EGUsphere, referee comment RC2
https://doi.org/10.5194/egusphere-2022-555-RC2, 2022

Comment on egusphere-2022-555

Anonymous Referee #2

Referee comment on "Subseasonal precipitation forecasts of opportunity over southwest Asia" by Melissa Leah Breeden et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-555-RC2, 2022

Subseasonal precipitation forecasts of opportunity over southwest Asia

By Melissa Leah Breeden et al.

General comments

The authors investigate sub-seasonal forecasts of opportunity for precipitation over southwest Asia using expected forecast skill from a Linear Inverse Model, in addition to assessing forecast skill at lead times beyond two weeks associated with potential sources of predictability, such as ENSO and the MJO.

The text is well written and discussed, demonstrating the contribution of this work to previous research and comparing its results with other authors. The applied methodology is clear and well-founded. This reviewer's opinion is favourable to the publication of this article, and only minor revisions are requested.

Specific comments

L19. South Pacific Convergence Zone (SPCZ)

L57. The European Centre for Medium-Range Weather Forecasts (ECMWF) - Integrated Forecasting System (IFS)

L59. North Atlantic Oscillation (NAO)

L78-L79. 2mT, OLR, and SST already defined in L64

L80. Climate Hazards InfraRed Precipitation with Stations (CHIRPS; Funk et al. 2015)

L82-L83. Suggest including "(Trenberth, 1997; Trenberth and Stepaniak, 2001)" when defining the Niño 3.4 index.

Trenberth, K.E. (1997) The definition of El Niño. Bulletin of the American Meteorological Society 78(12):2771–2778. https://doi.org/10.1175/1520-0477(1997)078<2771:TDOENO>2.0.CO;2

Trenberth, K.E. and Stepaniak, D.P. (2001) Indices of El Niño evolution. J. Clim. 14(8):1697–1701. https://doi.org/10.1175/1520-0442(2001)014<1697:LIOENO>2.0.CO;2

L283-L284. 18 days is also the timescale when the full atmospheric response to tropical diabatic heating anomalies is seen (Jin and Hoskins (1995)). Suggest including such information.

Jin and Hoskins (1995). The Direct Response to Tropical Heating in a Baroclinic Atmosphere, https://doi.org/10.1175/1520-0469(1995)052<0307:TDRTTH>2.0.CO;2

L290-L293. Wonder whether using the zonally asymmetric stream function component (i.e., zonal mean removed) can better represent the atmospheric circulation response to tropical diabatic heating anomalies. Suggest replicating such an evaluation using stream function anomalies without its zonal mean (same as for section 3.2.2)

L293-L296. A dry linear baroclinic model could be a useful tool to assess the contribution of tropical heating anomalies over the Indian Ocean and West Pacific in modulating the atmospheric circulation response to southwest Asia (suggest including such an evaluation as potential future assessments).

I am also interested in seeing the global regression pattern between precipitation anomalies in southwest Asia and OLR/stream function anomalies considering the entire period. This would provide the overall lead/lag observed relationships, supporting the composite results.

Fig. 9. Hard to see the SST contours (L623. Add “c” after red/blue).

L319. Change “anoamlies” with “anomalies”

L340. Suggest including additional information here, such as: Moreover, using a dry linear baroclinic model provides the reader with a deep understanding of the role played by the basic state and thermal forcing in producing the circulation anomalies under different ENSO conditions.