1. Formulae search

1.1. Introduction and mode of operation

1.1.1. Introduction

The *Formulae* search allows the user to perform targeted searches on the onomastic sequences. The available search criteria are specific in this respect. The user creates his/her query by composing one or two of the fragments of formulae associated with the results filtering criteria. Given that the formula is linked to the testimony in the database, this search mode provides a testimony results type.

1.1.2. Mode of operation

The interface is made up of three areas. The operator between the criteria is "AND", whereas it's "OR" between values. If *Strict* is selected, the operator between values changes and becomes "AND". The formulae search relies on the strict reading of the sequences saved in the database, so the order of the elements, the operators and the parentheses of formulae must be respected.

> E.g.: "Zeus #" and "# Zeus" are two different forms of formulae.

1.1.2.1. Elements or divine powers count (1)

The user can choose the number of elements in a testimony and/or the number of divine powers linked to a formula. These two criteria are composed of a first column with a numerical comparison operator and a second one where the value is entered. It is read from left to right.

> E.g.: *Element count* ≤ 3 and *Divine powers count* = 1 reads as "the number of elements should be less than or equal to 3 AND the number of divine powers is equal to 1".

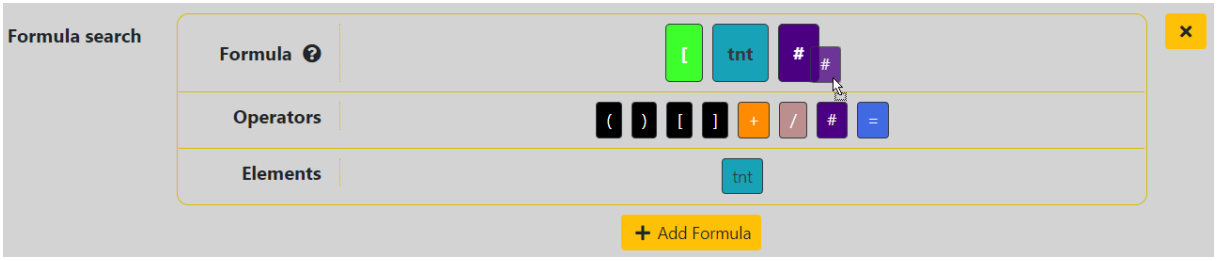
1.1.2.2. Formulae assembler (2)

A formula is assembled in three stages:

- 1) the user searches for the elements that he/she want to add (*Add a new element*), this field allows to find an element using absolute form, Beta Code and translations with the criterion *Name(s)*. The choice is confirmed with the + button.

- 2) the user determines the position of the element within the formula; the choices are: “start”, “end”, “other” or “any”. By default, the “any” value is selected.

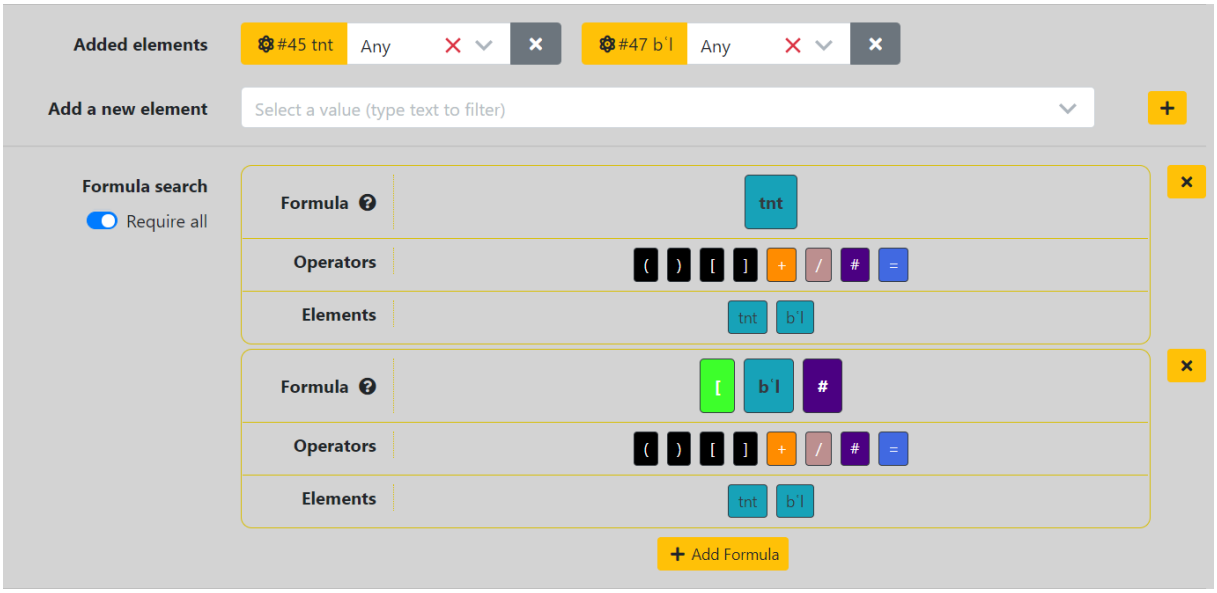
- 3) the user constructs the formula/formulae. When the first element is added, the formulae assembler will appear. It is structured around three areas: the space for the *Formula*, the *Operators* of the onomastic sequences and the added *Elements*.



The assembler works with Drag/Drop. The user adds the elements and operators to the *Formula* area. The order within the formula can be changed. To remove a component, the user must select it in the *Formula* area and then drag it into the *Operators* or *Elements* area.

It is possible to add other formulae using the *Add Formula* button. It is also possible to delete them. If the “Require all” button is selected, the operator between the formulae changes from “OR” to “AND”. It implies that the result must correspond with all the formulae.

> E.g.: if the user enters the formulae “[Baal #” and “Tanit”, and selects *Require all*, the search will look for testimonies where Baal, at the beginning of the syntagm, is followed by a qualification (#) AND where the element Tanit is present.



1.1.2.3. General filters (3)

The user can filter their his/her search according to the general criteria of language, dating, location and typology of the source. These work in the same way as with the guided search.

The search works using SQL language; the criteria are combined with "AND" and "OR". Between two conditions, "AND" makes it necessary for both conditions to be true whereas "OR" requires a minimum of one of the two conditions to be true in order to provide a result.

Therefore:

- **Between each criterion**, the operator is "**AND**",

  E.g.: if the user enters in *Language(s):* "Phoenician" and *Place:* "Near East > Syria", the results should be in the Phoenician language and located in Syria.

- **Between each value**, the operator is "**OR**",

  E.g.: if the user enters in *Source:* "Epigraphy > Dedication"; "Epigraphy > Label/Ownership", the results shown will contain dedications or ownership inscriptions.

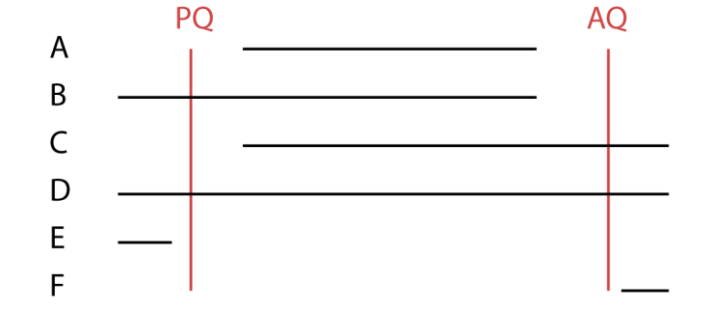
- *Require all* **turns the operator into** "AND".

