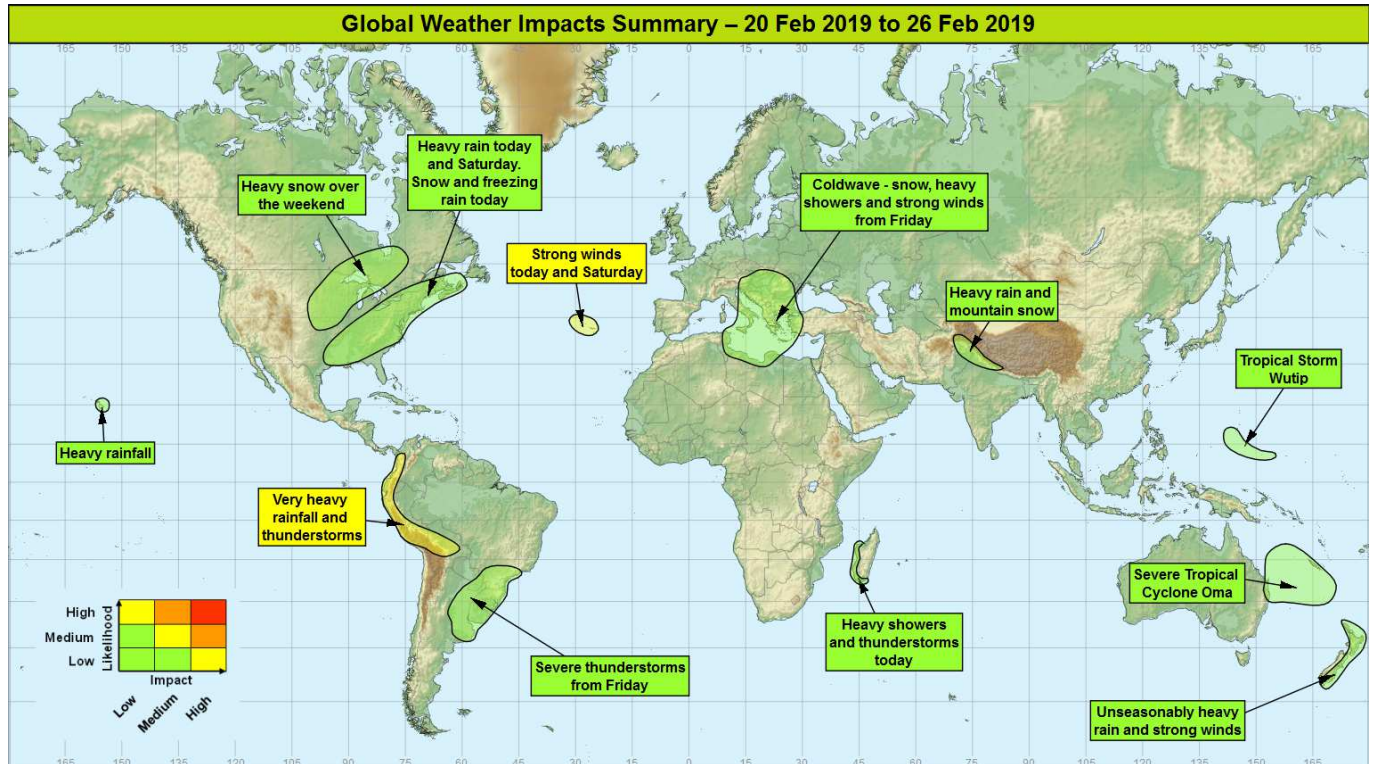


## Global Weather Impacts – Wednesday 20<sup>th</sup> to Tuesday 26<sup>th</sup> February 2019

Issued on Wednesday 20<sup>th</sup> February 2019

### HEADLINES

- Heavy rain and thunderstorms continuing over Colombia, Ecuador, Peru and Bolivia with flooding likely.
- Tropical Storm Wutip develops in NW Pacific, expected to become a Typhoon over next 48 hours.
- Tropical Cyclone Oma moving slowly south-westwards over the Coral Sea.



