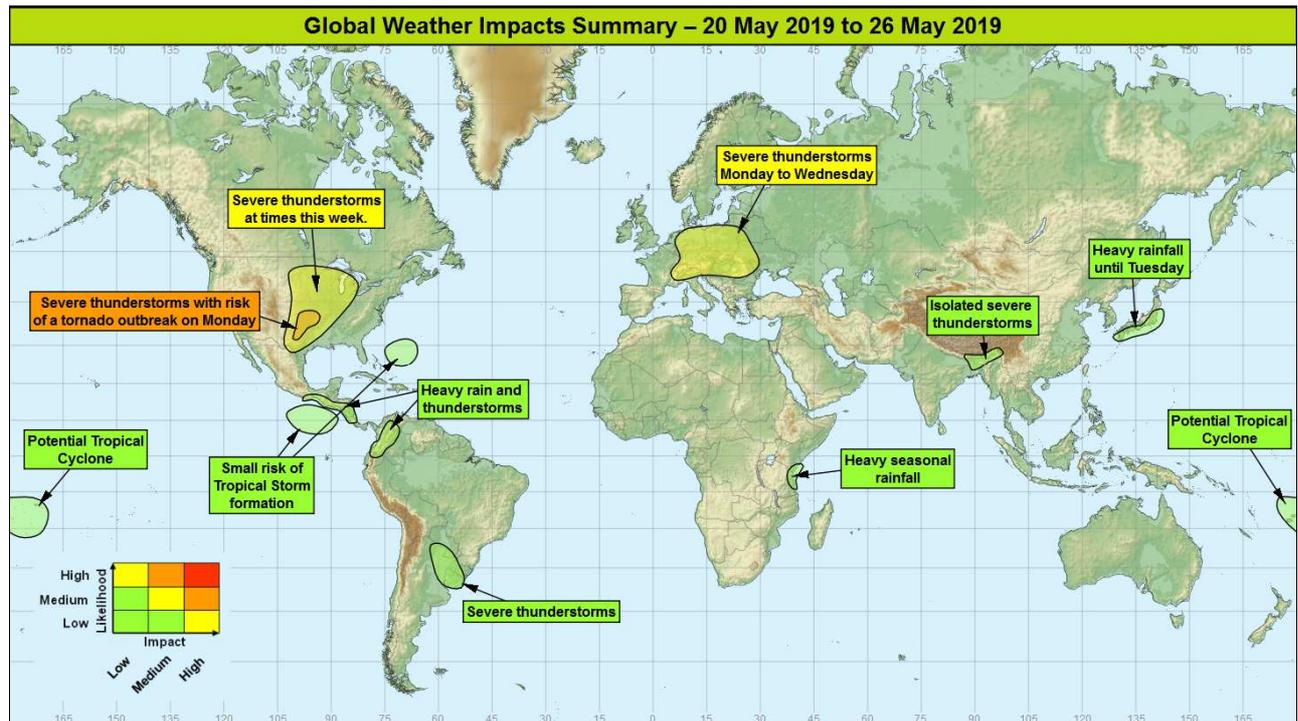


Global Weather Impacts – Monday 20th to Sunday 26th May 2019

Issued on Monday 20th May 2019

HEADLINE

- Severe thunderstorm and tornado outbreak across the central and southern Plains of the USA.
- Severe thunderstorm threat across central and eastern Europe from Monday to Wednesday.



DISCUSSION

Tropical Cyclones

There are no tropical cyclones at time of issue. The following areas are being monitored for potential development:

Southwest Pacific (Fiji and Samoa)

Weather

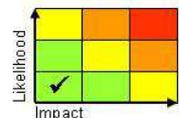
A cluster of thunderstorms over the open ocean approximately 300 km north-northwest of Fiji could organise into a weak tropical cyclone over the next few days.

Discussion

Ensemble output highlights this area as having increased potential for tropical cyclogenesis over the next few days. The signal from global deterministic models is rather muted – should a cyclone develop it is likely to be weak in terms of wind but most output suggests significant rainfall for the islands in the region.

Expected Impacts

Should a cyclone develop, it is most likely to stay over open water and be relatively weak before dissipation. The main impact would be from heavy rain and attendant increased risk of flash flooding.



This forecast may be amended at any time

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Northeast Pacific

Weather

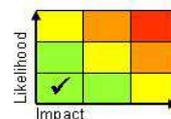
An area of persistent shower and thunderstorm activity south of the Mexican Pacific coastline may gradually develop as it drifts slowly eastward over the coming week. There is a low risk of a tropical storm forming in this area early next week.

Discussion

Shear instability along the ITCZ which has now migrated to around 8°N, this will likely result in the development of a shallow low level circulation. This may organise thunderstorm activity around it, and in cooperation with the favourable oceanic and atmospheric conditions in this area may allow the gradual development of a tropical storm.

