

The Pondera Online Database

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Abstract—The Pondera Online Project aims to collect and study ancient and medieval weights that were produced between the mid-sixth century BCE and the mid-fifteenth century CE. It relies on a PostgreSQL database hosted by the University of Louvain (<https://pondera.incal.ucl.ac.be>).

Keywords—ancient and medieval weights, digital humanities, relational database

I. INTRODUCTION

The Pondera Online Project aims to collect and study ancient and medieval weights that were produced between the mid-sixth century BCE and the mid-fifteenth century CE. Nowadays, more than 20,000 weights dating from these two millennia are registered, half of them from public and private collections, half of them from archaeological excavations—but many weights remain unpublished.

No attempt for a global corpus of ancient and medieval weights has been made since the end of the 19th century. The available publications are either based on museum collections or archaeological excavations; a few weights were also published in epigraphical corpora. In most cases, the descriptions of weights are more or less accurate, but rarely complete; photographs are often not available.

Dispersed objects, disparate information and imprecise data together constitute a major obstacle to a comprehensive approach. Therefore, the Pondera Online Project is intended to fill a gap in the collection, standardization, and processing of these archaeological data, thanks to the creation of an open access relational database.

Initially, the Pondera Online Database only aimed to record ancient Greek weights, but it quickly appeared that such a tool should also include Roman, Late Roman, Byzantine, and Islamic weights. This was only made possible through the integration of almost 7,500 Late Roman and Byzantine weights collected by Dr. Bendeguz Tobias in the framework of a project funded by the Austrian Science Fund (FWF) at the University of Innsbruck (2013–2016). This generous collaboration was also the starting point for building an international network of scholars who are now contributing to the Pondera Online Project.

The Pondera Online Project was initiated by Pr. Charles Doyen, Research Associate at the Belgian Fund for Scientific Research (F.R.S.–FNRS). The project has been funded for four years (2016–2019) by the F.R.S.–FNRS, and the website is hosted by the University of Louvain (Belgium).

On October 1st, 2018, the Pondera Online database contained 11,619 artifacts. More than thirty researchers collaborate to this project.

II. DESCRIPTION OF THE PONDERA ONLINE DATABASE

The Pondera Online Project relies on a PostgreSQL relational database, coded in Python, that uses a Django interface [1]. This database consists of 26 tables [fig. 1]. The main table (“Artifact”) contains 72 fields. About half of them are multivalued fields.

The database structure enables the description of weights as archaeological and epigraphical objects at a granular level. Special attention is given to the provenance of the weights (archaeological excavations or antiquities trade), to their dating, and to their location (museum or private collection).

Most of the Pondera Online standards complies to the international standards used for describing coins and numismatic objects (Nomisma) [2], museums or collectors (ISNI) [3], as well as ancient and modern place names (ISO 3166-2 [4], GeoNames [5], and Pleiades [6]).

A. Archaeological Description of the Weight

The drop-down field “Authority” (several choices) identifies the personal, ethnic, or institutional authority under which the weight is issued. It is frequently used to indicate the ruling monarch appearing on a weight. It is based on the Nomisma “Authority” ID [2].

The drop-down field “Mint” (one choice) identifies the place of manufacture or the issuing city of the weight. It is based on the Nomisma “Mint” ID [2].

The drop-down field “Denomination” (several choices) identifies the official name(s) of the weight, based on its legend, its symbols, its shape, its mass, or any other available evidence. It is based on the Nomisma “Denomination” ID [2].

The drop-down field “Material” (one choice) defines the physical material from which the weight is made. It is based on the Nomisma “Material” ID [2].

The drop-down field “Manufacture” (one choice) defines the technique of manufacture of the weight. It is based on the Nomisma “Manufacture” ID [2].

The drop-down field “Shape” (one choice) defines the shape of the weight. So far, this typology is specific to Pondera Online.

The numeric fields “Dimensions” describe the three dimensions of the weight (length, width, and height) as the x -, y -, and z -coordinates in a 3D Cartesian coordinate system. The dimensions are typically expressed in centimetres (cm), but can occasionally be expressed in inches (in)—in this case, the

Funding agencies: F.R.S.–FNRS (Belgium), UCLouvain (Belgium), and FWF (Austria).

