

# Supporting Information for "Impacts of aquifer's geometry estimated from seismic refraction tomography on hydrogeophysical variables"

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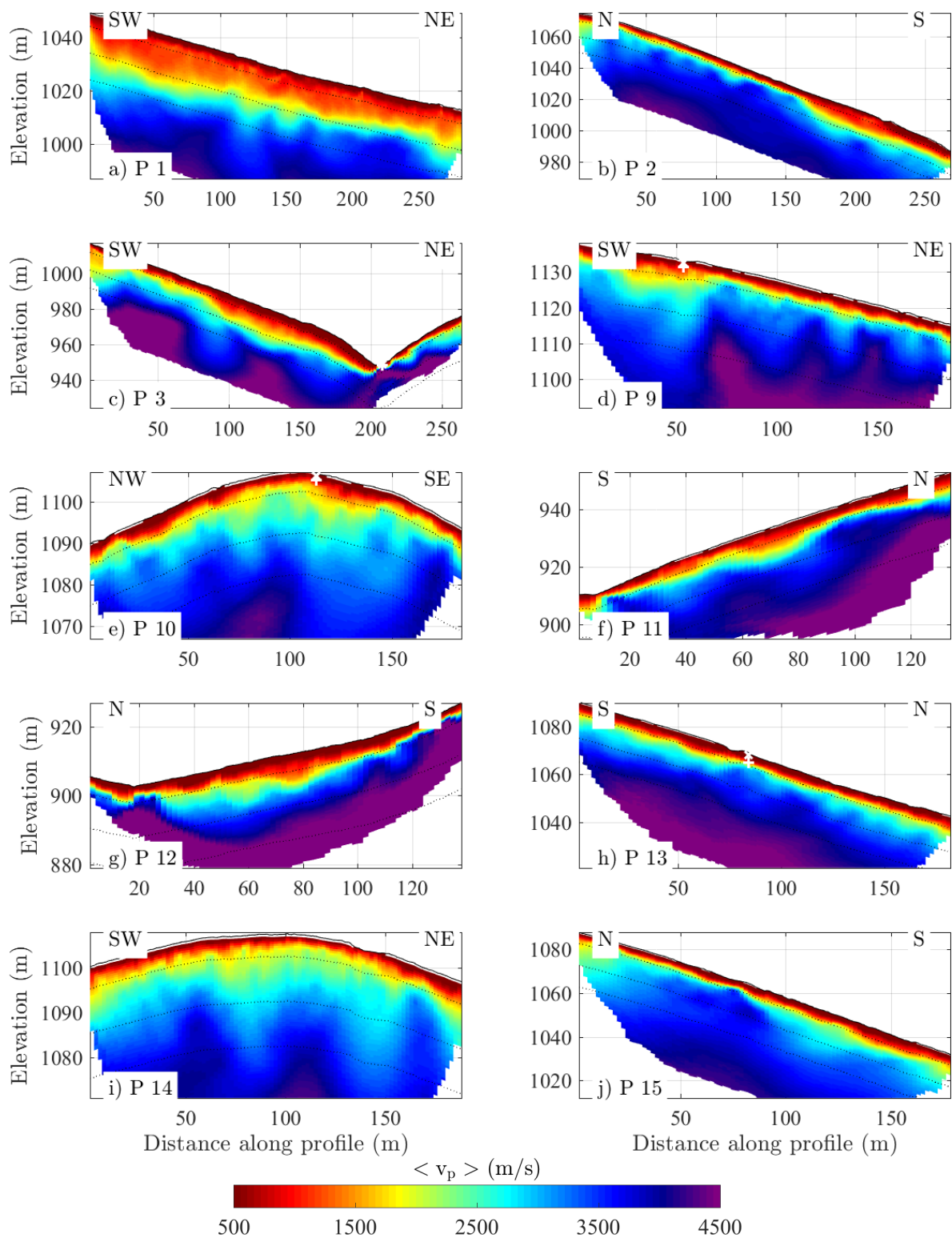
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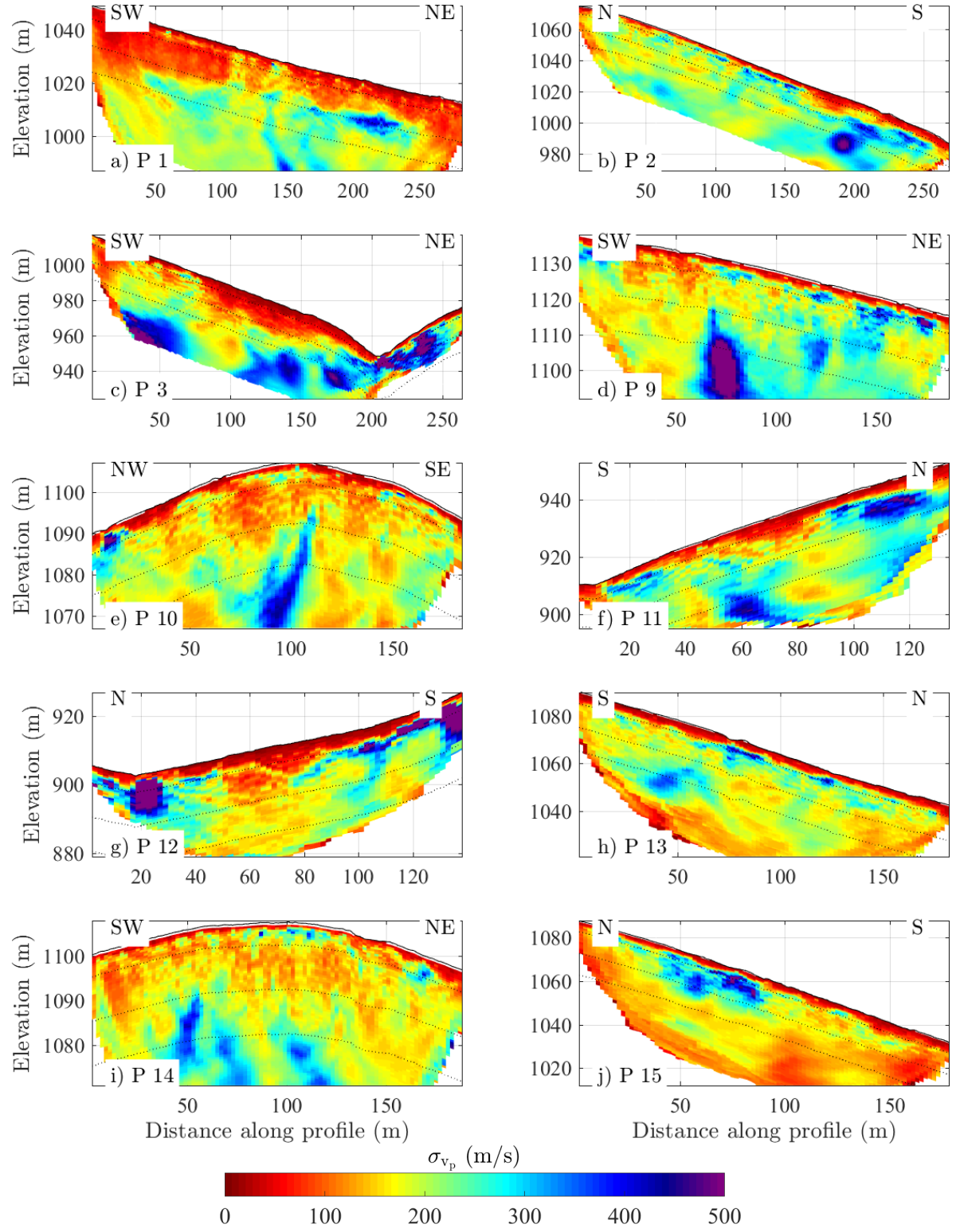
## **Introduction**

