

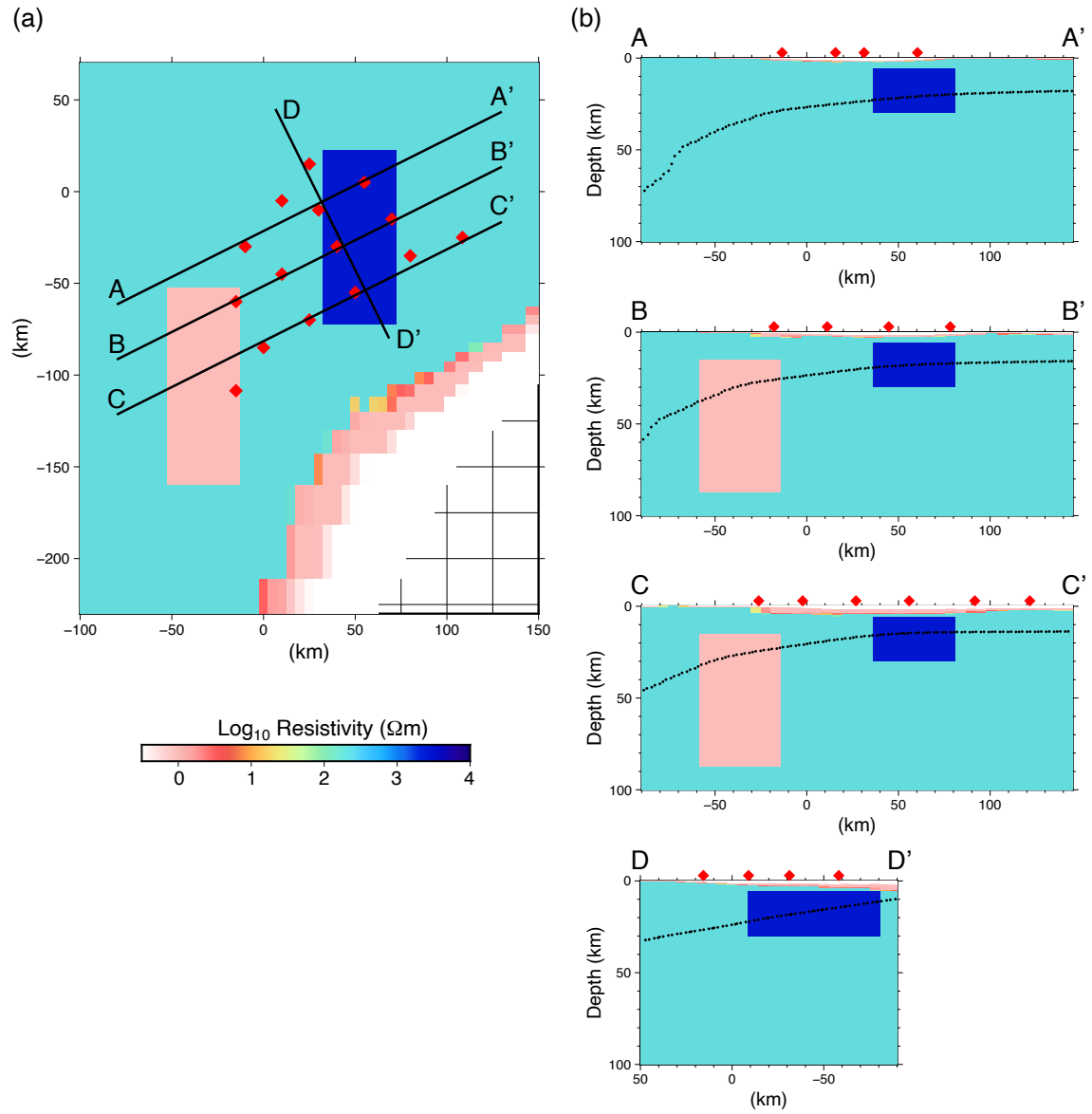
Supplementary information for

**“Goelectrical evidence of fluid controlling slow and regular
earthquakes along a plate interface”**

