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Corrigendum to "Subseasonal midlatitude prediction skill following Quasi-Biennial Oscillation and Madden–Julian Oscillation activity" published in Weather Clim. Dynam., 1, 247–259, 2020

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An error was found in the STRIPES calculation, which has now been corrected, resulting in different Figs. 2 and 3 as well as different spatial correlation coefficients between the STRIPES values for ERA-I and both ECMWF and NCEP. The section with the now corrected values and the corrected figures are shown below.

3 Results

3.1 Extratropical sensitivity

Figure 2a, c, and e show the STRIPES analysis of ERA-I for days within the ECMWF hindcasts, split by QBO phase. Darker shading indicates regions of greater sensitivity to the MJO for each QBO state. Regions along the North Pacific and Atlantic storm tracks as well as over North America are highlighted by STRIPES following the MJO for all phases of the QBO (Fig. 2a, c, e). This is consistent with previous research as these regions have been shown to be sensitive to MJO excited Rossby waves through, for example, their modulation of the North Atlantic Oscillation (Cassou, 2008), the Pacific North American Oscillation (Mori and Watanabe, 2008) and Northern Hemisphere wintertime blocking (Henderson et al., 2016). Interestingly, the Pacific and Atlantic sectors have similar STRIPES values. One may expect higher STRIPES values over the Pacific compared to the Atlantic since the Pacific is generally known to have a strong response to the MJO. We hypothesize that the Atlantic and European sectors also have similar STRIPES values to that of the Pacific due to enhanced blocking over the Atlantic and Europe at later leads following the MJO (Henderson et al., 2016). Since the STRIPES index accounts for all leads as well as the strength and consistency of the z500 anomalies, we therefore may expect STRIPES values over the Atlantic and European sectors to be large as well.

Figure 2b, d, and f show the STRIPES analysis of the ECMWF hindcasts for the same dates. ECMWF largely captures the spatial patterns and locations sensitive to the MJO under different QBO phases (spatial correlation with ERA-I: $r_{\text{NQBO-MJO}} = 0.94$, $r_{\text{EQBO-MJO}} = 0.93$, and $r_{\text{WQBO-MJO}} = 0.96$), but overall the model has smaller STRIPES values than ERA-I. This is likely a result of model forecast degradation at later lead times since the calculation of STRIPES utilizes z500 forecasts out to 28 d lead time.

An examination of the NCEP hindcasts shows that it also generally captures regions sensitive to the MJO under varying phases of the QBO (Fig. 3b, d, f; spatial correlation with ERA-I: $r_{\text{NQBO-MJO}} = 0.93$, $r_{\text{EQBO-MJO}} = 0.92$, and $r_{\text{WQBO-MJO}} = 0.93$) and is also weaker than the corresponding ERA-I analysis (Fig. 3a, c, e). The ERA-I STRIPES analysis for NCEP hindcasts largely has the same features as the ERA-I analysis for ECMWF hindcasts, but with larger values due to differences in sample size and dates of initialization between NCEP and ECMWF. From this STRIPES comparison (Figs. 2 and 3), we conclude that the ECMWF and NCEP hindcast models generally capture Northern Hemisphere regions sensitive to the MJO as highlighted by large spatial correlations between each model and ERA-I.

Recent research has shown that during EQBO, the MJO amplitude is larger and the convective envelope propagates slower compared to MJO activity during WQBO (Son et al., 2017; Nishimoto and Yoden, 2017; Zhang and Zhang, 2018).

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If direct impacts to the MJO (e.g. through changes in upper tropospheric tropical static stability) lead to changes in MJO teleconnection sensitivity across the Northern Hemisphere, we might expect EQBO-MJO events to have larger midlatitude sensitivity to the MJO compared to WQBO-MJO. Instead, we find that Northern Hemisphere sensitivity to the MJO is significantly reduced during EQBO-MJO events compared to WQBO-MJO events (compare Figs. 2c, e and 3c, e; significance of difference not shown). We explored this further and found that this difference can largely be explained by the tendency for WQBO to have larger magnitude z500 anomalies compared to EQBO, not more distinct stripes. This is likely due to the larger sample size during EQBO (Table S1) leading to reduced noise in the average. Therefore, when the amplitude differences between the z500 anomalies are accounted for through normalization, the difference in Northern Hemispheric sensitivity to the MJO between QBO phases is greatly reduced (Fig. S3).

