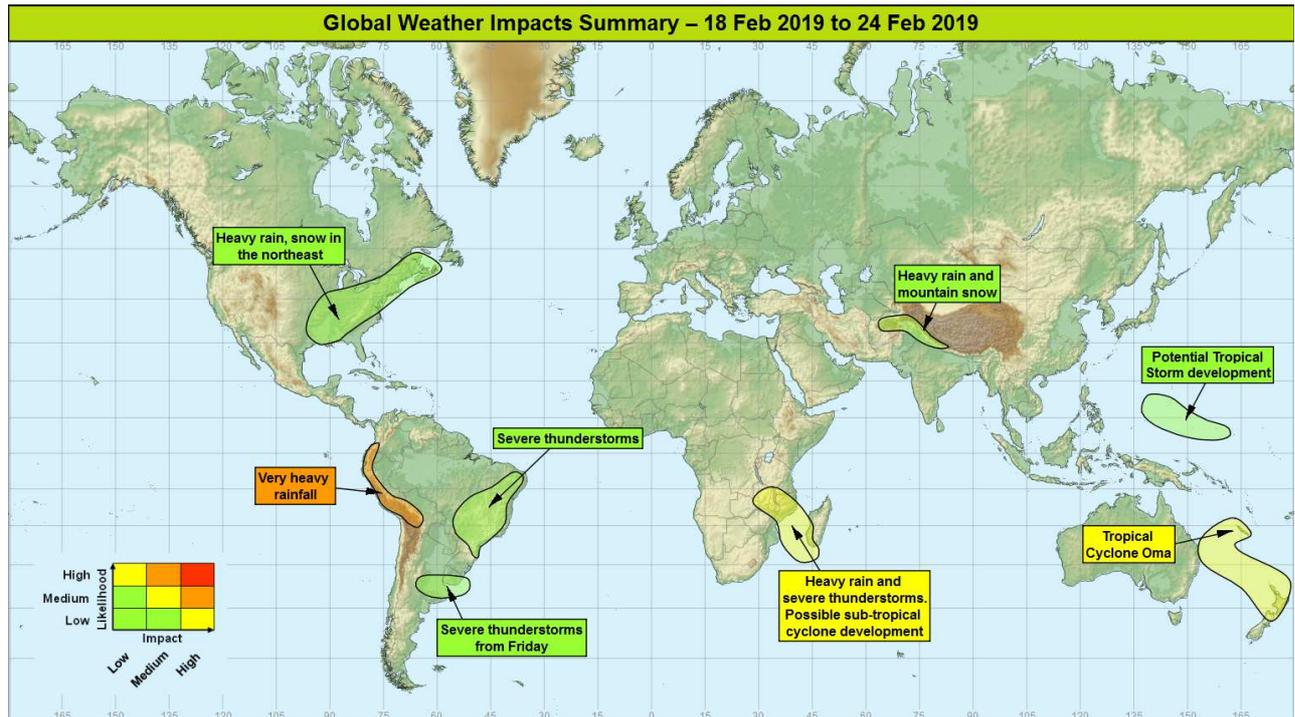


## Global Weather Impacts – Monday 18<sup>th</sup> to Sunday 24<sup>th</sup> February 2019

Issued on Monday 18<sup>th</sup> February 2019

### HEADLINES

- Very heavy rain and severe storms persist over parts of South America, Peru and Bolivia in particular.
- Tropical Cyclone Oma will pass close to the northwest of New Caledonia over the next two days.
- Heavy rain and severe thunderstorms affecting parts of south-eastern Africa and Madagascar.



### DISCUSSION

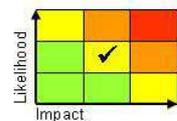
#### Tropical Cyclones

#### Tropical Cyclone Oma (Southwest Pacific, Vanuatu, New Caledonia, New Zealand and far east of Australia)

#### Weather

Oma has continued slowly southwards over the last 24 hours, and remains a Category 2 cyclone with sustained winds of 57 mph. The official advisory calls for no further strengthening, but evidence suggests that some re-intensification will occur over the next couple of days. Oma has now moved past Vanuatu and will next likely pass by the northwestern tip of New Caledonia overnight Monday into Tuesday. Although the very strongest winds are likely to remain offshore, severe gales are expected across northwestern Vanuatu on Monday and Tuesday. Strong onshore flow is likely to lead to persistent heavy showers coming on the north east facing coast of New Caledonia. By the time these ease on Wednesday, some areas along the north coast could see as much as 1000 mm of rain, which would be as much as five times the average rainfall for February. There is a small likelihood that Oma could drift far enough west by next weekend to affect the far east of Australia, but it is more likely to track southeast to bring unseasonably strong winds and heavy rainfall to New Zealand later this week.