  E.g.: if the user enters in *Source:* "Epigraphy > Dedication"; "Epigraphy > Label/Ownership", and marks the *Require all* box, the results shown will contain dedications AND ownership inscriptions.

For the dating criteria, once the user has chosen the chronological interval, the *Strict* button means that the *post quem* and *ante quem* values must strictly be between the two limits that he/she has chosen. The user can only indicate one single chronological limit.

E.g.: the red *post quem* (PQ) and *ante quem* (AQ) limits are the values chosen by the user. The possible records, numbered from A to F, are shown on a timeline with their dating interval.

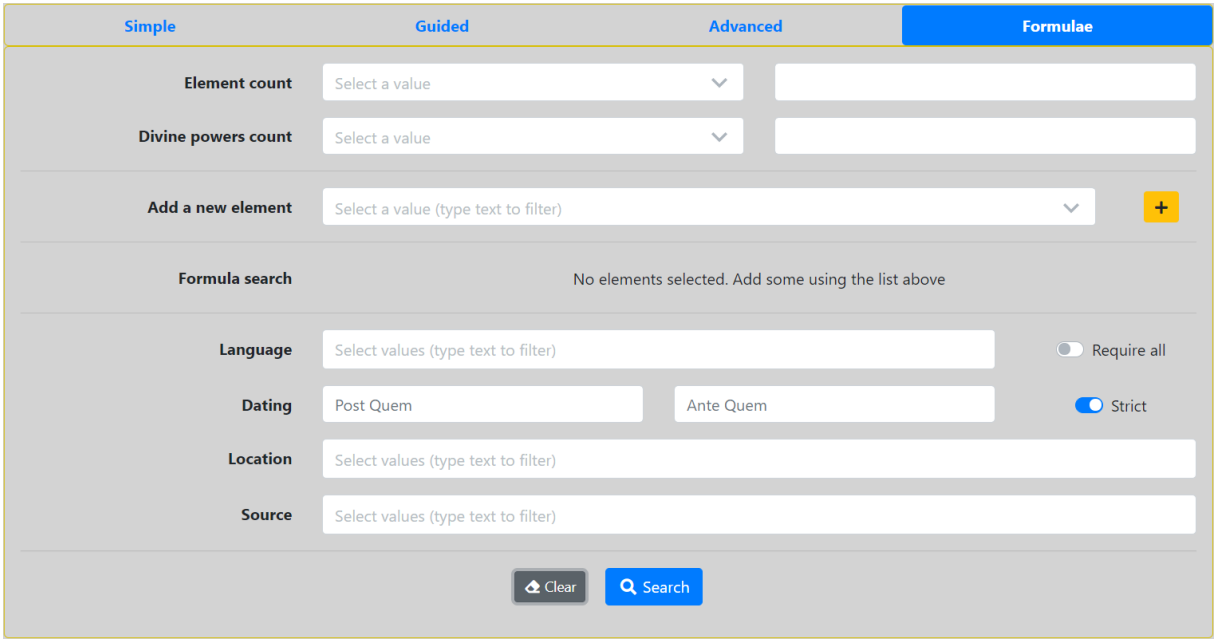
- With PQ and AQ defined, with *strict* checked, the only result is A, without *strict* checked, the results are A, B, C and D.
- With only AQ defined, whether *strict* is checked or not, the results are A, B and E.
- With only PQ defined, whether *strict* is checked or not, the results are A, C and F.



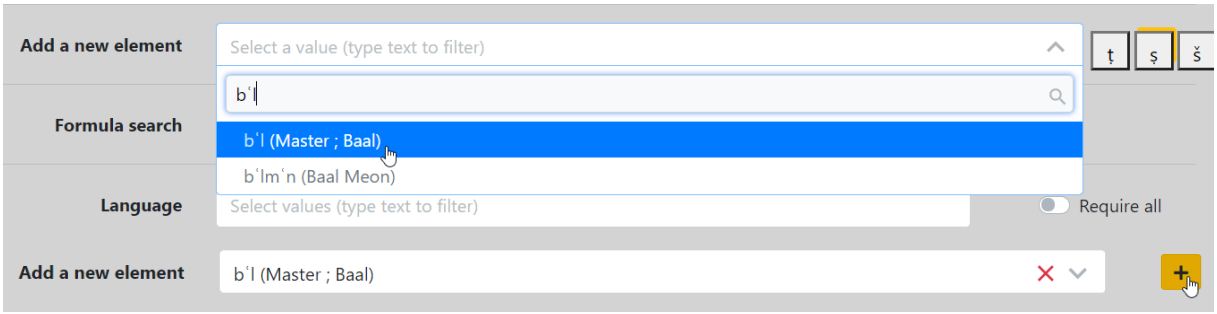
Once the criteria and the values have been selected, the user launches the query using the *Search* button. The *Clear* button fully clears the form.

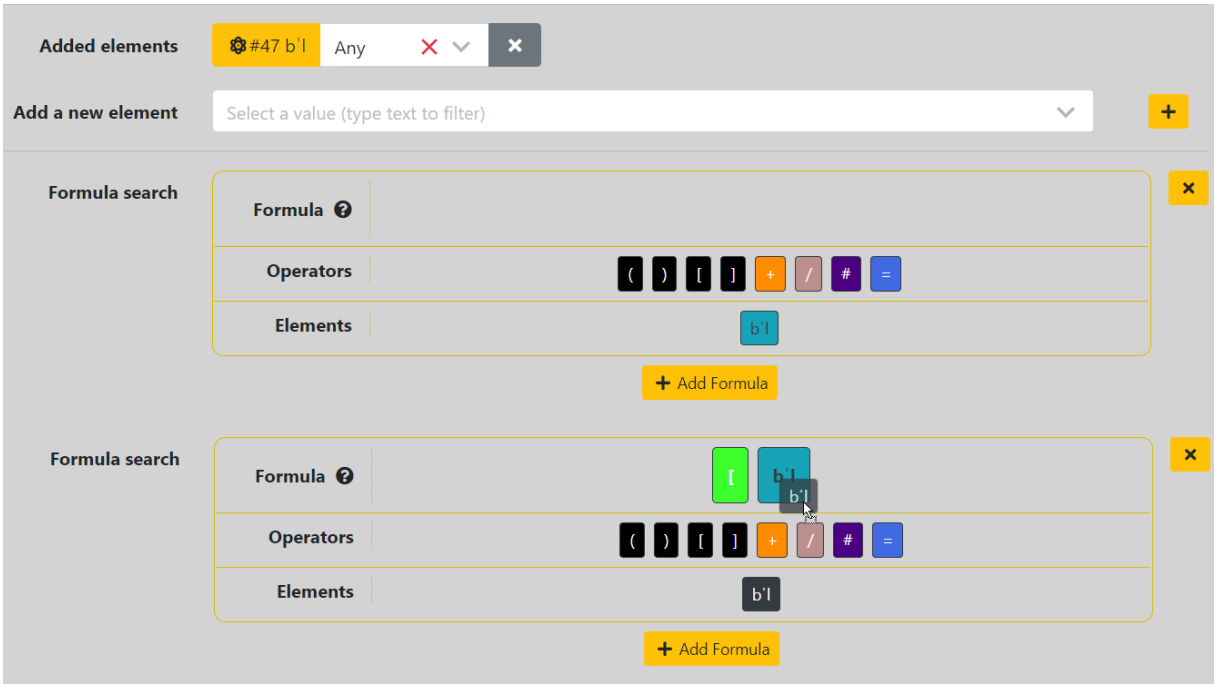
1.2. Appearance

1.2.2.1. Areas of the "Formulae" query



1.2.2.2. Assembly of a formula





1.3. Query fields

1.3.1. Element count

This is the number of elements in the formula. An element that is included in a formula several times is counted **each time** that it appears.

