

# Author's Response to Reviews of

*Modeling magnetopause location for 4D drift-resolved radiation belt codes: Salammbô model implementation.*

Rabia Kiraz, Nour Dahmen, Vincent Maget, Benoit Lavraud

## **Response to referee comments from Reviewer 1**

*The authors addressed most of my concerns. I only have a minor suggestion for the Figure 2 and Figure 3 in the response letters. The comparison of simulation results between the new and the previous magnetopause models during the March 2015 storm are shown in Figure 2 and Figure 3. Can the authors also add satellite observations in the two figures to support that the new magnetopause model is a better choice in the simulation.*

We sincerely thank the reviewer for this remark. Comparing Salammbô simulations with satellite measurements is a challenging task. For the study of the Saint Patrick Storm event in March 2015, we consulted our database to identify available satellite data. The relevant satellites are RBSP A and B, THEMIS A, D, and E, GOES 13 and 15, as well as LANL 01, 02, 04, 97, 91, and 94. However, only GOES 13, LANL 97, and LANL 91 provided usable data. Consequently, our analysis is limited to geosynchronous orbit, restricting the validation of our magnetopause location model. Due to the scarcity of suitable satellite data, a comprehensive validation against in situ measurements remains an open task. While this aspect requires further investigation, we believe that, at this preliminary stage, validation based on a magnetopause crossing catalog provides a reasonable first step. Future studies should focus on a more extensive validation of the magnetopause location model using satellite data from multiple geomagnetic storms.