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**Supplementary Information for**
Volcanic Ash, Victims, and Tsunami Debris from the Late Bronze Age Thera Eruption discovered at Çeşme-Bağlararası (Turkey)

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Supplementary text
Figures S1 to S8
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**Other supplementary materials for this manuscript include the following:**

Datasets S1


**Fig. S1.**
Volcanic ash layer and related tsunami deposits (H1a-d) at Çeşme–Bağlararası as seen from the baulk wall of the excavation.


**Fig. S2.**

Çeşme–Bağlararası excavation area photograph from 2010. A) Stone removal pit (filled with H1d); B) Darker soils that overlay tsunami rubble (H1a); C ) Rubble spillover into room through collapsed fortification wall; D) Continuation of the same section from which sediment sampling was carried out, E) Intact portion of fortification wall, F) Undisturbed portion of site (Level CB2).

**Fig. S3.**

Çeşme–Bağlararası excavation photo from 2012. The collapsed and disturbed walls to the right and the truncated damaged walls are visible on the left. The tsunami deposits H1a continued into the buildings on the left side of the image. Irregular pits are visible throughout the excavation area. The rubble outside the fortification walls is visible on the lower right of the photograph.

**Fig. S4.**

Young male articulated skeleton within tsunami rubble at Çeşme–Bağlararası. The curve of the excavation around the skeleton marks the extent and shape of the deposit (scalloped/lenticular) The uneroded portion to the right of the skeleton in the photo contains undisturbed archaeological stratigraphy from pre-Thera eruption period (Level CB2).


**Fig. S5**

Upper: Comparison of Elemental Values (XRF) from Çeşme – Bağlararası vs. Santorini.
Lower: PCA Comparison of Elemental Values from Çeşme – Bağlararası vs. Santorini Bo Tephra

Much of Çeşme - Bağlararası's nearby geological deposits are volcanic in origin, resulting in significant amounts of local tephra and pumice within typical background sediments. The identified ash layer is relatively thin, ranging from less than 1 cm to 3 cm thick. The values of the non-sieved ash layer do not perfectly 'match' those of comparative Santorini Bo samples, but instead represent a mixed Bo and older, locally-derived ash and pumice. Other sites in the region, such as Çine Tepecik, Miletos and Iasos, show INAA results that more closely match Bo values. Geographically, relative to Çeşme - Bağlararası, these sites are closer to Santorini, and thus have thicker ash deposits with less mixing with local pumice and ash. Sediment elemental (XRF) values were measured from a coarser fraction (greater than 125 micron, see upper graph) of two samples. The underlying assumption being that due to particle size and distance from Thera these size fractions could not have arrived with the wind, and therefore are of local origin. Results from the larger sized fraction in the ash layer were compared to the results from the larger sized fraction from the underlying non-ash layer (see upper graph). Their similarity supports the

presumption that materials in the coarse fraction are unrelated to the fallout of airborne Theran ash. In the lower graph (INAA), coarse Çeşme - Bağlararası pumices were similarly measured independently and shown to be less similar to Bo samples than the measurements from bulk Çeşme - Bağlararası ash samples. Again, confirming different sources of volcanic ash products within the deposit.

