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 #1**

The paper makes a significant effort to simulate the electromagnetic coupling through the lithosphere, atmosphere, and ionosphere before the Wenchuan MS8.0 earthquake. The integration of geophysical observations with advanced modeling techniques is a noteworthy approach. Nevertheless, there are several issues that require the author's attention to enhance the robustness of the study.

1. In Section 2, the estimation of the current magnitude excited by the Wenchuan earthquake, derived solely from the seismic electromagnetic signals at the Gaobeidian station, may be overstated. The reliance on data from a single station may not provide a compelling argument; if the electromagnetic anomalies recorded at Gaobeidian are exceptional, closer stations should have reported stronger signals, yet such reports are absent. The authors should make some comments on this.

   The reviewer is right. Though electromagnetic emissions were recorded at three observing stations during the Wenchuan earthquake, only one ground-based observing station (Gaobeidian station) is taken part in calculations due to its almost synchronized anomalous emissions with the ionospheric variations three days prior to the Wenchuan main event. And it is 1440 km from the Wenchuan epicenter after all. Besides this, there are no near stations as reference at all. So, the calculation errors could be generated during this period. However, Guan et al. (1994) reported 16.9 mV m$^{-1}$ electric field at the 250 km Ningjin station in Hebei network before the Datong-yanggao $M_S$6.1 earthquake. The electric field of 1.3 mV/m at 1440 Gaobeidian station is a reasonable value if series attenuation of the wave along the distance is considered. We have added some discussion on this topic in the revised paper in Section 5.

2. The simulation's prediction of an induced electric field reaching up to 10^4 kV/m above the epicenter seems improbable. Is there any evidence from additional observational data or independent research supporting your simulation results?

   In the revised manuscript, we eliminate this value an only keep kV/m magnitude of the calculated ground electric field at f = 0.01 Hz. In fact, this value is a theoretical result but with an error near the source when the finite length dipole is used. We have added some discussion from different aspects in red to illustrate this unexpected strong result: ionospheric enhanced influence on remote propagating of incident wave, “selectivity effect” or "sensitivity point" of electromagnetic signal measurement and calculated error of the physical model used in this paper.

3. The authors are requested to elucidate the cause of the small high-potential anomaly observed at an altitude of 150-200 km above the source, as depicted in Figure 4.

   It has been testified that the "hot-dot" is caused by the distortion in the central of the input ground surface electric source. The surface theoretically calculated electric values near the ground source central are not accurate when the finite length dipole is used. We have mentioned that the central values of the electric fields on the ground near the Wenchuan source are not accurate due to theoretical calculation method.

4. At lines 461-465, the authors should clarify why the results from Bortnik (2010) are considered comparable with the findings of this study.

   Generally, electromagnetic emissions are considered as the results of rock's deformation and rupture under the stress either from observing practice and rock-stress experiments. And the climax stage of these emissions occurs when the main rupture (quick development from the micro-cracks to macro-cracks) of the seismic fault under collective stress happens. The regional stress decrease is associated with the magnitude of the impending earthquake and released energy. Thus, electromagnetic emissions could be related with the magnitude or released energy of an earthquake. So, in the light of the formula between the released energy E and the magnitude M of an earthquake $lgE = 5.8 + 2.4M$ (Beno & Richter, 2010), the results attained in this paper are possibly in a reasonable range.

   We have also added some similar contents into the revised version of the paper in red.