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A comparison of legacy and recently acquired multichannel seismic data on 95 Ma Pacific oceanic crust south of the Hawaiian Islands

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The oceanic crust in the vicinity of the Hawaiian Islands is of tectonic interest because it formed at a fast spreading mid-oceanic ridge during the Late Cretaceous (Turonian) and has been deformed since the Late Miocene by volcanic loads generated at a deep mantle hotspot. We have used legacy and recently acquired multichannel seismic reflection data to determine the character of oceanic crust and the Moho in a region south of the Hawaiian Islands where the Pacific plate has been flexed upwards partly by volcano loading and partly by the dynamics of the hotspot. The legacy data is based on Common Depth Point (CDP) and Constant Offset Profile (COP) data acquired onboard *R/V Robert D. Conrad* and *R/V Kana Keoki* during August/September 1982. *Conrad* was equipped with a 3.6 km long streamer and a 1864 cu. in. airgun array and *Kana Keoki* was equipped with a 1864 cu. in. array. During the COP experiment the two ships steamed on a similar heading and a separation distance of 3.6 km, yielding an effective offset for reflection data of 7.2 km. Original field data have been re-processed with 'state-of-the-art' seismic processing work flows using Shearwater REVEAL software. The recently acquired data was acquired during October 2018 with *R/V Marcus G. Langseth*, equipped with a 15 km long streamer and a 6600 cu. in. airgun array. Comparisons between the legacy and recently acquired reflection data have been informative, revealing new methods to process *Conrad's* legacy of multichannel data acquired on 31 cruises during 1975 to 1989 and new insights on the structure and nature of the Moho in 95 Ma oceanic crust.