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## Constraints on the mantle transition zone structure using triplicated body waves

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The mantle transition zone (MTZ) is bounded by seismic discontinuities at average depths of 410 km and 660 km, which are generally associated with major mantle mineral transformations. A body wave impinging from above on these discontinuities develops a refracted and reflected branch, leading to multiple arrivals of the same wavetype within a short time window. These so-called triplicated body waves are observed at regional epicentral distances (15-30°) and carry information on MTZ structure due to their strong interaction with the 410 km and 660 km discontinuities. Careful data selection and processing as well as the assessment of source parameters are necessary steps in obtaining a high quality triplication data set. In this study, we consider recordings of events in Central America at permanent and transportable USArray stations, which are inverted for mantle structure. Our methodology is based on a joint consideration of mineral physics and seismic data in a probabilistic inversion framework and allows for determination of mantle thermo-chemical and seismic velocity structure. We present constraints on the mantle structure underneath the Gulf of Mexico.