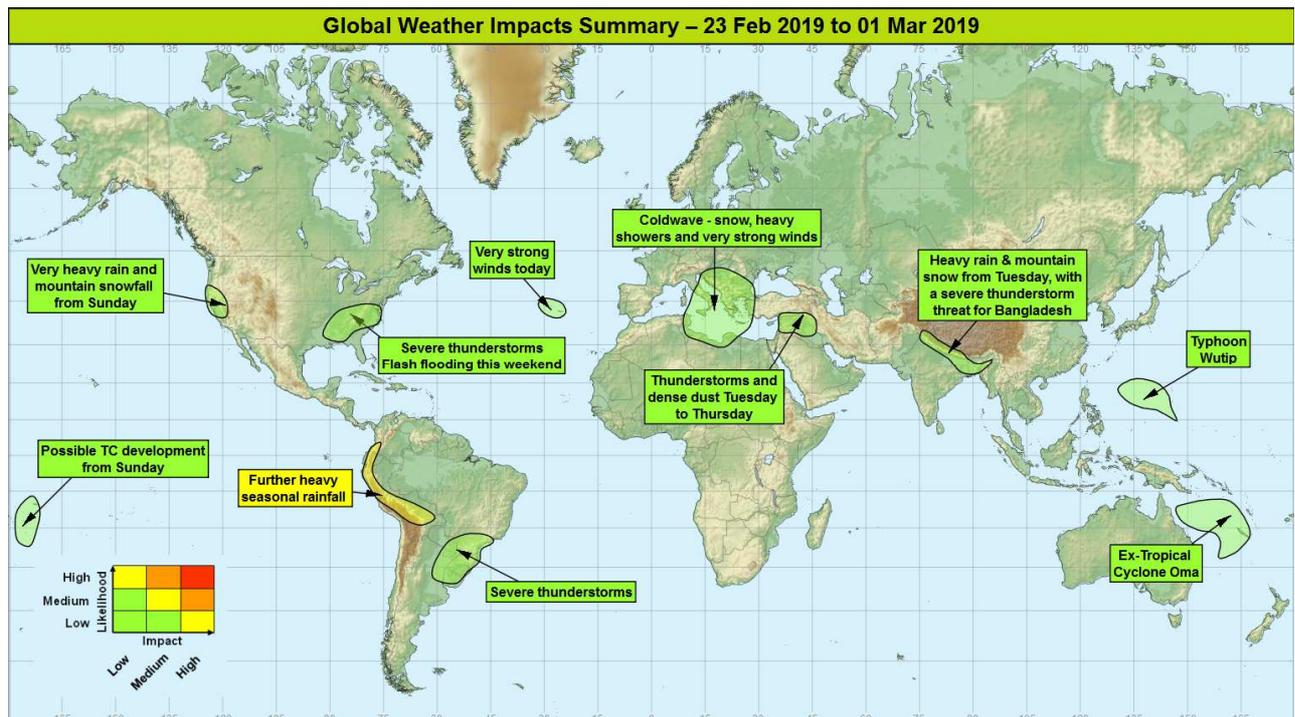


**Global Weather Impacts – Saturday 23<sup>rd</sup> February to Friday 1<sup>st</sup> March 2019**

Issued on Saturday 23<sup>rd</sup> February 2019

**HEADLINES**

- Heavy rain and thunderstorms continuing over Colombia, Ecuador, Peru and Bolivia with flooding likely.
- Typhoon Wutip continues northwest in the tropical Pacific – possibly impacting Guam this weekend.
- Severe thunderstorms, with a tornado threat, across southeastern USA this weekend.
- Very cold and unsettled across southeast Europe and Central Mediterranean next few days.
- Early start likely to the Bangladesh severe storm season.



**DISCUSSION**

**Tropical Cyclones**

**Typhoon Wutip (Northwest Pacific and Mariana Islands)**

**Weather**

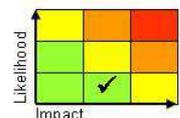
Typhoon Wutip is located near 11.0 degrees North 143.5 degrees East at 23/0300Z, and was moving north-northwest at 8 mph. Sustained winds associated with Wutip are 98 mph, with gusts to 138 mph, with this strength likely to be maintained through the weekend as Wutip tracks slowly northwestwards, just to the southwest of Guam. Wutip will also produce very heavy rainfall with intense thunderstorm activity likely. Much of the rain will fall across the ocean, but there is the possibility of up to 75 mm of rain falling across the Mariana Islands, which is half the average February rainfall. Next week Wutip is expected to slowly move away westwards from the Mariana Islands as it gradually weakens.

**Discussion**

There is good model agreement for this evolution of Wutip during the next week. The loss of strength next week will be due to Wutip moving far enough north to encounter increased wind shear from the sub-tropical jet.

**Expected Impacts**

The forecast track of Wutip keeps it over open waters, although it will come close to the southern tip of the Marianas Islands, including Guam. The expected track should preclude landfall, but heavy rain and strong, gusty winds could impact these islands.



