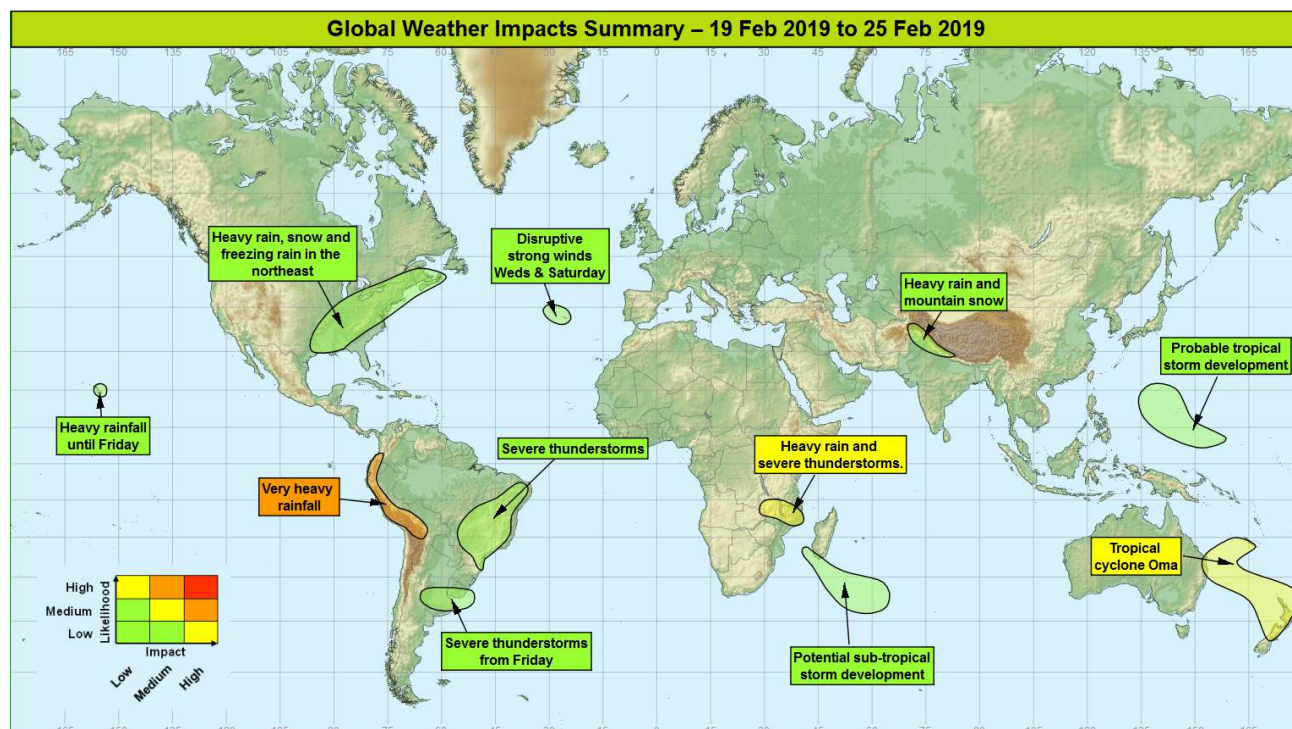


Global Weather Impacts – Tuesday 19th to Monday 25th February 2019

Issued on Tuesday 19th 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 today.
- Heavy rain and severe thunderstorms affecting parts of eastern Africa.



DISCUSSION

Tropical Cyclones

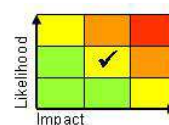
Tropical cyclone Oma (Southwest Pacific, Vanuatu, New Caledonia, New Zealand and far east of Australia)

Weather

Oma has continued slowly south-westwards over the last 24 hours, and has intensified into a Category 3 cyclone with sustained winds of over 74 mph. Oma is currently moving past the north-western tip of New Caledonia, and although the very strongest winds are likely to remain offshore, severe gales will continue across north-western New Caledonia on Tuesday. These winds will draw frequent, heavy showers onto the north-east facing coast/hills 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. Beyond New Caledonia the track of Oma remains very uncertain, it 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

With excellent atmospheric conditions around the system Oma has gradually intensified over the past 24 hours. Beyond Wednesday large differences between model output emerge, a minority (for example ECMWF) take the system westwards across the Coral Sea reaching Queensland on Friday, the vast majority turn the system to the southeast with an extra-tropical transition as it tracks towards New Zealand this weekend.



This forecast may be amended at any time

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Expected Impacts

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. Queensland or New Zealand may see a threat of strong winds and flash flooding by the end of the week, although which if any of these locations will see impacts from Oma remains uncertain.

The following regions are being monitored for possible development:

Northwest Pacific (Micronesia and Mariana Islands)

Weather

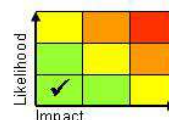
A tropical low located close to Micronesia, is highly likely to develop into a tropical storm as it continues moving slowly north-westwards over the coming few days. Later this week the system may pass close by the northern Mariana Islands (such as Guam), and this is likely to be the only impact on land (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 2 days. The system is moving through an area favourable for development, with excellent pole ward and equator ward 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 HWRf) suggest a typhoon (sustained winds > 73 mph) will form within the next 2 days.