This supplementary information file provides figures and tables completing the parent article. Seismic refraction data were acquired in May 2018 and August 2019 on the Strengbach catchment, Vosges mountains, France.

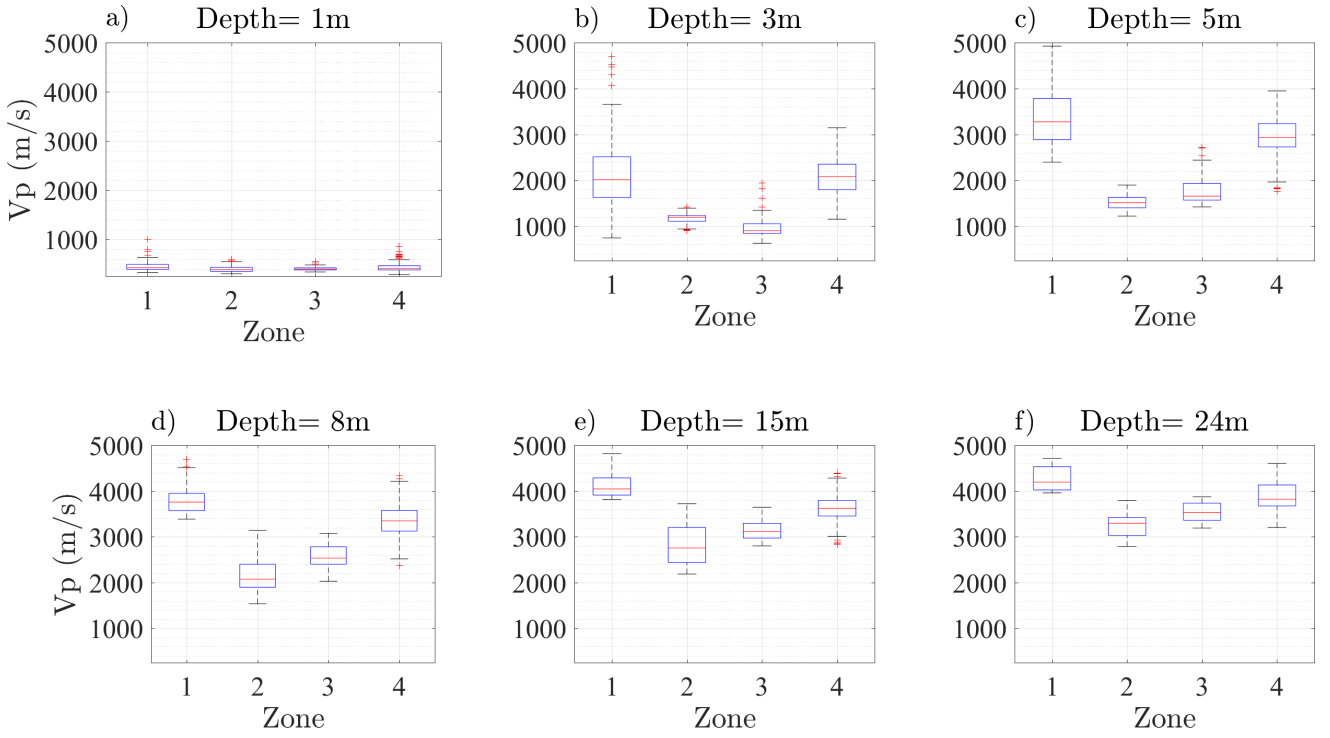


**Figure S1.** Average seismic velocity of the whole SRT profiles acquired on the Strengbach. The dotted lines correspond to the surface elevation minus 5, 15 and 25 m. The white cross (plus) indicates the depth at which the bottom interface of the regolith (saprolite) was estimated during the drilling of a nearby piezometer or borehole.