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

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## Ex-Tropical Cyclone Oma (Coral Sea and New Caledonia)

### Weather

Oma, situated near 28.2 degrees South 161.2 degrees East has recently been declassified as a tropical cyclone, having become sub-tropical, but this system is still producing mean wind speeds of 59 mph. The forecast track of Ex-Oma is expected to take it north-northeastwards through the rest of the weekend, with an increasing likelihood of a weakening system moving across or very close to New Caledonia on Monday. The track thereafter is increasingly uncertain, but there is confidence that this system will weaken further. The transit close to or across New Caledonia could produce a further 50-100 mm of rain across an island that received large rainfall totals when Oma tracked south last week.

### Discussion

Oma has been engaged by a mid-latitude upper trough, which has resulted in it losing true tropical cyclone characteristics due to increased vertical wind shear. The 22/12Z EC and GFS, along with many of the multi-model EPS members produced a similar track to the official track from the Bureau of Meteorology, taking this system northwards, comfortably west of New Caledonia. The 22/12Z GM track was on the 'eastern extreme' of the model spread, taking Ex-Oma northwards very close to New Caledonia. This was thought to be an outlier, but the 23/00Z GM is even further east, and has now been joined by the 23/00Z GFS, increasing the level of uncertainty that is associated with the interaction of Ex-Oma and the mid-latitude upper trough.

### Expected Impacts

There looks like an increased threat of Ex-Oma making landfall on New Caledonia on Monday, but even if this does occur, the threat of local flash flooding and landslides looks low. The main impact will be the severe gales and high seas to marine transport in the region.

***The following area has potential for Tropical Cyclone development:***

## Southwest Pacific (Samoa and Tonga)

### Weather

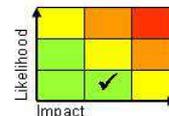
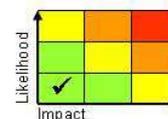
There is the potential for a tropical cyclone to develop close to Samoa on Sunday and Monday, and track south across Tonga early next week. There is still low confidence in the details of this event, but there is the potential for heavy rainfall and very strong winds for a time.

### Discussion

An Equatorial Rossby Wave could assist in the development of a tropical cyclone close to Samoa by the start of next week, although there is not unanimous model agreement for this. All models do track a system south across Tonga early next week, but with uncertainty on the intensity of this system.

### Expected Impacts

If this system develops, there is a threat of flash and coastal flooding along with wind damage.



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## Europe

### Southeast Europe, Tunisia and northern Libya

#### Weather

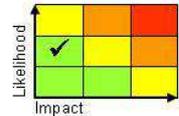
Cold wave transferring southwestwards into the Central Mediterranean through the weekend with more normal conditions following south into southern Europe early next week. Temperatures 5-10°C below normal are expected. Snow is likely for parts of Southeast Europe. Over the Mediterranean, frequent heavy showers/thunderstorms will develop, which could bring very large amounts of rain (up to 150 mm in 24 hours) to adjacent coasts and some islands, particularly southern Greece and Crete. In addition, there is the potential for severe gales to develop, producing very rough seas and possible dense dust storms over Tunisia and Libya. The Dalmatian coastline has seen a strong Bora (very cold northeasterly wind) through Friday night with gusts as high 109 mph at Split and 94 mph recorded at Dubrovnik. This Bora will tend to ease through the course of today (Saturday).

#### Discussion

The major pattern amplification taking place over Europe will result in a surge of cold air and trough extension over Southeast Europe, resulting in a strong cold front pushing south across the Balkans and into the eastern Mediterranean. This evolution will result in a deeply unstable environment over the central/eastern Med bringing the potential for very strong winds around the periphery of the developing depression.

#### Expected Impacts

Widespread severe frosts, with temperatures by day and night well below normal. Snow may be heavy for parts of northern Greece. Flash flooding is likely in association with intense thunderstorms. The winds may be strong enough to damage some structures and the power network, and will impact air and marine transport.



## The Azores

### Weather

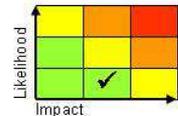
A period of very strong winds is likely to affect the Azores through today (Saturday) as storm Kyllian (as named by the Portuguese Met Service), passes to the north, bringing southerly winds gusting to 60-70mph at times. Winds should ease quickly into the early hours of Sunday.

#### Discussion

A major jetstream propagated ESE out of the Eastern Seaboard of the US through Friday, with strong diffuence on the jet's forward side. An associated low crossed onto the cold side of the jet, and this, coupled with strong left-exit forcing lead to explosive cyclogenesis. The track of the low will remain to the NW of the Azores, though some very strong winds are expected well to the southeast of the low's centre.

#### Expected Impacts

Very strong winds will likely disrupt air travel to and from the islands, and very rough or high 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

### Parts of southeastern USA

#### Weather

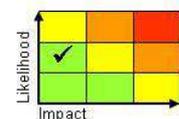
This part of the USA will see intense rainfall and severe thunderstorms through the weekend, with the possibility of large hail, very strong winds and tornadoes. Up to 100-150 mm of rain could fall in a 24 hour period, which is just over the average February rainfall in the region.