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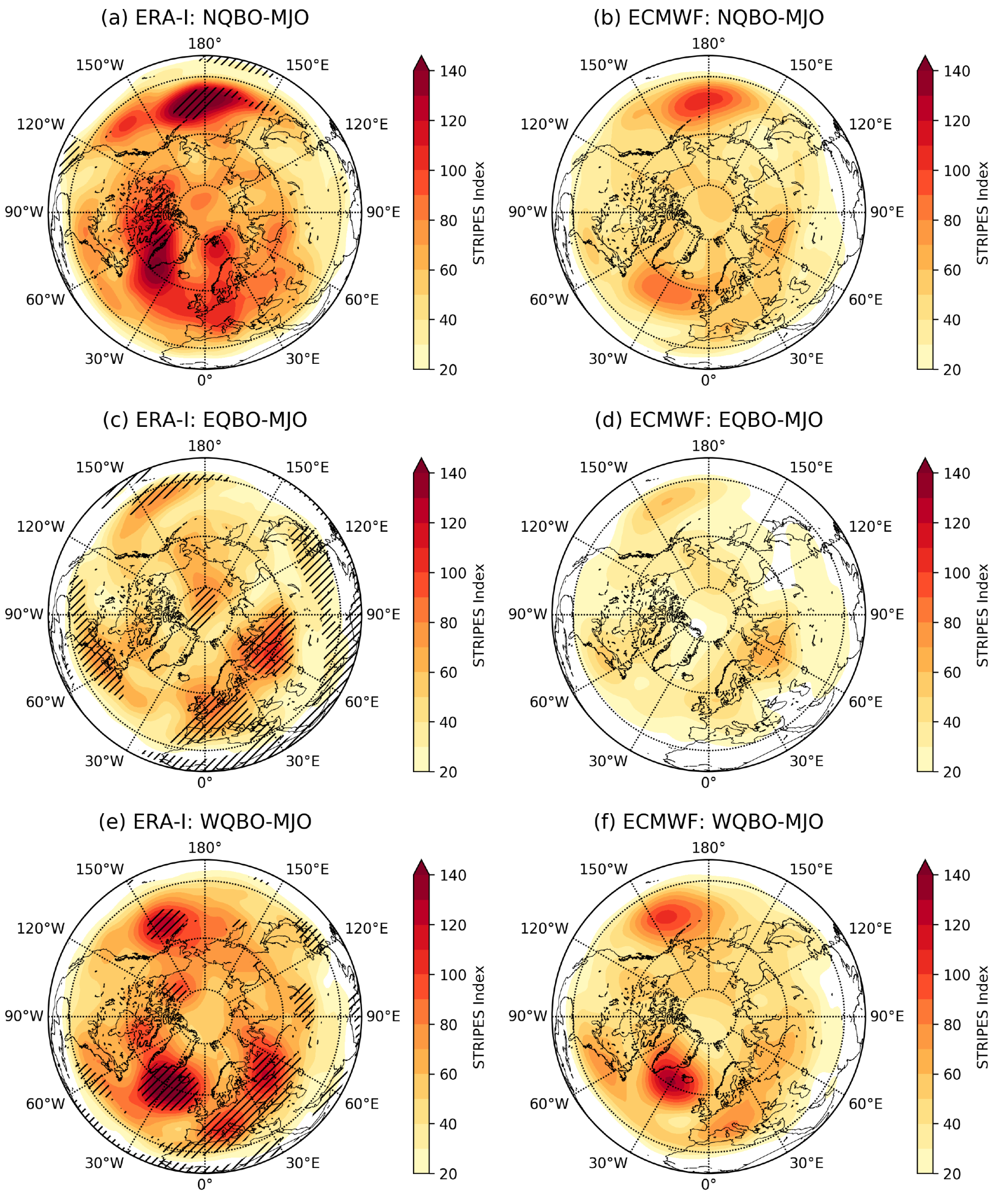

Figure 2. STRIPES values for **(a, c, e)** ERA-Interim and **(b, d, f)** ECMWF for all **(a, b)** NQBO–MJO, **(c, d)** EQBO–MJO, and **(e, f)** WQBO–MJO events. **(a, c, e)** Black hatching denotes STRIPES values that are statistically larger than expected by chance at 90 % confidence in ERA-I. Significance is only calculated for ERA-I.

