Earth's core magnetic field model Mag.num and the IGRF 13 candidate

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The Earth's core magnetic field model Mag.num was the parent model for the GFZ IGRF 13 candidate submission. The model is based on geomagnetic ground observatory and Swarm satellite observations. Epochs 2020.0 and beyond were not covered by the data available at the time of submission and our results were based on predictions. In this study, we investigate the effect of the more recent available data on our results of the 2020.0 epoch and the predicted secular variation by generating an updated Mag.num version. We especially focus on the spatial and temporal patterns of the local geomagnetic field minimum of the South Atlantic Anomaly (SAA). Recently, global geomagnetic field models have shown that an additional, although shallow, secondary minimum at Earth's surface has developed since around 2005. The location and significance of the secondary minimum and of the saddle point between the two minima are assessed also in view of the respective differences among the candidate models.