1.3.2. Divine powers count

Each formula proposition is linked to an **estimate** of the number of divine powers present in the formula saved in the 1st position. This number may change for alternative formulae (which can be viewed in the *Testimony* forms).

1.3.3. Formula

This is the **standardised reading** of the onomastic sequence with a system of operators and parentheses created within the framework of the MAP project.

1.3.4. Language

Languages in which the names of the gods are expressed. This list is made up of languages included in the project that the user may come across in the database.

Warning: for a search embracing all the sources in Semitic language entered in de database, the user will choose **ALL** of the following Semitic languages: **Ammonite, Aramaic (ancient, imperial, middle, late), Edomite, Hebrew, Moabite, Phoenician, Punic**.

1.3.5. Dating

These are the chronological limits that the user wishes to apply to their search. For a BCE date, place a minus sign "-" before. For a specific date, enter an identical figure into the *post quem* and *ante quem* fields.

1.3.6. Place

Location of either the source or the testimony, if it exists.

1.3.7. Source

List of types of sources, classified by source category (epigraphy, glyptic, numismatic, papyrology and manuscript tradition) and sub-categories.

1.4. Notes

- If the user want to see all the data in Semitic entered in the database, the user will choose ALL the following Semitic languages: Ammonite, Aramaic (ancient, imperial, medium, late), Edomite, Hebrew, Moabite, Phoenician, Punic.
- The user must register an elements count, a divine powers count or add an element in order to launch a search.
- Only formulae in the 1st position are taken into account in the search; the user can view the other options via the *Testimony* forms.
- Elements that are added but not arranged in a formula are taken into account in the query. The operator is "OR": the result contains one *or* the other. Using the formulae assembler with *Require all* reverses the operator.
- The operators in the formula are read as follows:
    - **+** coordination. "Zeus and Athena" is formulised as "Zeus + Athena"; "Tanit and Baal" is formulised as "Tanit + Baal".
    - **#** qualification (qualifies *or* is qualified). Apollo Puthios is formulised as "Apollo # Puthios"; "Tanit face of Baal" is formulised as "Tanit # face # Baal".
    - **/** juxtaposition. "Zeus Sarapis" is formulised as "Zeus / Sarapis"; "Eshmun Melqart" is formulised as "Eshmun / Melqart".
    - **=** clarified equivalence. "Of Zeus called Nephotes the Great" is formulised as "Zeus = [Nephotes # Megas]".
- The brackets, **[**…**]**, in the formula indicate the syntagms.

  E.g.: **[**the goddess # Astarte**]**
  [Apollo # Puthios**]** + **[**Apollo # Kedrieus**]**.

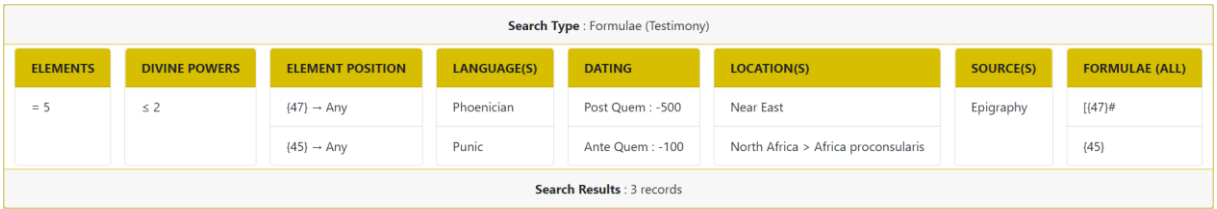
- Parentheses, **(**…**)**, are used to mark distributive properties, that is, cases where an element or a syntagm qualifies (#) or clarifies (=) several other elements or syntagms.

  E.g.: Apollo # (Puthios + Kedrieus).

1.5. Types of results

Results are shown on a new page in the form of three blocks.

1.5.1. Reminder of criteria



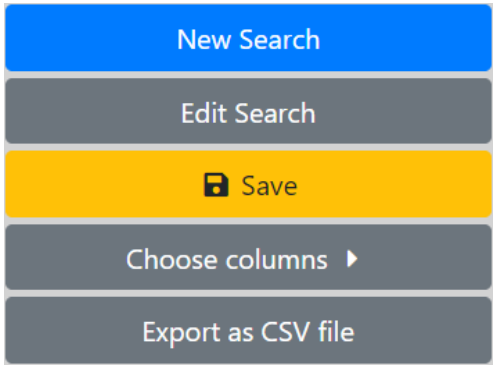
Search Type : Formulae (Testimony)

ELEMENTS	DIVINE POWERS	ELEMENT POSITION	LANGUAGE(S)	DATING	LOCATION(S)	SOURCE(S)	FORMULAE (ALL)
= 5	≤ 2	{47} → Any	Phoenician	Post Quem : -500	Near East	Epigraphy	[{47}#
		{45} → Any	Punic	Ante Quem : -100	North Africa > Africa proconsularis		{45}

Search Results : 3 records

The interface shows the type of search, the criteria and the number of records that have been found for the search.

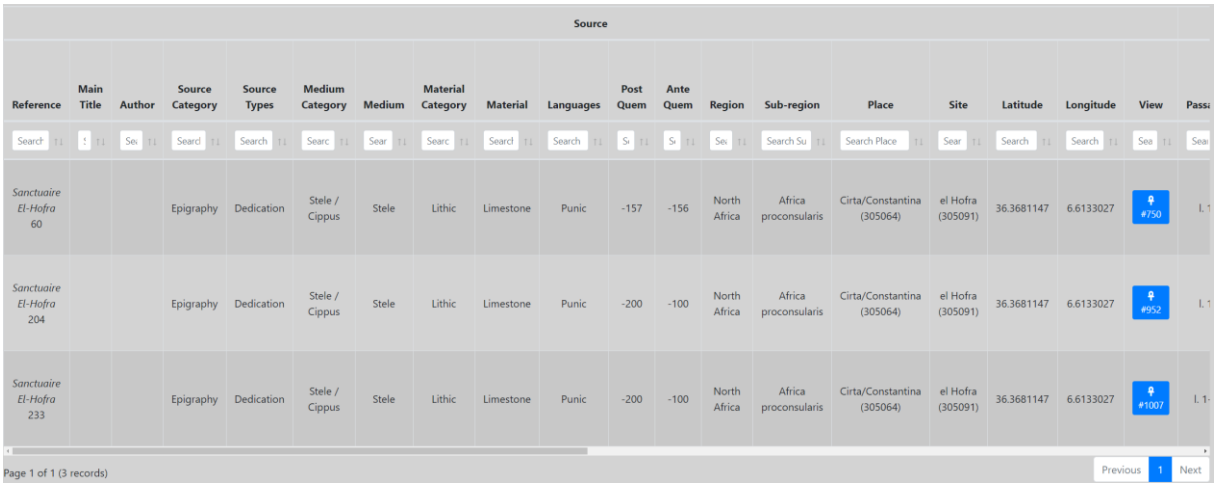
1.5.2. Action buttons



- Carry out a new search and clear the chosen criteria;
- Carry out a search maintaining the criteria;
- Save the search criteria;
- Select the columns to be shown and exported;
- Export the results table in CSV format.