Expected Impacts

Nil during this period as the weak circulation remains over open water away from land.



North Atlantic

Weather

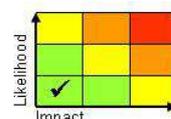
An organised area of showers and thunderstorms to the west of the Bahamas is expected to form an area of low pressure through Monday, and may develop into a short-lived tropical or sub-tropical storm late Monday or early Tuesday, beyond that environmental conditions become hostile so any weak cyclone that formed would quickly decay.

Discussion

The signal from the deterministic models is for a brief closed circulation to form later Monday into Tuesday; this could be as a brief Tropical Cyclone, or as a sub-tropical cyclone.

Expected Impacts

Nil significant as it is expected to remain over open water, although Bermuda is likely to see some enhanced showers or thunderstorms mid-week.



Europe

Central and eastern Europe

Weather

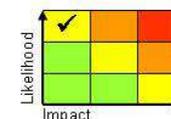
Heavy showers and thunderstorms are expected to affect large parts of central and eastern Europe through the first half of the coming week, with these storms producing the threat of up to 75 mm in a 6-12 hour period. There is the potential for severe thunderstorms to develop in the region which would produce the threat of very strong winds, frequent lightning large hail and possibly even a tornado. With time the most intense shower activity will migrate northeast, and even here weaken by midweek.

Discussion

A complex upper vortex will produce areas of forcing that will engage a complex warm plume across central and eastern Europe through the first part of the week. This will result in the potential for a mixture of large CAPE and skinny CAPE deep convection that when combined with modest vertical wind shear could produce MCS activity as well as high rainfall producing storms. The complex nature of the upper air and lower level thermal pattern will make it difficult to accurately predict where these storms will form. The cooling of the plume and advance of an upper ridge from the west will ease the shower threat from midweek.

Expected Impacts

Flash flooding is a significant threat, with a lower likelihood of damaging winds and large hail damage. Frequent lightning could impact aviation and power networks. There are some large cities in this region, and so there is the potential for significant disruption.



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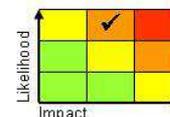
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North America

Central parts of the USA

Weather

There is a continued threat of severe thunderstorms in this region of the USA through the next week. Whilst not everywhere in this region will see thunderstorms each day, there will be a significant severe thunderstorm threat in this region each day. These storms will produce very strong winds, large hail and tornadoes, with up to 150 mm of rain falling in a 24 hour period in places, and up to 300 mm of rain possible in a few places through the next week, which is around twice the average May rainfall in this region.



Late Monday and early Tuesday in particular portions of Texas and Oklahoma are a risk of seeing a significant tornado outbreak, with conditions favourable for the development of strong and potentially long duration/long track tornadoes. Even areas that do not see tornadoes will be at risk from frequent lightning, strong wind gusts >70 mph, and large hail >5cm diameter. As a result in a limited area (highlighted in amber), it has been judged likely that resources from outside the local region will likely be needed to clear debris and restore power supplies etc.

Discussion

A series of upper troughs will sweep east across the USA through the next week, with the upper forcing engaging a marked baroclinic zone and the pre-frontal broad warm sector (850hPa of around 23°C) that contains the S'ly flow (low level jet). This setup will produce CAPE in excess of 2500J/kg at times, with marked shear providing the ingredients for severe convective outbreaks. This central region of the USA has already seen widespread river flooding through the last few months due to large snowpack melt and anomalously heavy rainfall. So further heavy rains will just exacerbate this impact.

Late Monday and Tuesday in particular incredibly severe ingredients come together across parts of Texas and Oklahoma, with CAPE reaching 4500J/kg, and values of vertical winds shear, storm relative helicity etc laying close to the top end of the climate record.

Expected Impacts

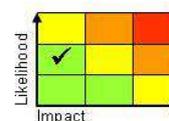
Flash flooding, large to extremely large hail, damaging winds and strong tornadoes are all likely. Disruption to infrastructure as well as transport disruption across the area (including major disruption to aviation) can also be expected. The longevity of this event increased the likelihood of significant population centres being impacted. Another impact could be larger scale river flooding due to already very high river levels through the central part of the USA.

Central America and Caribbean

Southwest Mexico, Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica

Weather

Showers and thunderstorms are likely to remain frequent and persistent across the area over into the middle part of this week. 50-100 mm of rain could fall locally daily, with some areas seeing accumulations of 250 mm of rain. For context, the average rainfall total for Acajutla (Pacific coast of El Salvador) for May is 168.8 mm.



Discussion

The MJO is expected to continue to propagate E across the western hemisphere, ramping up convection as it does so. Activation of the ITCZ looks like being most marked along the Pacific coast of parts of Central America, and it is here that forecast profiles support deep convection. Large amounts of precipitable water are available, as well as copious amounts of CAPE (3000J/kg), the heaviest precipitation this week looks to be associated with the potentially enhanced flow ahead of the potential tropical storm development area.

