

Additional file 2

Supplement to

Estimation of source, path, and site factors of S waves recorded at the S-net sites in the Japan Trench area using the spectral inversion technique

By

Yadab P. Dhakal¹, Takashi Kunugi¹, Hiroaki Yamanaka², Atsushi Wakai¹, Shin Aoi¹, and Azusa Nishizawa¹

¹ National Research Institute for Earth Science and Disaster Resilience, Tsukuba, Japan

² Tokyo Institute of Technology, Tokyo, Japan

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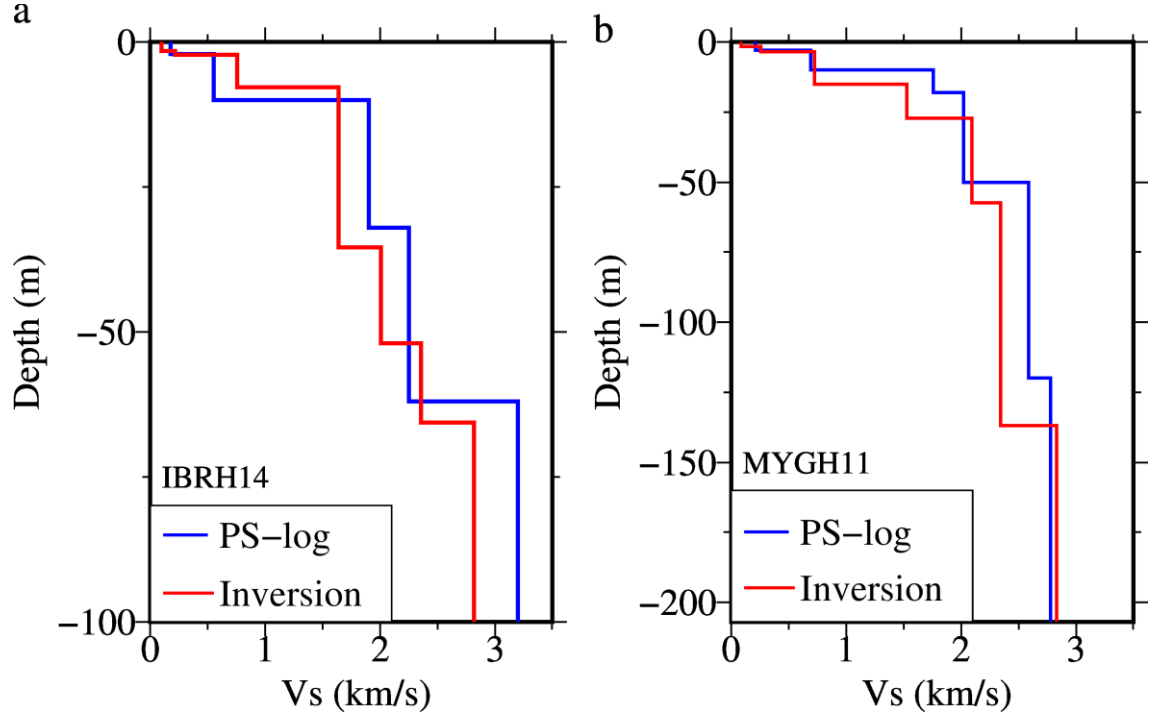


Fig. A1 S-wave velocity (V_s) models at the sites IBRH14 **a** and MYGH11 **b**. The blue and red lines denote the models based on PS-logging data and inversion of surface-to-borehole spectral ratios (SBSR), respectively. See **Fig. 1** in the main paper for the location of the sites. See the **Tables A1** and **A2** for the layer parameters obtained from the inversion of SBSR. For the PS-logging velocity models, see the **Tables A3** and **A4**, respectively (Aoi et al. 2004). The borehole sensors at the two sites were set up at the depths of 100 and 207 m, respectively.

Table A1 Layer parameters at the IBRH14 site obtained from the inversion of the observed surface-to-borehole spectral ratios. For the comparison with the PS-log model, see **Fig. A1** of this additional file.

S-wave velocity (m/s)	Thickness (m)	Density (g/cm ³)	Q_0	a	f_0
101.515	1.5365	1.5	6.85	0.1633	9.8
218.984	0.6817	1.5	6.85	0.1633	9.8
757.57	5.529	1.7	6.85	0.1633	9.8
1637.668	27.6786	2	20	1.153	0.51
2007.465	16.4898	2.1	20	1.153	0.51
2358.189	13.687	2.1	20	1.153	0.51
2815.196	-	2.4	20	1.153	0.51

$$Q(f) = Q_0 f^a \text{ for } f < f_0$$

$$Q(f) = Q_0 f_0^a \text{ for } f \geq f_0$$

where Q is S-wave quality factor, and f is frequency.

Table A2 Layer parameters at the MYGH11 site obtained from the inversion of the observed surface-to-borehole spectral ratios. For the comparison with the PS-log model, see **Fig. A1** of this additional file.

S-wave velocity (m/s)	Thickness (m)	Density (g/cm ³)	Q_0	a	f_0
83.214	1.5197	1.5	1.99	0.2381	9.6
254.503	1.8677	1.5	1.99	0.2381	9.6
722.214	11.6163	1.6	1.99	0.2381	9.6
1531.046	12.263	1.9	20.6	1.16	0.5
2093.133	30.2125	2.1	20.6	1.16	0.5
2342.238	79.5052	2.4	20.6	1.16	0.5
2834.002	-	2.6	20.6	1.16	0.5

Table A3 S-wave velocity model at the IBRH14 site based on PS-logging data*. For comparison with the velocity model obtained in the present study, see **Fig. A1** of this additional file.

S-wave velocity (m/s)	Thickness (m)
180	2
550	8
1900	22
2250	16
2250	14
3200	-

*The velocity model was retrieved from the website: <https://www.kyoshin.bosai.go.jp/>

Table A4 S-wave velocity model at the MYGH11 site based on PS-logging data*. For comparison with the velocity model obtained in the present study, see **Fig. A1** of this additional file.

S-wave velocity (m/s)	Thickness (m)
210	3
690	7
1760	8
2020	32
2590	70
2780	-

*The velocity model was retrieved from the website: <https://www.kyoshin.bosai.go.jp/>

Reference

Aoi S, Kunugi T, Fujiwara H (2004) Strong-motion seismograph network operated by NIED: K-NET and KiK-net. Journal of Japan Association for Earthquake Engineering

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