### DISCUSSION

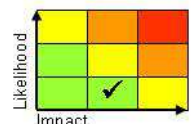
#### Tropical Cyclones

#### Tropical Cyclone Oma (New Caledonia and Queensland, Australia)

##### Weather

Oma has weakened to Category 2 (Australian scale) status with sustained winds of 68 mph and gusts of 96 mph, centred due west of Koumac, New Caledonia. Oma is expected to head south-westwards over the coming 2-3 days over open water. The associated strong, locally damaging winds that have affected parts of northwest New Caledonia are expected to ease today; however the persistent north-westerly wind will continue to bring frequent heavy showers, with a further 100-300 mm of rain here before showers steadily ease off through the rest of the week. The future track of Oma is extremely uncertain, but the most recent data suggests that should the cyclone make landfall at all, it is most likely to be over the east Australia coast, with potential for Brisbane to be affected by strong winds and heavy rain.

##### Discussion



This forecast may be amended at any time

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Oma maintains a modest satellite presentation, with weak steering currents over the next few days the future track and evolution are very uncertain. GM takes Oma SW'wards over gradually cooler SSTs and slowly weakens the storm as a result, whilst EC has more of a westerly track, over steady SSTs and maintains a steady intensity. This latter forecast is consistent with the latest guidance from BoM. These initial uncertainties look likely to be the main driver for the future very large model disparities – an upper trough approaching from the west is either not in time to stop Oma from reaching the Queensland coast, or in the case of GM and GFS, is in time to deflect it back E. The ensemble output reflects the current large spread and high uncertainty. Koumac in New Caledonia has reported 267mm in 48 hours. Over higher ground, a further 350mm is signalled for today before showers ease off.

## Expected Impacts

Across New Caledonia further heavy showers may lead to flash flooding, and an increased risk of landslides in high ground exposed to the northeast. Parts of the Queensland coast may see strong winds and extreme rainfall by the end of the week, although confidence in its track and therefore impacts is low at this stage.

## Tropical Storm Wutip Weather

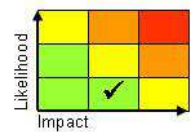
Tropical Storm Wutip is located in the vicinity of Micronesia in the Northwest Pacific, with sustained winds of around 50 mph. Wutip is expected to strengthen into a typhoon in the next couple of days as it moves steadily west-north-westwards over the very warm waters of the tropical Pacific. Later this week the system looks most likely to pass just to the south of Guam, possibly as a very strong Typhoon (sustained winds approaching 100 mph), but there is a small likelihood of a direct hit.

## Discussion

Equatorial Rossby Wave activity has helped to organise convection in this region, with tropical cyclogenesis having now occurred. The system is moving through an area favourable for development, with excellent poleward and equatorward outflow channels, and low vertical wind shear. All models are in good agreement that Wutip will strengthen over the next few days, although there are large differences in the rate of development on offer. The majority of output and the official guidance from JMA suggests that Wutip will strengthen into at least a Typhoon, whilst the ensemble is tightly clustered with relatively high confidence in the track. By the time Wutip approaches Guam however, confidence in the position becomes much lower.

## Expected Impacts

Very localised flash flooding from heavy rainfall is the main threat across Micronesia, but many of these islands are small, flat, with catchments that drain rapidly to the sea in addition to being sparsely populated. There is a lower likelihood of damaging winds, storm surge and heavy rainfall later this week to the Northern Mariana Islands, should Wutip approach or make landfall, with Guam at particular threat.



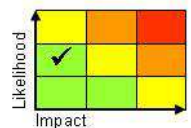
## Europe

## Parts of central and SE Europe including the Balkans and Italy as well as Tunisia and northern Libya

## Weather

Turning very cold over the coming days with temperatures 5-10°C below normal, and several centimetres of snow to many parts of SE Europe (including higher parts as far south as Sicily, Greece and northeast Turkey). Over the Mediterranean, frequent heavy showers/thunderstorms are likely to develop, which could bring very large amounts of rain to adjacent coasts, particularly southern Greece and Turkey. In addition, there is the potential for strong winds/gales to develop, producing rough seas and possible dust storms over Tunisia and Libya.