Research Projects:

- FWF P 25514-G19: “Late Antique and Byzantine Weights in the Mediterranean Area.” (2013–2016)
- F.R.S.–FNRS MIS F.4530.16: “Pondera Online. Ancient Metrology and Digital Humanities.” (2016–2018)
- UCLouvain FSR 2017: “Ancient Weights from Athens.” (2017–2019)
- F.R.S.–FNRS CDR J.0041.18: “Ancient and Byzantine Weights: New Research, New Corpora.” (2018–2019)

relevant field should be filled in, and the dimensions will be converted to centimetres automatically.

The numeric field “Metrology” registers all the measurements of the mass of the weight since it was found or acquired. The mass of the weight is typically expressed in grams (g), but can occasionally be expressed in grains (gr)—in this case, the relevant field should be filled in, and the mass will be converted to grams automatically. To each measurement can be linked a date of measurement (format YYYY-MM-DD), the reference for this measurement (free text), and technical explanations about the physical conditions of the object (fragmented and/or cleaned) and its location in the museum (exhibited or conserved in a storage room). If several measurements are registered, one mass should be selected as the reference mass of the weight.

The drop-down field “Iconography” (several choices) enumerates all the symbols that are shown on the weight. E.g. “Dolphin”, “Horse”, “Female head”, “Bust of an Emperor”, “Wreath”. So far, this typology is specific to Pondera Online.

The drop-down field “Wear” (one choice) measures the degree of degradation of the weight due to physical reaction with its environment, as defined by the Nomisma “Wear” ID [2] and by an international description of wear [7].

The drop-down field “Corrosion” (one choice) measures the degree of degradation of the weight due to chemical reaction with its environment, as defined by the Nomisma “Corrosion” ID [2] and by an international description of corrosion [7].

The tick boxes “Handle” and “Suspension Hole” describe the suspension device of the weight, if any.

The tick boxes “Recarved Mould” and “Recarved Weight” point out the subsequent interventions on the mould or the weight.

The tick box “Intentionally destroyed” should be checked if the weight was intentionally destroyed in ancient or medieval times.

The free text field “Archaeological description” is intended to describe the weight as an archaeological artifact, by focusing on facts and details that are not sufficiently highlighted in the other description fields.

The field “Picture” is intended to insert as many photographs and drawings of the weight as necessary. To each picture can be linked a copyright credit (free text) and a URL.

The tick box “Autopsy” should be checked if the object was included in the database after a first-hand examination.

The field “Authenticity” (one choice) defines the status of authenticity of the weight. So far, this typology is specific to Pondera Online.

B. Epigraphical Description of the Weight

The drop-down field “Legend Type” (several choices) specifies the information given by the legend of the weight, such as the denomination, the authority or the mint.

The free text field “Fac Simile” contains the diplomatic edition of the inscription or markings (incised or in relief) placed on the weight (without lowercase characters, spaces between the words, or edition marks).

The free text field “Edition” contains the scientific edition of the inscription or markings (incised or in relief) placed on the weight, according to the Leiden Conventions.

The drop-down field “Monogram” (several choices) makes it possible to record and analyse the monogram(s) that are engraved on the weight. It is linked to the field “Authority”.

The drop-down field “Countermark Type” (several choices) specifies the information given by the countermark(s) of the weight, such as the denomination, the authority or the mint.

The drop-down field “Countermark” (several choices) makes it possible to record and analyse the countermark(s) that are engraved on the weight. It is linked to the fields “Authority”, “Iconography” and “Monogram”.

C. Archaeological Context

The drop-down field “Findspot (region)” (one choice) locates the findspot (country or region) of the weight. It is based on the ISO 3166-2 standard [4].

The drop-down field “Findspot (site)” locates the archaeological site in which the weight was found. It is based on the table “Spot”.

The free text field “Archaeological context” describes the archaeological context in which a weight was found. This field details the field “Findspot (site)”.