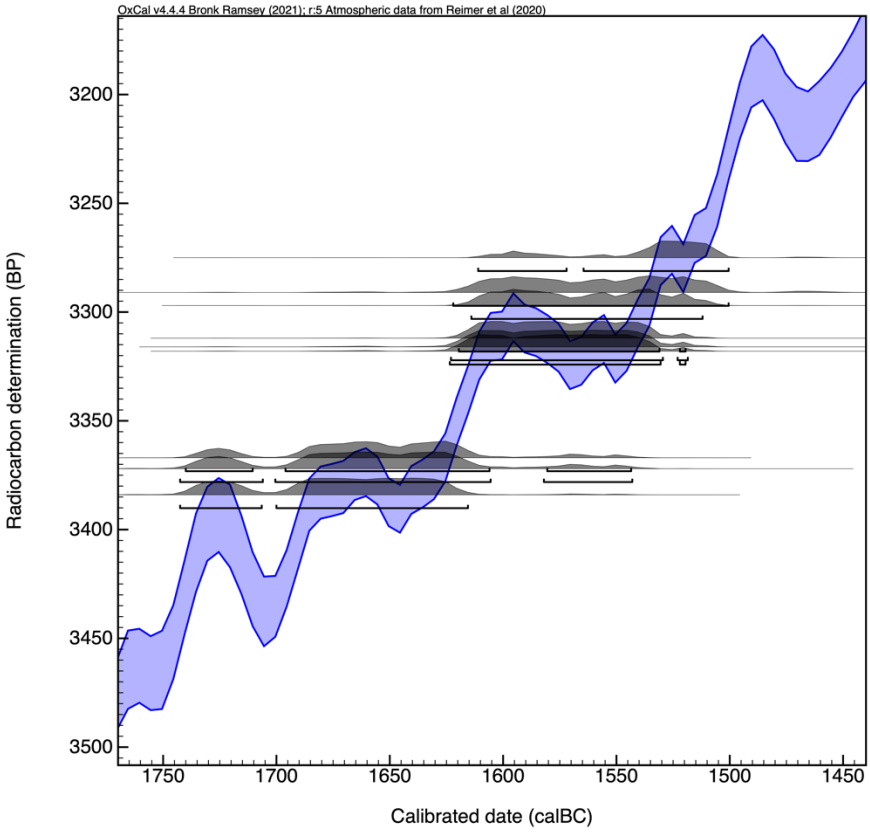


**Fig. S6.**

All radiocarbon ages calibrated and plotted against the calibration curve. Two clusters are present.

