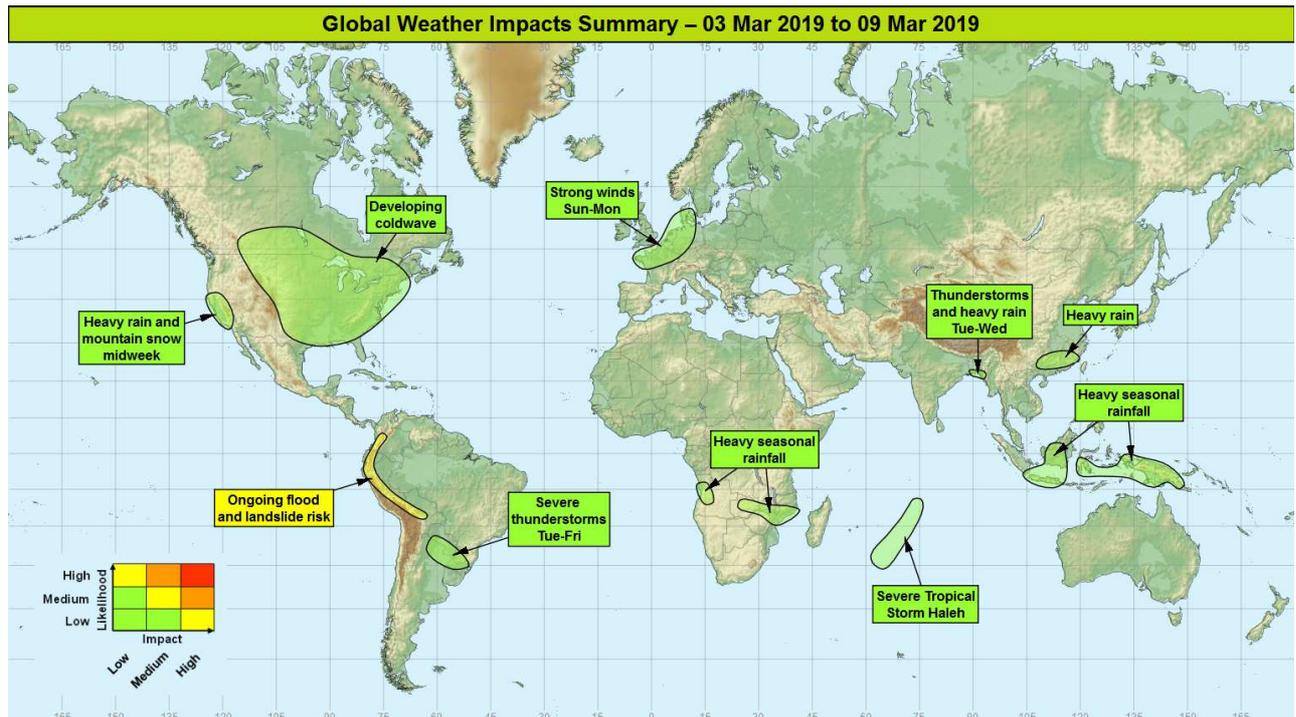


## Global Weather Impacts – Sunday 3<sup>rd</sup> to Saturday 9<sup>th</sup> March 2019

Issued on Sunday 3<sup>rd</sup> March 2019

### HEADLINES

- Enhanced flooding and landslide risk persists across parts of Peru, Colombia, Ecuador and Bolivia.
- Potential for heavy rainfall to affect parts of southeast Africa over the next week.
- Winter storm affecting the United States today with another coldwave developing next week.



### DISCUSSION

#### Tropical Cyclones

#### Severe Tropical Storm Haleh (Southwest Indian Ocean)

##### Weather

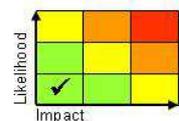
Severe Tropical Storm Haleh was located around 1100 miles northeast of Mauritius on Sunday morning and is expected to undergo further strengthening over the next couple of days into a tropical cyclone with forecast maximum sustained winds of 90 mph. However, Haleh is expected to remain well away from land before eventually moving into the mid-latitude westerly flow and weakening later next week.