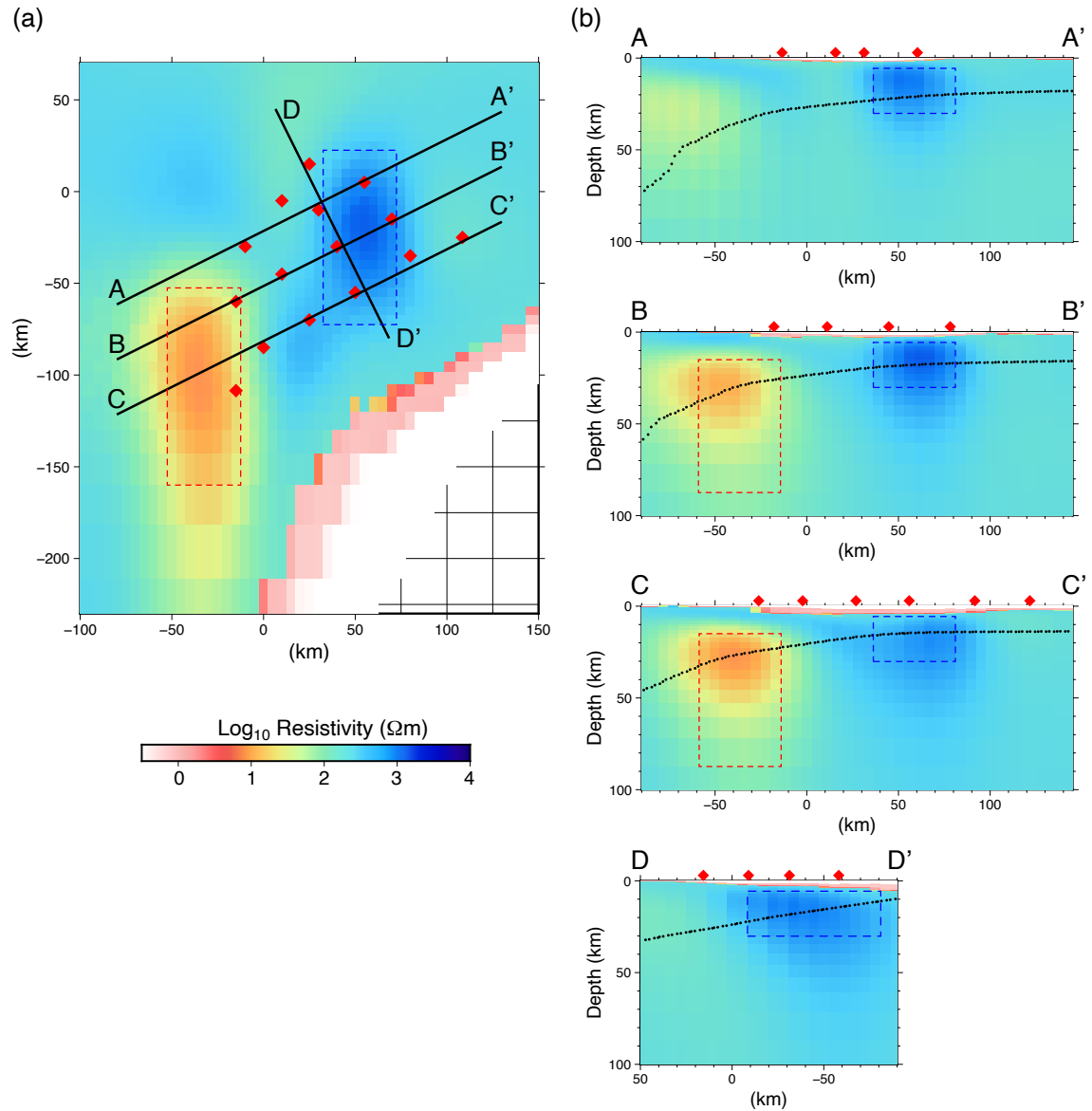
by Hayato Nakamura, Hiroshi Ichihara, Tada-nori Goto, Tetsuo Matsuno, Noriko Tada,
Manaka Kuroda, and Shinya Sato

