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Supplementary material: Imaging the lithospheric structure and plumbing system below the Mayotte volcanic zone

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Supplementary Material A

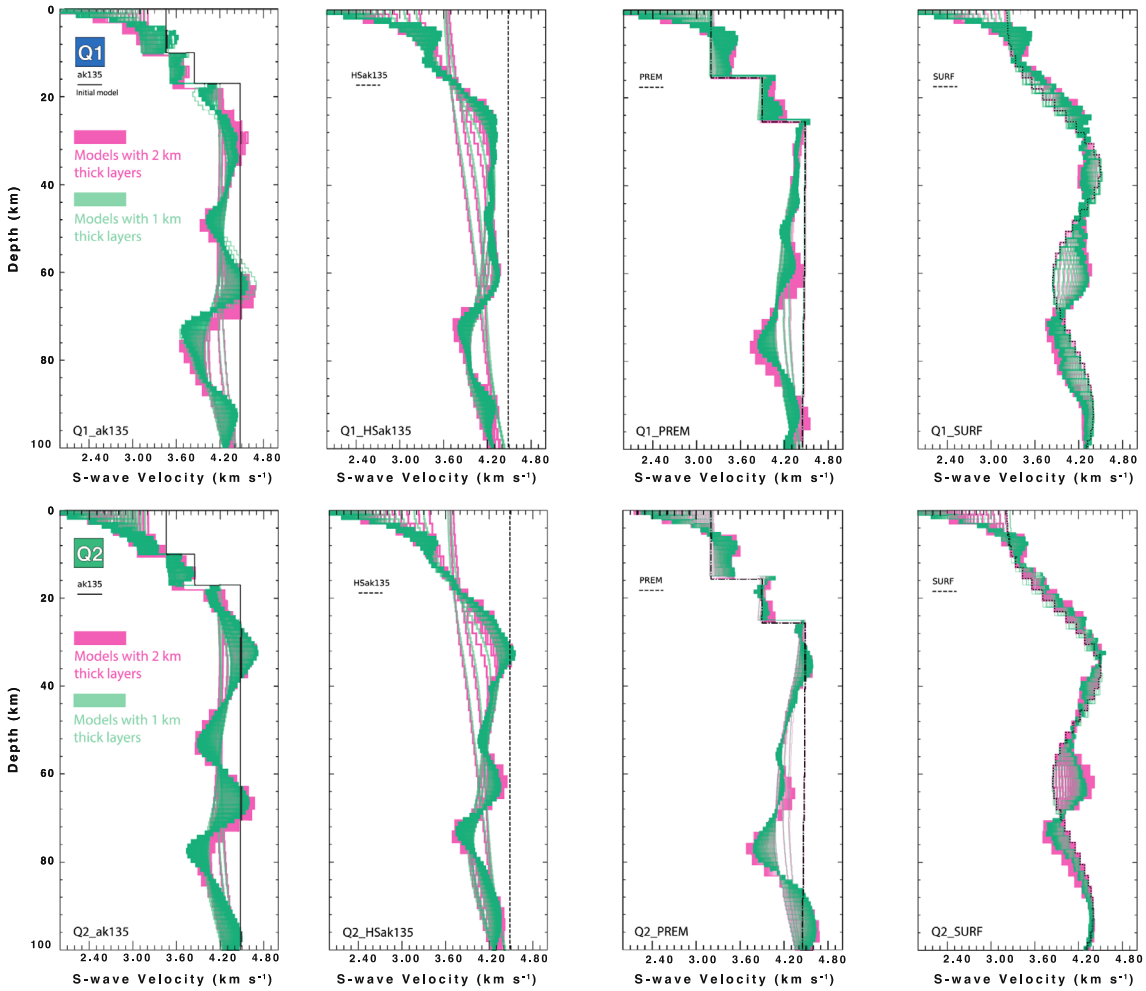
Table S1. NA parametrization, modified from Fontaine et al. [2013b] and identical to that used in Dofal et al. [2021]

Layers	H (km)	V_S^{upper} (km·s^{-1})	V_S^{lower} (km·s^{-1})	V_P/V_S
L1	0–2	1.5–3.0	1.0–3.0	2.00–3.00
L2	0–3	1.5–4.5	1.5–4.5	1.65–2.00
L3	1–15	1.5–5.5	2.8–5.3	1.65–1.80
L4	5–20	3.2–5.5	3.2–5.5	1.65–1.80
L5	5–20	3.2–5.5	3.2–5.5	1.65–1.80
L6	5–30	2.8–5.0	2.8–5.0	1.70–1.90

H is the layer thickness, V_S^{upper} is the velocity at the top of the layer, V_S^{lower} is velocity at the bottom of the layer and V_P/V_s is the velocity ratio in the layer.