Expected Impacts

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 significant uncertainties on the depth and track of the system by this time.



Mozambique Channel and south-west Indian Ocean

Weather

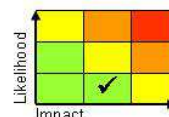
A low has moved east into the Mozambique Channel over the past 24 hours, it was expected to acquire some tropical characteristics and potentially become a sub-tropical storm. However imagery shows that the system has struggled to organise, and as a result is now expected to only bring heavy rainfall as it passes by southern Madagascar through Tuesday and Wednesday with the potential for up to 250mm of precipitation to also fall in this region which is usually one of the driest parts of Madagascar (and recently in drought).

Discussion

Increasing vertical wind shear appears to have disrupted the formation of sub-tropical storm. Deep convection associated with this low has been sheared to the east and has exposed the low level centre. As a result little development of this feature is expected for the next day or so as the low brushes past southern Madagascar (and interacts with the high terrain). It is still possible a sub-tropical storm may form, but this would occur out over the open ocean and not impact upon any land.

Expected Impacts

Heavy rain and thunderstorm are likely to bring flash flooding, and an increased risk of landslides. Additional hazards of frequent light will pose a danger to people working outside and may disrupt utilities for a short time.



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Europe

The Azores

Weather

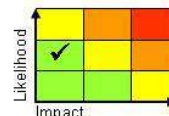
Two periods of strong south-westerly winds look likely to affect the Azores this week, the first area on Wednesday is tied to Storm Julia (named by the Portuguese Met Service), where gusts could reach around 60 mph; the second period on Saturday could see gusts reach 70 mph.

Discussion

An exceptionally strong jet stream emanating from the USA at about 40° latitude will induce two rapid 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 on the depressions southeast flanks will affect the islands.

Expected Impacts

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



North America

Eastern United States, far east of Canada

Weather

Two further 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 and freezing rain on the north-western edge of the precipitation where it abuts the 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.

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 and south-eastern states. Some winter hazards (heavy snow / freezing rain) possible at times on the northern edge of these frontal waves. Washington, New York and Boston all look likely to see some transitory heavy snowfall/freezing rain late Wednesday to early Thursday (meaning some short lived travel disruption likely), before heavy rain sets in.



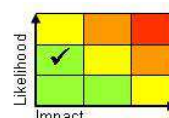
Maui and Big Island, Hawai'i

Weather

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Heavy rain and thunderstorms is forecast to affect the easternmost islands of the Hawaiian Islands chain through until Friday. The heaviest precipitation will fall across windward hills and mountains, where in excess of 200 mm could fall each day. By the time the rain eases on Friday, between 500-1000mm of rainfall is signalled 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 will draw a plume of tropical air from the equator region across the islands. The sub-tropical jet stream also sits across the islands, and various troughs in this will activate this plume at times leading to even further enhancement of rainfall. Although the rainfall totals quoted are exceptional for many parts of the world, some 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

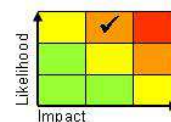
Frequent heavy showers and thunderstorms are expected to continue across the northern Andes through the next week, extending into Bolivia. Up to 100 mm of rain is possible each day in isolated locations (falling within the space of a few hours) with some places seeing a further 250 mm of rain over the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

Discussion

On Thursday 14th 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 NW 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

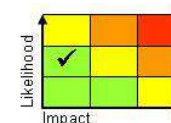
Expected Impacts

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.



Eastern Brazil

Weather



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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. This region typically receives 40-60 mm of rain over a week at this time of year.

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. These storms 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

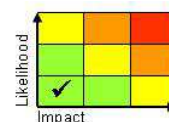
A further spell of severe thunderstorms is forecast across this region from Friday onwards, and then transfer slowly northeastwards. Rainfall totals in isolated locations may reach 50-100mm, with much of this falling in a short period of time; in addition other hazards associated with severe thunderstorms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

Eastern Zambia, Mozambique, Malawi and southern Tanzania

Weather

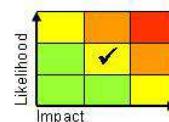
Having migrated northeast over the past week, a band of heavy rain and thunderstorms will become slow moving across Zambia, Malawi, Mozambique and southern Tanzania. Here precipitation will continue each day with intensities largely reducing with time; a further 100-200 mm is forecast over the coming week.

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.

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. With the winds creating hazardous conditions on open water (such as Lake Malawi).



Southern Madagascar – See *Tropical Cyclones* section.

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Middle East

Nil.

Asia

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

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

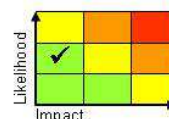
Several periods of prolonged heavy rain and mountain snowfall are forecast to affect this region through the coming week. At lower elevations 25-50mm of rainfall is expected, which is very unusual for the time of year, and more typical of the amounts a monsoon depression may bring in the summer months. 50 cm of fresh snowfall seems likely for the higher ground of Afghanistan, whilst over 200 cm of fresh snow could fall in the higher parts of northern Pakistan and northern India. Conditions are 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.

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.

**Australasia**

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

Additional information

Nil.

Issued at: 190830 UTC **Meteorologist:** Nick Silkstone

Global Guidance Unit

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