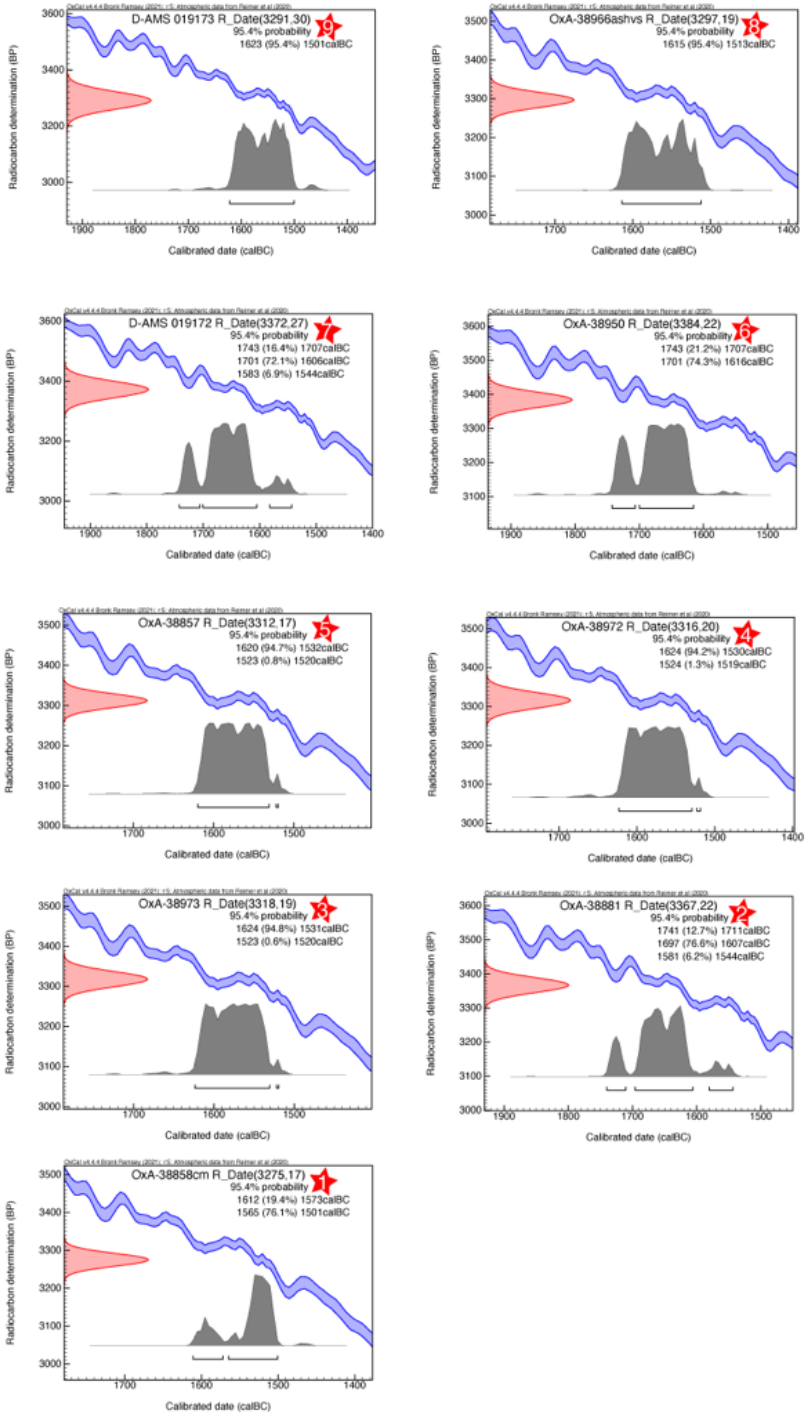


**Fig. S7.**

OxCal calibrations from individual sample measurements.

