 1000 mm of rain could be produced from this system as it becomes slow moving in the Gulf of Tongking, with northern Vietnam and the far south of China likely to be affected. If this system develops further, very strong winds and building seas are also possible.

As the system develops through the next few days, frequent intense showers and thunderstorms will affect western Luzon in the northern Philippines, with up to 250 mm of rainfall possible in the next day or two before the shower activity becomes less intense by midweek.

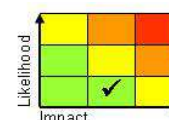
### **Discussion**

There is a fairly strong signal from deterministic and EPS model data for this development from an Equatorial Rossby Wave. However, there remains significant uncertainty in track and depth of any development. These types of events result in severe weather impacts in this region, and escalation to a ‘yellow’ or ‘amber’ event is possible in the coming days should confidence of development increase.

This system will feed in moist, unstable air to western Luzon through the next day or two, but the flow will back towards midweek, reducing the rainfall here.

### **Expected Impacts**

Impacts are currently expected to mainly be from rainfall, with flash flooding the primary hazard and landslides possible in steeper terrain. A possibly prolonged event will increase the likelihood of river flooding, with wind damage and coastal flooding possible if a stronger system were to develop.



## **Northwest Pacific Ocean**

### **Weather**

There is the potential for a tropical cyclone development later this week and into the weekend to the east of the Philippines and south of Japan. Any system that develops could produce very strong winds and heavy rainfall, but there is low confidence for the location of any development.

### **Discussion**

There is an inconsistent signal for the deterministic models and a weak signal from EPS output for a tropical cyclone development in this region later this week. Any development would most likely on impact marine transport, but there are some small islands in the region that could see impacts from any system that develops.

### **Expected Impacts**

Flash flooding and wind damage, with the possibility of storm surge flooding too



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## Europe

### Central / eastern Europe and southern Scandinavia

#### **Weather**

Further intense showers and threat of severe thunderstorms are expected in this part of Europe this week, but this area is expected to shrink in size later in the week. Rainfall accumulations of up to 50-75 mm in a few hours looks possible, along with large hail, very strong winds and large hail.

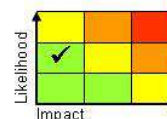
#### **Discussion**

The very warm plume across this part of Europe will continue to be engaged by a complex system of upper troughs through the week, producing conditions for deep, complex convection. CAPE in excess of 1500J/Kg along with PWAT of 40 mm will produce conditions for significant convective impacts.

From midweek a combination of the plume cooling and shrinking will lower the likelihood of the most severe convective impacts.

#### **Expected Impacts**

Severe storms will produce a threat of flash flooding, damaging hail, power outages, transport disruption (especially aviation) and wind damage.



## North America

### Hawaii – see *Tropical Cyclones* section

## Central America and Caribbean

### Costa Rica, Panama and western Colombia

#### **Weather**

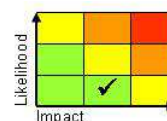
Heavier than average rainfall is expected at times through the next week in this region, in the form of intense showers and thunderstorms. Up to 250 mm of rain could fall in places (which is around the average July rainfall) through the next week.

#### **Discussion**

A succession of active African Easterly Waves will continue to bring periods of more frequent thunderstorms than usual through the next week.

#### **Expected Impacts**

Flash flooding and an increased likelihood of landslides.



## Northeastern Caribbean islands

#### **Weather**

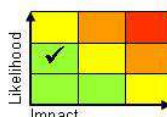
More frequent than usual thunderstorm activity will transfer northeastwards from the northern Lesser Antilles across parts of Puerto Rico and Haiti, across the Turks and Caicos Islands and eventually into the Bahamas through the next 5 days. Up to 75 mm of rain could fall in a few hours from these storms, along with frequent lightning.

#### **Discussion**

A marked African Easterly Wave will produce enhanced thunderstorm activity as it slowly tracks northwestwards across this region.

#### **Expected Impacts**

Threat of flash flooding (possibly landslides too in the more mountainous islands). Some disruption to aviation and power networks also possible.



## South America

### Western Colombia – see *Central America and Caribbean* section

## Africa

Nil.

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**Middle East**

Nil.