D. Circumstances of Acquisition

The drop-down field “Region” (one choice) locates the place of acquisition (country or region) of the weight. It is based on the ISO 3166-2 standard [4].

The drop-down field “City” locates the city in which the weight was acquired. It is based on the table “Spot”.

The free text field “Circumstances of Acquisition” describes the circumstances of acquisition of the weight. This field details the field “City”.

E. Dating of the Weight

The drop-down field “Chronological Period” (several choices) identifies the period of production of the weight, according to the traditional periodization of ancient and medieval times.

The numeric field “Chronological Range” details the field “Chronological Period” by defining a *terminus post quem* and a *terminus ante quem*.

The free text field “Comments on Chronology” is intended to justify the suggested dating for the weight, by explaining the main chronological arguments and referring to modern scholarship.

F. Collection History

The drop-down field “Collection” (several choices) registers all the private collection(s) and/or the museum(s) that conserved the weight since it was found or acquired. To each collection can be linked a date of acquisition (format YYYY-MM-DD) and an inventory number (free text).

G. Bibliography

The drop-down field “Bibliography” (several choices) registers all the relevant bibliographical references, in an abbreviated form (usually with the author-date system). To each bibliographical reference can be linked a page or column number, a reference number, a plate or figure number, and a short comment. This short comment is mainly intended to point out some features of the bibliographical reference, such as reference to a wrong inventory number, confusion between several weights, or specific typology. A comprehensive bibliography (currently 1642 references) is available on the Pondera Online website [8].

H. Varia

The free text field “Additional comment” is intended to present information that cannot be included in another field.

The numeric field “Permalink” provides the unique identifier of a weight in the Pondera Online Database. It is generated automatically.

The free text field “External links” (several choices) refers to external websites and databases that record the weight (such as museums, archaeological sites, epigraphical corpuses, etc.).

The drop-down field “Status” defines the status of the file: “Published” (final version, available online in open access); “Draft” (preliminary version, available online in open access with the warning: “This is a preliminary version.”); “Limited access” (access restricted to one contributor, not available online).

III. GEOLOCATION DATA

Three tables of the Pondera Online Database (“Spot”, “Mint”, and “Collection”) make possible to generate distribution maps.

The table “Spot” currently contains 826 items [fig. 2]. Each item is defined by its geographic coordinates (latitude and longitude), by its location in a country and a region (e.g., a province or a state) [4], and by a GeoNames [5] and/or Pleiades [6] reference numbers, if any. The table “Artifact” refers directly to the table “Spot” to define the findspot if a weight was found in an archaeological context, and to define the place of acquisition if it was acquired on the antiquities trade. The table “Spot” also characterizes the items of the tables “Mint” and “Collection”.

The table “Mint” currently contains 87 items [fig. 3]. Each item is defined by reference to the table “Spot” and by its Nomisma “Mint” ID [2]. The table “Artifact” refers to the table “Mint” for defining the place of manufacture or for the issuing city of a weight, where known.

The table “Collection” currently contains 564 items, of which 187 are private collections and 377 are museum collections [fig. 4]. Each item is defined by reference to the table “Spot” and by its ISNI number [3], if any. The table “Artifact” refers to the table “Collection” for defining the holding entity (either institution or individual) of a weight.

Since each weight has potentially a triple geolocation (production, finding, and storage), we aim to develop dynamic distribution maps highlighting circulation patterns of weights during ancient and medieval times (from the production place to the findspot), but also in modern times (from the findspot to the collection).

