NCEI WATER LEVEL REPORT – Tsunami

UPDATE
March 14, 2023

Services

NDBC DART Ocean Bottom Pressure Data Archived and Processed

NCEI has received and archived 31 new Deep-ocean Assessment and Reporting of Tsunamis (DART) ocean bottom pressure data packages from sites maintained by the National Weather Service's National Data Buoy Center (NDBC) in the Pacific and Atlantic Oceans. Among the data submitted for archive, 18 data packages were recovered from the seafloor in 2021 and 13 data packages were recovered in 2022. The data have been quality-controlled and tides analyzed by NCEI's Tsunami Water Level Team. The period of coverage varies among the sites (one to four years). A small tsunami generated by the January 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano was observed at 11 of the DARTs. The six largest wave observations are shown in Figs. 1-6.

Additionally, a small tsunami generated by the July 22, 2020 M7.8 earthquake southeast of Perryville, Alaska, was observed at three of the DARTs and a small tsunami generated by the March 25, 2020 M7.5 earthquake in the Kurils was observed at DART 21419 in the northwest Pacific. These data, recorded at 15-second resolution, are not available until the data are physically retrieved from the seafloor instrument. The data and products may be viewed and downloaded from NCEI by exploring either the DART layer of the Natural Hazards Map Viewer or the DART data inventory timeline. The processed records produced by NCEI are used to validate tsunami models in support of the NOAA Tsunami Program.

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Services (cont'd)

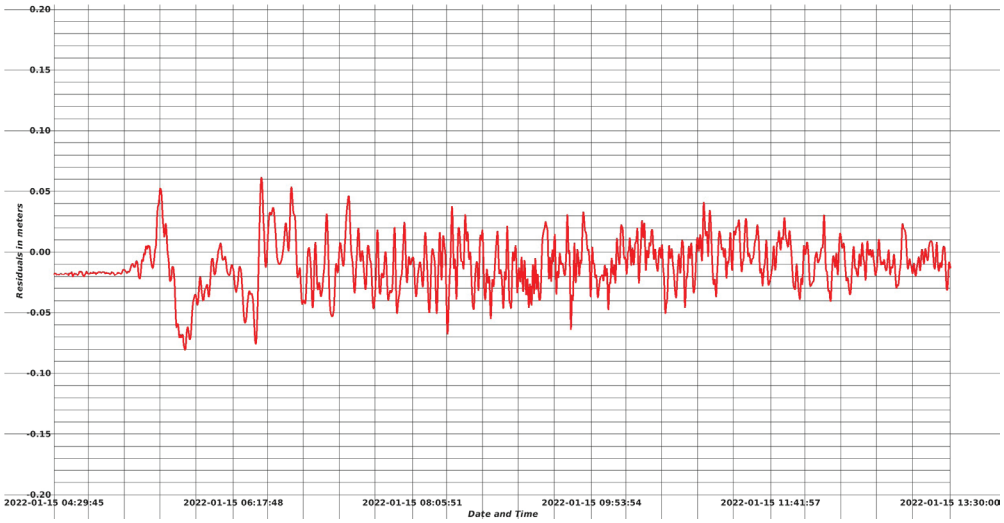

Figure 1: High-resolution, quality-controlled and de-tided water level observations of the Jan. 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano during DART deployment 51425_20200921to20220904 (370 NM Northwest of Apia, Samoa).