Supplementary Table S1 Specifications of the OBEMs

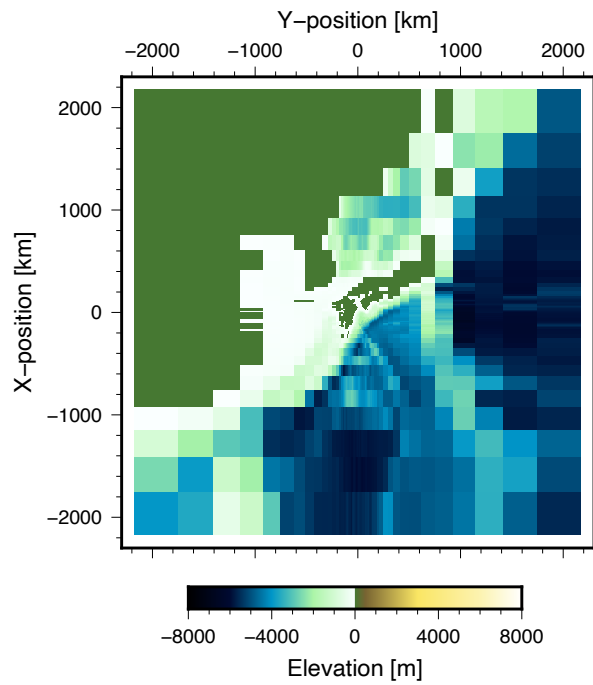
Station	Deployment Location			Declination (IGRF-13)	Observation Period		Station
	Latitude	Longitude	Depth		Start Date	Finish Date	Used for
							Magnetic Field
	(deg.)	(deg.)	(m)	(deg.)	(yyyy.mm.dd)	(yyyy.mm.dd)	
EMP1	32.005712	132.507097	1,903	-6.888	2017.03.02	2017.12.24	EMP1
EMP2	31.881848	132.258312	1,950	-6.856	2017.03.02	2017.12.30	EMP2
EM3	32.226515	132.418525	1,754	-6.959	2017.03.17	2017.08.26	EM3
EM4	32.428995	132.340637	1,593	-7.024	2017.03.17	2017.08.26	EM4
NU7	32.100638	132.085460	1,029	-6.925, -7.004	2017.08.28	2018.08.12	NU7
NU3	32.249617	131.899645	742	-6.975, -7.053	2017.08.28.	2018.07.27	NU3
NU2	32.636715	132.266988	600	-7.087, -7.166	2017.08.28	2018.05.12	NU3
NU1	32.434318	132.082440	804	-7.107	2018.03.20	2018.08.26	NU1
NU11	32.170740	132.828512	1,407	-7.083	2019.03.18	2019.08.25	NU11
NU12	32.252275	133.157417	1,077	-7.093	2019.03.18	2019.08.25	NU12
NU8	32.352932	132.718098	1,297	-7.143	2019.03.18	2019.08.25	NU12
NU5	32.537132	132.599052	925	-7.204	2019.03.21	2019.08.25	NU5
NU9	31.552940	131.815217	921	-6.999	2020.03.19	2020.09.19	NU9
NU10	31.722583	131.989123	1,048	-7.047	2020.03.19	2020.09.19	NU10
NU6	31.962672	131.849058	746	-7.124	2020.03.19	2020.09.19	NU6



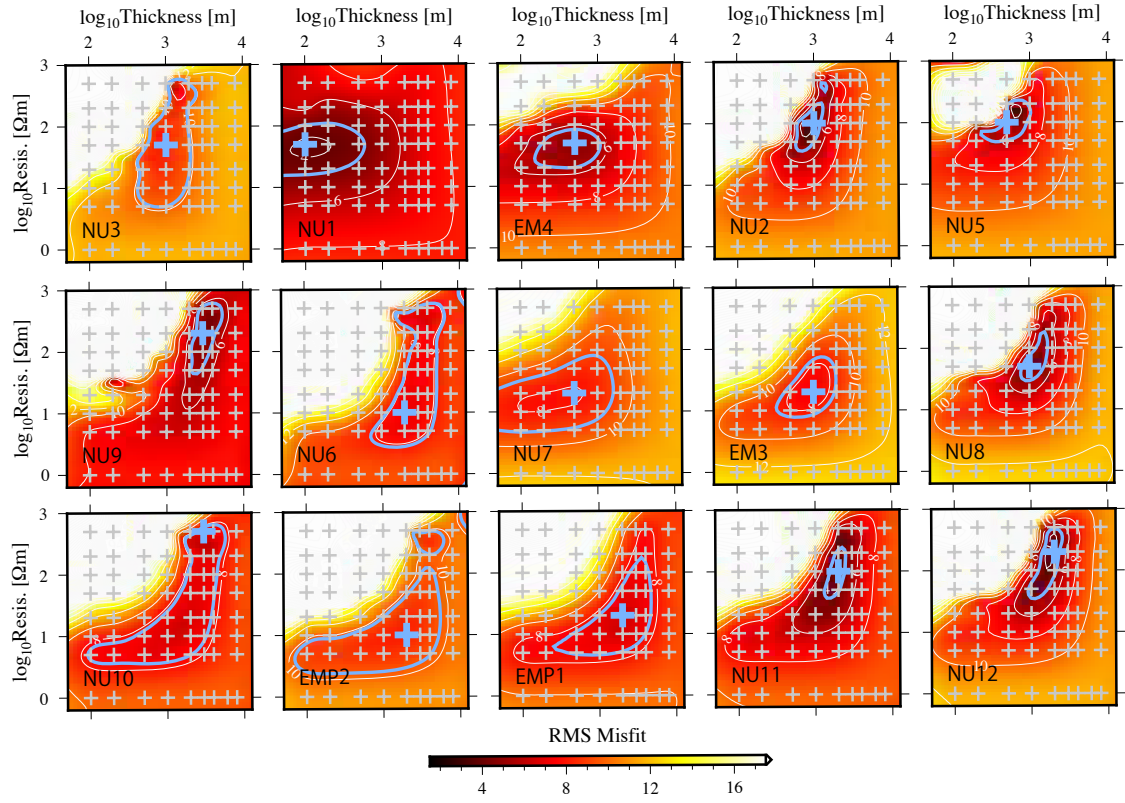
Supplementary Fig. S1 Hypothetical resistivity model for the hypothetical inversion test. (a) Resistivity section along the plate interface. (b) Vertical cross sections along lines A–A', B–B', C–C', and D–D' in (a). The black dotted lines represent the plate boundary interface.



