Reviewer Evaluations:

Review of the article

I do not endorse the approach presented in this manuscript, and the scientific rigor of the data analysis could be improved. That said, I will not oppose the publication of this work provided that the assumptions and data analysis steps are clearly presented. On that point, I do not have major comments anymore.

Even when so, the manuscript content could still be improved, as discussed below. In particular, there are still some inaccurate and/or missing points:

l.108: "we remove them manually": please specify, in the main text, what is done here. As of now, a reader could not reproduce this approach. This could also be a good place to mention the difficulty to differentiate between spatial and temporal field variations.
Our response: We have added a brief description in section 2.1 (lines 106-108) and 2.3 (lines 149-152).

l. 123: "this assumption denounces the very concept of stochastic acceleration restricting the process to a resonant interaction". This claim needs to be substantiated. It is inconsistent with the first works on radial diffusion (e.g., Parker, 1960, https://doi.org/10.1029/JZ065i010p03117; Falthammar, 1965, https://doi.org/10.1029/JZ070i011p02503)
Our response: We have erased the sentence in order to avoid any misinterpretations. The text now (Line 123) is as follows: "This assumption can lead to underestimation of the radial diffusion coefficient, since higher m values are shown to be often significant (e.g. m=2 up to m=5 at recovery phase of storms".

l.137: "by a factor 2": this statement is true only in a special case, and not in general. See Lejosne (2019): "This result relies on the assumptions that (1) the magnetic field disturbances are described by the simple model introduced by Fälthammar (1965) (equations 2 and 3) and that (2) there is no electric potential disturbance."
Our response: Duly amended (lines 136-138).

l.186, Fig.2: The increase in DLL_E in the 1-2 MLT sector could also be due to electric field measurement errors at times when the spacecraft are in the Earth's shadow. Has this effect been considered?
Our response: We agree with the reviewer that this could also be a possible explanation. However, we would expect to see similar pronounced increases in pre-midnight MLTs as well, something that is not evident.

l.198 : "the 6 hours MLT coverage by the three THEMIS spacecraft" This statement needs to be proven or reformulated.
Our response: The sentence (lines 197-200) has been modified as follows: "This means that the partial azimuthal coverage provided by the three THEMIS spacecraft could lead to an up to one order of magnitude of uncertainty in the estimation of the DLLB for particular spatial configurations of the three THEMIS spacecrafts, e.g. when all three are located in the nightside or all three are located in the dayside."

l.290-292: These statements consist of putting the work presented here as the reference work. This is misleading. In particular, the conclusion statement l. 386-388 are very

misleading and it should be reformulated. It is not because the DLL coeffs provided by this analysis are greater than most DLLs than "all models underestimate DLL".
Our response: We don't understand how these sentences are misleading or setting our work as reference. Concerning the statements in lines 290-292, we have emphasized that: "the terms overestimation / underestimation of the DLL by the available semi-empirical models are always in comparison with our calculated values, which of course are themselves estimations of the true radial diffusion coefficient". This is a common procedure when comparing different datasets or, in our case, a dataset inferred from in situ measurements with models (lines 291-292). Nevertheless, we have modified the text in order to remove the terms overestimation / underestimation. At the same extend, we have modified the text at the conclusions section.

Section 6.2: it is not explained how, from a partial coverage in time and L* for the DLL database (limited to THEMIS orbits), a database covering all times and L* is obtained to be used in the simulation. How often are the DLL values updated? And why?
Our response: Obviously, the database contains gaps both in L* and in time due to the orbit of the THEMIS mission. For the St. Patricks event, the limited amount of gaps was filled using interpolation/extrapolation schemes. In detail, the gaps in the DLL spectra with respect to L* were interpolated using power law interpolation/extrapolation, and then we performed a time interpolation at each L* value (a description has been added in lines 355-356). Concerning the update of the DLL values we are not sure what the reviewer means. The calculations have been performed once and the output cdf files have been stored in the url we have provided. If the reviewer means update to include further temporal coverage, this is something we intend to do in the future.