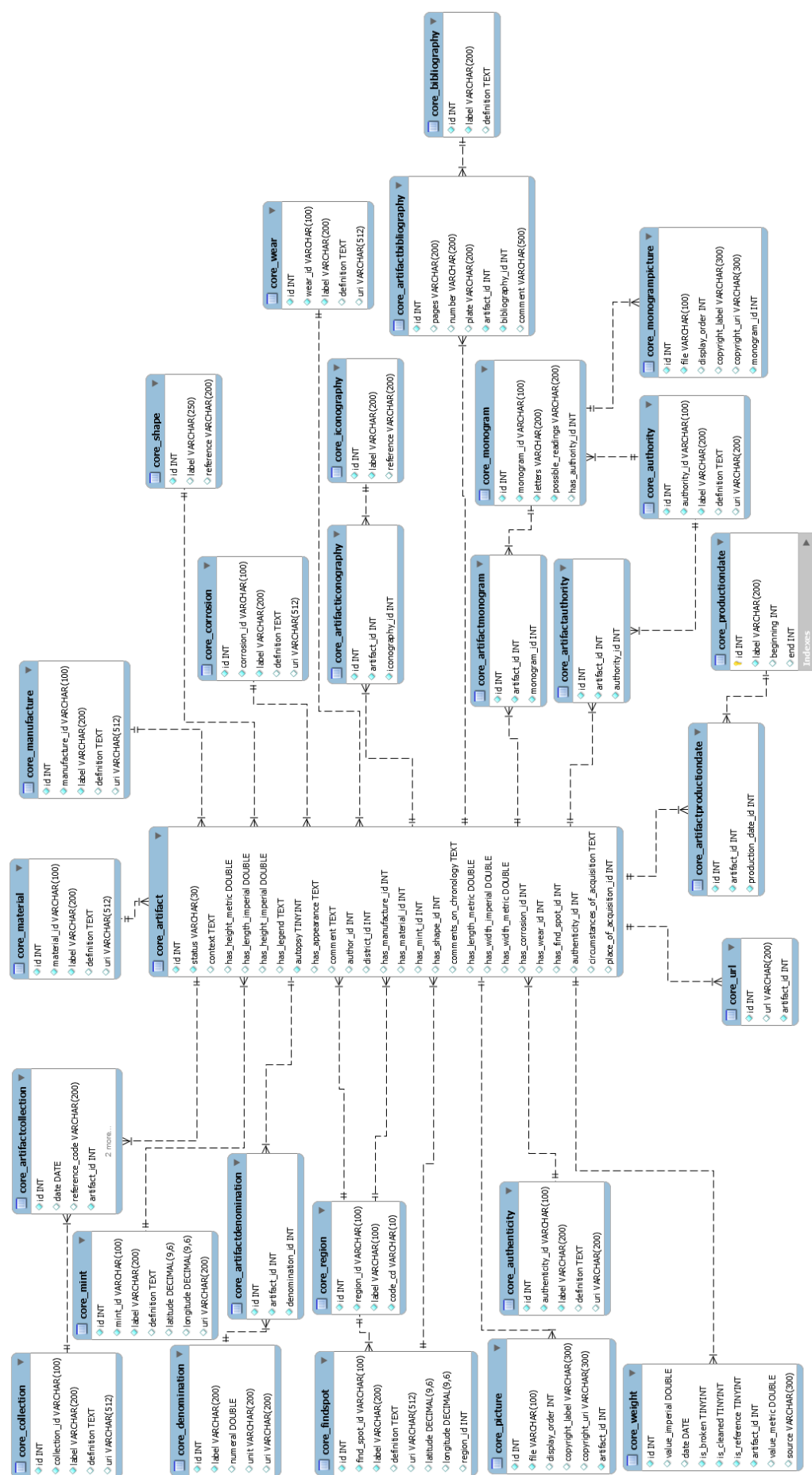
IV. MAIN RESULTS AND PERSPECTIVES

The Pondera Online Database has been the first attempt to produce a systematic corpus of ancient and medieval weights for more than a century. In two years, almost 12,000 weights were added to the database; the long-term objective is to collect about 40,000 objects.

Over the coming years, we also aim to develop the website hosting the database, by designing a customised encoding form, by creating a new search page, and by implementing visualisation tools (maps and charts). Moreover, we will structure the scholarly community that is gathered around the Pondera Online project.