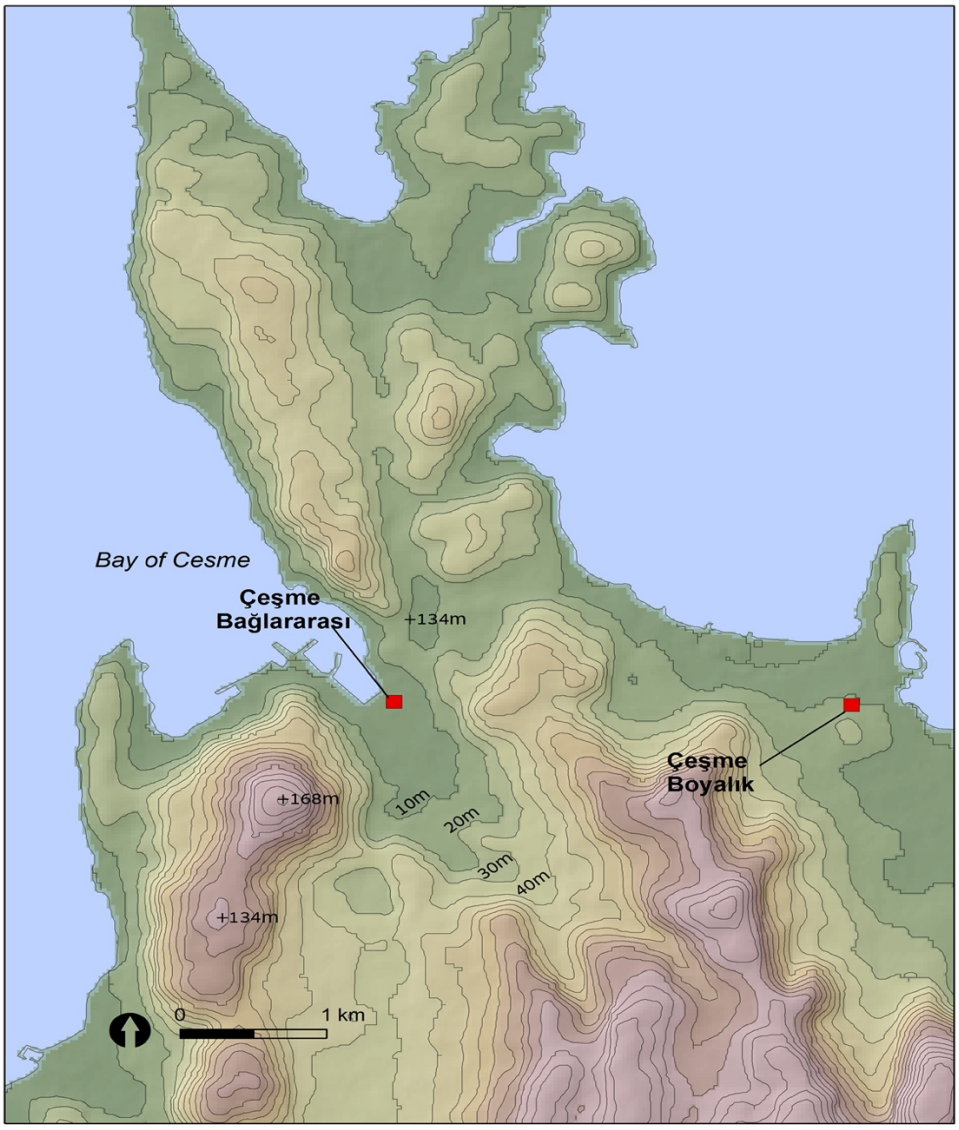


**Fig. S8.**

Topographic map of Çeşme area and location of Çeşme–Bağlararası site. Isopachs are 10m elevation intervals. Adapted from Şahoğlu 2015 [1], Figure 1, created by Dr. Michele Massa.

**Table S1.**

Radiocarbon results. Radiocarbon samples were measured at Direct AMS (Washington, USA) and The Oxford Radiocarbon Accelerator Unit (ORAU) and calibrated using OxCal.

| LAB ID | Sample # (Fig.3) | LAB | Level | Material | Radiocarbon Date (ybp 1950) | Cal BC/CE MIN (2σ:Oxcal) | Cal BC/CE MAX (2σ:Oxcal) |
|---|---|---|---|---|---|---|---|
| OxA-38858 | 1 | Oxford | CB 1 | *Hordeum Vulgare* | 3275±17 | 1612 | 1501 |
| OxA-38881 | 2 | Oxford | CB 1 | *Bos Taurus* | 3367±22 | 1741 | 1544 |
| OxA_38973 | 3 | Oxford | CB 1 | *Ovis Aries* | 3318±19 | 1624 | 1520 |
| OxA-38972 | 4 | Oxford | CB 1 | *Sus Scrofa* | 3316±20 | 1624 | 1519 |
| OxA-38857 | 5 | Oxford | CB 1 | *Olea europea* | 3312±17 | 1620 | 1520 |
| OxA-38950 | 6 | Oxford | CB 1 | Charcoal | 3384±22 | 1743 | 1616 |
| D-AMS 019172 | 7 | Direct AMS | CB1 | bone (unidentified) | 3372±27 | 1743 | 1544 |
| OxA-38966 | 8 | Oxford | CB 1 | Charcoal | 3297±19 | 1615 | 1513 |
| D-AMS 019173 | 9 | Direct AMS | CB1 | Charcoal | 3291±30 | 1623 | 1501 |

**Data S1. (separate file)**
Table of all sediment analytical results (grain size distribution, XRF, Marine Inclusions) (Excel)

**SI References**


1. Şahoğlu V (2015) Çeşme – Bağlararası: A Western Anatolian Harbour Settlement at the Beginning of the Late Bronze Age. *NOSTOI: Indigenous Culture, Migration and Integration in the Aegean Islands and Western Anatolia during the Late Bronze Age and Early Iron Age*, eds Stampolidis N, Maner Ç, Kopanias K (Istanbul), pp 593–608.