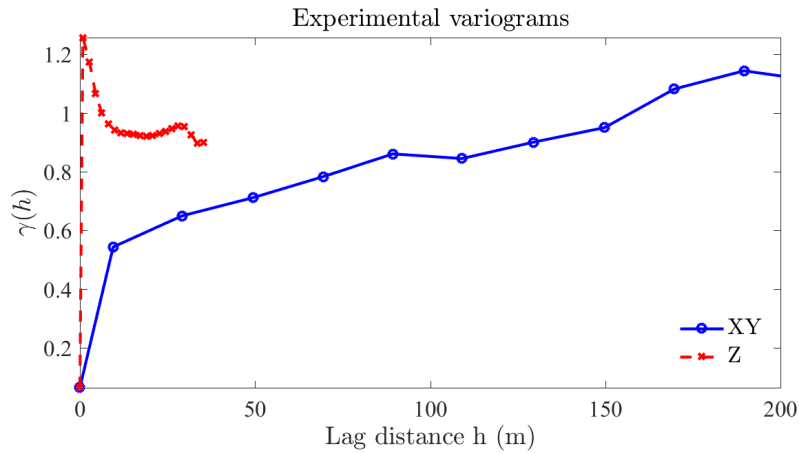
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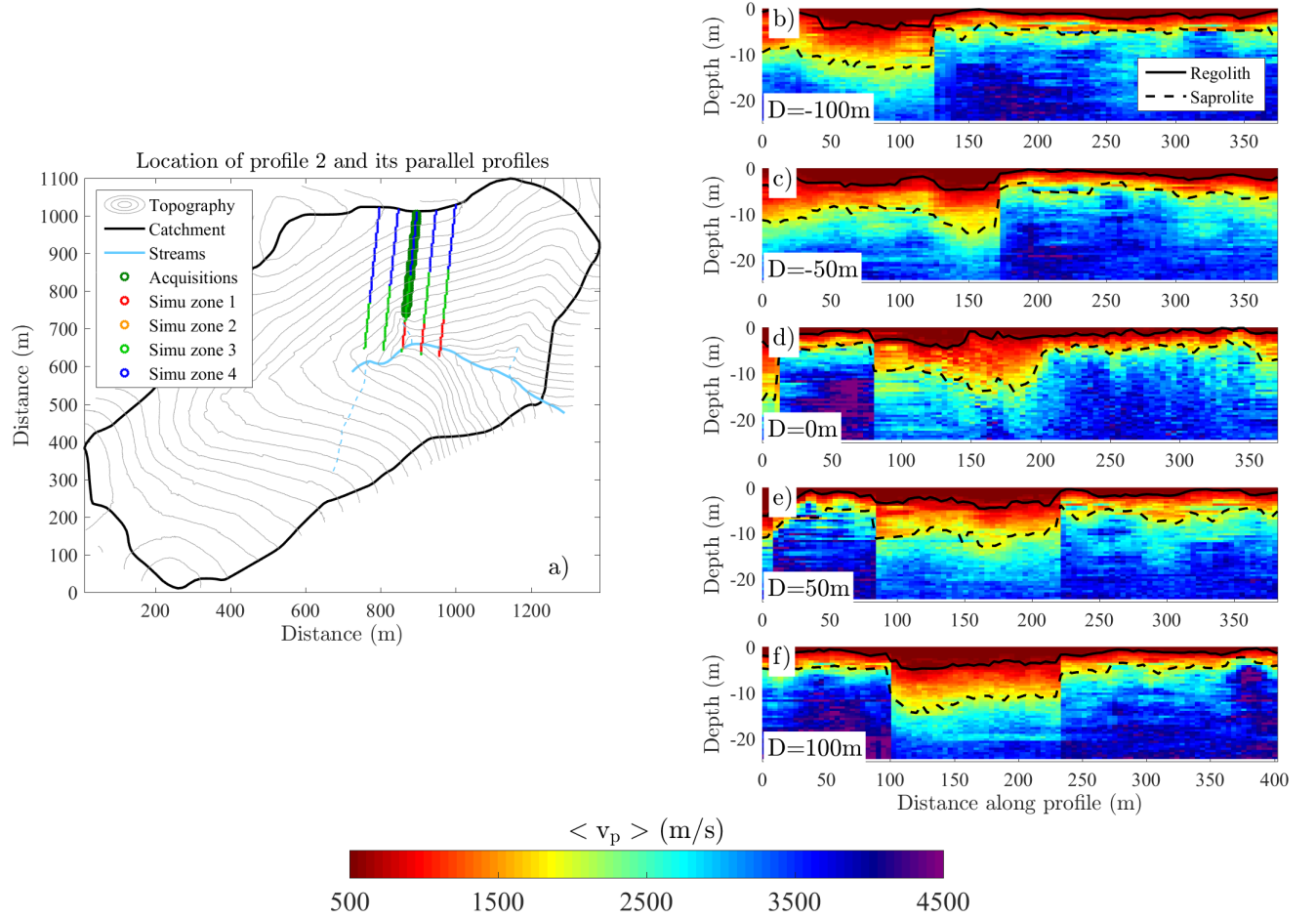