##### Discussion

Haleh has moved into a slightly less favourable environment for further deepening, although this is expected to be short-lived and intensification is expected to resume as northwesterly shear decreases and the effects of drier mid-troposphere air subside on Sunday night. Haleh is likely to remain a tropical cyclone well into next week before slowly weakening as it moves south over decreasing oceanic heat content.

##### Expected Impacts

None.



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**Europe****Northern France, Low Countries, Denmark and Germany****Weather**

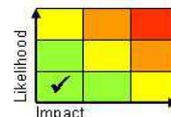
Storm *Freya* is expected to bring a spell of strong winds to much of northwest Europe during Sunday and Monday with the potential for gusts of up to 70-80 mph around exposed coasts and 50-60 mph inland.

**Discussion**

*Freya* is now undergoing deepening within the right entrance region of a departing jet streak, but is then expected to benefit from the effects of the left entrance region of a separate jet core. As the system crosses the UK, it is likely it have reached maturity before filling across the North Sea. However, an instant occlusion is likely to bring to a second swathe of strong winds across northern France during Monday which increases the area of potentially disruptive winds.

**Expected Impacts**

Damage to buildings and trees is possible with some power cuts likely. Some disruption to transport, including rail, air, road and ferry services is likely.

**North America****California****Weather**

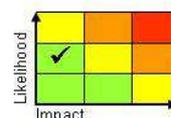
Parts of California have experienced a spell of very heavy rainfall in recent weeks leading to severe flooding and evacuations. Another spell of rain, mountain snow and strong winds will affect the state through the middle of next week. The heaviest rainfall is expected to be along the Pacific coastline where a further 40-60 mm is likely to fall, whilst a further 1.5 metres of snow is possible over the Sierra Nevada range.

**Discussion**

A south-shifted Pacific jet stream, often associated with El Niño, has resulted in a constant stream of sub-tropical moisture being drawn up towards California over several weeks. This has led to low-level rainfall and mountain snowfall accumulations building up leading to an increased susceptibility to impacts from further events.

**Expected Impacts**

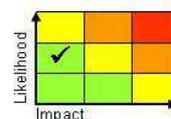
Further urban and river flooding is possible. Heavy snowfall in the higher elevations of the Sierra Nevada is likely to make travel difficult. There is an increased threat of mud/rockslides and debris flow flooding in the foothills, particularly in the vicinity of burn scars.

**Southern Canada, central and eastern USA****Weather**

Another winter storm is in the process of moving across the eastern half of the USA with areas of heavy snow, heavy rain and severe thunderstorms. The greatest threat of significant snow is expected to be from the central Appalachians to New England whilst severe thunderstorms are most likely across the Deep South. Through early next week, a plunge of arctic air will move south across the eastern half of North America with temperatures falling widely 10-20 °C below average. The extent and coverage of the cold temperatures will abate by the end of next week, particularly across southern USA.

**Discussion**

A jet streak crossing the Rockies will engage a strong thermal gradient lying in wait across the central Plains with the resulting area of low pressure moving east an array of hazards including heavy snow and ice pellets on its northern and western flanks, whilst in the warm air to the south locally severe thunderstorms are possible. Strong cold advection in its wake is expected to allow cold air to sink as far south as the Gulf of Mexico by Monday.

**Expected Impacts**

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

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Some travel and power disruption is likely as a result of heavy snow across central and eastern USA. Heavy rain and severe thunderstorms across southern USA are likely to result in some urban and river flooding given already saturated soils in the mid and lower Mississippi Valley, as well as localised damage to property and infrastructure. Although not expected to be as prolonged as previous coldwaves, the very cold conditions that follow could impact vulnerable populations.

