This paper proposed to investigate the relationship between the Boreal Summer Intraseasonal Oscillation and the monsoon low-pressure systems, which is a novel topic with respect to the dynamics near the Indian ocean. The authors studied the precipitation, water vapor, vorticity and the SLP genesis during all eight phases of BSISO and selected phases 2 and 5 as representatives of opposing phases. The energetics was then illustrated through linearization and omega function based on the two typical phases. The nonlinear features in the vertical velocity and vorticity within the SLPs were highlighted by subtracting the linear part from the full fields.

The manuscript is nicely drafted but still has some problems that need to be fixed before publishing

Major opinions:

1. Are Figures 1,2 and 3 colorblind-friendly? I know you are trying to use rainbow colors to represent different phases but should be careful with the selection of colors. It looks a bit messy especially when you assign three levels of brightness to each color.
   This is a fair comment from the reviewer, and clearly any figure using a wide range of hues will not be accessible to sufferers of dichromacy or monochromacy. However, we do note that for sufferers of protanomaly – the most common form of colour blindness (anomalous or weak trichromacy in the red cones) – Figs 1-3 are still readable. This is because the hue degeneracy occurs only between phases 7 and 8, as we show in Fig R3.1 (below) by applying a colour-blindness projection to our original Fig 3.

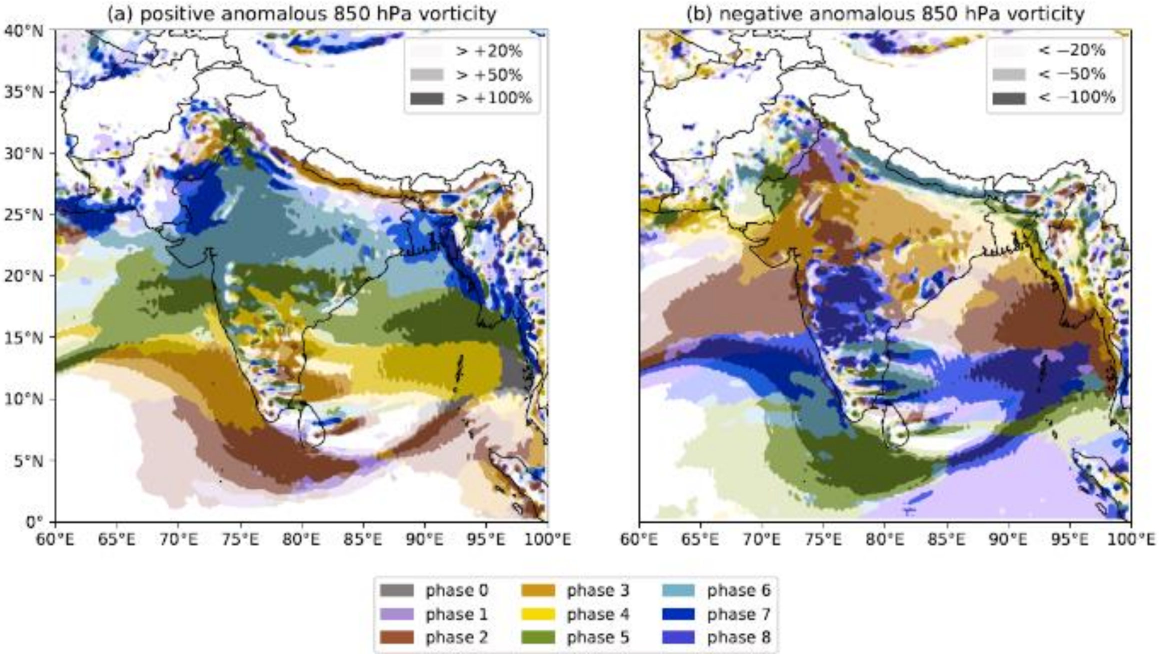


*Figure R3.1*

Here are two potential options to better show these plots:

1). Instead of using darkness or brightness to represent the intensity, try using contours with different line types, for example, the one on the left, use dashed contours for >20%, solid contours for 100% and no contours for 50%

We test this suggestion in Fig R3.2 below, which is analogous to Fig 3 in our original paper. We believe this makes the plots less clear since line contours do not contain directional information, meaning the reader does not know which side of each solid line is less than or greater than a ±100% anomaly. We do not, therefore, adopt this suggestion.