The choice of columns is explained in the "Save and Export" section (*infra* 5).

1.5.3. Results table



The user can change the number of results shown per page and navigate between them. He/she can apply a general filter to all of the results or to a specific column with the help of the search boxes. The content of the columns can be sorted into ascending or descending order. Action buttons in the *View* column provide access to the corresponding forms.

Remember that the results shown correspond to the type of *Testimony* result of the advanced search.

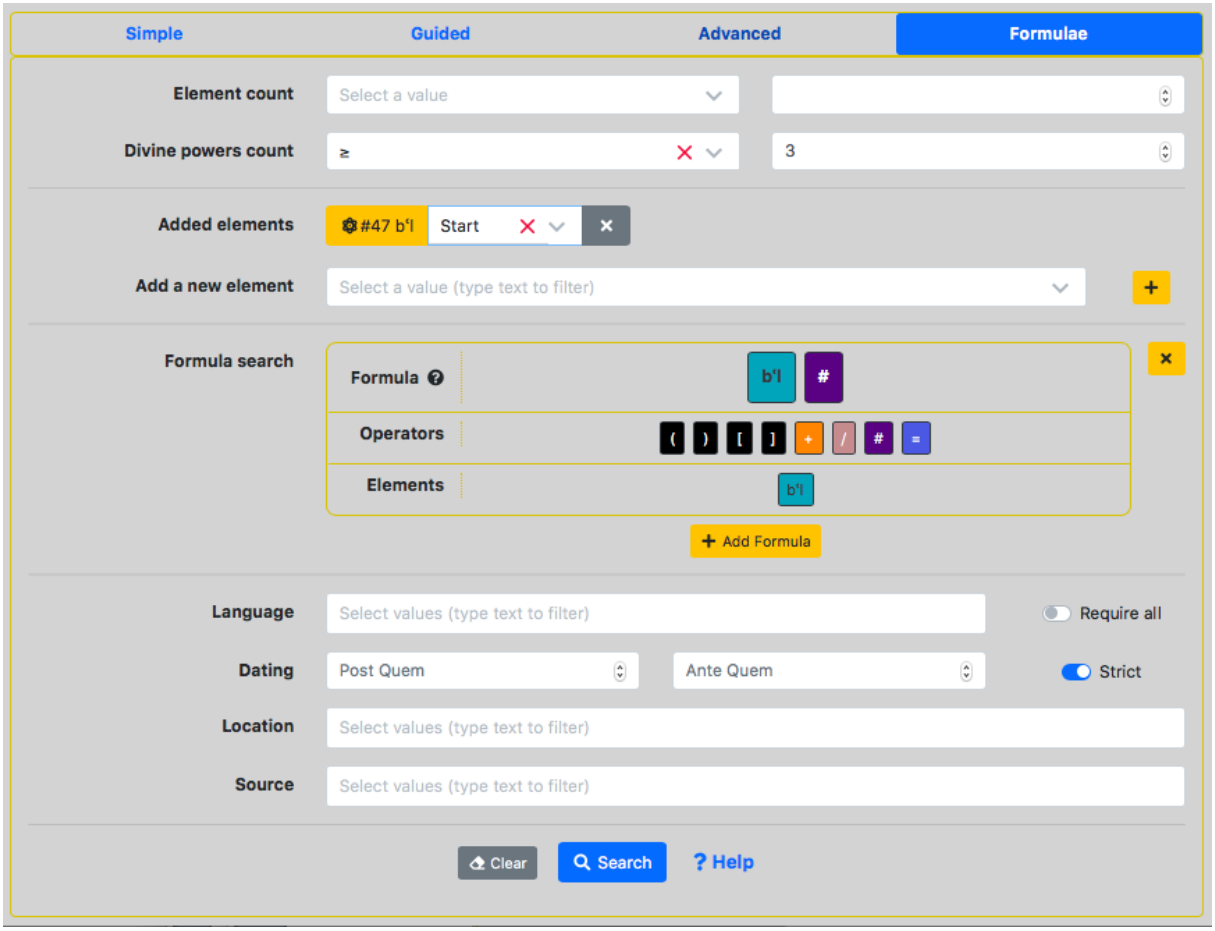
1.5.4. Note

- Each result will only be shown once, even if it meets several of the criteria defined by the user.
- The user can order the results according to several columns by pressing the Shift key and the arrows next to the name of the column. This ordering is saved in the user's profile.

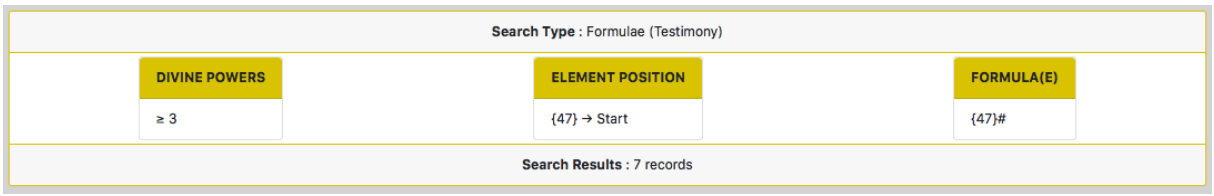
1.6. Examples

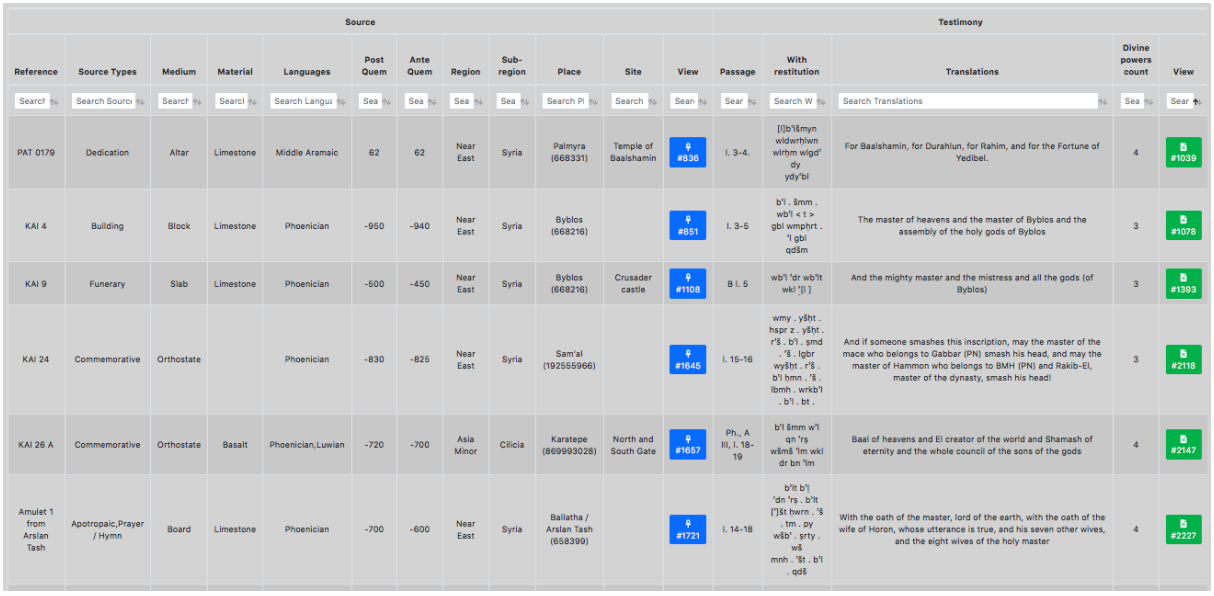
To show all of the formulae with 3 or more than 3 divine powers, where the element "bʿl" is qualified by another element and at the start of the formula: In *Divine powers count*, select "≥"

and “3”, and then in *Added elements*, search for the element “bʻl”. In the formulae assembler, drag-drop “bʻl” and #:



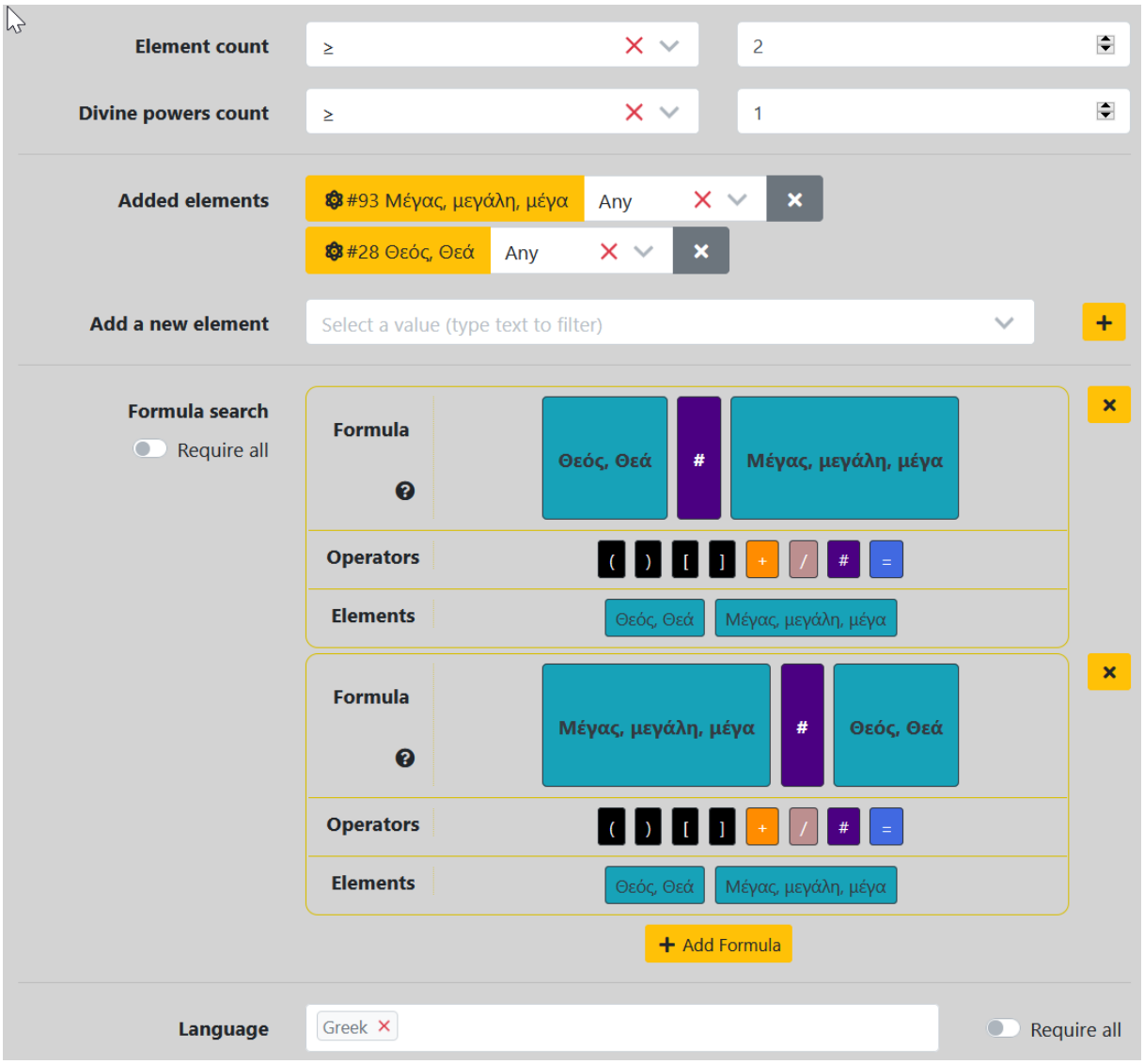
Results:



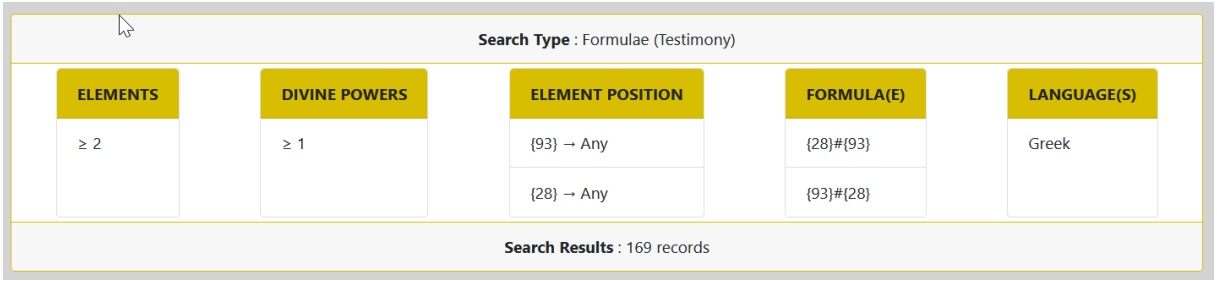


Source												Testimony			
Reference	Source Types	Medium	Material	Languages	Post Quem	Ante Quem	Region	Sub-region	Place	Site	View	Passage	With restitution	Translations	Divine powers count	View
Search	Search Source	Search	Search	Search Langua	Sea	Sea	Sea	Sea	Search Pl	Search	Sear	Sear	Search W	Search Translations	Sea	Sear
PAT 0179	Dedication	Altar	Limestone	Middle Aramaic	62	62	Near East	Syria	Palmyra (668331)	Temple of Baalshamin	#836	l. 3-4.	[l]b'lšmyn wldwrḥlwn wlrḥm wlgd' dy ydy'bl	For Baalshamin, for Durahlun, for Rahim, and for the Fortune of Yedibel.	4	#1039
KAI 4	Building	Block	Limestone	Phoenician	-950	-940	Near East	Syria	Byblos (668216)		#851	l. 3-5	b'l . šmm . wb'l < t > gbl wmphrt . 'l gbl qdšm	The master of heavens and the master of Byblos and the assembly of the holy gods of Byblos	3	#1078
KAI 9	Funerary	Slab	Limestone	Phoenician	-500	-450	Near East	Syria	Byblos (668216)	Crusader castle	#1108	B l. 5	wb'l 'dr wb'lt wkl '[l]	And the mighty master and the mistress and all the gods (of Byblos)	3	#1393
KAI 24	Commemorative	Orthostate		Phoenician	-830	-825	Near East	Syria	Sam'al (192555966)		#1645	l. 15-16	wmy . yšḥt . hspr z . yšḥt . r'š . b'l . ṣmd . 'š . lgbr wyšḥt . r'š . b'l ḥmn . 'š . lbmh . wrkb'l . b'l . bt .	And if someone smashes this inscription, may the master of the mace who belongs to Gabbar (PN) smash his head, and may the master of Hammon who belongs to BMH (PN) and Rakib-El, master of the dynasty, smash his head!	3	#2118
KAI 26 A	Commemorative	Orthostate	Basalt	Phoenician,Luwian	-720	-700	Asia Minor	Cilicia	Karatepe (869993028)	North and South Gate	#1657	Ph., A III, l. 18-19	b'l šmm w'l qn 'rṣ wšmš 'lm wkl dr bn 'lm	Baal of heavens and El creator of the world and Shamash of eternity and the whole council of the sons of the gods	4	#2147
Amulet 1 from Arslan Tash	Apotropaic,Prayer / Hymn	Board	Limestone	Phoenician	-700	-600	Near East	Syria	Ballatha / Arslan Tash (658399)		#1721	l. 14-18	b'lt b'l 'dn 'rṣ . b'lt ['l]t bwrn . 'š . tm . py wšb' . ṣrty . wš mnh . 'št . b'l . qdš	With the oath of the master, lord of the earth, with the oath of the wife of Horon, whose utterance is true, and his seven other wives, and the eight wives of the holy master	4	#2227