Expected Impacts

Flash-flooding, landslides in what is a mountainous area, and gusty winds are all likely.

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South America**Colombia and Ecuador****Weather**

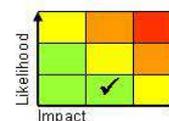
Heavy seasonal rainfall is expected across this region through the coming week with daily rounds of frequent heavy showers and thunderstorms. Where the showers occur most frequently a further 300-400 mm of rain could accumulate, which is close to the average for the whole of May in the wetter Colombian sites.

Discussion

Good model agreement for another spell of heavy seasonal rainfall towards the end of what has been an active rainy season in this region. This active period of weather is likely to be due to the passage of the MJO.

Expected Impacts

Further flash flood and landslide events seem increasingly likely through next week, threatening transport infrastructure and settlements in the region.

**Southeast Brazil, Uruguay, Paraguay and northeast Argentina****Weather**

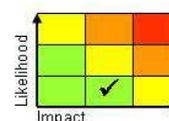
Heavy showers and severe thunderstorms will affect Southeast Brazil, parts of Uruguay, northeast Argentina and Paraguay through much of this week. Whilst not all areas will see the most intense rainfall each day, 50-100 mm of rain could fall in places within a few hours. The average rainfall in this region for May is 100-200 mm.

Discussion

The South Atlantic Convergence Zone will remain active for much of the next week, with a combination of short wave upper trough and the warm WBPTs triggering deep convection across this area.

Expected Impacts

Localised flash flooding and increased chance of landslides in mountainous areas. Large hail, strong winds and frequent lightning are additional hazards which may cause damage to property and disruption to transport and utilities. Parts of this region have seen a wetter than usual rainy season, and so further rainfall could result in river flooding. Although exactly where the heaviest rain will fall is uncertain the area does include some densely populated regions (including Sao Paulo and Rio de Janeiro in the next day or two).

**Africa****Eastern Tanzania and far southeast of Kenya****Weather**

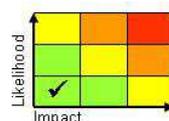
Heavy seasonal rains continue, with numerous showers and thunderstorms drifting into coastal regions off the Indian Ocean, bringing up to a further 100 mm of rain. Over the last few weeks these areas have been much wetter than average (receiving 200-300% of average rainfall amounts). Most of the heaviest rain will be offshore but there is small chance of very heavy rainfall affecting some of the coastal cities here, especially from midweek.

Discussion

The inter-tropical convergence zone will maintain the focus for frequent heavy showers and thunderstorms across eastern Tanzania and the extreme southeast of Kenya. Increasing south-westerly flow to the south of the ITCZ (associated with developing monsoonal flow in the Indian Ocean Basin) will contribute to the enhancement of showers and thunderstorms in this region.

Expected Impacts

Further flash flooding and damage to property and infrastructure is possible in large cities like Dar es Salaam and Mombasa, plus the popular tourist destination of Zanzibar.

**Middle East**

Nil significant.

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Asia

Northeast India, Bhutan and northern Bangladesh

Weather

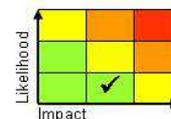
Severe thunderstorms are likely to affect the region during the next week. As well as intense rainfall (up to 150 mm daily although many areas will miss the heaviest rain), large hail and strong winds are possible.

Discussion

Various shortwave upper troughs moving northeast in the sub-tropical jet over northern India and Nepal will lead to destabilisation of the airmass and the development of diurnal thunderstorms. High CAPE and vertical wind shear will aid the development of severe, long-lasting storms, with hail and strong winds additional hazards.

Expected Impacts

Localised flash flooding and increased chance of landslides in mountainous areas. Large hail, strong winds and frequent lightning are additional hazards which may cause damage to property and disruption to transport and utilities.



Japan

Weather

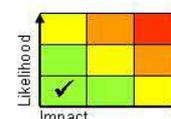
A period of very heavy rainfall is expected to affect parts of Japan through the next 2 days. Up to 250 mm of rain could fall in a 24 hour period, with southern coasts and hills seeing the most intense rainfall. This event could see southern parts of Japan having a month's worth of rain in just 24-36 hours.

Discussion

An active frontal system will gradually track east across Japan through the next 3 days, increasingly forced by an extending upper trough. The combination of the enhanced upper forcing and the strong, moist southerly flow could produce intense rainfall on south facing upslopes of Japan.

Expected Impacts

Flash flooding will be the main threat, but with a lower likelihood of landslides in this pre-monsoon period.



Australasia

Fiji and Samoa – See *Tropical Cyclones* section.

Additional information

Nil.

Issued at: 200750 UTC **Meteorologists:** Ele Hands / Nick Silkstone

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