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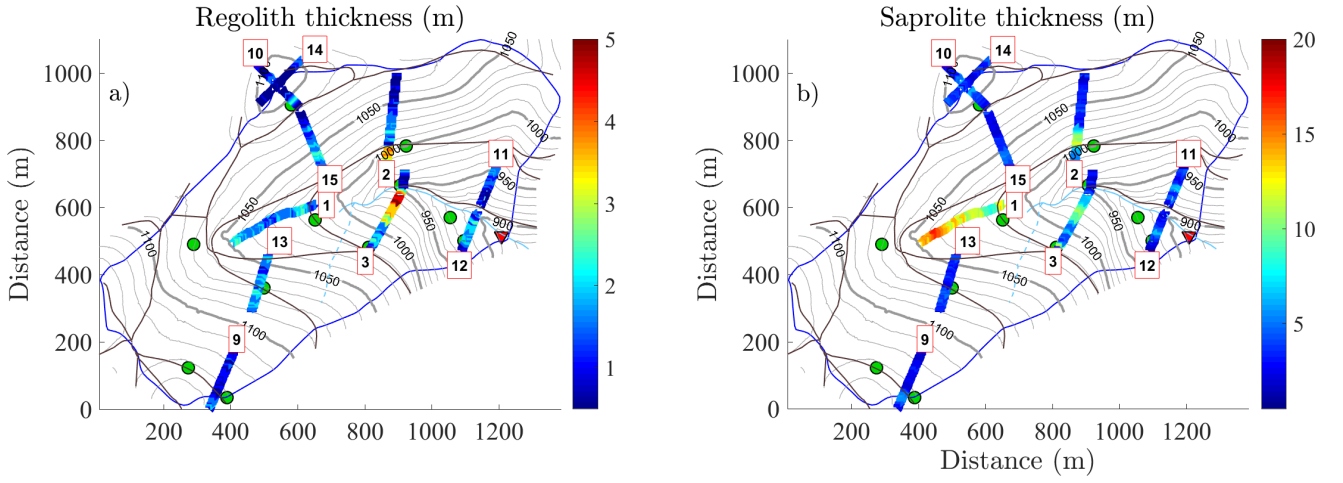
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