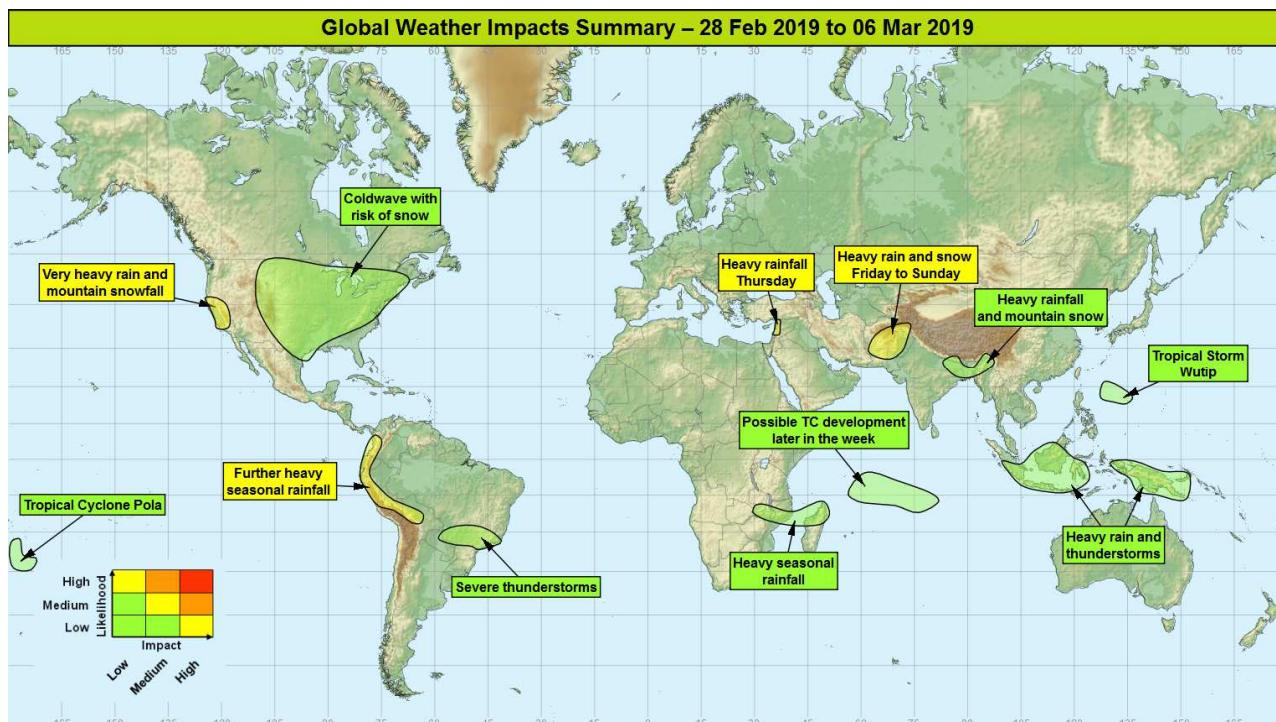


## Global Weather Impacts – Thursday 28<sup>th</sup> February to Wednesday 6<sup>th</sup> March 2019

Issued on Thursday 28<sup>th</sup> February 2019

### HEADLINES

- Heavy rainfall causing major flooding in parts of Peru, Colombia and Bolivia.
- Heavy rain and major snowfall likely across Pakistan and Afghanistan through the next few days.
- Further heavy rainfall likely to affect California this weekend.



### DISCUSSION

#### Tropical Cyclones

##### Tropical Storm Wutip (Northwest Pacific)

###### **Weather**

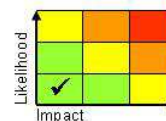
Wutip has weakened markedly as it drifted west across the Philippines Sea through the past 24 hours. Sustained winds associated with Wutip are now around 40 mph. Wutip is expected to dissipate within the next 24 hours.

###### **Discussion**

There are reports that Wutip was the strongest ever February typhoon. However strong vertical wind shear has led to the rapid demise of Wutip through the past 24 hours, satellite imagery showing what deep convection remains displaced well away from the low level circulation. Wutip is expected to continue to weaken, with dissipation likely within the next 24 hours.

###### **Expected Impacts**

Nil.

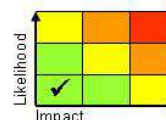


##### Severe Tropical Cyclone Pola (Southwest Pacific)

###### **Weather**

Pola formed during Tuesday and is currently around 390 miles SSE of Suva, Fiji. Pola has undergone marked strengthening, and now has mean winds of around 95-100 mph. Pola is expected to maintain a southerly course through the next 24 hours, keeping the system well away from any land.

###### **Discussion**



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Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

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Pola is presently in a favourable environment, and may intensify a little more in the short term as it is steered south by a sub-tropical ridge. Thereafter, an approaching trough will erode this ridge allowing Pola to make an eastward turn. By the weekend a baroclinic zone will disrupt the cyclone, which is likely to result in extratropical transition.