#### Discussion



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Oma has weakened slightly over the past 24 hours, despite excellent atmospheric conditions for strengthening. The main inhibitor to immediate strengthening is a pool of cool SSTs caused by upwelling beneath the slow moving system. However, the system is forecast to begin moving south today (steered by a sub-tropical ridge), which will lead to it passing over more favourable 27-28°C seas and likely allowing some slight reintensification. Beyond Wednesday differences between model output emerges, a minority (for example ECMWF) take the system westwards across the Coral Sea towards Queensland, the vast majority turn the system to the southeast with an extra-tropical transition as it tracks towards New Zealand.

#### **Expected Impacts**

Whilst the core of Oma is unlikely to make landfall across New Caledonia, frequent heavy showers are likely to lead to flash-flooding and landslides, particularly in areas exposed to the northeast. Damage and disruption due to strong winds is a secondary concern, this mainly for the northwest of the island. New Zealand may see a threat of strong winds and flash flooding by the end of the week, with a lower likelihood of flooding and wind damage to the far east of Australia.

***The following regions are being monitored for possible development:***

#### **Northwest Pacific (Micronesia and Mariana Islands)**

##### **Weather**

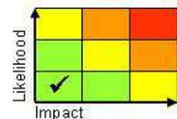
A tropical low located between the Marshall Islands and Micronesia, is highly likely to develop into a tropical storm as it continues moving slowly north-westwards over the coming few days. Later this week the system may pass close by the northern Mariana Islands (such as Guam), and this is likely to be the only impact on land (while at least tropical storm strength) before the system curls away to the northeast and decays across the open north Pacific.

##### **Discussion**

The northern part of an Equatorial Rossby Wave couplet (the southern part associated with Tropical Cyclone Oma) could orchestrate the development of a Typhoon from this weak tropical depression through the next 3 days. The system is moving through an area very favourable for development, with excellent poleward and equatorward outflow channels, and low vertical wind shear. All global models allow the development of a tropical storm (with differences regarding the speed of development) and most high resolution models (such as HRRF) suggest a typhoon (sustained winds > 73 mph) will form within the next 3 days.

##### **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, but there are large uncertainties on the depth and track of the system by this time.



**Southwest Indian Ocean (Mozambique Channel)** – See *Africa* section.

#### **Europe**

Nil significant

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## North America

### Eastern United States, far east of Canada

#### **Weather**

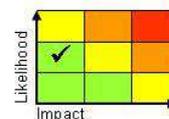
At least three weather systems will run northeast across this region through this week. Each one is forecast to bring heavy precipitation along its path. There is the potential for severe thunderstorms in the warm air to the southeast of these lows, and snow on the northwestern edge of the precipitation where it abuts cold air. Up to 50 mm of rain could fall in a 24 hour period with the potential for over 200 mm of rain accumulating by the end of the week.

#### **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, which will bring the majority of rainfall..

#### **Expected Impacts**

Flash flooding is very 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. Some winter hazards (heavy snow / freezing rain) possible at times on the northern edge of these frontal waves. New York appears to be susceptible mid-week, with potential disruption to travel in the area.



## Central America and Caribbean

Nil significant

## South America

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

#### **Weather**

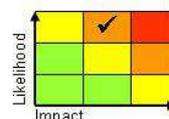
Frequent heavy showers and thunderstorms are expected to continue across the northern Andes through the next week, extending into Bolivia. 100-150 mm of rain is possible each day in places (falling within the space of a few hours) with some places seeing a further 250-350 mm of rain over the next week, which is significantly higher than the monthly average.

#### **Discussion**

On Thursday 14<sup>th</sup> February NOAA declared weak El Nino were 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

#### **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.



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**Eastern Brazil****Weather**

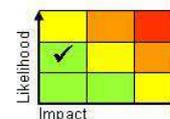
Heavy showers and thunderstorms continue across the region. Some places are likely to receive 50-100 mm of rain in 24 hours (much of this falling in a short space of time). Over the week, some unlucky places may receive around 200 mm. Further persistent showers/thunderstorms are also likely to affect the coast of Santa Catarina state today which could bring a further 100mm on top of the 100+mm reported in the last 24 hours. This region typically receives 40-60 mm of rain over a week at this time of year. Thunderstorms are likely to be severe at times with strong winds, large hail and frequent lightning additional hazards. Showers are expected to become less frequent from the middle of this week.