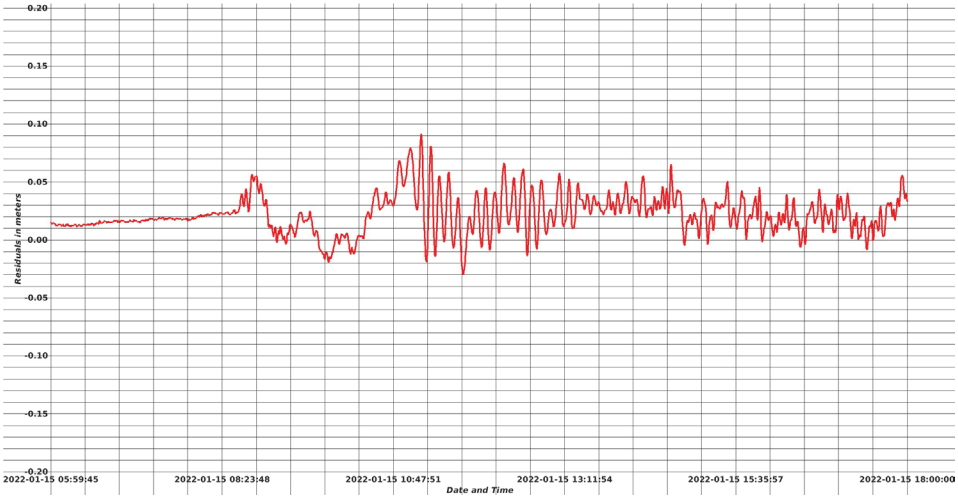

Figure 2: High-resolution, quality-controlled and de-tided water level observations of the Jan. 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano during DART deployment 51407_20200412to20220922 (34 NM West of Kailua-Kona, Hawaii).

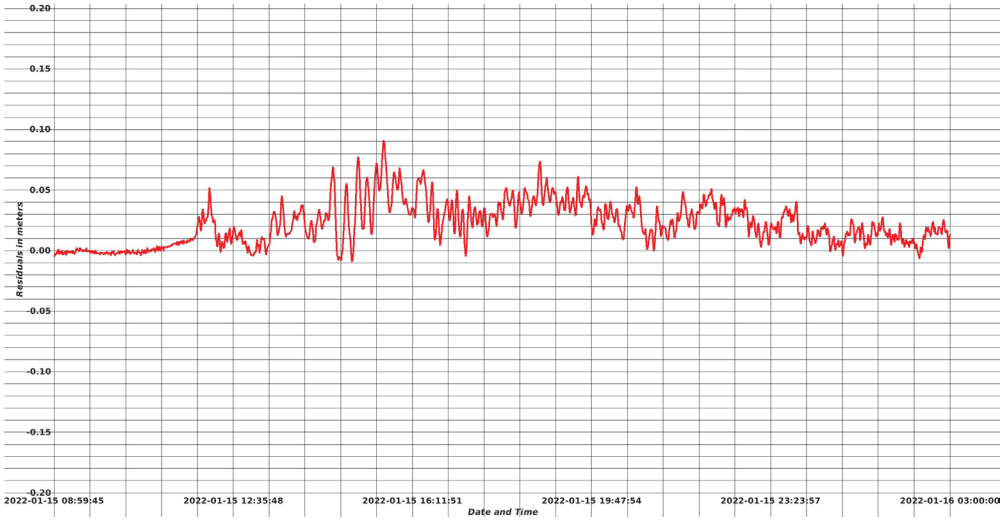

Figure 3: High-resolution, quality-controlled and de-tided water level observations of the Jan. 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano during DART deployment 46414_20180606to20220608 (165 NM Southeast of Chirikof Island, Alaska).

Contribution to the 2022 U.S. National Sea Level Report to GLOSS

NCEI's Tsunami Water Level Team contributed tsunami-related tide gauge and DART information to the 2022 U.S. National Sea Level Report to the Global Sea Level Observing System (GLOSS). This is the first time this biennial report included information about National Tsunami Warning Center (NTWC) and Pacific Tsunami Warning Center (PTWC) tide gauge networks and NCEI tsunami water level products and services.

Services (cont'd)

