‘Indications for a potential synchronization between the phase evolution of the Madden-Julian Oscillation and the solar 27-day cycle’ review by Indrani Roy

It is a very well written paper. I think the authors have addressed all the issues that we mentioned. Hence, I am in favour of publishing it after minor revision.

Line 11, page 27: You mentioned, ‘Note that the influence of the 11-year solar cycle on the analyzed relationship would have been also of interest. Unfortunately, the number of remaining 27-day cycles in the analyzed 38-year period was not sufficient to apply this additional filter, so that this aspect: was not further investigated here.:’

However, the main purpose was not to find the influence of 11 year solar cycle but to eliminate the solar 11 year background signal which is present on top of 27 day cycle. It is to note that solar 11 year Min and QBO Ely combination in upper stratospheric winter polar temperature showed certain specific behaviour (Labitzke and van Loon, 1992).

Also, similar argument is mentioned in Page 13, line 14 and revise those statements.

Relating to Table: It is ok to skip a Table, as long as readers know the number of data points for the signal you noted. This study is for 38 years. There are four combinations: solar Max/Wly, Max/Ely, Min/Wly and Min/Ely; that means each combination roughly has 9 years each. Moreover, the signal you noticed is only for winter. You mentioned: ‘The MJO appears to cycle through its 8 phases within 2 solar 27-day cycles.’ (Page 1, line 12). The mean periodicity of the MJO is with 50 to 60 days (line 7, page 4). It can give a brief idea of how many data points in those Min/Ely will have for a particular threshold/ transition of the MJO phase. That knowledge will be useful to indicate significant results.

Fig. S15: Correct the figure legend, ‘It is obvious that the choice of the pressure level, at which the wind data is evaluated to define the QBO state, does qualitatively not influence the conclusions.’ It would be ‘….conclusions for solar Minimum years-Ely phase.’ Also, mention that for QBO Wly-Min, it is significant for MJO strength1.0 to 1.1 for QBO 30 hPa.

Fig. 6: Minimum MJO strength significant only between 1.4 to 2.1; but in Fig S15 it is 1.0 to 2.1. Mention in the legend if the change is due to a larger y axis scale.

Fig. S 15: Authors did a calculation using QBO Ely (30 hPa) only in Solar Min. Following Labitzke and van Loon (1992) and Camp and Tung (2007), as I mentioned in my last review, if there is any difference due to change in QBO height, it is likely to reflect in Solar Max Ely phase.

Following the same reason, Fig S3 could have been different in QBO 30 hPa for Max.

However, it is not the main focus of this analysis and can be verified later. You can mention it as a comment here to verify for future work.

Solar ‘Bottom-up Mechanism’: In the solar bottom-up mechanism it is better to include ‘tropical Pacific’. Lately, that hypothesis is also discussed with schematic by Meehl (2008, 2009) involving tropical Pacific Nino SST, change in Walker circulation and trade wind etc.

Meehl et al. (2008): A coupled air-sea response mechanism to solar forcing in the Pacific region, J. Climate., 21(12), 2883-2897.

Meehl et al (2009): Amplifying the Pacific Climate System Response to a small 11-year Solar Cycle Forcing. Science,