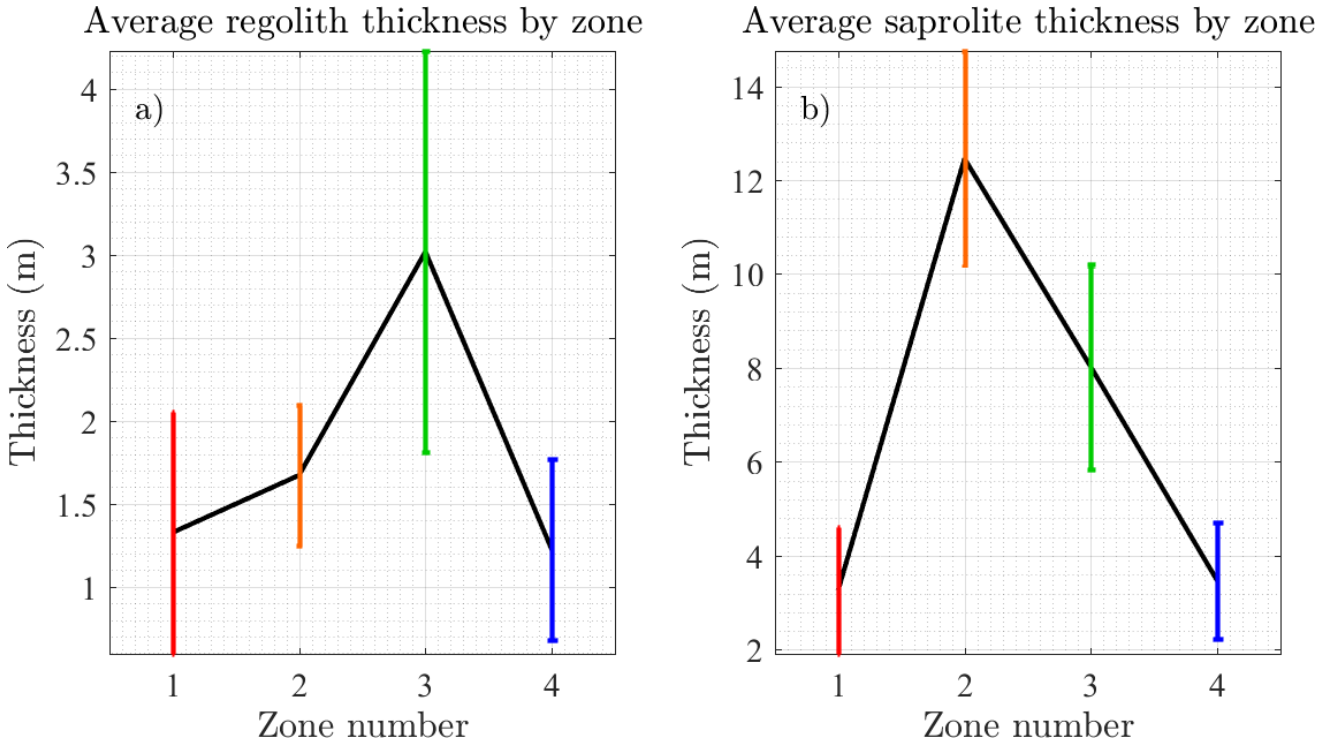
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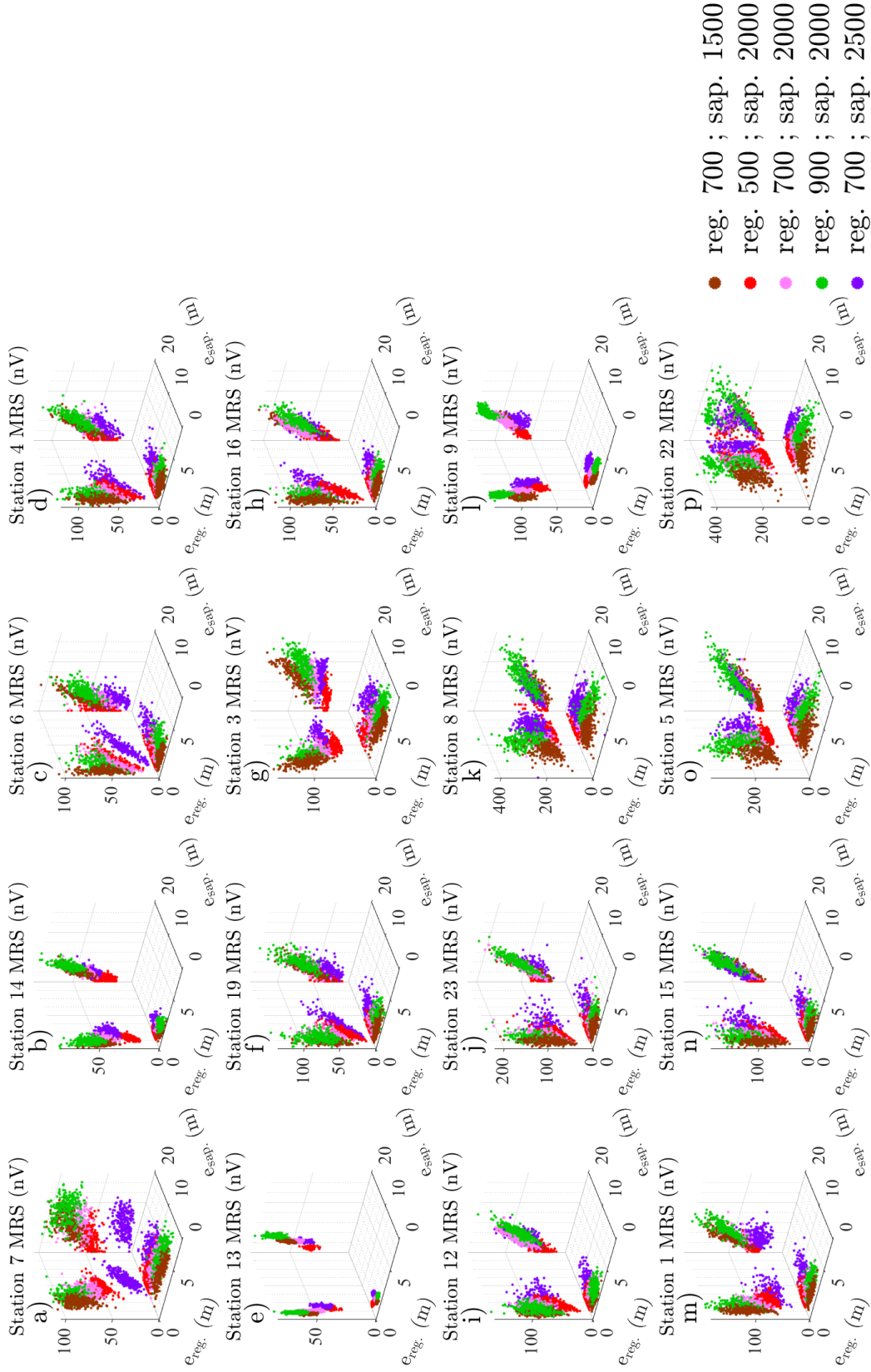


