

# Evaluating Climate Models with the CLIVAR 2020 ENSO Metrics Package

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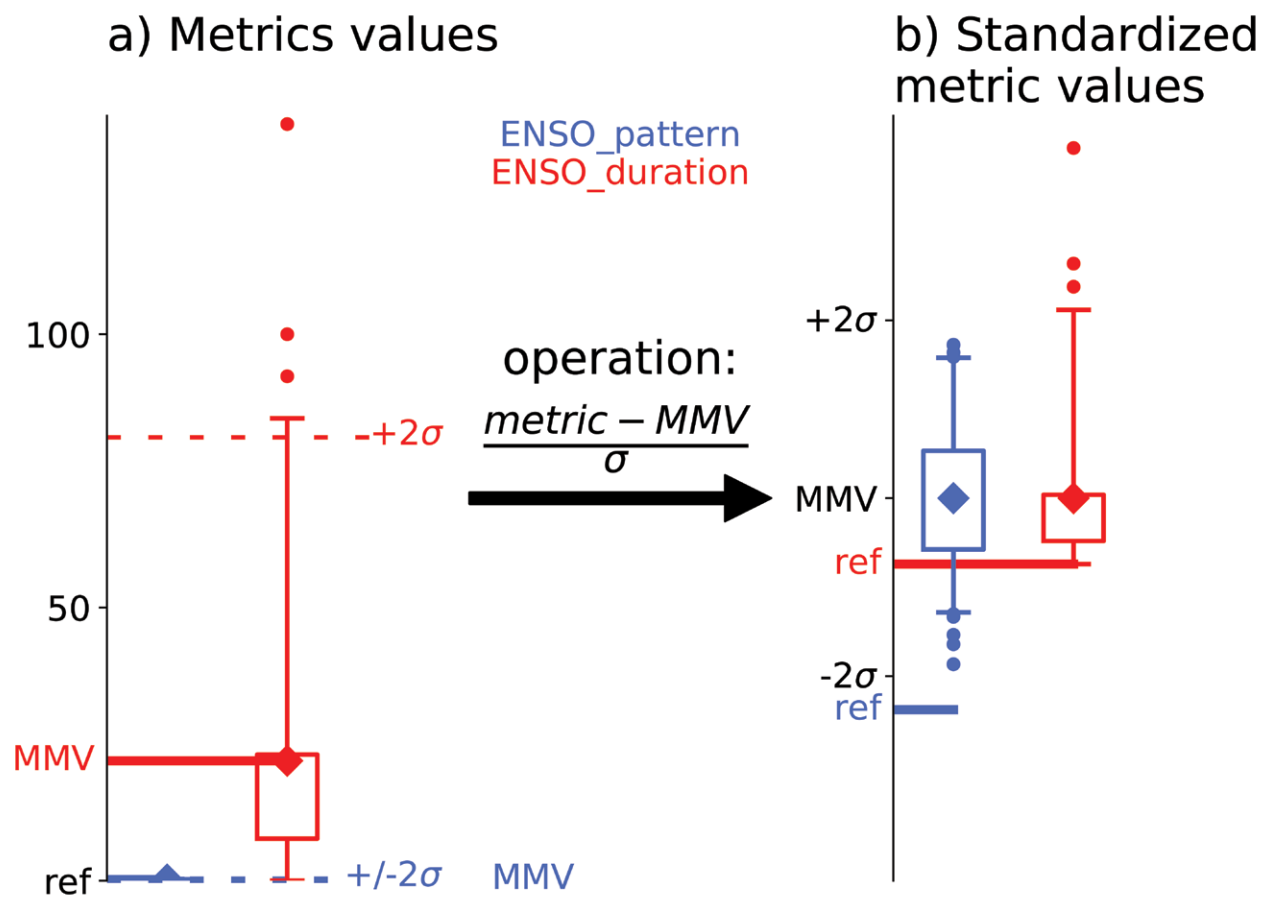
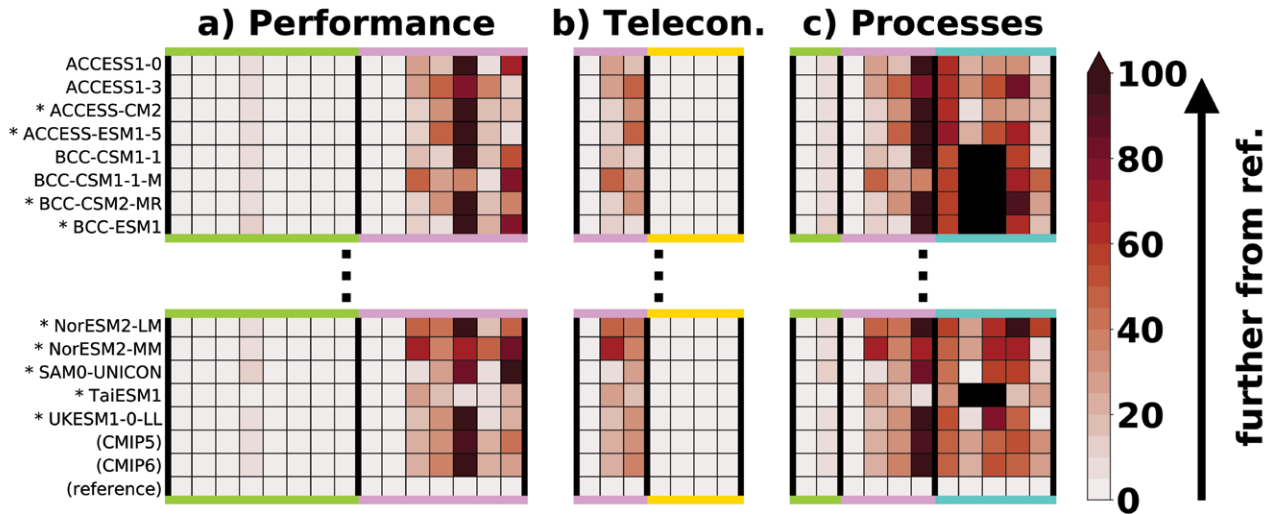


