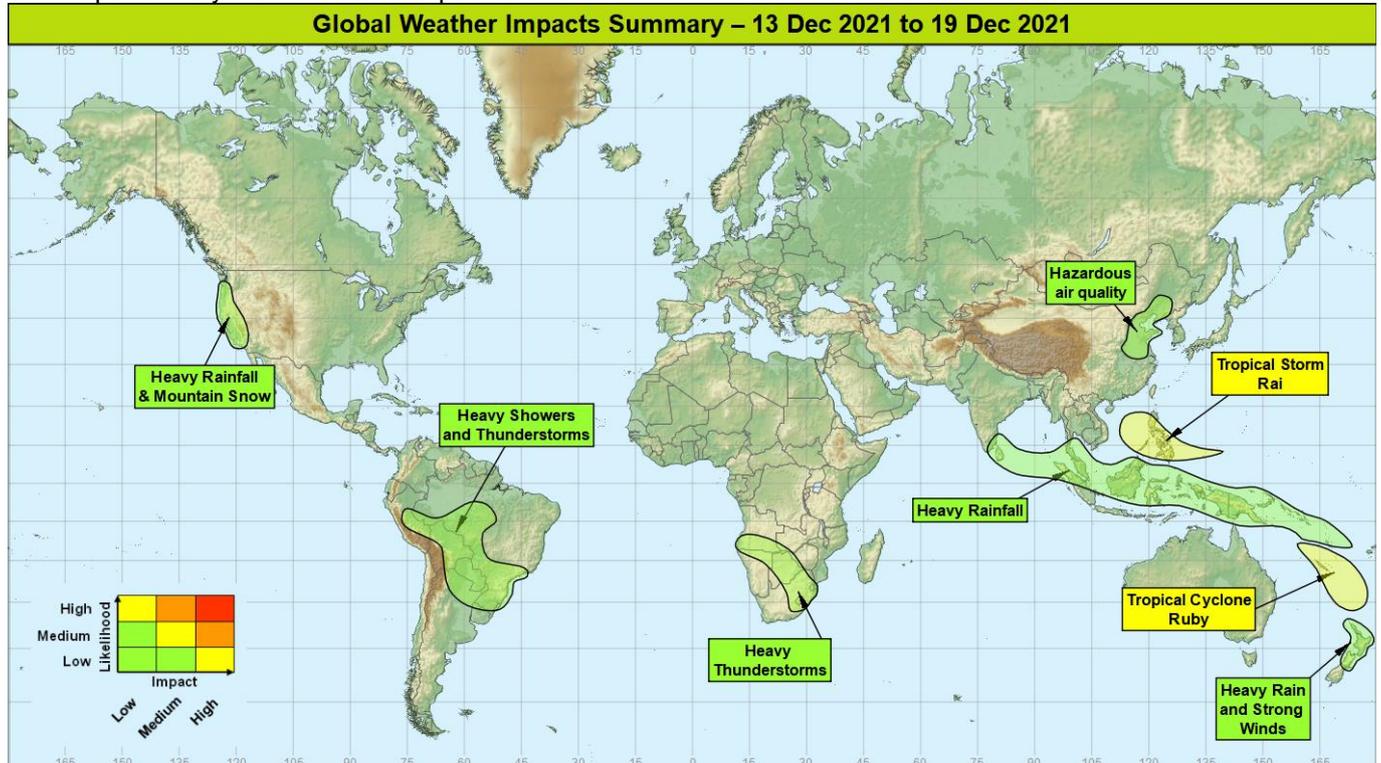


Global Weather Impacts – Monday 13th to Sunday 19th December 2021

Issued on Monday 13th December 2021

HEADLINES

- Tropical Cyclone Ruby has formed in the Coral Sea and is expected to impact New Caledonia this week
- Tropical Storm Rai has been named and is signalled to impact parts of the Southern Philippines mid-week.
- A spell of very wet weather is expected over New Zealand.