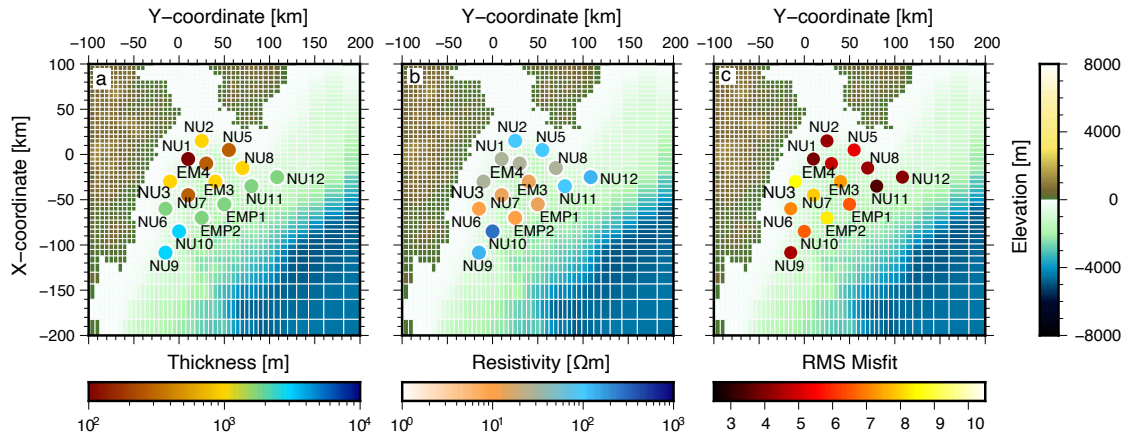
Supplementary Fig. S2 Hypothetical inversion test result. Red diamonds indicate OBEM observation sites. (a) Resistivity section along the plate interface. (b) Vertical cross sections along lines A–A', B–B', C–C', and D–D' in (a). The black dotted lines represent the plate boundary interface. The colored dashed lines denote areas of resistivity anomalies in the hypothetical model (Fig. S1).