REFERENCES

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- [2] Nomisma Consortium: <http://nomisma.org/>
- [3] International Standard Name Identifier (ISO 27729): <http://www.isni.org/>
- [4] ISO 3166-2 Standard: <https://www.iso.org/obp/ui/#search/>
- [5] GeoNames Database: <http://www.geonames.org/>
- [6] Pleiades Project: <https://pleiades.stoa.org/>
- [7] “Abnutzung und Korrosion = Usure et corrosion” (Bulletin IFS ITMS IRMS 2, 1995, Suppl.) https://www.muenzfunde.ch/downloads/supplement_1995.pdf/
- [8] Pondera Online Bibliography: <https://pondera.incal.ucl.ac.be/bibliography/>



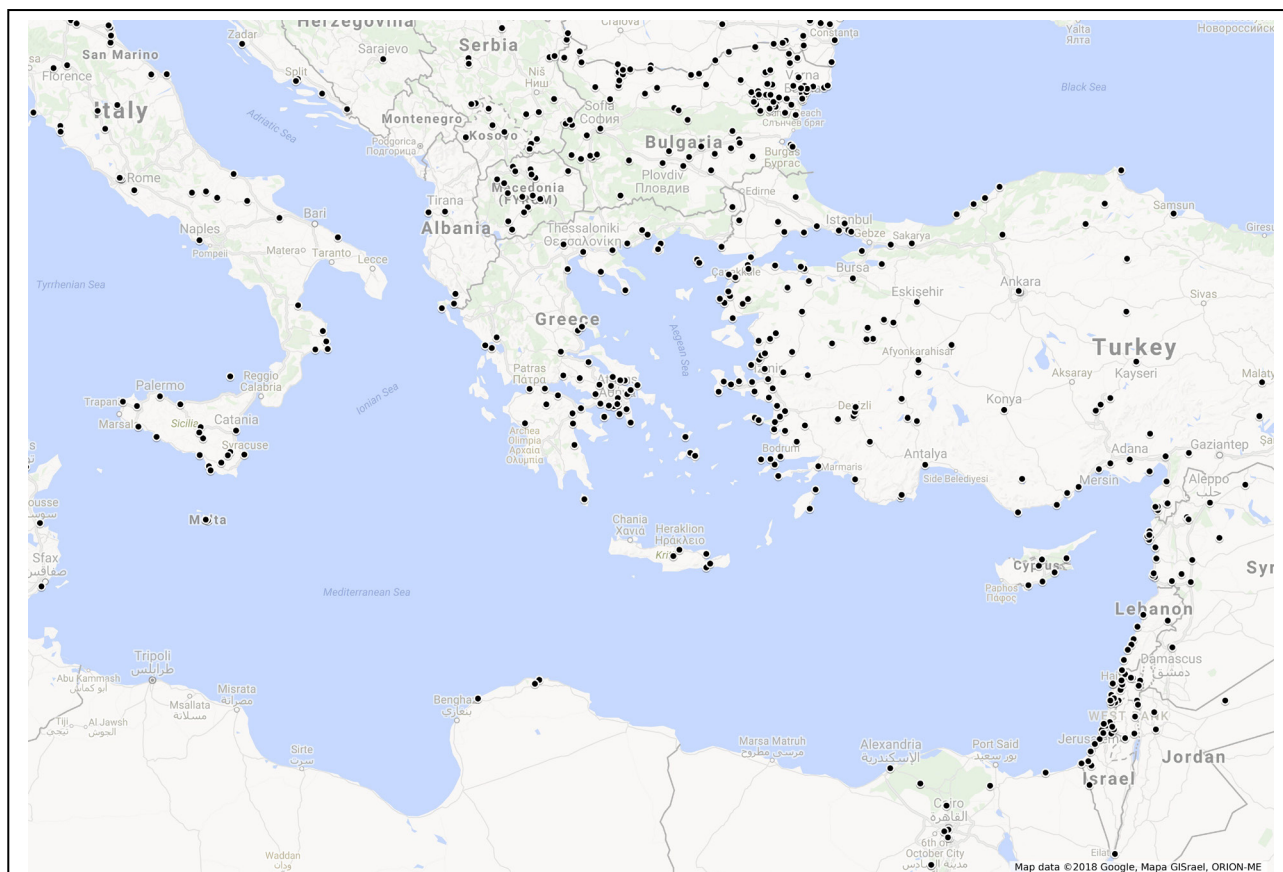


Fig. 2. Geolocation of the table “Spot” (Eastern Mediterranean)