DISCUSSION

Tropical Cyclones

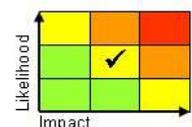
Tropical Cyclone Ruby - Southwest Pacific (New Caledonia and surrounding islands)

Tropical Cyclone Ruby has formed over the Coral Sea, currently a category 2 system with maximum sustained winds of around 60 mph. Ruby is moving south-eastwards and expected to continue its intensification to a category 3 system later today (Monday) or early tomorrow (Tuesday) as Ruby moves towards New Caledonia. The system is likely to track over or just off the northern shore of New Caledonia (between New Caledonia and the Lifou Islands) through tomorrow (Tuesday). Torrential rain is expected along the system's path, including parts of the southern Solomon Islands and Vanuatu islands, with some areas seeing 150-200 mm in a 24 hour period.

Discussion

The MJO is currently active over the western Pacific and looks to have spawned an Equatorial Rossby Wave which has now developed into Tropical Cyclone Ruby. Now that the discrete low has formed into a tropical cyclone there is a good agreement the system will track south-eastwards, with increasing confidence given broad model support, and environmental conditions look very favourable for intensification of the next few days (high SSTs ~30c, low vertical wind shear and strong poleward outflow).

Expected Impacts



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Global Guidance Unit (GGU), Services Operations Centre (SOC), Met Office, FitzRoy Road, Exeter

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Flash and coastal flooding possible. Wind damage looks likely for parts of New Caledonia, potentially focused over the Lifou Islands, with a lower risk of destructive winds over the main Island. Limited storm surge impacts are likely at this stage.

Tropical Storm Rai (Philippines)

Weather

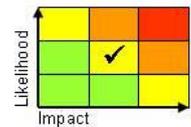
Tropical Storm Rai has this morning been named by the Japanese Met Agency, forming over the Philippine Sea. There is good model signal for this to track west towards central or southern parts of the Philippines (Layte and Mindanao), most likely reaching the Philippines during late Wednesday or Thursday as a Category 1 or 2 Tropical Cyclone (Typhoon). There is currently a large amount of uncertainty in the arrival time and depth of development, but likely to bring a threat of torrential rain (300-400mm) and damaging winds.

Discussion

Although TS Rai has been named, there remains a fair spread in NWP regarding the track and depth of Rai when it is well signalled to arrive over the Philippines at some point mid-week. GEFS being the most bullish with a selection of very deep low centres at present. That said, environmental conditions look favourable for further development as it tracks to the S of the Sub Tropical Ridge and engages with an area of enhanced convection, allowing intensification to a Cat1 or 2 system by the time it reaches the S'ern Philippine Islands. At present limited storm surge is present in models, however the bathymetry around Tacloban in particular is conducive to storm surge development, as seen in Haiyan 2013 (very track and depth dependant, with very few ensemble members having the track this far N).

Expected Impacts

Still some uncertainty in the strength of any system that does form but with an increased chance of flooding, damaging (perhaps destructive) winds and dangerous coastal conditions.



Europe

Nil.

North America

Western USA

Weather

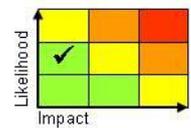
Another spell of heavy rain looks likely to affect this region over the coming days. Locally up to 150 mm may fall over a period of two to three days (though some of this will fall as snow over higher ground). The peak of the rainfall is likely to continue moving south to affect much of California where it is likely to bring significant snowfall to the Sierra Nevada.

Discussion

A plume of warm air drawn around a surface anticyclone will impinge on the high ground of this region. Strong flow will allow for orographic enhancement leading to some locally very large, (though probably not exceptional) totals for this region.

Expected Impacts

Risk of flash flooding and landslides in a region recently badly affected by flooding. Potential travel disruption. Risk of mudslides where rain falls on burn scars.



Central America and the Caribbean

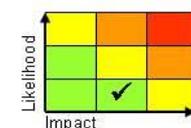
Nil.