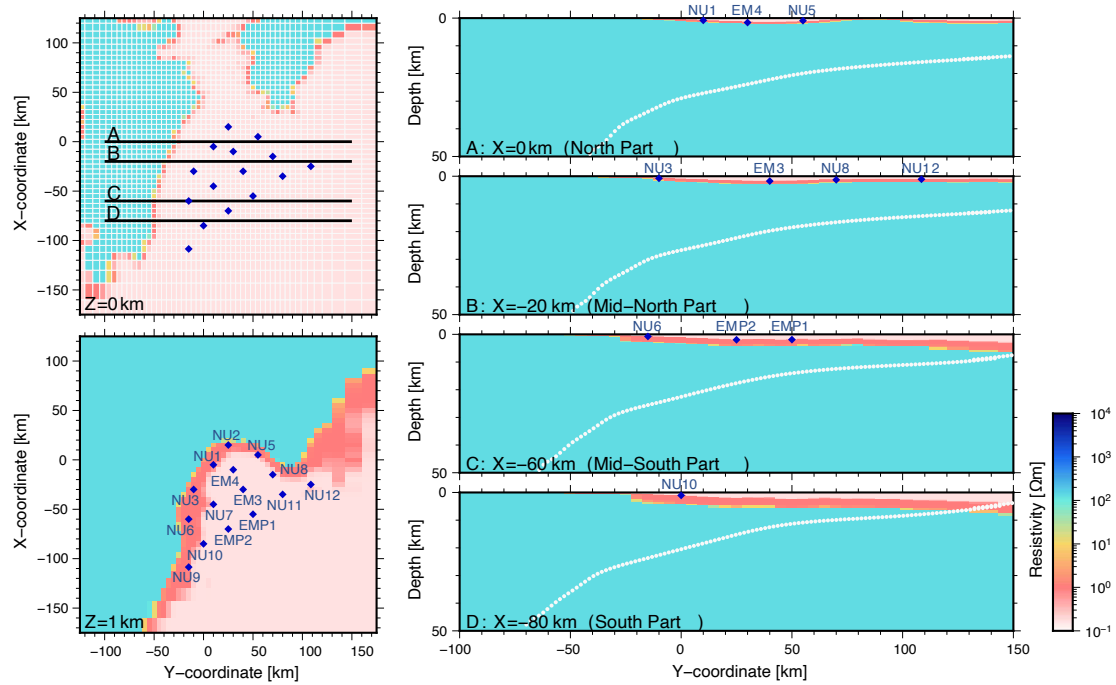
Supplementary Fig. S3 Bathymetry model used for the analyses and the horizontal mesh array adopted for the modeling.



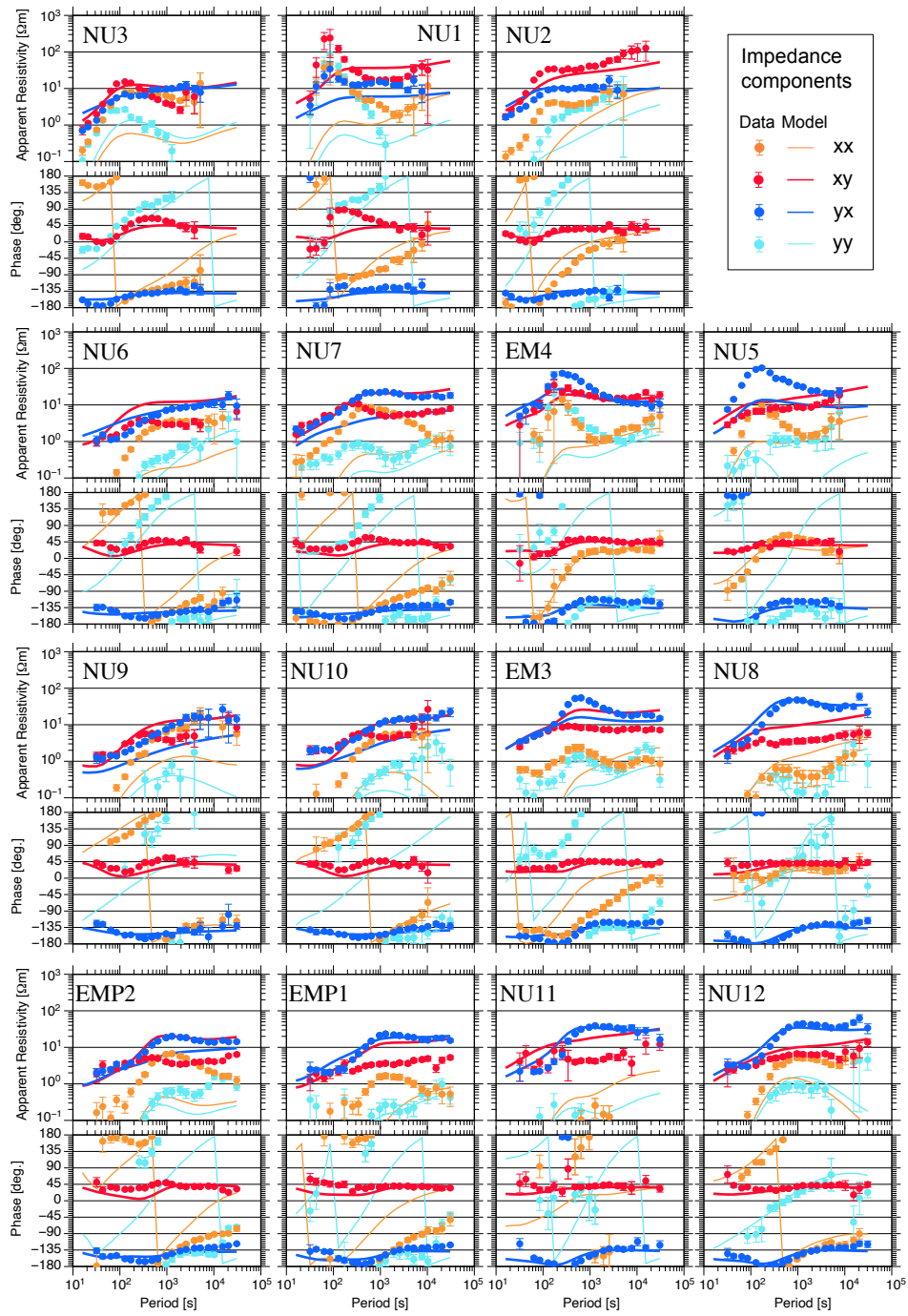
Supplementary Fig. S4 RMS misfit distributions used for the grid search analyses at each OBEM station. Light gray and blue crosses represent analysis points and minimum misfit points, respectively. In each panel, the models outside the closed blue curves differ from the best-fit (minimum misfit) model with a probability of more than 95% by one-sided F-test.