**Discussion**

A cut-off upper trough sits over the Bolivia/Paraguay and Brazil border region, this feature gradually relaxes and decays through the upcoming week. The forward side of this trough (over eastern Brazil) will engage the resident high WBPT plumes in place across this region and result in the daily generation of frequent (locally severe) thunderstorms. In the south of this region, a weak depression resulting from the strong upper forcing will result in enhanced flow and shower generation on to the coasts of southern Brazil, leading to the most reliable and persistent showers here today. This storm could access over 2000J/Kg of CAPE, and tap in to unidirectional shear to generate long-lived MCS or supercell storms.

**Expected Impacts**

Much of eastern Brazil (away from the far southeast) has seen below average monsoon rainfall in the past few months; rainfall will be welcome. However, intense rainfall will trigger flash flooding as well as landslides in more mountainous areas, perhaps impacting large cities. Strong winds, large hail and frequent lightning may also cause damage to property and infrastructure as well as posing a threat to life.

**Argentina and Uruguay (River Plate regions)****Weather**

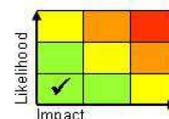
A further spell of severe thunderstorms is forecast to generate across this region from Friday onwards, and then transfer slowly northeastwards. Rainfall totals in isolated locations may reach 50-100mm, with much of this falling in a short period of time; in addition other hazards associated with severe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



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## Africa

### Southern Mozambique, Malawi and south-western Madagascar **Weather**

Having migrated northeast over the past week, a band of heavy rain and thunderstorms will become slow moving across Zambia, northeast Zimbabwe, Malawi and Mozambique. Here precipitation will continue each day with intensities largely reducing with time; a further 100-200 mm is forecast over the coming week. As a low associated with this area of rainfall moves out into the Mozambique Channel through Monday, it may begin to obtain some tropical characteristics. Regardless of development this low or sub-tropical storm will likely bring heavy rainfall to western and southern parts of Madagascar through until Wednesday with the potential for 100-200mm of precipitation to also fall here.

#### **Discussion**

A cold front has slowly progressed northeastwards across south-eastern Africa over the past week, this feature has now become slow moving having become detached from mid latitude forcing. The moisture footprint from this plume will promote deep convection (assisted by surface wind convergence) and continue to produce heavy thundery showers over the upcoming days. The depression (associated with the cold front) is currently emerging into the southern Mozambique Channel is likely to develop some tropical characteristics, however the engagement of an upper trough and lack of symmetry will likely result in this system being a sub-tropical rather than a tropical cyclone.

#### **Expected Impacts**

Heavy rainfall (often in the form of intense bursts) over the coming week will likely cause flash flooding in this region, there is potential for some fluvial flooding through the week as totals in this region begin to mount up. In addition to the rain large hail, strong winds and frequent lightning from thunderstorms could also disrupt transport (especially aviation) and power networks. In associated with the potential sub-tropical depression strong winds are likely to affect, southern Madagascar and the Mozambique channel until midweek.

#### **Middle East**

**Levant coast** – See *Europe* section.

## Asia

**Marshall Islands, Caroline Islands and Mariana Islands** – See *Tropical Cyclones* section.

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

#### **Weather**

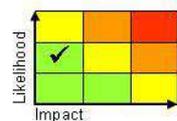
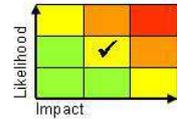
Several periods of prolonged heavy rain and mountain snowfall are forecast to affect this region through the coming week. At lower elevations 25-50mm of rainfall is expected, which is very unusual for the time of year, and more typical of the amounts a monsoon depression may bring in the summer months. 0.5-1 m of fresh snowfall seems likely for the higher ground of Afghanistan, whilst over 2 m of fresh snow could fall in the higher parts of northern Pakistan and northern India. Conditions likely to improve from Friday.

#### **Discussion**

A very strong sub-tropical jet continues to extend east across the region, this feature is buckled by longwave troughs in the polar front jet stream to its north. The result is fast moving shortwave troughs in the sub-tropical jet promote areas of mass ascent and frontogenesis. Come the middle of the week, a more pronounced and deeper mid-latitude trough is signalled to extend S generate a broader, more coherent area of precipitation, particularly heavy and persistent as the 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, but will fluctuate between 1700 metres and 2500 metres.

#### **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.



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**Australasia**

**Vanuatu, New Caledonia, New Zealand and far east of Australia**– See *Tropical Cyclones* section.

**Additional information**

Nil.

**Issued at:** 180940 UTC    **Meteorologist:** Nick Silkstone / D J Harris

**Global Guidance Unit**

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