

Interactive comment on “Atmospheric drag effects on modelled LEO satellites during the July 2000 Bastille Day event in contrast to an interval of geomagnetically quiet conditions” by Victor U. J. Nwankwo et al.

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Your time and effort is highly esteemed and appreciated. Thank you for your insightful comment. We clarify that the statement that ‘our findings are not particularly surprising’ is not intended to make light of the accomplishment of this work. Neither does it imply or suggest that the work does not contain any new ideas. Besides preceding the inclusion of a very important analysis, the statement is meant to ‘whet the appetite’ of the readers/scientific community preparatory to anticipated more profound findings that can lead to improved satellite ephemeris estimates using a new model that is now

under formulation (which includes the results of analysis made in this paper). By highlighting some important scientific contribution of this work (below) I believe that we have been able to show 'distinct comparison between the current paper and the previous paper and strongly justify why we focused on the Bastille event.' The title, abstract and conclusion are replete and also convey the specific accomplishments and what makes it differ from previous work. Thank you very much.

Some important scientific contribution of this work

(1) Given the great scientific interest in the Bastille Day great geomagnetic storm and its space weather consequences (particularly on orbital drag), this paper will increase the visibility and better contribute to the scientific body of knowledge surrounding the Bastille Day events.

(2) this work also doubled as a strong review paper because it presented extensive details/review on atmospheric drag (and its relevance) in relation to solar activity, against properly referenced background of existing work. The significant number of readers who have interacted with this manuscript on this platform (and others) certainly did because of its relevance to them. I am also aware of authors have cited this paper in their new manuscript.

(3) the latter analysis (in this paper) that contrasted the interval of quiescent solar-geomagnetic activity with the Bastille Day event/perturbed condition is very instructive and important too. This analysis motivated the development of new method and indices for description and estimation of drag effects on satellite ephemeris (comparing 2 regimes). We are now in the process of combining satellite drag model high-fidelity atmospheric specification to produce such realistic estimation model (beginning with the results of this work).

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Discussion paper