## Central America and Caribbean

Nil significant.

## South America

### Northern Andes region (Southern Colombia, Ecuador, Peru and Bolivia)

#### **Weather**

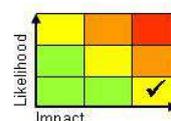
Further heavy showers and thunderstorms are expected to affect the northern Andes region over the next week with the heaviest rainfall expected to be across Ecuador and northern Peru. Rainfall accumulations will vary by location due to the showery nature of the rainfall, but locally 100 mm of rain is possible in a few hours, with some places seeing a further 200-400 mm of rain over the next week.

#### **Discussion**

Along the Pacific coastline north of NE Peru there are positive SST anomalies, and these indicate a weakening of trade winds and the Humboldt Current in this region. This setup allows sea breezes to draw moist oceanic air to the usually dry western Andes, with an unusually high frequency of heavy showers and thunderstorms occurring here. There is also likely to be an input from the South American monsoon and South Atlantic Convergence Zone as it moves north from Argentina.

#### **Expected Impacts**

Flash flooding and landslides remain an ongoing threat in the mountainous areas, as well as downstream river flooding. The most recent flood impacts have been reported from northwest Peru where homes and bridges have been destroyed and many thousands of people impacted. With much of this region now preconditioned by previous rainfall, further heavy rain will likely produce similar impacts.



### Northeast Argentina, Paraguay and southern Brazil

#### **Weather**

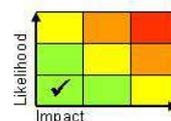
Frequent showers and thunderstorms, at times organised and severe, are expected to affect the region from Tuesday with activity likely to peak on Friday. Thunderstorms will produce strong winds, large hail and a few tornadoes possible in addition to heavy rain. During this period, some locations are likely to receive 200-300 mm of rainfall, often falling in short periods. This would represent around double the normal monthly rainfall for some locations.

#### **Discussion**

A number of disturbances embedded within the subtropical jet are expected to lead to several episodes of severe convection through the second half of next week, culminating in a marked cold front which will lead to more benign conditions following by the end of the week. The environment will often be characterised by high CAPE and shear, supporting mesoscale convective systems and supercells.

#### **Expected Impacts**

Severe thunderstorms are not unusual in this part of the world at this time of year but rainfall anomalies since the end of December have exceeded 200% in the far northeast of Argentina. Further heavy rainfall is likely to lead to flash flooding and increased risk of landslides. Severe thunderstorms will also cause some highly localised but potentially significant property and infrastructure impacts due to strong winds, hail and lightning.



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**Africa**

**Central Mozambique, northern Zimbabwe, southern Zambia**

**Weather**

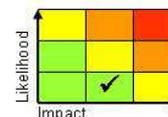
An area of low pressure in the Mozambique Channel is expected to move onshore on Sunday with associated frequent heavy showers and thunderstorms extending inland over the next week. The heaviest rainfall is expected to affect central Mozambique over the next couple of days before transferring into northern Zimbabwe and southern Zambia by midweek. It is possible that some locations may receive 250-400 mm of rainfall during this period which is equivalent to around what normally falls over 4-6 weeks.

**Discussion**

Progression of the MJO across the Indian Ocean favours enhanced rainfall in this region, aided by an equatorial Rossby wave that has recently crossed Madagascar. Rainfall has been fairly poor in the areas highlighted and so this rainfall could be welcome to the agricultural sector.

**Expected Impacts**

Risk of flooding in urban and low-lying areas, particularly as a result of heavy rain falling in a short period of time. River flooding is slightly less likely owing to the poor seasonal rainfall so far. Although large parts of the region are sparsely populated, impacts in any major cities include potential transport disruption, power interruptions and damage to buildings/infrastructure.



