Climate Discussion for March 2020

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Valid: February 28, 2020

Current forecasts suggest that the NAO (Figure 1) will be in a neutral or slight positive phase in the beginning of March, which means that its impact on precipitation and temperature will likely be small. However, the GFS ensemble forecast suggests that the NAO will return to a positive phase after early March, favoring warmer-than-normal conditions across the Southeast, Southwest, and Mid-Atlantic United States. The likelihood for warmer-than-normal conditions across the Southeast United States will be enhanced by a negative PNA pattern that is forecast to occur during the first half of March (Figure 2). The negative PNA phase will weakly favor drier-than-normal conditions along the East Coast United States.

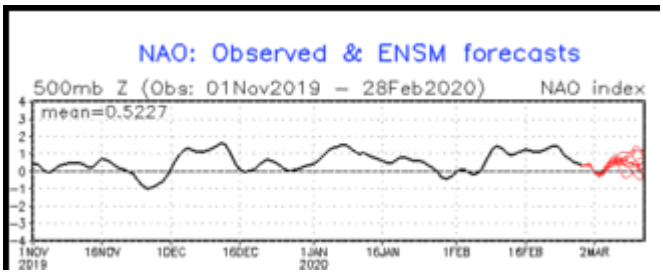

Figure 1. 14- day NAO ensemble forecast from the Climate Prediction Center.

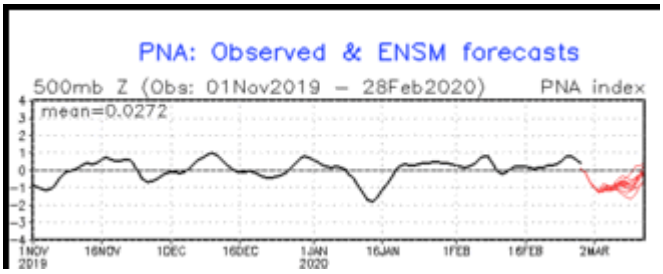

Figure 2. 14-day PNA ensemble forecast from the Climate Prediction Center.

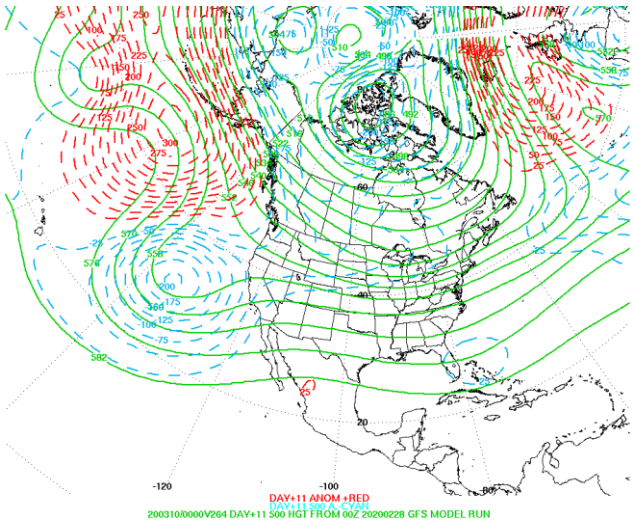

Figure 3. 11-day 500 mb GFS geopotential height forecasts obtained by applying a 7-day mean centered on the 11-th day.

The current 11-day forecast for 500-mb geopotential height anomalies (Figure 3) suggests that geopotential heights will be near normal across the eastern United States and below normal across Northern Alaska. The forecast negative 500-mb geopotential height anomalies across Alaska are more intense than those across the eastern United States so that the ridge-trough dipole index is forecast to be positive, which increases the odds of warmer-than-normal conditions occurring across the eastern United States. Without strong ridging over Alaska, it will be impossible for a strong surface anti-cyclone to develop across western Canada, which is necessary for the intrusion of Artic air into the eastern United States. Based on the NAO, PNA, and 500-mb geopotential height forecasts, I think the eastern, south-central and southwest United States will experience above-average temperature conditions for the first half of March.

For the past month, equatorial Pacific SST anomalies have been positive around the date line and near climatological elsewhere across the equatorial Pacific (Figure 4). This pattern corresponds with a negative trans Nino index and a central Pacific El Nino. This pattern does not favor colder-than-normal or warmer-than-normal conditions across the eastern United States. Similarly, the current SST setup does not favor drier-than-normal or wetter-than-conditions across the eastern United States. Thus, I am not giving SST anomalies any weight in my March prediction.

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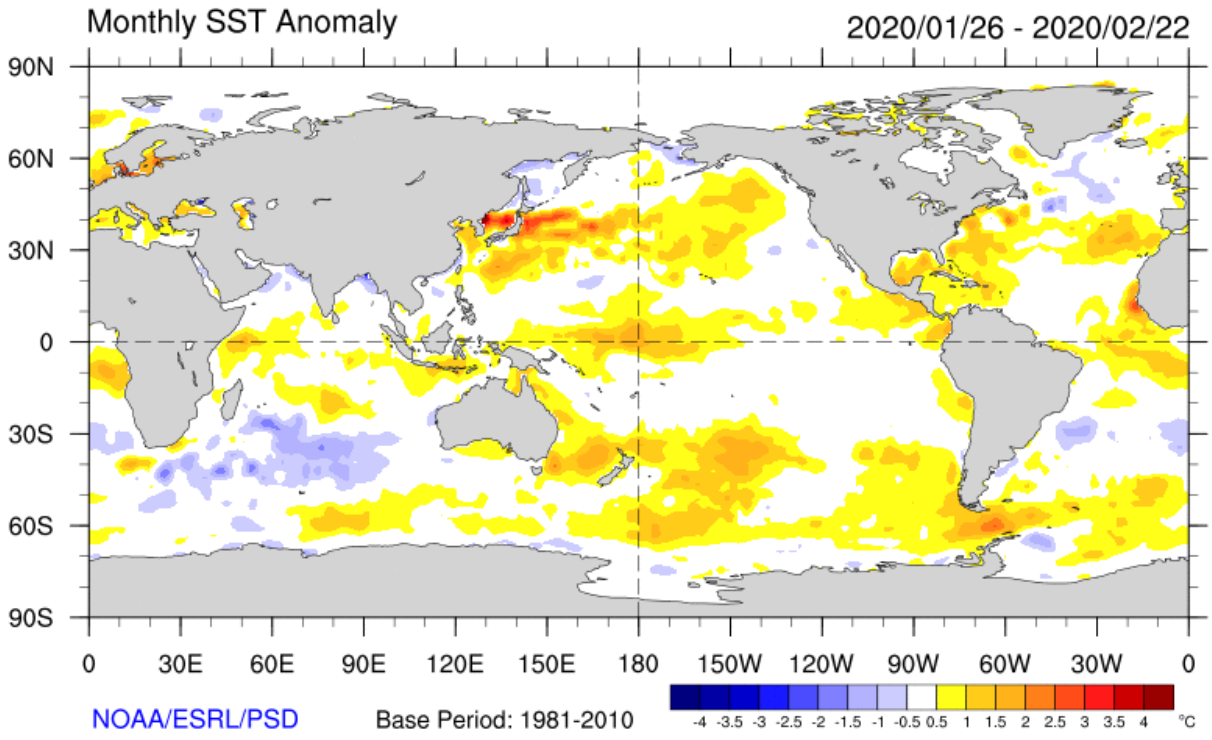

Figure 4. SST anomalies over the course of the last month.