#### Discussion

A strong southwesterly upper flow combined with a warm, moist southerly low level flow will provide conditions for large CAPE / strong wind shear deep convection across some southeastern parts of the USA this weekend. A cold front will sweep east to bring this event to an end by the end of the weekend.

#### Expected Impacts

Threat of flash-flooding. Disruption to travel/transport is also likely. Damage from severe thunderstorms, including large hail, very strong winds and a few tornadoes.



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## Southern Oregon and northern California

### **Weather**

This region of the Pacific West will see several spells of very wet weather from Sunday through to the middle of next week. This could result in up to 400 mm of rain accumulating, which is three times the average February rainfall. The rain will fall as snow on higher ground, increasing the snow pack across the Sierra Nevadas.

### **Discussion**

A strong south shifted Pacific jet stream will feed 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. The snowfall could descend as low as 800 metres above sea level initially, but the snow level will rise to 1800-2200 metres above sea level by midweek. There are still model differences regarding the position and persistence of frontal activity in this region.

### **Expected Impacts**

Flash, and an increasing likelihood of river, flooding. Increased likelihood of landslides. Increasing avalanche threat in the Sierra Nevadas.



## Central America and Caribbean

Nil significant.

## South America

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

### **Weather**

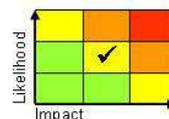
Frequent heavy showers and thunderstorms are expected to continue across the northern Andes through the next week, extending into Bolivia. Up to 100 mm of rain is possible each day in isolated locations (falling within the space of a few hours) with some places seeing a further 300-400 mm of rain over the next week, which would be slightly higher than the monthly average, coming on top of heavy seasonal rains through the last month.

### **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.

### **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. Information on further impacts from the ongoing storms has been difficult to come by in recent days. Therefore, we continue to assess this event as yellow (medium likelihood of a medium impact event).



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## Southeast Brazil, eastern Paraguay, far northeast of Argentina and Uruguay

### **Weather**

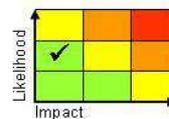
A spell of severe thunderstorms is expected to develop across the south of this region from today, and then transfer northwards over the 3 or 4 days. Rainfall totals in isolated locations may reach 50-100mm, with much of this falling in a short period of time; in addition other hazards associated with severe thunderstorms will be present.

### **Discussion**

A southward extrusion of the monsoon plume across this region is being engaged by a shortwave upper trough in the sub-tropical jet stream, resulting in 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. Early next week the severe thunderstorms could reach some of the more populated and mountainous cities along Brazil's Atlantic coastline (such as Sao Paulo), with landslides will become an increased threat.



## Africa

### Tunisia and northern Libya – See *Europe section*

## Middle East

### Lebanon, Syria and Iraq

### **Weather**

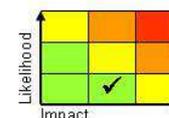
Through Tuesday, Wednesday and Thursday heavy showers and thunderstorms will affect Lebanon and the far west of Syria, along with the Turkish border mountains of Syria and Iraq, and the Zagros Mountain region of northeastern Iraq. Up to 50 mm of rain could fall in a 6-12 hour period. This is around half of the average February rainfall for this region. The rain will fall as snow on the mountains. Strong winds on both days will pose a threat of dense lifted dust storms.

### **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.

### **Expected Impacts**

Flash flooding and mountain snow impacts are likely to disrupt land transport and life in the region. Dense dust storms pose a threat to health as well as land and air transport.



## Asia

### Mariana Islands – See *Tropical Cyclone section*

## Northern India, Nepal and Bangladesh

### **Weather**

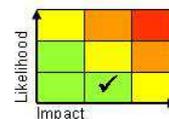
Heavy showers (falling as snow above 2000 metres) will run east across northern India and Nepal between Tuesday and Thursday. Up to 150 mm of rainfall could fall in places, with up to 100-150 cm of snow over the mountains. Across Bangladesh and northeast India severe thunderstorms could develop, producing up to 100 mm of rain in a few hours, along with a threat of frequent lightning, large hail and tornadoes. Late February is a few weeks earlier than usual for severe storms in Bangladesh.

### **Discussion**

A sharp upper trough in the sub-tropical jet will engage a high wet bulb potential temperature plume drawn off the Arabian Sea. In addition to the mass ascent caused by the trough and warm advection, strong orographic enhancement of the precipitation will take place as deep southwesterly flow runs into the Himalayas. The degree to which the interaction of the trough will take place over Pakistan is still uncertain, with the GM offering the wettest and snowiest solution for this region.

### **Expected Impacts**

Flash flooding will be a threat, with heavy snowfall over the mountains severely disrupting travel across high mountain passes, and increasing the likelihood of avalanches. Damage from large hail and tornadoes are possible in parts of Bangladesh and northeast India.



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**Australasia**

**New Caledonia, Samoa and Tonga** – See *Tropical Cyclone section*

**Additional information**

Nil.

**Issued at:** 230750 UTC    **Meteorologist:** Paul Hutcheon

**Global Guidance Unit**

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