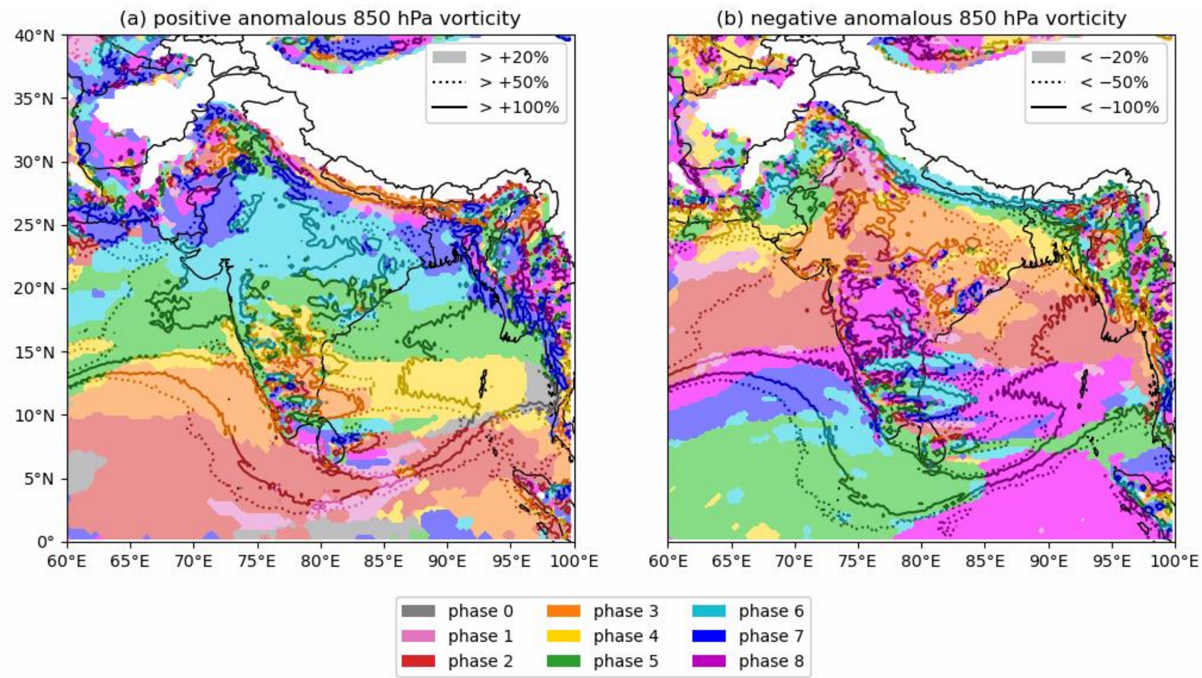


*Figure R3.2*

2). Separate each plot into three according to the intensity.

We test this suggestion in Fig R3.3 below, which is again analogous to Fig 3 in our original paper. Presenting the three thresholds in different plots makes intercomparison more difficult and would massively inflate the number of (sub)figures we use in Figs 1-3 from six to eighteen. For these reasons, we do not adopt this suggestion.