## Discussion



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The major pattern amplification taking place over Europe looks likely to result in a surge of cold air and trough extension over E Europe, resulting in a strong cold front pushing south across the Balkans and into the eastern Mediterranean. Models continue to differ in the details of the final trough extension/disruption over the Med, and thus the location of a depression that is expected to spin up, but common to all models is the potential for snow and cold air significantly far south, and a deeply unstable environment over the central/eastern Med with potential for strong winds around the periphery of the depression.

## **Expected Impacts**

Significantly below normal temperatures and severe overnight frosts likely to have adverse impacts on vulnerable communities, particularly given the large concentration of migrants in the area. Snow likely to lead to some travel disruption, with aviation affected. Heavy rain around the peripheries of the Mediterranean could lead to localised flash flooding, and increased landslide risk in mountainous terrain.

## **The Azores**

### **Weather**

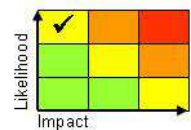
Two periods of strong south-westerly winds look likely to affect the Azores this week, the first spell early today is associated with Storm Julia (*named by IPMA, Portugal*) where gusts could reach around 60 mph before quickly easing this afternoon. The second spell is expected on Saturday when gusts may exceed 60 mph.

### **Discussion**

An exceptionally strong jet stream emanating from the USA at about 40° latitude will induce two explosive cyclogenesis event in the western/central Atlantic this week. Although the two low centres will track well to the northwest of the Azores, exceptionally strong southerly winds within the warm conveyors will affect the islands and surrounding ocean.

### **Expected Impacts**

Strong winds will likely disrupt air travel to and from the islands, and rough seas will disrupt marine travel and cause localised coastal impacts such as flooding. Some minor damage to utilities and property possible, and blocked roads are possible from things such as fallen trees.



## **North America**

### **Eastern and North-Central United States, southeast Canada**

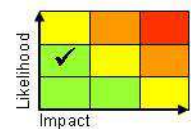
#### **Weather**

Two further weather systems will run northeast across this region through this week, one developing through today, and the second developing over the weekend. Both are forecast to bring heavy precipitation along their paths. There is the potential for severe thunderstorms in the warm air to the southeast of these lows (which will bring the majority of the rain), and snow and freezing rain on the northwestern edge of the precipitation. Up to 100 mm of rain could fall in a 24 hour period with the potential for over 200 mm of rain in some places accumulating by the end of the week. 20-40 cm of snow could fall over and just to the east of the Appalachians today, and more widely southeast of the Great Lakes over the weekend.

#### **Discussion**

A fairly persistent negative Pacific North America (PNA) pattern has been in place since early February and is signalled to continue through the following week, this pattern sees high latitude blocking across the northwest Pacific and troughing across the western side of north America. This configuration favours the development of a strong baroclinic zone across the SE USA, and then the generation of surface lows to the lee of the Rockies that run northeast and bring a corridor of heavy rainfall, with the snow on their northern flanks, and severe storms possible on the south-eastern flank of these systems. This latter aspect looks most likely in the second system, with a more favourable kinematic environment as a shortwave upper trough approaches the warm plume.

#### **Expected Impacts**



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Flash flooding is likely, with increased risk of river flooding and landslides. There is also the potential for some severe storm impacts such as damaging winds and large hail, and later, a few tornadoes for south-eastern states. Some winter hazards (heavy snow / freezing rain) possible at times on the northern edge of these systems. Washington, New York and possibly Boston all look likely to see some transitory heavy snowfall/freezing rain later today to early Thursday (meaning some short lived travel disruption likely), before heavy rain sets in.