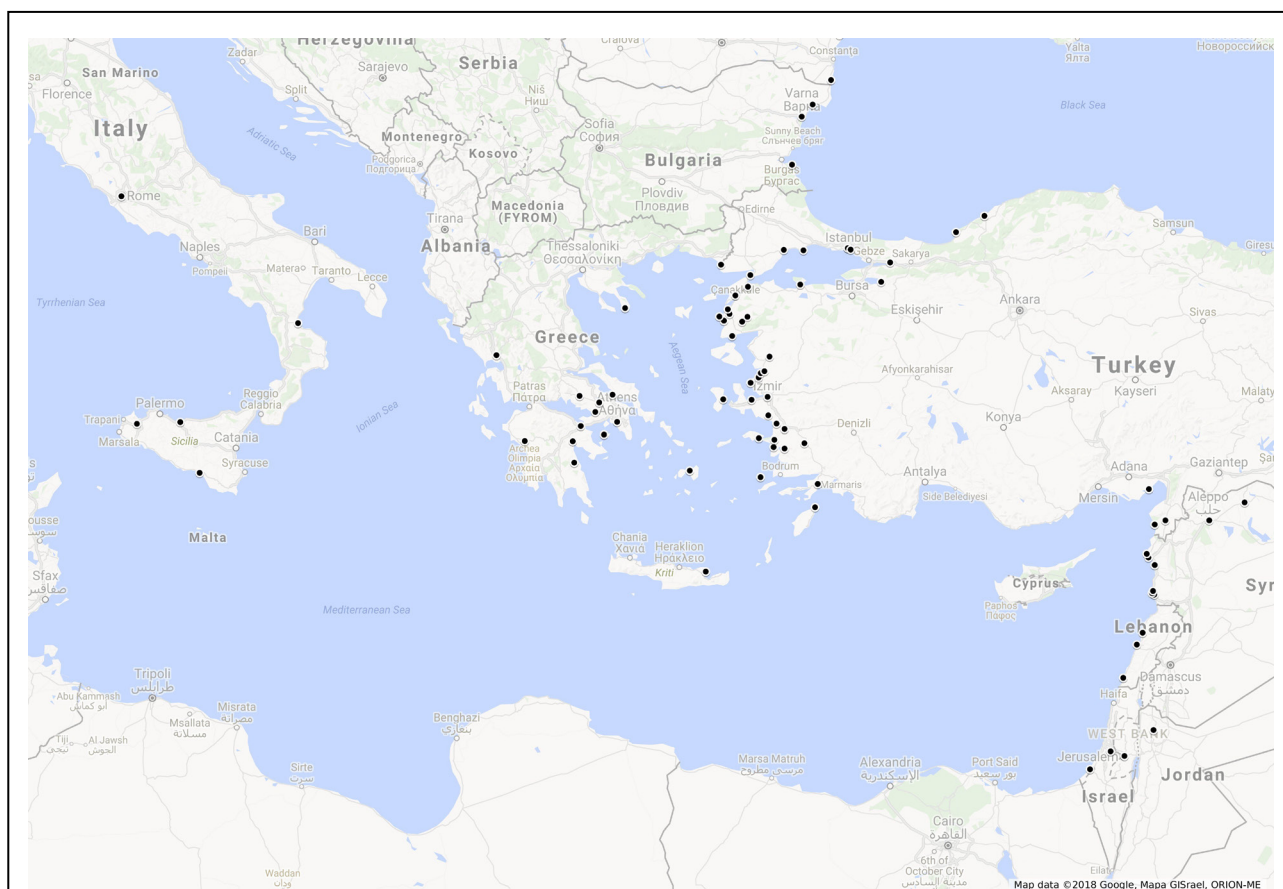


Fig. 3. Geolocation of the table “Mint” (Eastern Mediterranean)

