

REVIEW OF REGIONAL WEATHER (May 2020)

1. Overview

1.1 The rainfall anomalies for May 2020 can be partitioned broadly into northern and southern Southeast Asia (Figure 1). Over northern Southeast Asia (10-20°N), most of the coastal regions and some areas further inland experienced below-average rainfall. As this period marks the start of the Southwest Monsoon season, this could mean a slight delay in the onset of the monsoon season for some parts of northern Southeast Asia. There are differences in the intensity and spatial extent between the two data sources, GSMaP-NRT and CMORPH-Blended. For CMORPH-Blended, the areas with below-average rainfall extended further inland over Mainland Southeast Asia, apart from coastal Myanmar (wetter based on CMORPH-Blended, but drier based on GSMaP-NRT).

1.2 For southern Southeast Asia, most of the Maritime Continent region experienced aboveaverage rainfall amounts. The more intense rainfall was observed over the western Maritime Continent (parts of Java, Sumatra, and Borneo). Over the eastern side (Maluku Islands and West Papua), mostly drier conditions were observed. This large-scale rainfall anomaly pattern (below-rainfall conditions in the north and above-average conditions in the south) is broadly consistent with the predictions in the subseasonal weather outlooks for the <u>first</u> and <u>second</u> fortnights of May 2020, except for the eastern Maritime Continent region.



Figure 1: Rainfall anomalies for the month of May 2020 based on GSMaP-NRT data (left) and CMORPH-Blended data (right). The climatological reference period is 2001-2019. Green colour denotes above-average rainfall (wetter), while orange denotes below-average rainfall (drier).

1.3 Most parts of Southeast Asia experienced above-average temperature during May 2020 (Figure 2). Much warmer anomalies ($\geq 1.0^{\circ}$ C) are concentrated over Mainland Southeast Asia

and West Papua; thus broadly aligned to areas that experienced drier conditions during the same period.



Figure 2: Temperature anomalies for May 2020 based on ERA-5 reanalysis. The climatological reference period is 2001-2019. Red colour denotes above-average temperature (warmer), while blue denotes below-average temperature (colder).

2. Climate Drivers

2.1 The Madden-Julian Oscillation (MJO) retreated from Phase 4 into the unit circle (weak signal) during the first and second weeks of May 2020. The MJO then emerged over the Indian Ocean (Phase 2) in the later part of the second week, weakened momentarily during Phase 3 and Phase 4, and re-emerged to propagate strongly eastwards in Phase 6, Phase 7, and Phase 8 in the last week of May 2020. Typically, the Maritime Continent experiences drier conditions during Phase 6 to Phase 8 of the MJO. For May 2020, this is only true for the eastern Maritime Continent (see 1.2). The western Maritime Continent rainfall anomaly, on the other hand, could have been dominated by the wetter conditions that prevailed in the first three weeks.



Figure 3: The MJO phase diagram. The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator (denoted in the text with the first day of the month in blue and the last day of the month in red). The distance of the index from the centre of the diagram is related to the strength of the MJO. Values within the grey circle are considered weak or indiscernible (data from the Bureau of Meteorology, Australia).