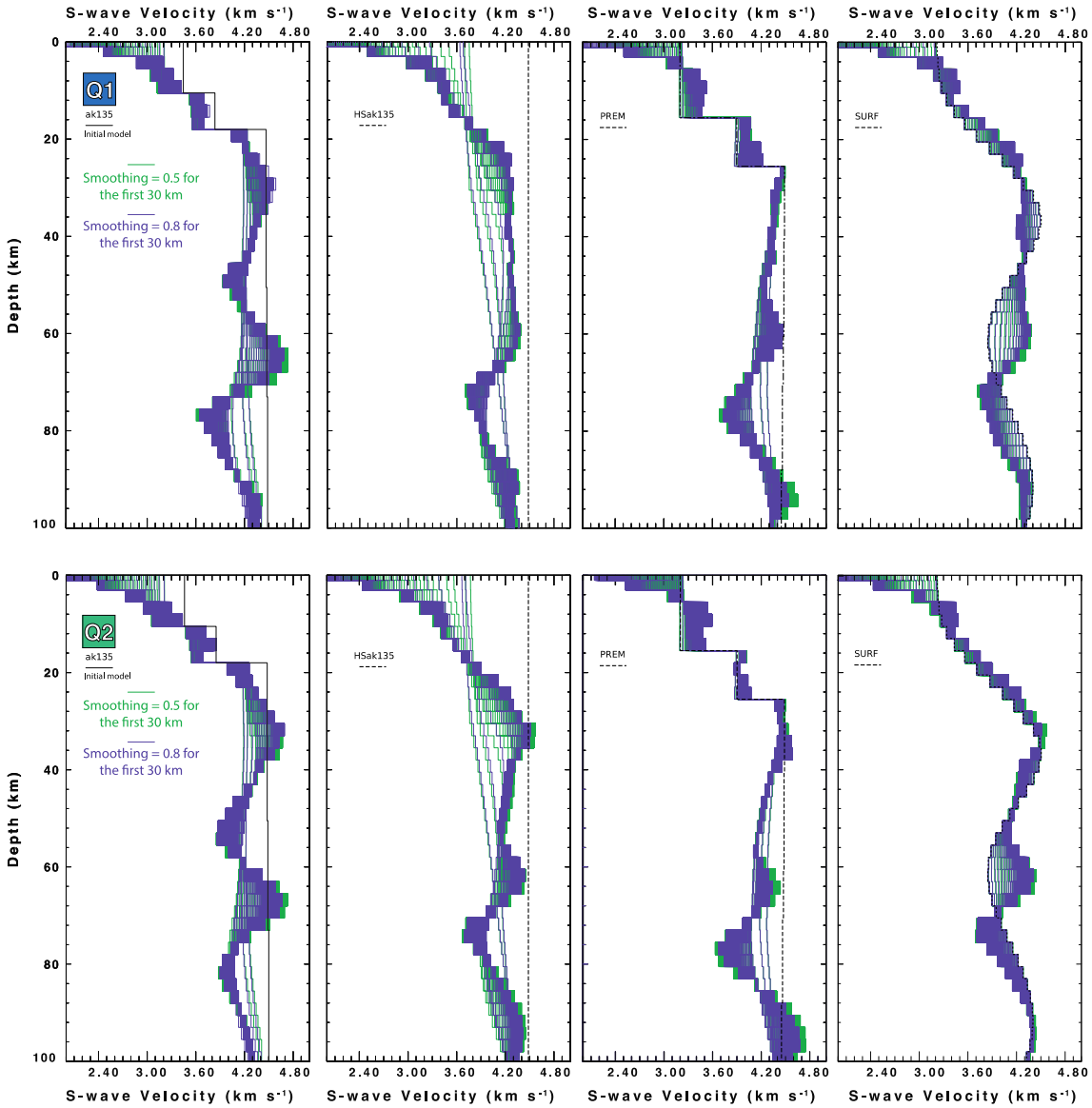
Supplementary Material B

Top, inversions in Q1 quadrant for the 4 initial models (ak135, HSak135, PREM, and SURF) with uniform thickness layers of 1 and 2 km (green and pink, respectively). Below, the same for the Q2 quadrant. The dotted line represents the initial model for each inversion. The generated green and pink model envelopes are nearly identical. Therefore, the initial thickness of the layers in the *a priori* models has no or little influence on the generated final models.



Supplementary Material C

Influence of the smoothing parameter. Two values of the smoothing parameter were tested for each inversion. In green, the smoothing parameter is set at 0.5 and in violet at 0.8 (value used for models presented in the paper). Note that the influence of this parameter is negligeable since a variation of 0.1 to 0.2 km·s^{-1} is observed according to smoothing parameter varying from 0.5 to 0.8.



Supplementary Material D

List of selected events recorded by MAYO station satisfying selection criteria's (epicentral distance from the station between 25° and 90°, with a magnitude greater than 5.5 and), see the .txt files available online.

Supplementary Material E

Top, the full set of models generated for the inversions in Q1 quadrant with 4 initial models (ak135, HSak135, PREM, and SURF). The color scale indicates the iteration number from 0 to 100, red and blue, respectively. Below, the same for the Q2 quadrant. The dotted line represents the initial model for each inversion.