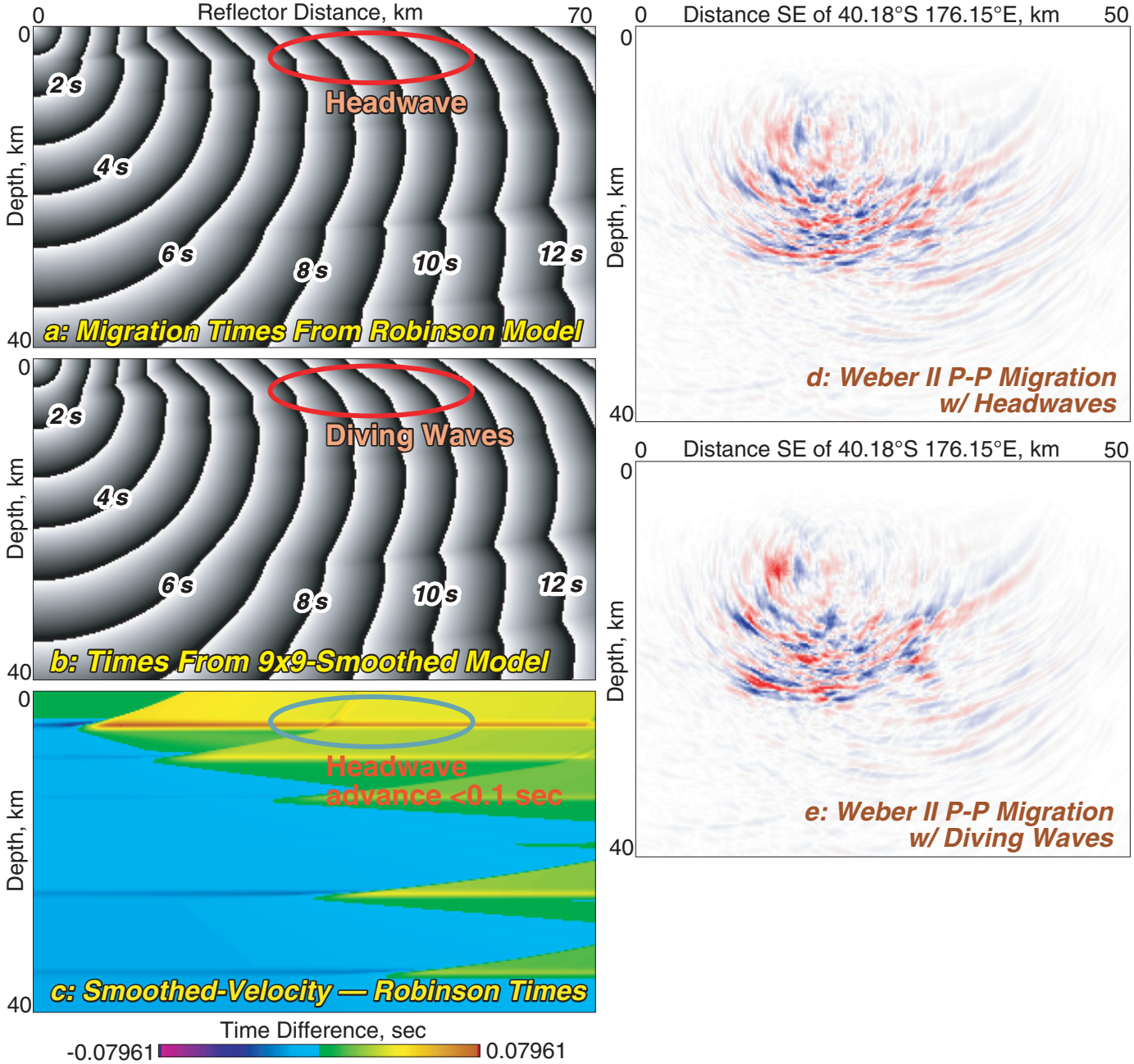

Figure 8: Test of the effects of migrating possible headwaves. a) is a travel-time section from Robinson's (1994) 1-d velocity model, used in the migrations of Figure 7, and contoured by taking the time from a source at the upper left, modulo one second. b) is the same travel-time section, but computed after smoothing Robinson's velocity model with a 1.8-by-1.8 km 2-d boxcar averaging kernel. Converting the velocity interfaces into gradients removes headwaves and substitutes diving waves, making the angled headwaves (a) into spherical waves (b). c) shows the time difference between the smoothed-velocity and the original times. The red colors show that, just above an interface, a headwave will arrive up to 0.08 s earlier than a diving wave. d) and e) show the backscattered P-P migration of Figure 7a using headwaves, and the same migration employing the smoothed-velocity travel times (b) for imaging, respectively. The small difference between (d) and (e) shows the 0.08 s headwave advance of these arrivals to 70 km distance is insignificant in the context of the 2-8 Hz waves migrated.