### Expected Impacts

Pola is expected to stay over open water. The main impact will come from large waves over coasts of western Tonga.

The following areas are being monitored for possible development:

### Indian Ocean

#### Weather

There is an increasing likelihood of a tropical cyclone development in the central or southwest Indian Ocean over the weekend, but any development will remain away from land.

#### Discussion

The MJO continues to move across the Indian Ocean, shedding equatorial Rossby waves that will transfer slowly westwards. An area of enhanced convection in the central Indian Ocean look likely to undergo development, enhanced by the aforementioned Rossby wave, with now good model agreement for the development of a tropical system in the central Indian Ocean over the weekend.

### Expected Impacts

Impacts will be restricted to maritime transport from very strong winds and high seas.



### Europe

Nil significant.

### North America

#### California

#### Weather

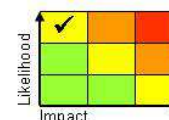
A prolonged period of extremely heavy rainfall has affected California in recent weeks, leading to severe flooding and mandatory evacuations in some places. Venado recorded 520 mm of rainfall in 48 hours up to midday Wednesday UK time, while Whiskeytown Lake saw almost 600 mm fall in 72 hours. After a couple of days respite, a further area of low pressure moving in from the Pacific will bring more very heavy rainfall (and mountain snowfall) this weekend. This could produce a further 50 to 100 mm of rainfall, with up to 200 mm falling on the western side of Sierra Nevada.

#### Discussion

A strong south-shifted Pacific jet stream has fed in a constant stream of Pacific moisture (known as the 'Pineapple Express'), resulting in a series of frontal systems impacting this part of the Pacific coastline that has seen very heavy rainfall (mountain snowfall) in recent months. There are signs of a shift in the pattern next week, with lows taking a more usual track further north.

### Expected Impacts

Ongoing flash and river flooding. Increased likelihood of landslides. Increasing avalanche threat in the Sierra Nevada.

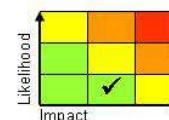


### Eastern Canada, central & eastern USA

#### Weather

Over the weekend and early next week an intense plunge of cold air will move south across much of the eastern half of North America. Temperatures will be widely 10-15 °C below average with the cold air reaching as far as the Gulf of Mexico. This will be accompanied by snow and strong winds in the north, with the potential for large lake-effect snow accumulations around the Great Lakes. On the southern boundary of the cold air freezing rain is possible.

#### Discussion



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Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

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Areas of low pressure will be steered NE along the eastern seaboard by a strong jet stream. In its wake, cold air will be drawn south from the Canadian Arctic to affect large parts of central and eastern North America. There is the potential for a nor'easter-type development to impact the eastern seaboard next week, although models show some uncertainty in the track and shape of this feature at this time.

## **Expected Impacts**

The extreme cold could impact vulnerable populations, especially in more southern areas which are less used to such conditions. Risk of significant disruption to travel and power supplies.

## **Central America and Caribbean**

Nil significant.

## **South America**

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

#### **Weather**

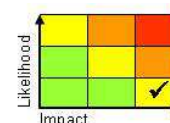
Heavy showers and thunderstorms are expected to continue across parts of the northern Andes region through this period, extending into parts of Peru and Bolivia east of the Andes. Up to 100 mm of rain is possible each day in isolated locations (falling within the space of a few hours) with some places seeing a further 200-400 mm of rain over the next week, which would be slightly higher than the monthly average, coming on top of heavy seasonal rains through the last few months.

#### **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 are a threat in the mountainous areas, with a risk of downstream river flooding. Parts of Peru, Colombia and Bolivia to the east of the Andes appear to have been badly affected so far, with a state of emergency declared in a number of areas and many thousands of people affected.



### **Southeast Brazil and eastern Paraguay**

#### **Weather**

An area of severe thunderstorms is expected to continue transferring northwards over the next few days. Rainfall totals in isolated locations may reach 150-200 mm, with much of this falling in a short period of time; in addition other hazards associated with severe thunderstorms will be present.

#### **Discussion**

A southward extrusion of the monsoon plume across this region will continue to be engaged by an upper trough in the sub-tropical jet stream, resulting in a South Atlantic Convergence Zone event, producing an active band of severe thunderstorms moving northwards across this region.

#### **Expected Impacts**

Potential for flash flooding. In addition large hail, frequent lightning, strong, gusty winds and the odd tornado may bring significant but highly localised impacts.