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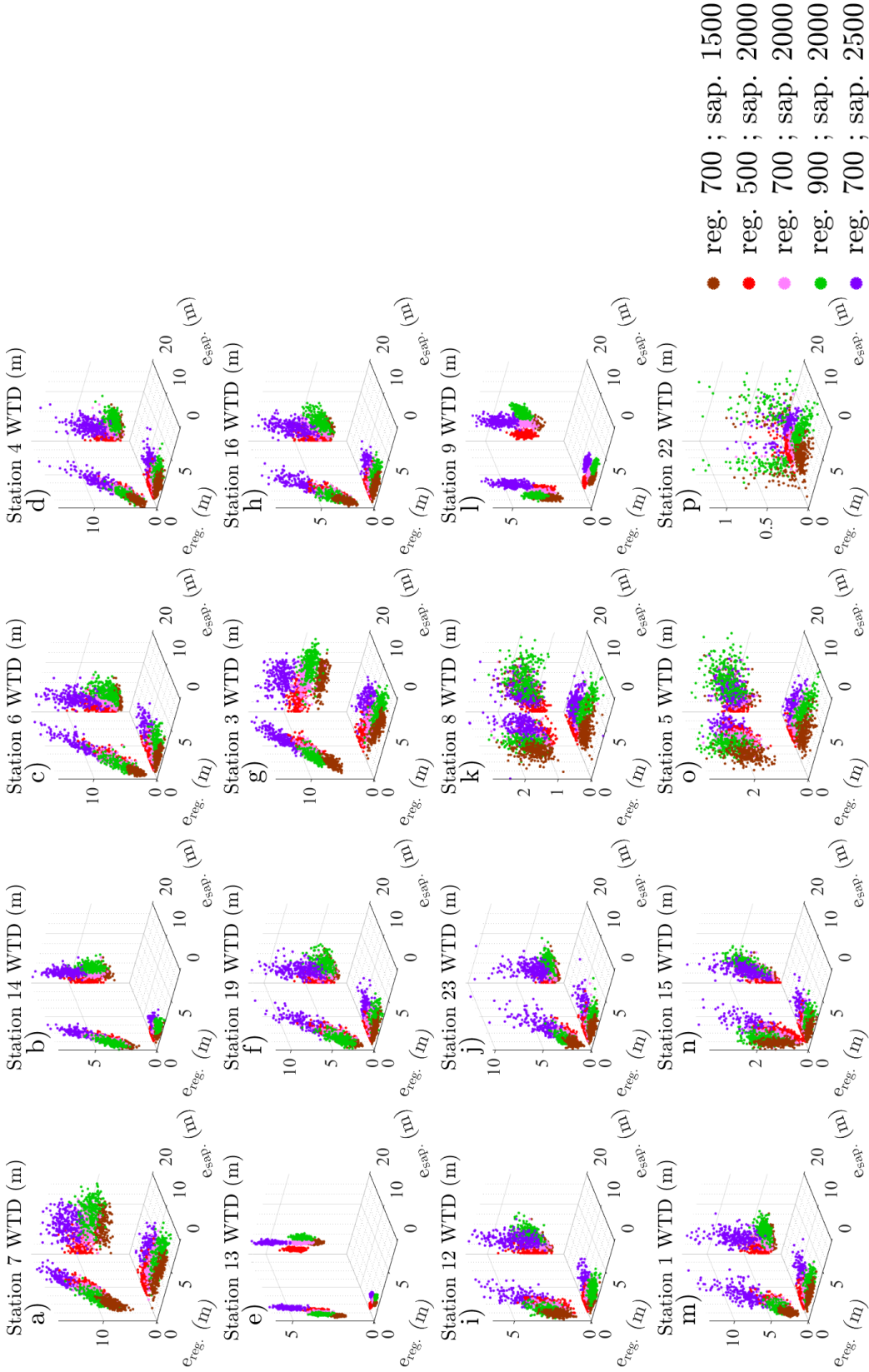