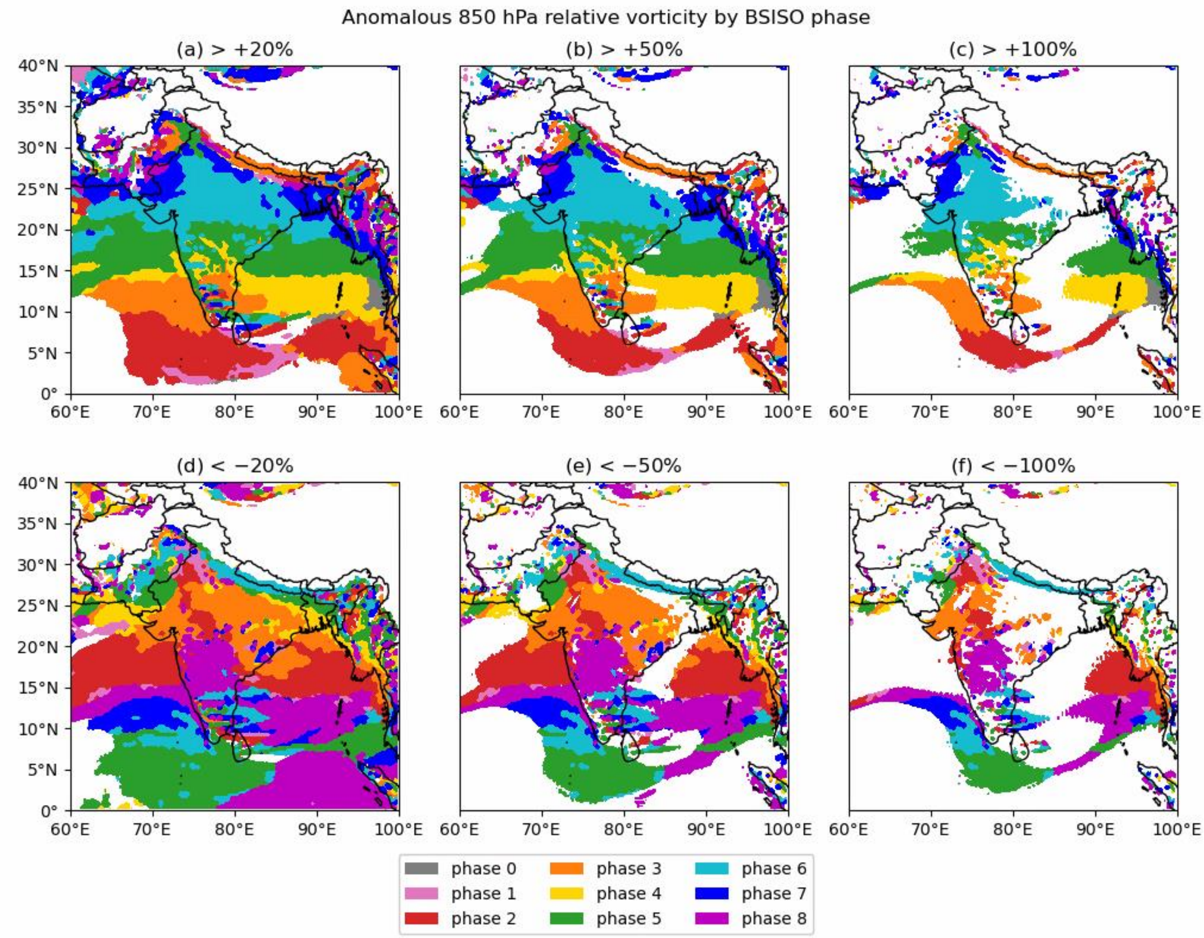


*Figure R3.3*

Instead, we suggest a compromise, allowing us to keep the number of subfigures in the paper low but also to provide a friendly option for colour blindness. For each of Figures 1-3, we will provide a supplementary figure that decomposes the anomalies by phase (following the style used in our original Figs 6 and 7). An example of this construction is given (again for Fig 3) in Fig R3.4.

