

## Candidate models of IGRF13-SV from Japanese team

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International Geomagnetic Reference Field (IGRF) and its secular variation models are open to public every five years. Next IGRF models, the Gauss coefficients to represent the spatial distribution of the field at epoch 2020.0 and its secular variation (first time derivatives) in the period from 2020.0 to 2025.0, will be determined and published around December, 2019, by Working Group of IAGA V-MOD. The IGRF and its secular variation models are determined based on candidate models submitted by research groups for Working Group V-MOD. We plan to submit a candidate secular variation model to contribute for determining IGRF13-SV.

Prediction of the main geomagnetic field is necessary to obtain a candidate model for IGRF and its secular variation. Although purely statistical prediction, which had been a usual procedure in the past, can be a possible method, we employ physics-based modeling for the prediction. Since the parameters used for geodynamo calculations are not "realistic" values for the Earth's core, it is not appropriate to take geodynamo solutions as they are for the predictions. Nevertheless, it is possible to select parameter set and appropriate normalizing time-scales to obtain modeled magnetic field that is similar to the geomagnetic field. In this presentation, we are going to show candidate models of secular variation obtained by geodynamo data assimilation with discussions on the time-scales, the method of assimilation, and data-set employed for the modeling.

Keywords: IGRF, geodynamo modeling, geodynamo data assimilation