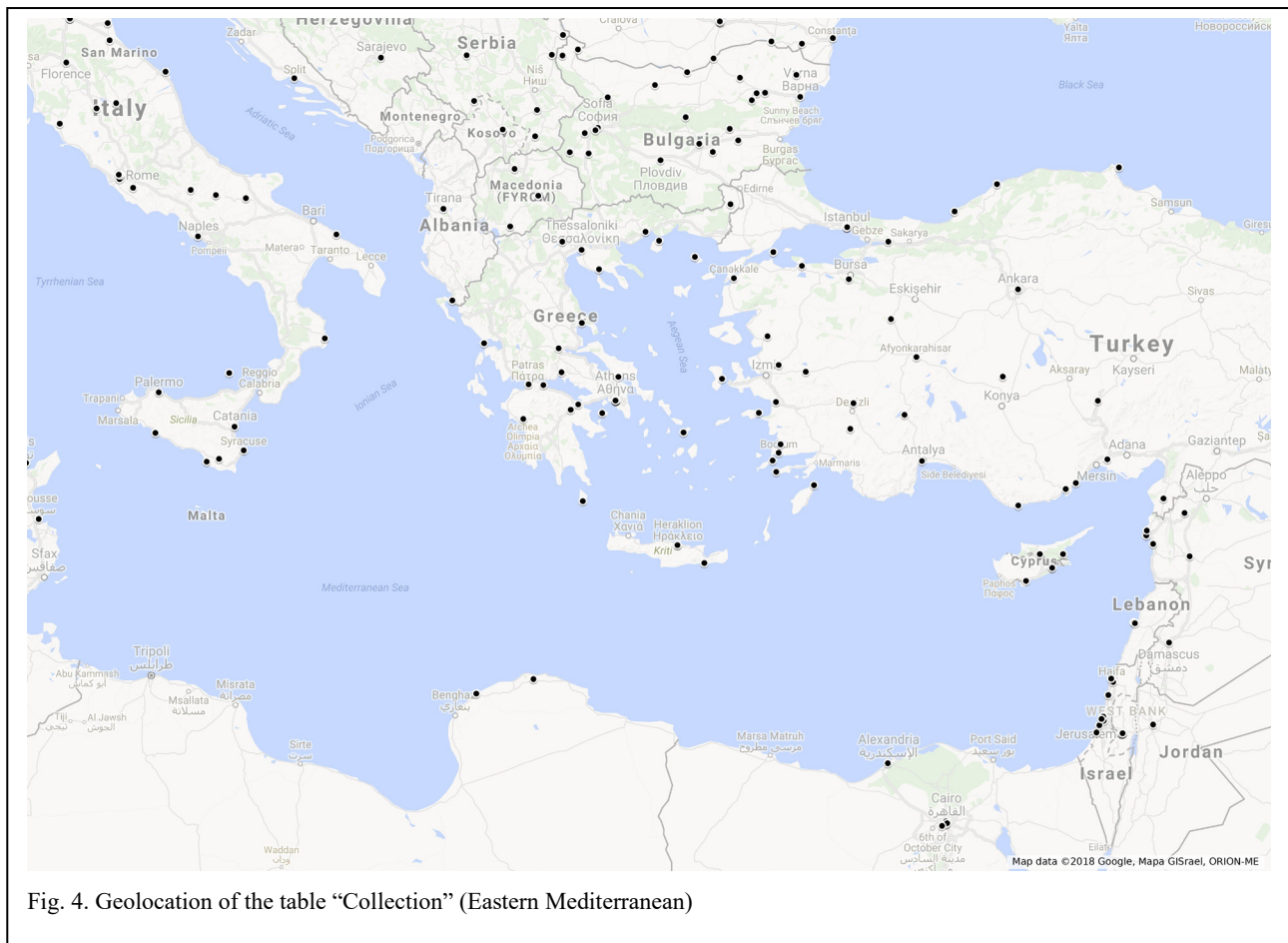


Fig. 4. Geolocation of the table “Collection” (Eastern Mediterranean)