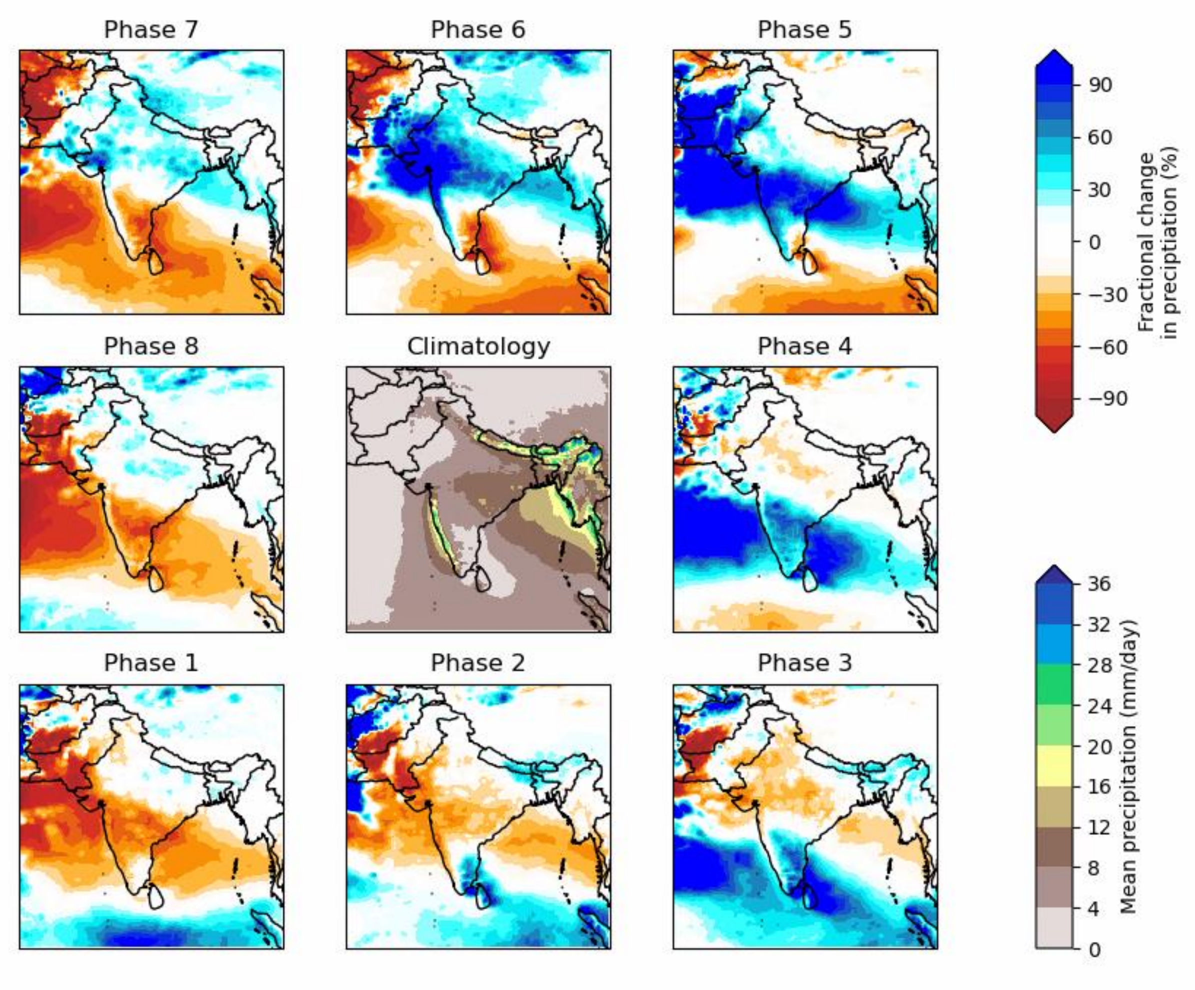


*Figure R3.4*

2. In line 34, you stated that BSISO is identical to MJO.
   This is not true. In line 34, we stated "Like the MJO (Wheeler and Hendon, 2004), it is typically separated into eight phases, representing octants of the phase space describing its leading modes of variability." While the BSISO and MJO share many similarities, here we only inform the reader that they are often represented in the same way (i.e. using a Wheeler-Hendon plot, or using a 1-8 integer phase numbering system).

   The phases of MJO are usually shown by the outgoing long-wave radiation, how about BSISO? Is it often shown by OLR or precipitation or any other fields? Can you make a schematic plot to show the eight phases? An amplitude-latitude or an amplitude-time or a time-latitude diagram is suggested when introducing the eight phases.
   Figures 1-3 serve as our introductory plots, concisely showing the

development of the BSISO (more-or-less as time-latitude maps) and its impacts over monsoonal South Asia. I don't really see the benefit to the reader of recycling this information into a fourth introductory plot, especially as such figures are already available in the Kikuchi et al (2012, 2021) and Lee et al (2013) references, to which the reader is directed in the introduction. No change has been made here.