To show all of the formulae that, like the sequence “Isis Thea Megistê”, contain a syntagm composed of the adjective “Megas, megalê, mega” (including comparative and superlative forms) and the name “Theos, thea”, regardless of the number of divine powers and the position of the elements: in *Element count*, select “≥” and “2”, and then in *Divine powers count*, select “≥” and “1”. In *Added elements*, search for the elements “Megas, megalê, mega” and “Theos, thea”. In the formulae assembler, drag-drop “Theos, thea”, “#” and “Megas, megalê, mega”, then “Megas, megalê, mega”, “#” and “Theos, thea”:


Element count
≥
2
Divine powers count
≥
1
Added elements
#93 Μέγας, μεγάλη, μέγα
Any
#28 Θεός, Θεά
Any
Add a new element
Select a value (type text to filter)
Formula search
Require all
Formula
Θεός, Θεά
#
Μέγας, μεγάλη, μέγα
Operators
( ) [ ] + / # =
Elements
Θεός, Θεά
Μέγας, μεγάλη, μέγα
Formula
Μέγας, μεγάλη, μέγα
#
Θεός, Θεά
Operators
( ) [ ] + / # =
Elements
Θεός, Θεά
Μέγας, μεγάλη, μέγα
Add Formula
Language
Greek
Require all

Results:


Search Type : Formulae (Testimony)
ELEMENTS
≥ 2
DIVINE POWERS
≥ 1
ELEMENT POSITION
{93} → Any
{28} → Any
FORMULA(E)
{28}#{93}
{93}#{28}
LANGUAGE(S)
Greek
Search Results : 169 records

Search interface

Source								Testimony					
Reference	Source Types	Medium	Material	Post Quem	Ante Quem	Place	View	Passage	With restitution	Transliteration	Name quality of reading	Agents	Formula
Search	Search Source Types	Searc	Search	S	Se	Search Place	Sea	Sea	Search With	Search Trans	Searcl	Search Agents	Search Form
BAALIM II IV.3	Dedication	Seat / Throne	Terracotta	-400	100	Byblos (668216)	#530	Gr. l. 1	Ἀστάρτηι θεᾶι μεγίστηι	Astartêi theai megistêi	(1) Confident reading		{236}#{28}#{93}
Judean-Syrian-Egyptian Conflict 45	Graffiti	Pavement		-332	551	Omboi (786079)	#141	l. 1-2	Νεχθαραῦτο(ς) θεοῦ μεγίστου	Nechtharauto(s) theou megistou	(1) Confident reading		{148}# [{28}#{93}]
IThSy 255	Dedication	Altar	Granite	-332	551	Elephantine (786021)	#205	l. 1	θεῷ μεγάλῳ Ἄμμωνι.	theôi megalôi Ammôni	(1) Confident reading		[{28}# {93}]#{104}
I.Philae 118	Proskynema	Pylon		-332	-80	Philae (786089)	#501	l. 1-2	[πρὸς τὴν μ]ε[γίστην — — —] θέαν [κυρίαν Ἶσιν ἐ]ν Φιλ[αι]ς — — —	[pros tên m]e[gistên ---] thean [kurian Isin e]n Phil[aï]s ---	(2) Probable reading		[{93}#{28}]# [{26}# {95}#{258}]

2. Save and Export

2.1. Saving a search

2.1.1. Introduction

The interface makes it possible to save a search, whatever its type (Simple, Guided, Advanced, Formulae). A user can access and reuse one of the saved searches at any time. Saved searches are named and are unique to each user.

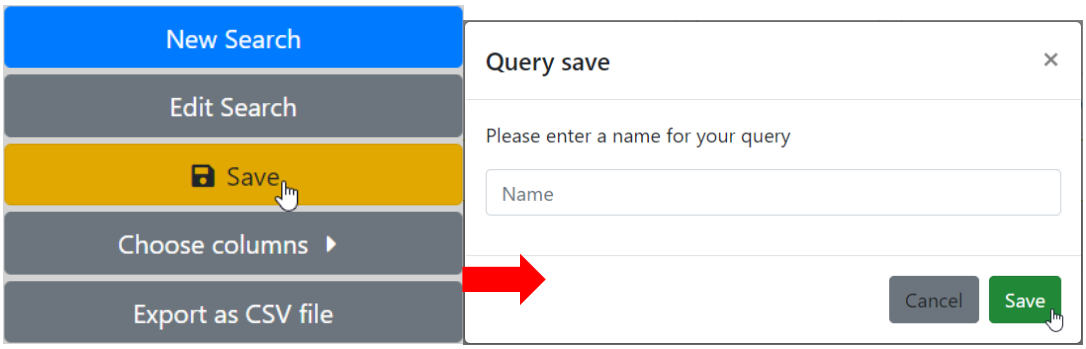
2.1.2. Mode of operation

After completing a search, it can be saved using the *Save* button next to the reminder of criteria. **This saves the criteria, not the results**. Therefore, when loading a search between two different uses, the number of records may change.

The user is asked to name his/her query. He/she should choose a suitable name. He/she is reminded of the criteria when loading a query (*infra* 5.3.).

Saving a query with the same name as one that has already been saved overrides the parameters of the existing query.

2.2. Appearance



2.3. Reusing a query

2.3.1. Introduction

The interface allows the user to load a query from each type of search. A drop-down list is available on the right side of the screen. This list is unique for each user.

2.3.2. Mode of operation

The user can load or erase a query using the action buttons. When a query has been chosen, the interface automatically loads the page with the search type and criteria. The user can modify the criteria as he/she desires. However, these changes are not saved in the saved search. Simply click on the *Search* button to launch the query.

