

Typhoon Predictions for Guam for 2020

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This is the coordinated assessment for tropical storm and typhoon activity for the island of Guam for the remainder of 2020. This assessment is based on independent Pacific-wide typhoon predictions, internal forecast assessments for Micronesia activity, the current and predicted states of the El Niño-Southern Oscillation (ENSO) climate pattern, and the historical tropical cyclone activity associated with past ENSO states. It is prepared for the Government of Guam, Guam citizens, visitors, and other interested parties. These predictions could change over the next few months.

Background: For Micronesia, there is a relatively predictable relationship between tropical cyclone activity and the state of ENSO. In the tropics, tropical cyclones generally move from east or southeast to west or northwest. Thus, if a tropical storm or typhoon develops southeast or east of Guam, it will often track toward the island. If a tropical storm or typhoon develops west or north of Guam, it will usually move away from the island. When an El Niño occurs, tropical storms and typhoons begin to develop earlier in the year and farther to the east toward eastern Micronesia. They tend to move toward the west, west-northwest or northwest, often toward Guam. When a La Niña event occurs, the storms tend to develop later in the year and west of or near the Mariana Islands. In this case, they usually move west or northwest before significantly intensifying. During El Niño events, the chance of Guam getting a direct hit triples when compared to the chance during non-El Niño periods. During an ENSO-neutral state, which is the transition state between El Niño and La Niña, the chance of getting a direct hit by a tropical storm or a typhoon is much better than during La Niña, but not quite as good as during El Niño. In general, the odds of Guam getting a **typhoon** are about 1 in 5 or about once every 5 or 6 years. In El Niño years, the odds are 1 in 3 or about once every 3 years, while in La Niña the odds drop to 1 in 10 or about once every 10 years.

Options: So where are we now? We are now in an ENSO-neutral phase. What do we expect for the future? Most climate forecast models suggest that we will remain in the ENSO-neutral phase through the Summer and into the Fall, then begin to transition to a La Niña phase. Could there be a transition to an El Niño instead of a La Niña? There could be such a transition, and the models are now actually hinting at an eventual El Niño solution. Could we remain in an ENSO-neutral phase? Yes, and that is still a distinct possibility. Since the computer models do not indicate movement toward a moderate to strong La Niña or a moderate to strong El Niño, there is quite a bit of uncertainty in the end-of-year ENSO status and thus in the number and intensities of 2020 tropical cyclones.

Outlook: So, what does all of this mean for Guam?

1. Based on the above assessments, our predictions are for 1-3 tropical depressions or tropical storms to pass within 200 miles of Guam from June through mid-July, followed by 2-3 typhoons to pass within 200 miles of Guam between mid-July and November. The typhoons will most likely be Category 1 to Category 3 typhoons, but a Category 4 typhoon late in the season is possible. The uncertainty in the late Fall to early Winter ENSO status (continuing ENSO-neutral or moving to an El Niño phase or to a La Niña phase) should extend the typhoon season to the end of November. Typhoon tracks should become more equatorward by December, reducing the threat for Guam.

2. For the occurrence of actual winds on Guam, we offer the following. For the remainder of the year, there is a 50-60% chance (1 event every 1.5-2 years) of getting a strong tropical storm (sustained winds 50-73 mph) and a 25-30% chance (1 event every 3-4 years) of getting a Category 1 typhoon (sustained winds 74-95 mph). The chance of getting a Category 2 typhoon (sustained winds 96-110 mph) is about 15-18% (1 event in 6-7 years), while the chance of getting a Category 3 typhoon (sustained winds 111-129 mph) is around 8-10% (1 event every 10-13 years). Chances of getting a Category 4 typhoon (sustained winds 130-155 mph) is around 3-4% (1 event every 25-35 years) and finally, the chances of getting a Category 5 (sustained winds 156-195 mph) is less than 1-2% (1 event every 50-100 years). These percentages will likely need to be fine-tuned as the season evolves. Tropical cyclone activity for Guam could begin around early summer, but keep in mind that weather patterns in our area can change quite rapidly. We are located in the only basin that can get a typhoon any month of the year. Upper atmospheric wind patterns have finally become those favorable to tropical cyclone development. Thus, the odds of getting a few severe tropical storms and/or a Category 1 or 2 typhoon on Guam is actually pretty good with the evolving weather patterns.

3. The continuation of ENSO-neutral into the Fall should keep sea levels relatively near normal with only small fluctuations. This should minimize the threat of coral bleaching for the remainder of 2020.

4. The below normal rainfall we experienced in the first half of 2020 has transitioned to near normal rainfall, which we expect will likely persist through the end of the year.

Keep in mind that these predictions can change as the year progresses.