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## Africa

### Northeast Madagascar, northern Mozambique, southern Malawi and eastern Zambia

#### **Weather**

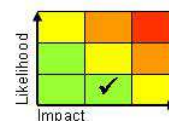
Heavy showers and thunderstorms are expected to affect northeastern parts of Madagascar on Thursday. Locally these could produce in excess of 100 mm in a few hours with 172 mm being reported in Sambava, Madagascar on Wednesday. There is a risk of this heavy rainfall spreading west to affect parts of Mozambique, Malawi and Zambia over the weekend into early next week. Over a 7-day period, northeast Madagascar typically receives 50-100 mm of rainfall whilst elsewhere, 30-60 mm is considered normal.

#### **Discussion**

Progression of the MJO through the Indian Ocean favours enhanced rainfall in this region. The rainy season has been weak so far, so this rainfall could be welcome to the agriculture industry. GM develops a small tropical low which then moves west to produce some very heavy rainfall across north-eastern Mozambique this weekend, however support from other models is muted.

#### **Expected Impacts**

Increasing threat of flash flooding and landslides through the next week.



## Middle East

### Israel, Lebanon and western Syria

#### **Weather**

Heavy showers and thunderstorms will affect Israel, Lebanon and the west of Syria on Thursday. Up to 50 mm of rain could fall in a 6-12 hour period. This compares to a February average rainfall of around 120 mm. The rain will fall as snow on the mountains.

#### **Discussion**

An upper trough will sweep east across the region, destabilising the boundary layer to produce deep convection. An upper ridge will follow to bring a more benign spell of weather. WBFL will lower from 2200 metres to 1500 metres, which will allow heavy snowfall to affect land above 2000 metres initially, but eventually down to 1300 metres.

#### **Expected Impacts**

Flash flooding and mountain snow impacts are likely to disrupt transport. Risk of impacts to vulnerable and displaced populations.



## Asia

### Northwest Pacific – See *Tropical Cyclones* section.

### Afghanistan, northern Pakistan and northwest India

#### **Weather**

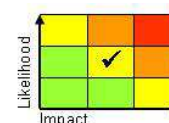
A period of heavy rain and snowfall will affect large parts of Pakistan, particularly the north, Afghanistan and northwest India on Friday and Saturday before clearing eastwards on Sunday. Some places are likely to see up to 200mm of rainfall or up to 2m of snowfall with highest accumulations likely near the central Afghanistan-Pakistan border (mainly southwest of Kabul) and the far NE of Pakistan. For some parts of the region this represents around 4 to 5 times their normal monthly rainfall.

#### **Discussion**

A marked upper trough will cross the area on Friday and Saturday pushing a deep low pressure system eastwards across Pakistan and Afghanistan, and producing copious amounts of precipitation.

#### **Expected Impacts**

This has the potential to produce significant disruption from snowfall across mountainous areas, perhaps closing mountain passes. Previous heavy snowfall events have led to the collapse of buildings through weight of snow in these regions and this is certainly possible during this event. In addition, there will be a risk of avalanche, while at low levels some flooding is likely. For now the worst conditions are expected over relatively sparsely populated and mountainous regions.



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Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

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**Northeast India, Nepal and Bangladesh****Weather**

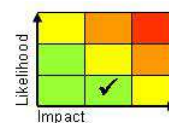
Heavy showers and thunderstorms (falling as snow above 2300 metres) will continue east across north-eastern India and Nepal on Thursday. Up to 75 mm of rainfall could fall in places, with up to 75 cm of snow over the mountains. Across Bangladesh and northeast India there is also a threat of frequent lightning, large hail and perhaps tornadoes. Late February is usually still the dry season with an average February rainfall of around 20 mm, but heavy populated cities like Dhaka could see many times that amount.

**Discussion**

The upper trough responsible for this outbreak will relax away through Thursday, with a gradual reduction of activity likely.

**Expected Impacts**

Flash flooding will be a significant threat in the region, with heavy snowfall over the mountains severely disrupting travel across high mountain passes, and increasing the likelihood of avalanches. There is also a low likelihood of large hail and tornado damage in parts of Bangladesh and northeast India, although flooding looks like the most likely impact.

**Indonesia, Malaysia and Papua New Guinea****Weather**

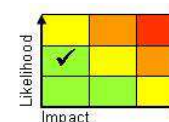
Above average rainfall is expected across the interior of many Maritime Continent islands through the next week. Whilst downpours are expected to be rather localised, they are likely to develop in a similar place each day with 100-150 mm of rain possible falling in 24 hours with some places likely to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

**Discussion**

Despite the MJO phase not being supportive of widespread convection and enhanced rainfall across the region, this allows diurnal convection driven by the land-sea breeze cycle to become dominant. Since this is a cyclical process, convection is likely to develop over similar areas each day particularly along the central spine of narrow islands such as Java and East Britain.

**Expected Impacts**

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

**Australasia**

**Tonga** – See *Tropical Cyclones* section.

**Papua New Guinea** – See *Asia* section.

**Additional information**

Nil.

**Issued at:** 280815 UTC **Meteorologist:** Mark Sidaway

**Global Guidance Unit**

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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

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