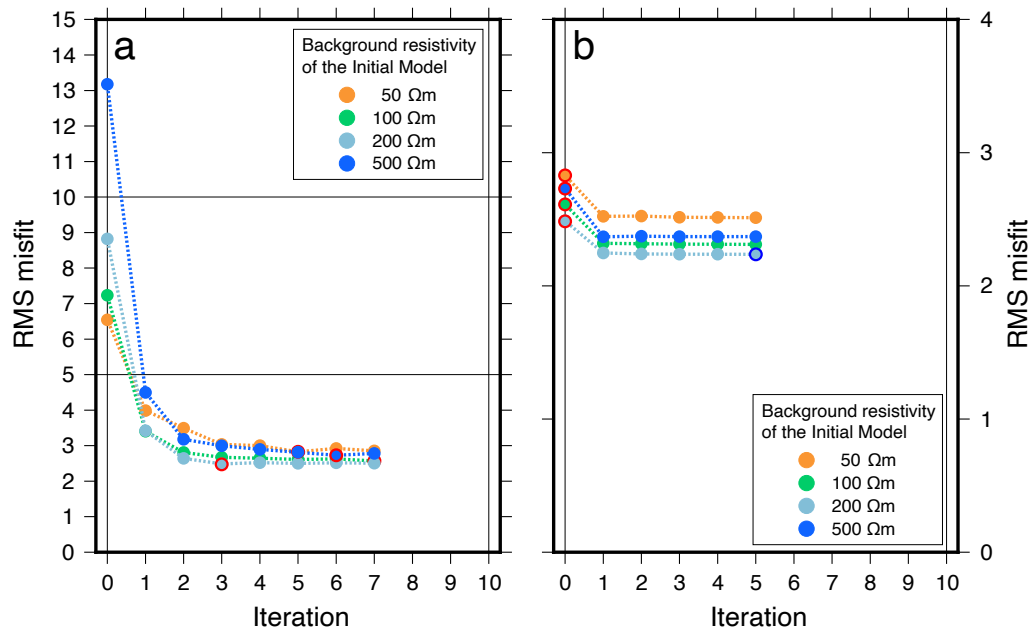
Supplementary Fig. S5 Parameters of the best-fit models obtained by the first-stage forward modeling. (a) Conductive layer thickness, (b) background resistivity for the best-fit (minimum misfit) model, and (c) the RMS misfit, indicated on the elevation map.



Supplementary Fig. S6 Initial resistivity model for the inversion analyses (background resistivity 200 Ωm). On each section, the dotted white line represents the plate boundary interface⁶⁰.



Supplementary Fig. S7 Initial model and observed response functions: apparent resistivities and impedance phases observed at the 15 OBEM stations. Dots with error bars and lines represent the observed and computed responses, respectively.



Supplementary Fig. S8 *RMSm* changes during the (a) first- and (b) second-stage inversion procedures. The open red circles denote the minimum *RMSm* models adopted as the initial model for the second-stage inversion. The open blue circle indicates the optimum model obtained in this study.