## **Hawaii (Maui and Big Island)**

### **Weather**

Heavy rain and thunderstorms are forecast to affect the easternmost islands of the Hawaiian Island chain today, and perhaps lasting several days. The heaviest rain will fall across windward hills and mountains, where in excess of 200 mm could fall each day. Should the showers continue through to the weekend, over 500 mm of rainfall could have fallen over the highest parts of the Big Island.

### **Discussion**

A strong near stationary high pressure cell sits just off the North American coastline this week. This leads to south-easterly winds across Hawai'i which draw a plume tropical air from the equator region across the islands. The sub-tropical jet stream also sits above the islands, and various troughs in this will activate this plume at times leading to even further enhancement of rainfall. The position of the plume is finely balanced, depending on the strength of the High, recent model output has tended to keep the plume offshore beyond today with a concomitant reduction in forecast rainfall amounts. Although the rainfall totals quoted are exceptional for many parts of the world, many locations in Hawaii have seen in excess of 1000 mm of rainfall during a month.

### **Expected Impacts**

An increased risk of flash flooding and landslides, particularly areas that have been affected by recent volcanic activity. This may lead to some travel and utility disruption, and damage to some property and infrastructure.

## **Central America and Caribbean**

Nil significant.

## **South America**

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

#### **Weather**

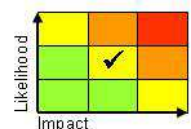
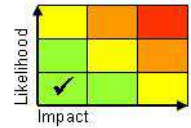
Frequent heavy showers and thunderstorms are expected to continue across the northern Andes through the next week, extending into Bolivia. Up to 100 mm of rain is possible each day in isolated locations (falling within the space of a few hours) with some places seeing a further 200-250 mm of rain over the next week, which is significantly higher than the monthly average.

#### **Discussion**

On Thursday 14<sup>th</sup> February NOAA declared weak El Nino conditions in the Pacific (although the Australian Bureau of Meteorology maintains ENSO neutral conditions). Along the South American Pacific coastline north of NE Peru there are positive SST anomalies (as often seen on El Nino events), 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. In addition the MJO is moving east across the Pacific through the next week, this will likely maintain or even further enhance convection across the region. This is more consistent with the signal for enhanced rainfall seen over Bolivia (east of the Andes) over the coming 5-7 days.

#### **Expected Impacts**

Further flash flooding and landslides are a significant threat in the mountainous areas, even for places downstream of the mountains (where it may have been dry) as rainfall draining off the mountains causes usually dry rivers to rapidly rise and fall. Parts of Peru and Bolivia appear to have been badly affected so far, with a state of emergency declared in a number of provinces, although information has been difficult to come by in recent days with a sense that the worst of the impacts may have already occurred.



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## Argentina and Uruguay (River Plate regions)

### **Weather**

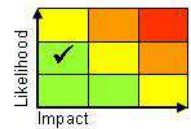
A further spell of severe thunderstorms is forecast to generate across this region from Friday onwards, and then transfer slowly northeastwards. Rainfall totals in isolated locations may reach 50-100mm, with much of this falling in a short period of time; in addition other hazards associated with severe thunderstorms will be present.

### **Discussion**

A southward extrusion of the monsoon plume across this region will begin to be engaged by a shortwave upper trough in the sub-tropical jet stream on Friday. This will result in an active band of severe thunderstorms moving northeast across this region over the following few days.

### **Expected Impacts**

Heavy rain falling in a short space of time could lead to flash flooding. In addition large hail, frequent lightning, strong gusty winds and the odd tornado may bring significant but highly localised impacts.



## Africa

### Tunisia and north Libya – See Europe

## Western and Southern Madagascar

### **Weather**

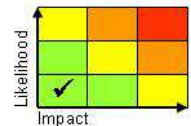
Heavy showers and thunderstorms are expected to continue to affect the west and south of Madagascar through today, before conditions improve. 100-200 mm of rainfall is likely in places, on top of that already fallen in the last couple of days.