**Asia**

**Northern Vietnam, northern Philippines and far south of China** – see *Tropical Cyclones* section

**Parts of central and northern India along with far south-eastern Pakistan****Weather**

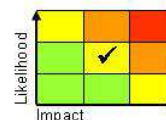
Periods of widespread, intense showers and thunderstorms will transfer from the east to west across this region through the next week, producing up to 300 mm of rain in a 24 hour period, with a threat of up to 600-800 mm through the next week in a few places. This means that some places could see several times their average July rainfall in a few days. There are some very large cities in this region that could see intense rainfall events during the next week.

**Discussion**

The main driver behind the severe monsoon conditions through the next week will be a succession of monsoon low pressure systems that will track from east to west across this region. This will result in most rainfall falling in the space of a couple of days, with longer drier periods in between. Forecast profiles show deep skinny CAPE, with high precipitable water (PWAT) allowing these fairly frequent cells to produce large precipitation accumulations.

**Expected Impacts**

High likelihood of flash flooding, and an increasing threat of river flooding. An increasing likelihood of landslides in hillier regions. Significant disruption to travel is likely, especially road and rail. Densely populated regions of India and Pakistan (including some large cities) could be impacted this coming week.

**Far west of India****Weather**

Persistent SW'ly monsoon flow into this area has seen a number of days of very heavy rain (daily totals in excess of 200mm), with further heavy rain expected at times through the next week.

**Discussion**

The strength of the monsoon south-westerly flow into south-western India will wax and wane as the monsoon low pressure systems track westwards to the north through the coming week. This will modulate the rainfall accumulations as we go through the next 7 days.

**Expected Impacts**

Continued flash and river flood threat along with a high likelihood of landslides during the next few days. However, the likelihood of these impacts decreasing early this week.

**North Pakistan, Nepal, Bhutan, far northeast India and northwest Myanmar****Weather**

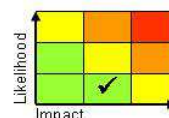
Further heavy showers and thunderstorms associated with the South Asian Monsoon in these areas are expected at times through the next week, but with rainfall totals close to expectations for the time of year with most places seeing 100 mm in the next week and a few up to 300 mm.

**Discussion**

As in south-western India, this region will see activity modulated by the monsoon low pressure systems running westwards across central parts of India. These systems will increase and decrease the moist southerly flow that is responsible for the monsoon rains.

**Expected Impacts**

Further flash flooding potential, and exacerbation of ongoing flash and river flooding. Risk of landslides in wettest areas.



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**Southern and western Myanmar, and far southeast of Bangladesh****Weather**

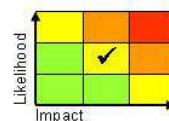
Strengthening of the monsoonal flow is expected to lead to an enhancement of rainfall in this area through the next week. 50-100 mm, locally 150 mm of rain could fall per day, with totals of up to 700 mm possible in places.

**Discussion**

As one monsoon depression moves across northern India over the weekend, another is signalled to form in the Bay of Bengal late in the weekend, which will strengthen the south-westerly gradient and increase rainfall across this part of the world.

**Expected Impacts**

Increased risk of flash flooding and landslides. Cox's Bazar looks to be on the northern edge of this region of intense rainfall, and so the likelihood of impacts is lower here.

**Northeast China and much of the Korean Peninsula****Weather**

Pulses of intense monsoon rainfall in the form of heavy showers and thunderstorms is expected at times through the next week in this part of eastern Asia. The storms could produce very strong winds and large hail too. Up to 150-200 mm of rain could fall in a day, with some places perhaps seeing several days of very heavy rainfall this coming week which could result in local accumulations of up to 400 mm.

**Discussion**

The seasonal monsoon front ('Mei-yu' in China and 'Changma' on the Korean Peninsula) will be active at times this coming week due to engagement from mid-latitude upper troughs. This will result in destabilisation of the plume to produce embedded deep convection.

**Expected Impacts**

Flash flooding and an increased likelihood of river flooding and landslides. Damaging hail is possible, as is local wind damage from very strong wind gusts.

**Australasia**

Nil.

**Additional information**

Nil.

**Issued at:** 290635 UTC      **Meteorologist:** Paul Hutcheon / Jason Kelly

**Global Guidance Unit**

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