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Radiocarbon Dating of the Plaster of Siloam Pool in the City of David

Elisabetta Boaretto

The plaster samples were collected from L108, B1028, during an excavation near the outer face of the wall damming the Siloam Pool in the City of David (see Greenhut and Mazor, this volume).[1] The associated material found in the fill abutting this plaster originated in L107 and L109, and contained solely Iron Age IIB pottery (see Greenhut and Mazor, this volume: Fig. 8). The expected age of the assemblage was between the seventh century and 586 BCE.

The plaster was not homogeneous, including a friable binder and many aggregates of different sizes. Very small pieces (only several millimeters in size) of charred remains could be observed under the microscope, mixed within the plaster material. A charcoal fragment, RTT 6089, was recovered and processed for radiocarbon dating. The sample was treated using the Acid-Alkali-Acid procedure (see Yizhaq et al. 2005). During pre-treatment the sample lost 79.9% of the material in mass, indicating a poor preservation. The percentage of carbon in the clean material was 52%, which is in the range of charred remains.

The radiocarbon determination for RTT 6089 was 2300 ± 55 uncalibrated years BP. Carbon-14 ages are reported in conventional radiocarbon years BP (before present = 1950) in accordance with the international convention (Stuiver and Polach 1977). Thus, all calculated ^{14}C ages have been corrected for the fractionation so the results will be equivalent to the standard δ13C value of -25‰ (wood).

Calibrated ages in calendar years have been obtained from the calibration tables in Reimer et al. 2020 by means of the OxCal v4.4.2 of BronkRamsey (2020) software (Bronk-Ramsey 1995; 2001). The probability distribution of the calibrated range is separated in several intervals due to the presence in the calibration curve of some wiggles. The 68.2% probability (corresponding to ±1σ standard deviation) is 410–350 BCE (37.5% probability) and 290–210 BCE (30.7% probability). The 95.4% probability (corresponding to ±2σ standard deviation) cover the range of 540–190 BCE (Fig. 1).

[1] The samples were analyzed in the D-REAMS Radiocarbon Laboratory, Scientific Archaeology Unit, at the Weizmann Institute of Science, Reḥovot.

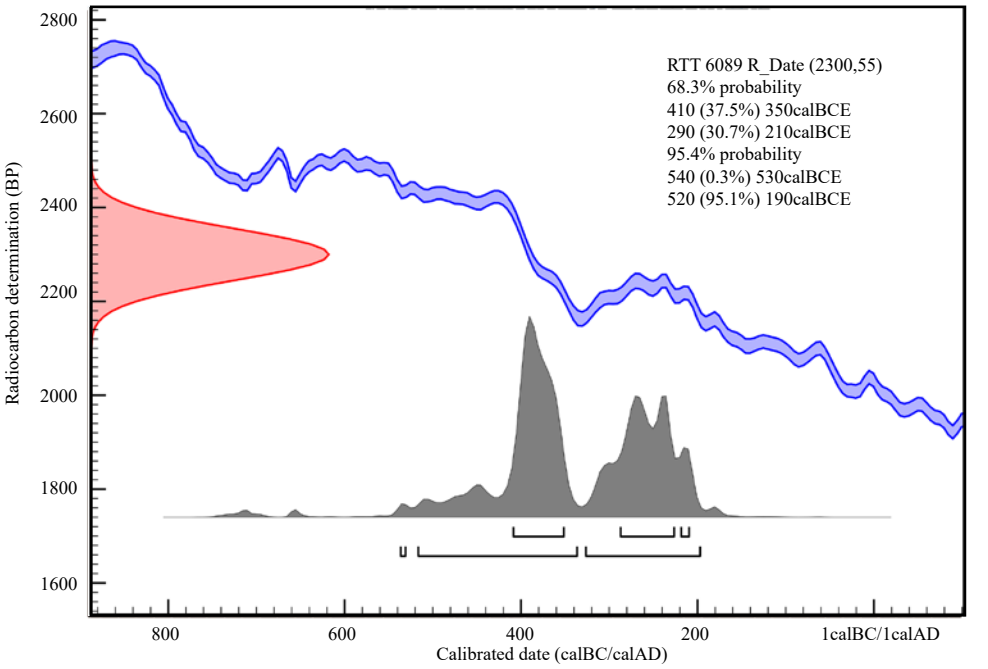

Fig. 1. Probability distribution of the RTT 6089 radiocarbon determination.

It is noteworthy that the major difference between ±1σ and ±2σ lies in the increase of the older limit by 130 years, while the younger limit remains almost unchanged. This is due to the inclusion of the Hallstatt Plateau.

The age obtained corresponds to the Persian and Hellenistic periods; however, since the sample was just a small piece of wood charcoal, the date should be understood as the production age of the plaster, or as a *terminus post quem* due to the old wood effect. The discrepancy between the obtained radiocarbon date and the date based on the archaeological material and stratigraphy (seventh century–586 BCE) is, at the moment, difficult to explain. Future excavations yielding samples for absolute dating will enable dating the archaeological context with higher precision (see Boaretto 2015).

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