3. In Line 64. The "symmetric" feature also exists in part of the TCWV. So it is not plausible enough to be considered a "difference".
   We agree with the reviewer here, and have revised the analysis accordingly: "We also note the effect on both vorticity and TCWV is almost equal and opposite when three BSISO phases apart, even though the effect is much weaker on the latter. For example, the region of enhanced vorticity south of India and Sri Lanka associated with phase 2 is similarly suppressed in phase 5 – and thus the circulation response to `active' and 'suppressed' BSISO phases is approximately symmetric"

Minor opinions:

1. A typo at Line 59, should be Fig.3.
   Corrected. Thank you.
2. It should be marked when the first time the abbreviation "TCWV" shows up.
   Agreed, we have made this change.
3. Please write the full name of BSISO in the title.
   We can make this change, but we note that 16 papers have been published with the abbreviation in the title, including in GRL (doi:10.1029/2018GL078321) and the Journal of Climate (10.1175/JCLI-D-20-0308.1). We defer to the Editor's preference here according to journal style.
4. Please write the full name of ERA5 in the subtitle in Line 90
   We have replaced this subtitle with: "ERA5: the fifth generation ECMWF global reanalysis"
5. When you say the LPS genesis is half a phase behind the vorticity maxima from Line 140 to 145, what do you mean by "half a phase". Can you do a lag regression to show that? Show the order of water vapor, vorticity and LPS genesis reaching their maxima using lag regressions or any better method.
   We have added a footnote in the revised manuscript to explain what we mean by fractional phases: "Recall that BSISO phase numbers are discretised from a continuous circular distribution, with e.g., 'phase 3' including phase numbers between 2.5 and 3.5. In the discrete space used in our maps, half a phase is the difference between being in the spatial centre of a phase and being at its boundary."

To answer the second part of the reviewer's comment, we further leverage these fractional – or continuous – phases. For reference, we provide a comparison between continuous phases and the standard eight discretised phases in Fig R3.5 below.