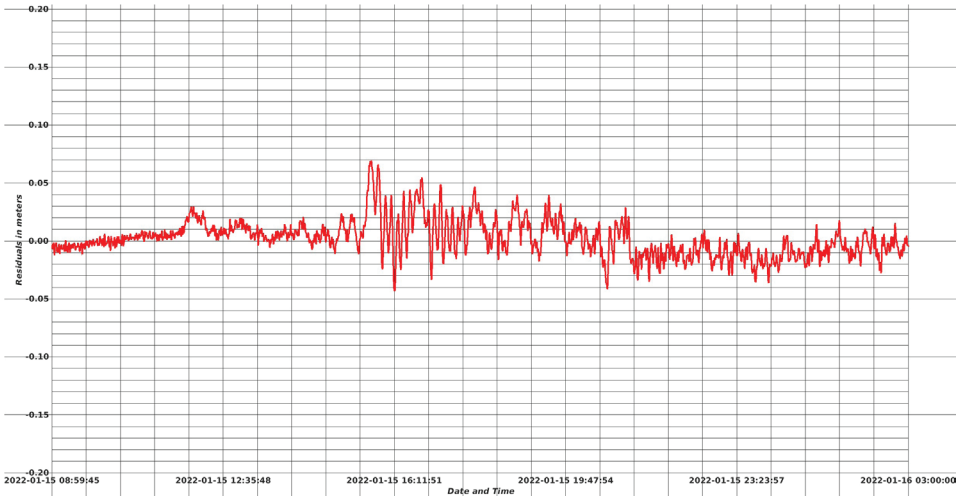

Figure 4: High-resolution, quality-controlled and de-tided water level observations of the Jan. 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano during DART deployment 46407_20180521to20220503 (210 NM West of Coos Bay, Oregon).

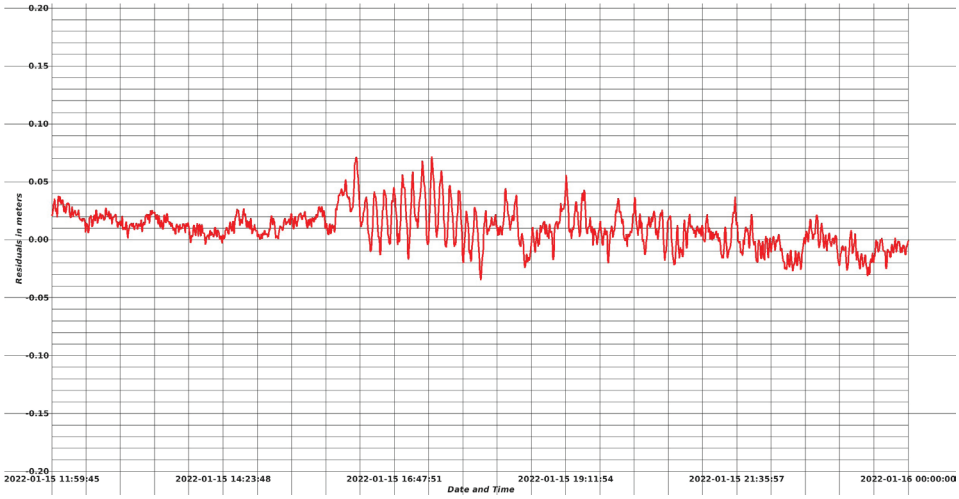

Figure 5: High-resolution, quality-controlled and de-tided water level observations of the Jan. 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano during DART deployment 46404_20180522to20220505 (230 NM West of Astoria, Oregon).

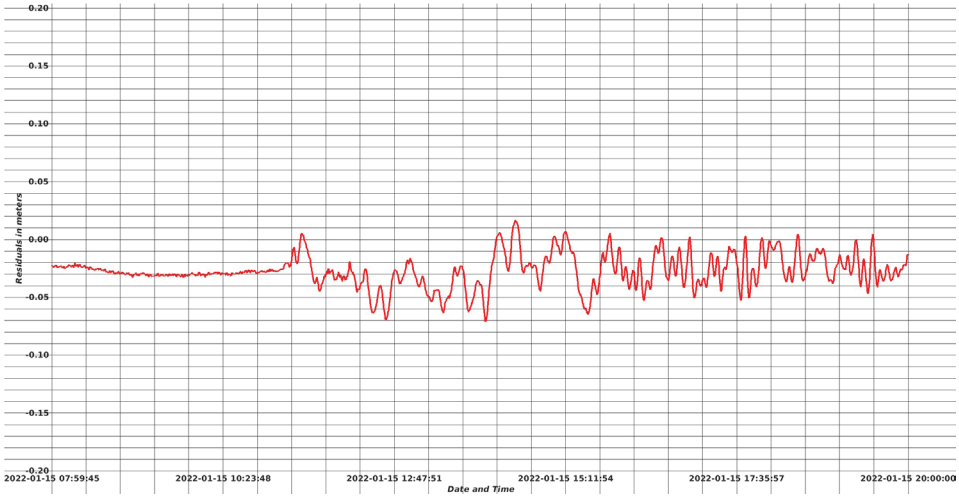

Figure 6: High-resolution, quality-controlled and de-tided water level observations of the Jan. 15, 2022 eruption of Hunga Tonga-Hunga Ha'apai Volcano during DART deployment 21415_20210713to20220628 (175 NM South of Attu, Alaska).