**Figure S8.** Distribution of MRS data as a function of the regolith and saprolite thickness

under each measurement stations. Data are estimated the 19th of April 2013 for different velocity

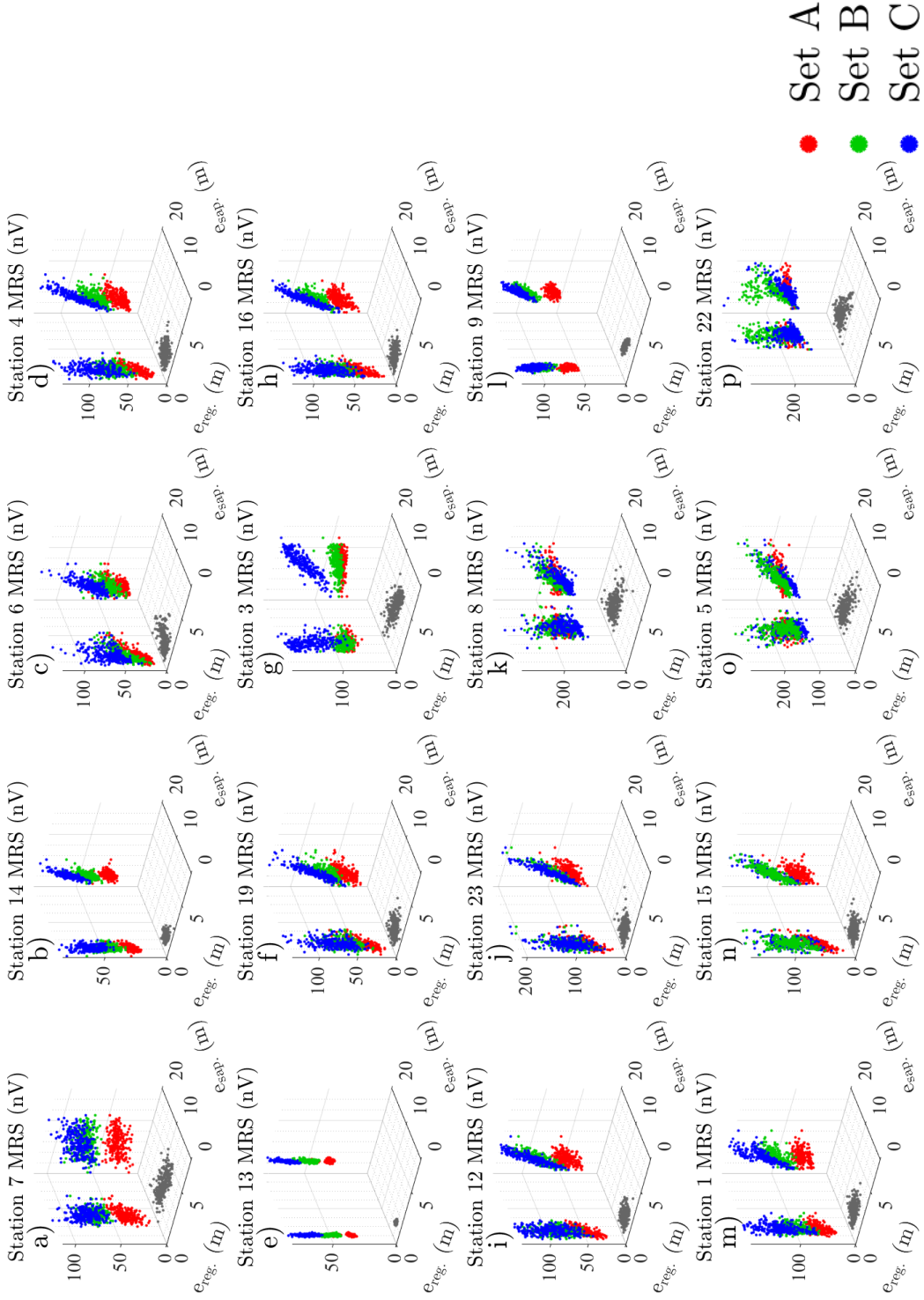
thresholds and the fixed set of parameter B.