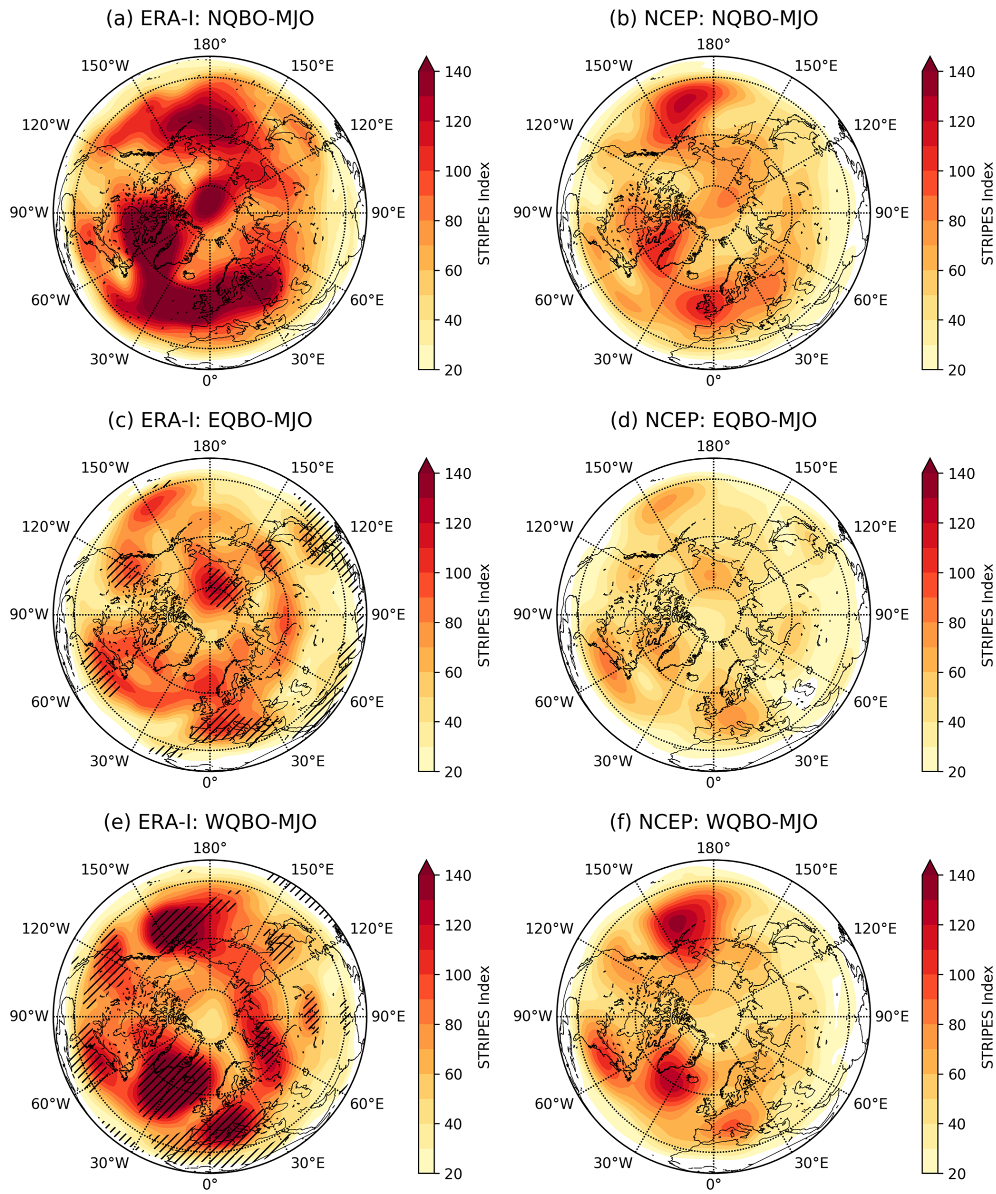

Figure 3. STRIPES values for **(a, c, e)** ERA-Interim and **(b, d, f)** NCEP for all **(a, b)** NQBO–MJO, **(c, d)** EQBO–MJO, and **(e, f)** WQBO–MJO events. **(a, c, e)** Black hatching denotes STRIPES values that are statistically larger than expected by chance at 90 % confidence in ERA-I. Significance is only calculated for ERA-I.