We thank the reviewer for the comments. Answers are given below in red. Changes in the revised version of the paper are also in red.

Reviewer #CC1

The paper deals with an interesting and challenging topic: the study of the lithosphere-atmosphere-ionosphere electromagnetic coupling before the occurrence of large earthquakes. Starting from the analysis of the ULF electromagnetic emissions observed by the Hebei geophysical network before the occurrence of the great Wenchuan earthquake (Ms8), the authors evaluated the magnitude of an energy source capable of generating the ULF signals observed by the Hebei network. In a second step, they simulated the propagation of the electrical signals through the atmosphere and finally obtained an estimate of the energy at the bottom of the ionospheric layer.

The overall organisation of the paper is quite good, but I have to make some critical comments. The main comments are as follows:

1. The estimate of the intensity of the "energy source" near the focus of the Wenchuan earthquake depends on the electromagnetic properties of the subsurface model (dielectric permittivity, magnetic permeability, conductivity). The assumption about the value of the conductivity could be better discussed, what are the changes if we modify the value of the conductivity? Furthermore, the assumption of a homogeneous half-space seems too simple, what are the possible changes introduced by a conductive shallow layer or by the presence of lateral discontinuities?

   The reviewer is right. Considered several electromagnetic properties like dielectric permittivity, magnetic permeability, conductivity, the conductivity is the predominant parameter that could affect the result much. In fact, we have discussed this topic in Li et al. (2016), when the results show that the observed electric field at 1440 km Gaobeidian station decreases about 20 orders of the magnitude if the conductivity of the Earth medium increases from 10^{-6} S m^{-1} to 1 S m^{-1}. In this paper, we use a simple half-space model, considering the Earth medium is homogeneous, to estimate the possible seismo-telluric current acting as the driving source of LAIEC, which could lead to calculation errors. Not mention that the electromagnetic signals recorded before the Wenchuan earthquake are probably generated in the shallow layer of the Earth like what the reviewer has mentioned. So, in the next step, it is possible that a complex and comprehensive physical model, multilayer media model, for instance, will be developed.

   About this point, we have added some contents into Section 5 in red.

2. The paragraph 3.1 could be revised and reorganised. The model introduced by Zhou et al. (2017) has been applied to study the coupling between ground-based electromagnetic emissions and the ionosphere, but there are only purely qualitative considerations about the like-steady conditions of the electromagnetic emissions.

The model developed by Zhou et al. (2017) is suitable for like-steady conditions. It is shows that the switch time required to move from an arbitrary initial state to a final steady state is equal to or more than $\tau = 1000$ s. Li et al. (2019) have qualitatively analyzed the temporal variations of ground-based ULF electromagnetic emissions at Gaobeidian station, geomagnetic anomaly and ionospheric observations occurred on May 9, 2008, three days prior to the Wenchuan earthquake and found that this process lasted about 10 hours. And the electromagnetic emissions abruptly increased at 6:00–7:00AM and the ionospheric variations started at 1:00 PM and reached their climax at 4:00 PM. So, in this paper, we consider that the total coupling process complies with the like-steady conditions when the model is used. We have added similar contents into the revised version of the paper in red in Section 3.2.

3. The equations and mathematical formulae in paragraph 3.1 could be better described and simplified. This would make the paper more readable.

Yes. We have deleted some redundant contents about conductivities in different parts of the Earth's spheres, parameter details and boundary conditions for some equations.

4. In the paragraphs "5. Discussion" and "6. Conclusions", the novelty of the results and their implications could be better emphasized.

We have added some contents in red in the revise version of the paper.

Finally, there are some typewriting errors (see seismo-elluric) and some sentences that strongly require a re-formulation. An accurate revision of the English form is mandatory.

Thanks. We have modified some sentences and mistakes in red in the revised version of the paper.