**Figure S9.** Distribution of WTD data as a function of the regolith and saprolite thickness

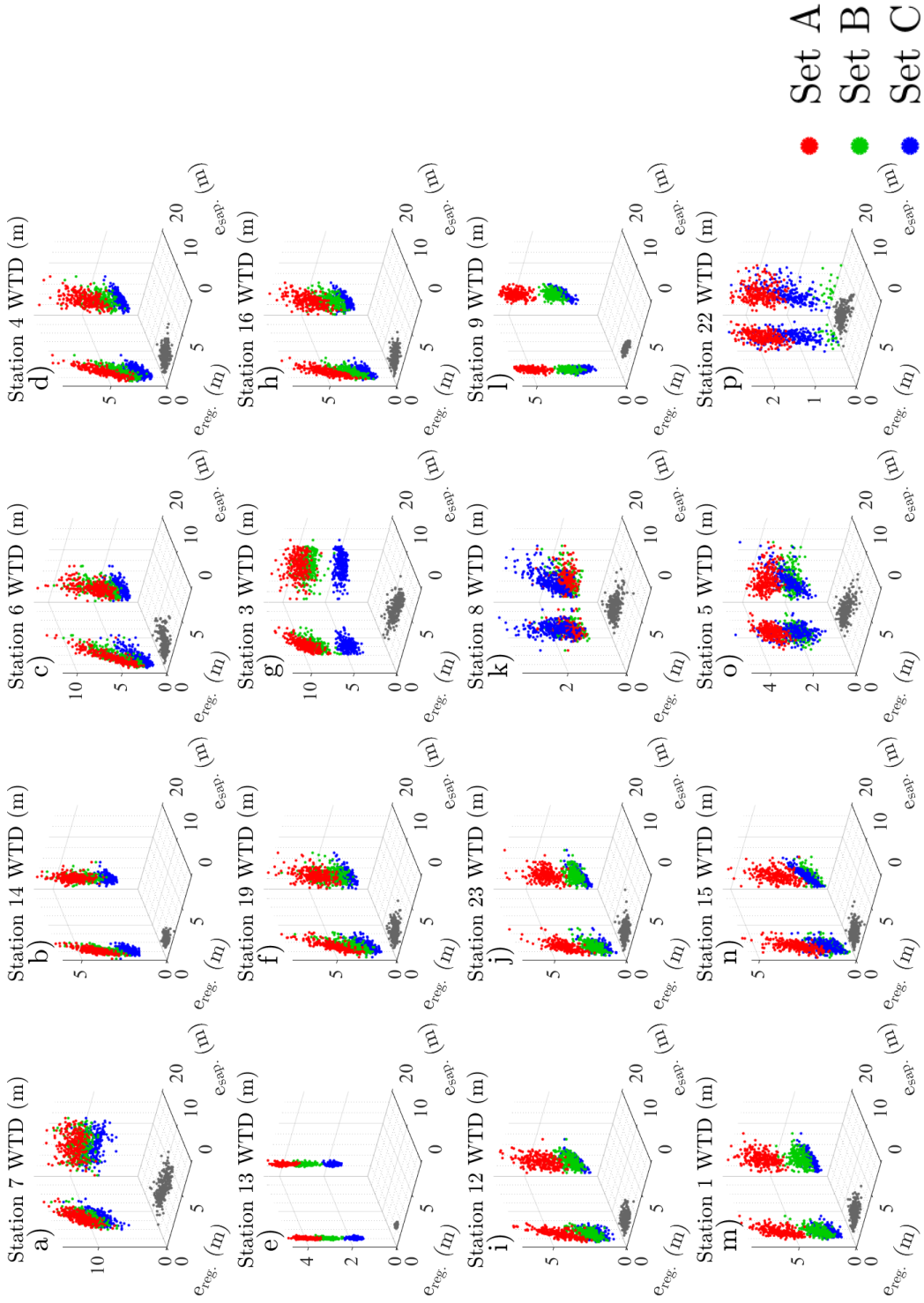
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**Figure S10.** Distribution of MRS data as a function of the regolith and saprolite thickness

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**Figure S11.** Distribution of WTD data as a function of the regolith and saprolite thickness

under each measurement stations. Data are estimated the 19th of April 2013 for different set of parameters and fixed velocity thresholds of 700 m/s for the regolith and 2000 m/s for the saprolite.

**Table S1.** Acquisition Parameters of the Seismic Lines.

Line number	1	2	3	9	10	11	12	13	14	15
Number of traces	144	144	144	96	96	72	72	96	96	96
Trace spacing (m)	2	2	2	2	2	2	2	2	2	2
Line length (m)	286	286	286	190	190	142	142	190	190	190
Number of shots	30	30	30	25	25	19	19	25	25	25
Shot spacing (m)	10	10	10	8	8	8	8	8	8	8
Recording time (s)	0.75	0.75	0.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Sampling time (ms)	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
Time delay (s)	-0.1	-0.1	-0.1	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05

**Table S2.** Set of Parameters Used in Seismic Tomography Inversions.

Top velocity (m/s)	250, 500, 750
Bottom velocity (m/s)	2000, 3000, 4000, 5000
z_weight	0.25, 0.5, 0.75, 1
lambda	2, 20, 200