### **Discussion**

A plume of high WBPT extruded from Africa across the Mozambique Channel and across Madagascar had the potential to briefly acquire tropical characteristics, but now is being engaged by mid-latitude troughing with any further development resulting from baroclinic processes. The current weak depression at the apex of the warm plume will provide enhanced NW'ly flow onto the W coast with abundant tropical moisture, whilst the approaching upper trough will destabilise the edge of the warm plume in the S, leading to very heavy showers and thunderstorms. Conditions improve tomorrow as the forcing, plume and low move away E and SE'wards. The rain is likely to be welcome in the S which is currently in drought, although this will help in the short term to increase run off and risk of flash flooding.

### **Expected Impacts**

Heavy rain and thunderstorms bring an increased risk of flash flooding and landslides. Transport and utilities may be temporarily affected.



## Middle East

Nil significant.

## Asia

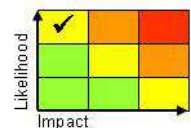
### Marshall Islands, Caroline Islands and Mariana Islands – See Tropical Storm Wutip

## Eastern Afghanistan, Northern Pakistan, far northwest of India and western Nepal

### **Weather**

Following yesterday's snow, a further spell of prolonged and heavy rain and mountain snowfall is expected today and Thursday, before gradually clearing eastwards. Snow is expected above 2000 metres, a mixture of rain and snow between 1000 and 2000 metres, and rain at lower levels. The heaviest precipitation is likely to fall on the Himalayan foothills of northern Pakistan and India, with a further 200-250cm of fresh snow possible through today. Further west, precipitation rates will be lower, the Hindu Kush is more likely to see 25-50cm through today before clearing early tomorrow. Within the warm air, heavy showers and thunderstorms are likely to develop quite widely across Pakistan and north west India, with 20-40 mm, and in places 60 mm possible in a 24 hour period. Conditions improving from Friday.

### **Discussion**



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A pronounced and deep mid-latitude trough is signalled to extend S and generate stronger baroclinicity and a broader, more coherent area of precipitation, particularly heavy and persistent as the moist and strong SW'ly flow impinges on the higher ground of the Himalayan foothills. The airmasses in this region contain large amounts of precipitable water (sourced from the Arabian Gulf and Seas), and are able to produce abundant heavy precipitation. The snow level looks likely to be around 2000 metres for much of the time.

### **Expected Impacts**

Very heavy snow over the mountains will block some key high road passes in the region, collapse roofs and enhance the risk of avalanches. The combination of snowmelt and heavy rain at lower levels could lead to flash and/or fluvial flooding at lower elevations, mainly across Pakistan.

### **Australasia**

**New Caledonia, Queensland** – See *Tropical Cyclones* section.

### **New Zealand**

#### **Weather**

Tropical Cyclone Oma now looks less likely to reach New Zealand however, there is a strong signal for the development of a large area of rain and strong winds over this coming weekend. The precise details of system do remain very uncertain, in particular the location of the strongest winds and whether or not they remain offshore, but there is potential for severe gales, large waves and 100-200 mm of rain to affect the north and the east of the islands.

#### **Discussion**

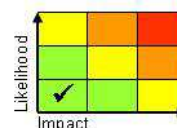
A plume of tropical moisture (which may or may not contain the extra-tropically transitioning remnants of Cyclone Oma) is forecast to become engaged by a sharp mid-latitude trough to produce large amounts of rainfall across the north of New Zealand through Friday, before cyclogenesis takes place which will take the focus of the rain further south. Depending on where the resulting low ends up, there is potential for strong E to SE'ly winds to generate large waves and produce wind impacts (severe gales possible), as well as prolonged heavy rainfall associated with a slow-moving backbent occlusion over parts of the E of New Zealand.

#### **Expected Impacts**

There is a low likelihood of flooding impacts due to the heavy and prolonged rainfall, coastal impacts such as coastal flooding due to large waves, and some disruption to marine transport, power and other utilities due to strong winds.

### **Additional information**

Nil.



**Issued at:** 200845 UTC    **Meteorologist:** D J Harris

**Global Guidance Unit**

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