Figure 9. Comparison of east-west cross sections across the Isabella anomaly using different starting models as labeled at the top of each column. Anisotropy results are from the scaled version. High velocity and anisotropy are denoted by cooler colors. High Vp/Vs is denoted by warmer colors. Outlines of subanomalies IA1–IA3 are shown; in interactive version, button at lower-left toggles the overlay on and off. If you are reading the full-text html version of the paper, please view the PDF of this paper or visit <https://doi.org/10.1130/GES02093.9i> to interact with Figure 9.

Because the IASP91 1-D model does not include information about Great Valley sediments, low wave speeds that should be located closer to the surface are smeared into deeper depths by the limited vertical resolution of the tomography at shallow depths, which distorts the shallower IA1 Vp/Vs feature.

The deepest low Vp/Vs_{Mean} anomaly, defined as IA3, was located beneath the eastern portion of the Sierra Nevada between 170 and 220 km depth. Vp/Vs_{Mean} perturbations were as low as ~2%. This anomaly is within the easternmost location of the Isabella anomaly (Fig. 9). While still faster than surrounding mantle, this portion of the Isabella anomaly was not as fast as IA1 or the central feature found at ~200 km depth. Instead, peak P- and S-wave velocities ranged from 1% to 4% faster than surroundings. There was minimal variation in the shape and magnitude of this Vp/Vs_{Mean} feature across the starting models, an indication that ray coverage was sufficient at this depth and location. There were also no variations between starting models because surface wave models

did not resolve anomalies at these depths, and the ray coverage prevented shallower differences from bleeding into these depths (Fig. 9).

Finally, the core of the Isabella anomaly observed in the P-wave tomograms (Jones et al., 2014), defined as IA2, corresponded to a region with a low-to-average Vp/Vs_{Mean} ratio (Fig. 9) that was higher than the eastern (deep) and western (shallow) anomalies.

Anisotropy also varied between the different Vp/Vs_{Mean} bodies (Fig. 9). The easternmost and deepest Vp/Vs_{Mean} anomaly, IA3, exhibited greater anisotropy than the other two anomalies, but was comparable to background levels. IA2 (core) exhibited the lowest anisotropy among the three features. IA1 (westernmost) coincided with a questionable region of low anisotropy that could result from streaking of IA2 structures. IA1 was the least resolved of the three anomalies owing to a lack of seismic stations in the San Joaquin Valley and its lower crust–shallow mantle location, where results from differing starting

Figure 9 is interactive. Button at lower-left toggles the overlay on and off. If you are reading the full-text html version of the paper, please view the PDF of this paper or visit <https://doi.org/10.1130/GES02093.9i> to interact with Figure 9.