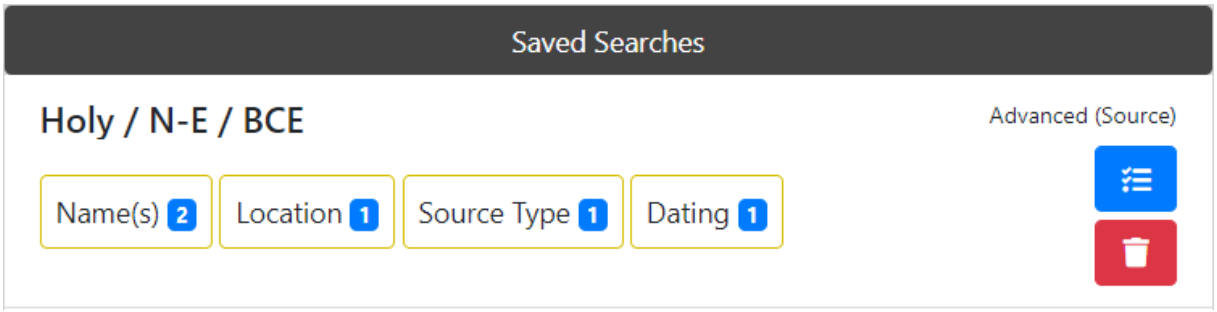
Each saved search is shown in the form of a “block” indicating:

- 1: name of the search;

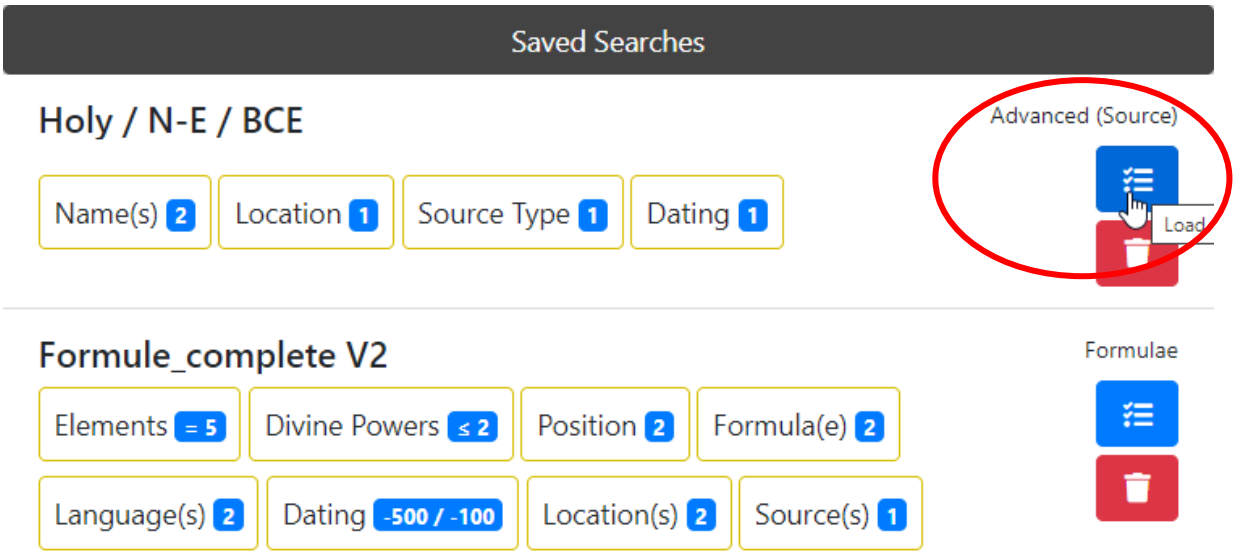
- 2: criteria saved with the number of values or the values;
- 3: search type;
- 4: load button;
- 5: delete button.

2.3.3. Appearance

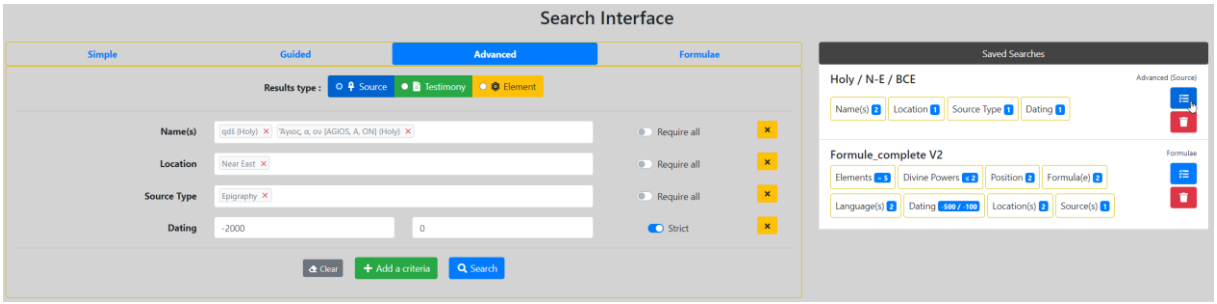
Description of the elements in block of a saved search:



Choice of saved searches:



Search successfully loaded:



2.4. Exporting the results

2.4.1. Introduction

The search results table can be exported using the action button *Export as CSV file*. The format of the downloaded document is CSV *(Comma Separated Values).* This maintains the filters and sorting applied to the columns of the results table.

By default, the name of the CSV is made up of the name "ERC MAP" and the reminder of the type of search "Results of Simple / Guided / Advanced / Formulae Search". If the results from a saved search are exported, the CSV will receive the name of the search.

The quote for the MAP database is shown in the first line of the document, updated for each export:

E.g.: Bonnet C. (dir.), ERC Mapping Ancient Polytheisms 741182 (DB MAP), Toulouse 2017-2022: https://base-map-polytheisms.huma-num.fr/ (04/05/2020).

2.4.2. Mode of operation

The columns are predefined for the simple and guided searches.

For the advanced and formulae searches, the user chooses the columns. The choice of columns is determined by the type of search and the type of result selected.

2.4.3. List of fields – Advanced search / Formulae search

2.4.3.1. Fields linked to the Source

- Reference;
- Main title;
- Authors;
- Source category;
- Source types;
- Medium category;
- Medium;
- Material category;
- Material;
- Languages;
- Post quem;
- Ante quem;
- Region;
- Sub-region;
- Place;
- Site;
- Latitude;
- Longitude;
- Link (view).

2.4.3.2. Fields linked to the Testimony

- Passage;
- Extract with restitution;
- Transliteration;

- Translations;
- Name quality of reading;
- Connected acts;
- Occasions;
- Material;
- Agents;
- Post quem;
- Ante quem;
- Region;
- Sub-region;
- Place;
- Site;
- Latitude;
- Longitude;
- Elements count;
- Formula:
- Divine powers count;
- Link (view).

2.4.3.3. Fields linked to the Element

- Absolute form;
- Beta Code;
- Nature;
- Translations;
- Invariant categories;
- Region;
- Sub-region;
- Place;
- Site;
- Latitude;
- Longitude;
- Link (view).

2.4.4. Notes

- The fields that are exported depend on the type of result that is desired (Source, Testimony, Element). Each level contains its own fields; the testimony takes its fields from the source to which it belongs.
- The *Formulae* search contains the fields belonging to the source and the testimony.
- The Latitude and Longitude columns allow to integrate the CSV results file into GIS software.

2.5. General notes

- The CSV format is an open format that follows the rules of the Open-data and FAIR data.

Presentation of the MAP project

The MAP project is an ERC Advanced Grant (741182) project that studies the divine powers in the Antiquity by means of their names, viewed as "onomastic sequences". The full title of the project is: *Mapping Ancient Polytheisms. Cult Epithets as an Interface between Religious Systems and Human Agency*. Thanks to the systems for naming the divine, it aims to unravel the relational logics, meaningful, but always fluid, which shape and animate the divine powers. These systems serve to express the gods' multiple functions and modes of action, as well as associating them with spaces where their presence fosters interactions with men. For this reason, the names of the gods play a strategic role in ritual communication, making it possible to target a specific interlocutor and reinforcing the effectiveness of the ritual. MAP focusses on the context in which each onomastic sequence is used, as well as the question of human agency.