Fig. ES1. Illustration of the challenge to display several metrics in a single figure, showing the need to standardize the distributions for the portrait plot. (a) Metrics distributions of ENSO\_pattern (blue) and ENSO\_duration (red), and (b) standardized metric distributions. In each distribution, the mean metric value (MMV) is removed and values are normalized by the standard deviation ( $\sigma$ ) as in Fig. 2.

# Metric values



# Standardized metric values

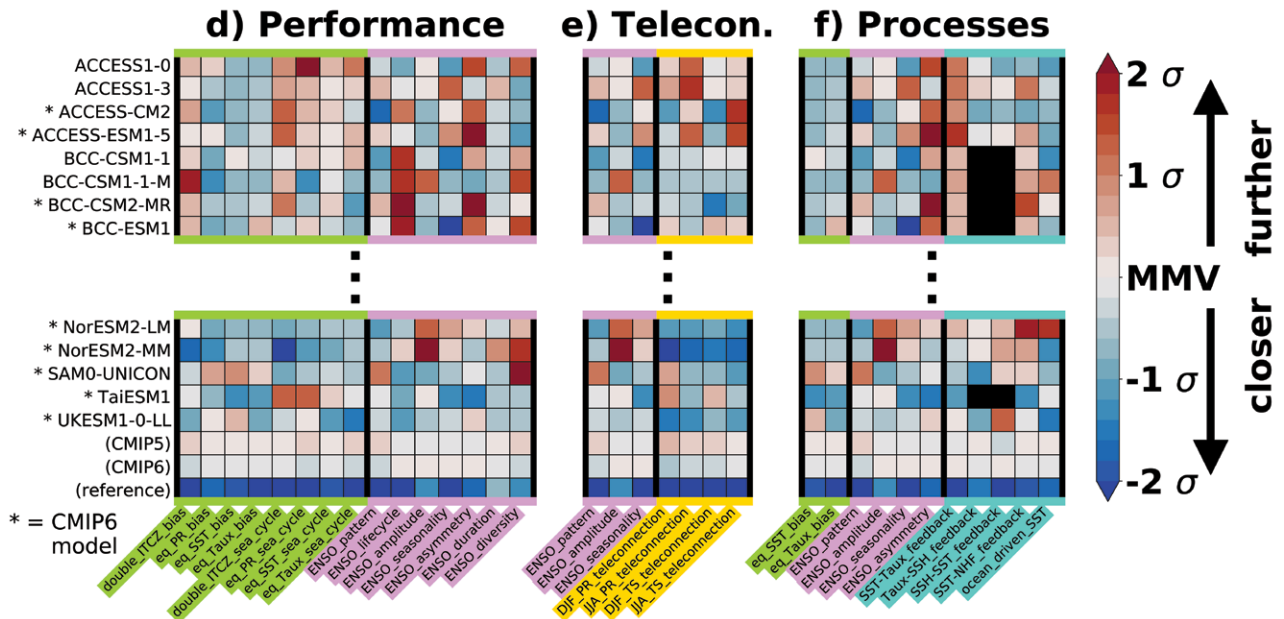


Fig. E52. A single colorbar with actual metrics values (top) does not support efficient distinguishing of differences at metrics values across models, so we standardized each distribution (bottom). Portrait plots showing the (a)–(c) metric values and (d)–(f) standardized metric values. In each column, the mean metric value (MMV) is removed and values are normalized by the standard deviation ( $\sigma$ ) as in Fig. 2.