**Northwest Angola**

**Weather**

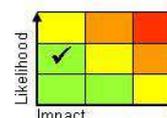
Although it is the wet season in this region, shower and thunderstorm activity is expected to be more widespread than normal over the next 2-3 days. Although rainfall will be fairly localised, some locations are likely to receive 75-100 mm of rainfall during this period. This follows reports of flash flooding impacts in Malanje and Luanda provinces over the past week.

**Discussion**

A combination of the MJO and a slightly weaker Benguela Current resulting in positive SST anomalies off the Angolan coast is likely to have led to an increase in thunderstorm activity during what otherwise has been a poor wet season for much of Angola. As the MJO moves into the Maritime Continent over the coming week, shower coverage will reduce.

**Expected Impacts**

Increased likelihood of flash flooding which could damage properties and lead to the temporary displacement of affected people.



**Middle East**

Nil significant.

**Asia**

**Bangladesh and northern Myanmar**

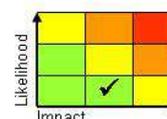
**Weather**

Shower and thunderstorm activity is expected to be more frequent than is usual on Tuesday and Wednesday with the potential for some locations to receive 75-125 mm of rain in a few hours. Whilst significantly higher amounts of rainfall occur during the southwest monsoon, this out-of-season rainfall would represent almost double the March average for those areas that receive the highest totals.

**Discussion**

The subtropical jet described above will extend eastward and engage a moisture laden low-level surface flow from the Bay of Bengal to trigger numerous heavy showers and thunderstorms, some of which are likely to become organised and locally severe.

**Expected Impacts**



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Increased likelihood of flash flooding and damage to properties from rainfall, large hail and locally strong winds. Vulnerable populations in the region, including the Cox's Bazar area, may be more susceptible to impacts owing to it being the dry season and monsoon preparedness is unlikely to have commenced (rainfall onset occurs during April and May).

## Southeast China

### **Weather**

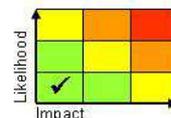
A succession of weather systems are expected to produce heavy rainfall across the same region over the next week. The heaviest rainfall is expected to fall across Guizhou, Hunan and Jiangxi provinces where over the next week, 100-150 mm of rainfall is expected to fall widely and locally 250 mm is possible. For context, Ganzhou, Jiangxi typically receives 180 mm of rain during March.

### **Discussion**

A series of westerly disturbances emerging from the Himalayas is expected to engage the strong baroclinic zone that lies across the southern third of China currently. This is expected to lead to several cyclogenesis events, spawning areas of low pressure that then develop as they move towards Japan but producing significant rainfall where the frontal zone remains slow-moving across China.

### **Expected Impacts**

Increased likelihood of flash flooding and temporary transport disruption. The cumulative effects of several rainfall episodes may also increase the risk of landslides in more mountainous areas.



## Indonesia, Malaysia and Papua New Guinea

### **Weather**

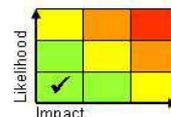
Above average rainfall is expected across many Maritime Continent islands through the next week. Whilst downpours are expected to be rather localised, they are likely to develop in a similar place each day with 100-150 mm of rain possible falling in 24 hours with some places likely to receive around 400 mm over the next week. In a typical 7-day period, this region normally receives around 50-100 mm.

### **Discussion**

Over the past couple of weeks, the MJO phase has not been supportive of widespread convection but has instead allowed diurnal convection driven by the land-sea breeze cycle to become dominant. Since this is a cyclical process, convection has developed over similar locations each day, particularly along the central spine of narrow islands such as Java and East Britain. Next week, the MJO is expected to support more widespread shower and thunderstorm activity.

### **Expected Impacts**

An increased likelihood of flash flooding leading to localised damage to infrastructure and property, including major cities such as Jakarta.



## Australasia

Papua New Guinea – See *Asia* section.

### Additional information

Nil.

**Issued at:** 030800 UTC **Meteorologist:** Matthew Lewis

**Global Guidance Unit**

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

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