The project encompasses the divine names from the Greek world in its widest expansion, and from the West Semitic world (Phoenician, Punic, Aramaic, Hebrew) from the Near East to the most western Phoenician colonies, in other words, on an ample Mediterranean scale and embracing an extensive period of time, from around 1000 BC to 400 BCE.

Presentation of the MAP database

The data for the names, contexts and agents is extracted from published corpus, formatted and recorded by the team working on the project, guest researchers and collaborators. Given that the corpus studied is heterogeneous on several levels, the database uses ontologies and lists of predetermined values to record the data in order to harmonize data entry and facilitate consultation.

MAP uses a relational database in SQL *(Structured Query Language)* which allows a large amount of different qualities of information to be recorded. This information is stored in entity classes (tables) according to an architecture inspired by the research questions of the project.

Structure of the database

The MAP database contains three data recording levels:

- Source;
- Testimony;
- Element.

The source (1) is the document – epigraphic, glyptic, numismatic, papyrological or of manuscript tradition – which contains one or more testimonies of divine onomastic sequences.

The testimony (2) is a group of several onomastic elements that refer to one or several divine beings and are combined to form an "onomastic sequence".

E.g.: Ἀπόλ[λωνος] Πυθίου καὶ Ἀπόλλωνος Κεδριέως is a Greek testimony;

lrbt ltnt pn bʿl w l'dn lbʿl ḥmn is a Punic testimony.

The element (3) is the minimal "unit of meaning" within the testimony. It is a semantic and non-grammatical category. Two or more elements constitute a testimony.

E.g.: Ἀπόλ[λωνος] Πυθίου καὶ Ἀπόλλωνος Κεδριέως the underlined words are the 4 elements of this Greek testimony;

lrbt ltnt pn bʿl w l'dn lbʿl hmn the underlined words are the 7 elements of this Punic testimony.

One source (level 1) contains one or more testimonies (level 2) which contain one or more elements (level 3).

Metadata tables are associated with these different levels, such as the location, the datation, the context, the agents and the bibliography. Knowing the structure of the database allows to formulate and calibrate the search process.

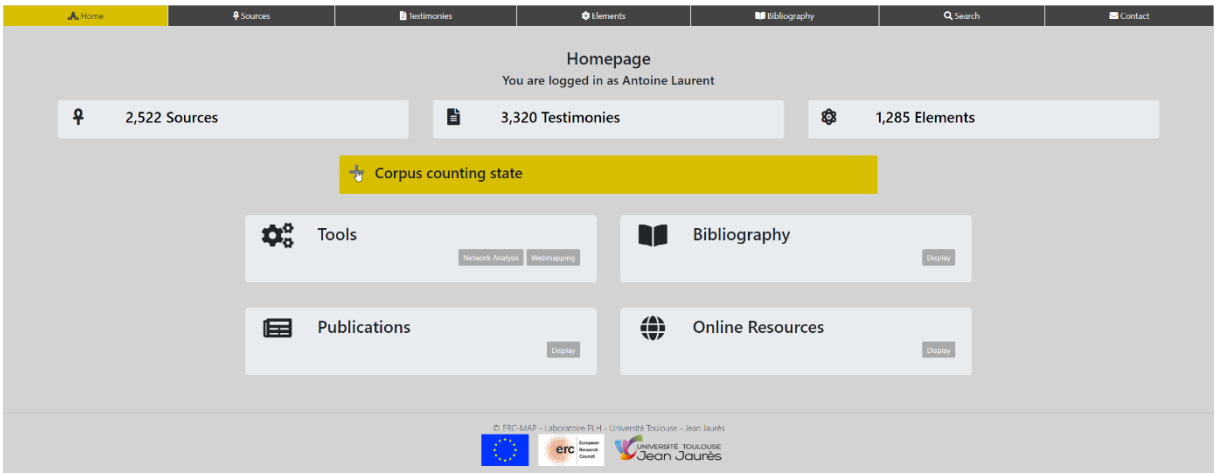
Entry / consultation interfaces

The search interface allows the user to query the information entered on the entry forms by the research team. Consultation and searches are based on the different levels of the database. The search results allow the user to consult the forms that match his/her criteria.

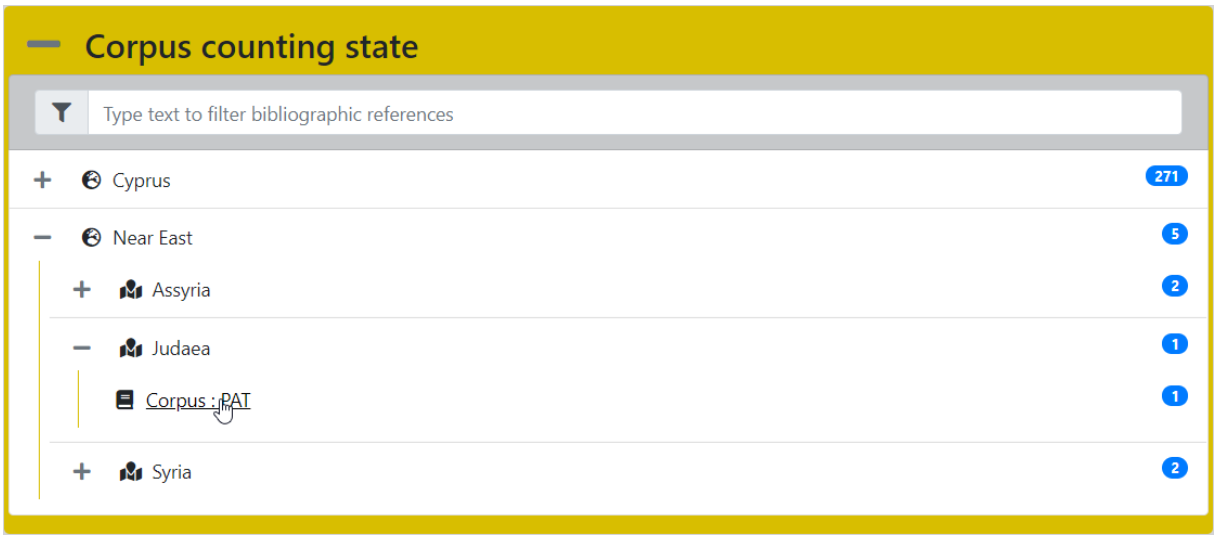
This Search Interface Guide for users of the database is complemented by a Data Entry Guide for editors of the forms in the database, along with a Webmapping Guide for users of the database. They are available here: https://hal.archives-ouvertes.fr/MAP-ERC/.

Corpus counting state

From the database homepage (https://base-map-polytheisms.huma-num.fr/), the user carrying out a consultation accesses the corpus counting state.



This tab shows the list of corpora according to the regions and sub-regions followed by the bibliographic references. The number that is shown corresponds to the number of sources for which **validation has been completed**. The corpora under study are not counted here. The results given in the search interfaces refer to this list.



The search bar allows you to filter the counting list by typing the first letter.

Search modes

The search interfaces can be accessed via the navigation bar.

Several search modes are available. Each one is adapted to the precision of the information that the user requires and to his/her knowledge on the subjects covered by the project. The search modes are:

- *Simple* which works like a search engine;
- *Guided* which has predefined criteria;
- *Advanced* with searches that the user composes;
- *Formulae* which is aimed at onomastic sequences.

Citing the MAP database

Bonnet C. (dir.), ERC *Mapping Ancient Polytheisms* 741182 (DB MAP), Toulouse 2017-2022: https://base-map-polytheisms.huma-num.fr/ (YYYY/MM/DD).

Contact

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Subject: DB – Search Interface