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Global upper mantle and transition zone shear wave structure from fundamental and higher mode surface waves

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We present a new global shear wave tomographic model of the upper mantle. The model is built from an extension of the surface wave automated waveform inversion approach of Debayle, (1999). This extension allows us to better extract higher modes information and to improve mapping of the transition zone. Over 300 000 Rayleigh waveforms have been matched with success with the new approach. A tomographic inversion allows us to constrain upper mantle SV-wave heterogeneities with a lateral resolution of several hundred kilometers and a vertical resolution of a few tens of kilometres. We discuss the new tomographic model.