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Hydrology and Earth System Sciences Discussions

Interactive comment on "El-Niño southern oscillation and rainfall erosivity in the headwater region of the Grande River Basin, Southeast Brazil" *by* C. R. Mello et al.

Anonymous Referee #1

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Comments to the authors

Unfortunately, I don't think there is enough scientific evidence to demonstrate the assumptions made by the authors in the paper. Read the detailed major and minor concerns I have.

Major concerns:

For each variable, there is only 24 monthly values. This is too few to be statistically significant. Justification is necessary. The problem is that there is not enough interannual variability in the analysis. The t-test gives only the statistical significance of the

correlation analysis per se given the used sample size, which is different than is the correlation represents the interannual variability. I recommend to increase the historical record of rainfall depths at least. These data is available since rainfall was measured at daily basis before 2006. This may give some extrapolation to the other variables although is not guaranteed. ENSO is not well defined in the text in terms of time. I mean in what month/year a given ENSO event is defined to begin and to finish? P10716L9-11: Move to Introduction Section. P10716L11-20: Move to Data and Methods Section. P10717L22-23: How a global weather anomaly can affect PSM region and not MR region if they are so close? P10717L20-22: Two out of five years are considered outliers by the authors. This makes the lack of data even weaker. P10717L290P10718L1: What this means? P10718L1-2: Authors assume this without data to backup their assumption. P10718L3-8: This is just an assumption. Authors can't assume this with only 5 years of data. P10718L19-21: Why not to use a Principal Component Analysis using Reanalysis, between this los pressure nuclei adjacent to the coast and the indices? This information is available since 1949. P10719L3: Reference needed. P10719L5: Is 22.6% statistically significant? P10719L9: All convective rainfall are due to cumulus formation. This do not justify the early rainfall patterns. P10719L20 - P10720L13: Move this to Methods Section. To justify the validity of this research, authors compare their results to an unknown published Master degree thesis of Aquino 2005, which is not published and unavailable. P10720L14-28: There are too many outliers in the data for a Pearson's correlation analysis. P10721L1-17: Better than correlation, in this case it is better to use contingence tables. P10721L18 - P10725-L17: Everything is descriptive. Unfortunately there is no science here, just assumptions from a very short historical record. Authors can't justify their assumptions.

Minor concerns:

Add sample size to all rows in tables. Captioning Figure 2: Re-paragraph, MEI is not for El Nino 3.4 region. Indices do not affect climate (P10708L8). Indices measure ENSO intensity (P10710L4) P10713L24: Add reference. P10713L6: Is this a better fit for the

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study area? more details are required here to justify this. P10714L16-18: All these values were aggregated monthly? P10711L15: What is a serious problem? do no t use qualifying adjectives, this is science, use statistics. P10711L12: Weather station network? P10711L8-9: What means more precise? P10711L8-9: 'there is not a good enough rainfall monitoring data' What it means? (a) data is not good quality?, or (b) The historical record is too short? P10710L22: Delete the extra comma.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 10707, 2011.