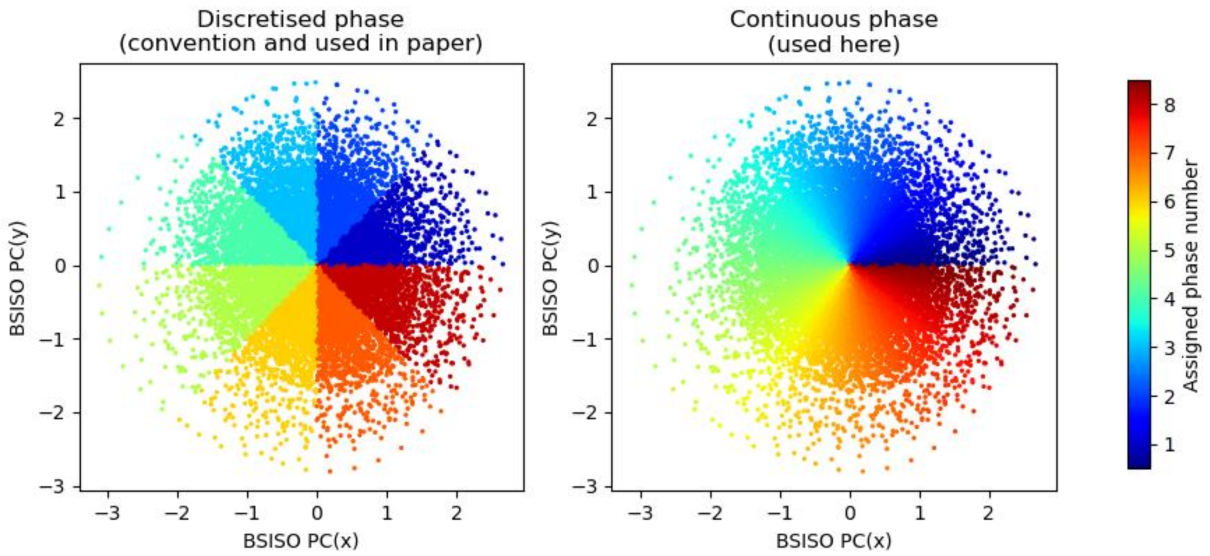


*Figure R3.5*

We now choose an appropriate sampling region – here using a 4°x4° box centred over Sri Lanka, following the text in L140-145, and making sure the region is large enough to reduce noise but small enough that it distinctly captures phase passages. We then take mean TCWV, relative vorticity, and precipitation over this box, using LOWESS smoothing to show them as functions of continuous BSISO phase in Figure R3.6. In addition, we plot a Gaussian kernel density estimate of LPS genesis rate (black). Vorticity leads, peaking at about 1.0; followed by LPS genesis, peaking at about 1.5; followed later by precipitation and TCWV, each peaking between 2.5 and 3.0. For brevity, we do not include these figures or analysis in the revised paper, but we do add a sentence summarising them at the end of the lines in question: "This pattern is confirmed through composite lag analysis using continuous BSISO phases (not shown)."

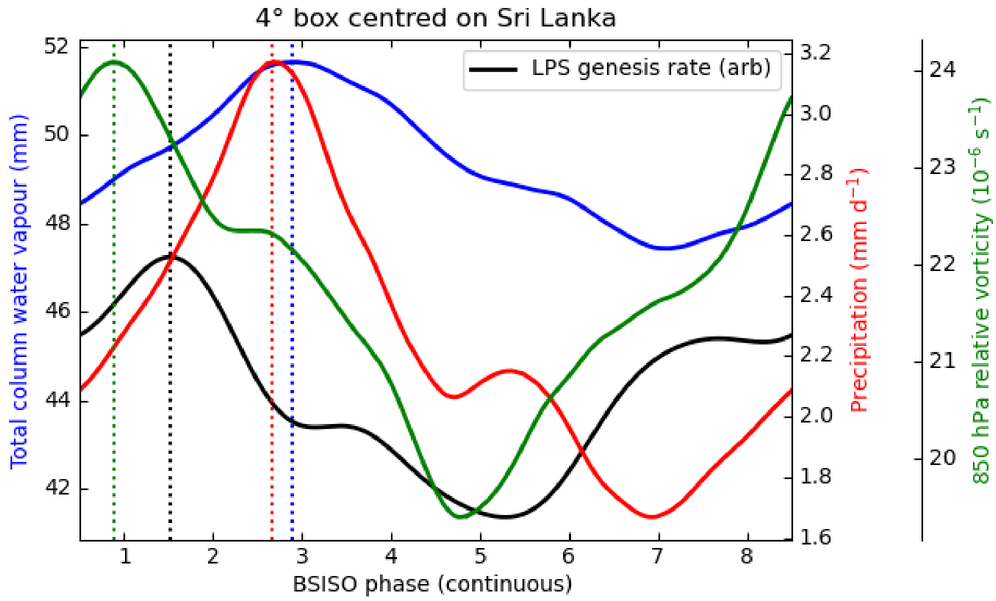


*Figure R3.6*

6. A question: why do you use relative latitudes and longitudes instead of the absolute ones in most of your plots? If you would like to state the topologies and locations, the absolute ones would be more helpful.
   Use of relative latitude and longitude (or geodesic) coordinates is conventional for storm-centred composites, e.g. for tropical cyclones (doi:10.1175/1520-0469(1981)038<1132:OAOTCF>2.0.CO;2), extratropical cyclones (doi:10.1175/MWR3082.1), and even Rossby waves (doi: doi.org/10.1175/MWR-D-12-00012.1).

   Neither of the ways of presenting absolute lons/lats possess a clear advantage. We could either take absolute in the literal sense, making an Earth-relative composite instead of a storm-relative composite. Given the relative footprint of LPSs is considerably smaller than the region in which they can be found, this would result in a smearing out of dynamical signals. Alternatively, we could simply add the mean LPS longitude and latitude to create a hybrid "absolute" coordinate, still storm-centred but with the origin shifted to (84°E, 19°N). But this would be misleading – a reader may then construe a point marked at (85°E, 27°N) to be in the Himalayan foothills, whereas in fact it is only that point convoluted by the track density function which may actually be as far south as 13°N (south India) or as far north as 35°N (Tibetan Plateau). For these reasons, no change has been made here.

I'm looking forward to seeing your response to the abovementioned questions.