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Comment on angeo-2022-4: Methodology and circular mean

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Community comment on "The time derivative of the geomagnetic field has a short memory" by Mirjam Kellinsalmi et al., Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2022-4-CC1, 2022

I am having a hard time understanding the motivation for the methodology described on Lines 81–90 of the manuscript. Why do the authors resort to constructing a histogram of eight bins of directional values, identifying an "approximate direction," and finally calculating a mean direction based on a (possibly small) subset of their statistics, when there are established statistical methods (e.g., the circular mean, circular variance and standard deviation, vector mean, covariance matrix) for dealing with circular statistics?

I have the feeling that the authors may be inadvertently reinventing the wheel, but perhaps I have misunderstood what the authors wish to accomplish with this alternative methodology.

Kind regards,

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References

Engineering Statistics Handbook §6.5.4.1. Mean Vector and Covariance Matrix (https://www.itl.nist.gov/div898/handbook/pmc/section5/pmc541.htm)

Directional statistics (Wikipedia; https://en.wikipedia.org/wiki/Directional_statistics)

Circular mean (Wikipedia; https://en.wikipedia.org/wiki/Circular_mean)