South America

Large parts of central South America

Weather

Enhanced seasonal shower and thunderstorm activity continues across the region to be well above average through the next week. Up to 200-300 mm could accumulate in places which, although this region sees high rainfall all year, is almost half the December average in just a few days.



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Discussion

A combination of several factors will be responsible for the anomalously high rainfall in this wide area in the coming week. The South American Monsoon is in an active phase, with a deep, moist and warm flow from the equatorial region enhancing precipitation. Also this week, as an area of low pressure develops and perpetuates the low-level convergence, the influence of a mid-latitude trough to the south will enhance activity here as well.

Expected Impacts

Enhanced likelihood of some significant flash flooding and landslides across the region.

Africa

Parts of southern Africa

Weather

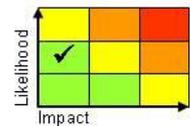
Intense showers and severe thunderstorms look likely at times in the coming week. As well as frequent lightning and large hail, up to 50-100 mm of rain could fall in just 6-12 hours in places, though many areas will miss the most severe thunderstorms.

Discussion

The warm tropical plume will extend south across southern Africa to be engaged by some mid-latitude upper trough at times this coming week. This synoptic set up will produce very large CAPE storms with enough vertical wind shear to produce some long-lived systems.

Expected Impacts

Flash flooding likely along with the possibility of damage from strong winds, lightning and large hail.



Middle East

Nil.

Asia

Large swathes of southern Asia

Weather

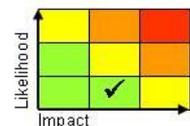
Showers and thunderstorms will continue to be frequent and more widespread early this week, bringing very heavy rainfall to some areas. It is likely that up to 100-150mm of rain could fall in a 24 hour period in a region that has seen significant flooding in recent weeks. Totals for the week could exceed 300mm in some places anywhere in a wide swathe from Sri Lanka to Papua New Guinea.

Discussion

The drivers responsible for the enhanced precipitation across this wide area are an active phase of the MJO crossing the area, as well as a couple of well-marked Rossby waves and an equatorial Kelvin Wave. SSTs are above average in this area as well, and these factors will combine to bring heavier and more frequent showers and thunderstorms in the coming week.

Expected Impacts

Increased threat of flash and fluvial flooding.



The Philippines: See *Tropical Cyclones* section.

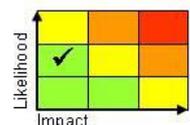
Eastern/southeastern China

Weather

Air quality is likely to continue to deteriorate at first this week as high pressure brings relatively calm conditions to this part of China, and while not unusual at this time of year, levels are expected to become dangerous before winds pick up later in the week.

Discussion

A cold high, typical of this time of year, is likely to be slow moving over this part of China for much of this week, especially at first. Air quality has already become "dangerous" over a wide area, and this is likely to become more severe over the coming days.



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Expected Impacts

Vulnerable populations will be adversely affected, and even healthy individuals are likely to suffer some ill-effects from very high levels of air polluting in the next few days.

Australasia

New Caledonia: See *Tropical Cyclones* section.

New Zealand

Weather

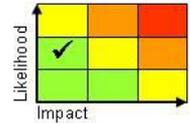
Spells of heavy rain and thunderstorms are expected across the North Island and northern parts of the South Islands over the coming days. The heaviest rain looks likely to be during Tuesday when some areas may see 100-150 mm falling in a 24 hour period. This could also be combined with a spell of strong winds during the middle of the week, mainly for the North Island. Conditions should improve later in the week.

Discussion

A complex sub-tropical plume will remain straddled across the north of the country over the coming days. This looks likely to be engaged by an upper trough running east early next week likely resulting in significant cyclogenesis in this region. Additionally, the development of Tropical Cyclone Ruby well to the north, will result in an elongated trough of low-pressure extending from the tropics towards NZ, with some very high PWC air being dragged south, and this will help in generating very large rainfall totals.

Expected Impacts

Flash flooding and disruption to transport.



Additional Information

- Nil

Issued at: 130830 UTC

Meteorologist: Chris Almond / Adam Thornhill

Global Guidance Unit

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