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On the consistency of tomographically imaged lower mantle slabs

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Over the last few decades numerous seismic tomography models have been published, each constructed with choices of data input, parameterization and reference model. The broader geoscience community is increasingly utilizing these models, or a selection thereof, to interpret Earth's mantle structure and processes. It follows that seismically identified remnants of subducted slabs have been used to validate, test or refine relative plate motions, absolute plate reference frames, and mantle sinking rates. With an increasing number of models to include, or exclude, the question arises - how robust is a given positive seismic anomaly, inferred to be a slab, across a given suite of tomography models? Here we generate a series of "vote maps" for the lower mantle by comparing 14 seismic tomography models, including 7 s-wave and 7 p-wave. Considerations include the retention or removal of the mean, the use of a consistent or variable reference model, the statistical value which defines the slab "contour", and the effect of depth interpolation. Preliminary results will be presented that address the depth, location and degree of agreement between seismic tomography models, both for the 14 combined, and between the p-waves and s-waves. The analysis also permits a broader discussion of slab volumes and subduction flux. And whilst the location and geometry of slabs, matches some the documented regions of long-lived subduction, other features do not, illustrating the importance of a robust approach to slab identification.