GEOnet Names Server (GNS) How To

Compose a Query and Export Data

To access the GNS query and export functions, visit GNS at http://geonames.nga.mil/gns/html/ and select the GNS Search - Text Based Page option (http://geonames.nga.mil/namesgaz/). The query page defaults to search, indicated by an active search button having a yellowish background tint and bold text.

Active search button.

Compose a Query - display results to the screen:

There are many ways to compose a GNS query, from the simple to the complex. The simplest query is for a name\(^1\) against the entire content of the database. Search qualifiers include Starts With, Exact Match, Contains, and Ends With. Multiple name input is possible by selecting the Multiple Name Search radio button below the country name list box. Up to 500 lines of individual names (one name per line) can be included for search types Starts With, Exact Match, and Ends With, and up to 100 lines of individual names (one name per line) can be included for search type Contains. The query is executed by clicking on any of the Search Database buttons scattered over the page.

Select Multiple Name Search and the Name input widget expands to show the ability to accommodate more than one name.

\(^1\) The use of the term name is synonymous with the term feature name.
The database stores feature names in both Reading Order\(^2\) (Mount Everest) and Reversed Generic\(^3\) (Everest, Mount) fields encoded in Unicode UTF-8. The database also converts and stores these feature names in fields called \texttt{SORT\_NAME\_RO} for reading order and \texttt{SORT\_NAME\_RG} for reversed generic.

A sort name is a form of the full name that allows for alphabetical sorting of the data into gazetteer sequence. For Roman script names, all character/diacritic combinations and special characters are substituted with QWERTY (visible U.S. English keyboard) characters, all characters are upper-cased, numerals are converted to lower-case characters (0-9 = a-j), spaces and hyphens are stripped out, and finally commas replaced with a space. Additionally, for non-roman script names in languages using Arabic based letters, vowel markings/pointers are removed.

The search function converts user input to sort name and looks at matching the search string against both sort name fields.

Wild card searches are possible by using percent (\%), which stands for zero (0) or more characters, or underline (_), which stands for a single character. All search qualifiers by default employ a percent (\%) wild card with the exception of Exact Match:

- **Starts With:** Search String\%
- **Exact Match:** Search String
- **Contains:** %Search String%
- **Ends With:** %Search String

An option is provided to view the composed query prior to executing it by selecting \textit{Show Me My Query}, located below the Search and Export buttons under Tools/Misc. Once selected, and besides showing the query parameters, it provides an option to cancel out of the query so its parameters can be further fine-tuned.

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\(^2\) Reading Order names are useful for, to name a few examples, maps, graphics, papers, publications, databases, and mobile application.

\(^3\) Reversed Generic names are useful for, to name a few examples, gazetteers and databases.
Show Me My Query selection box and resulting dialogue box when a query is executed.

There is a master reset button for the entire page which sets all selections back to default values; the Reset All Options button located under the Search and Export buttons. There are section reset buttons, normally located to the right of each section, which can be used to reset each individual section to its default values.

Initial GNS query page where user can select single or multiple names to search for and the type of string matching - defaults to Starts With.
Complexity can be added to a query by including a country4 - which activates the first-order administrative division list (ADM1 Names), name type, a particular scale range, feature designation (feature type), and/or a spatial extent using either a bounding box or a radius, to name a few. The more elements selected the more complex the query; the more complex the query, the longer it will take to execute but will produce a narrower set of returned data.

If searching against multiple countries, it might be wise to uncheck the Show ADM1 Names box to improve speed of selection.

A Historical Feature5 is defined as a "feature known to no longer exist, or evidence of the feature can no longer be found." These features are not included in any GNS search or export results by default. If exposing such features is desired, activate the Include Historical Features selection box. When this selection is made, two more fields will be exposed in the search results window; Effective and Termination Dates. The presence of a date in the Termination Date field indicates a historical feature.

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4 FIPS PUB 10-4 was withdrawn by the National Institute of Standards and Technology on September 2, 2008 based on Public Law 104-113 (codified OMB Circular A-119 and the National Technology Transfer and Advancement Act of 1995). The National Geospatial-Intelligence Agency (NGA), as the maintenance agency for FIPS PUB 10-4, has continued to maintain and provide regular updates to its content in a document known as Geopolitical Entities and Codes (GEC) (Formerly FIPS PUB 10-4).

The Geopolitical Entities, Names, and Codes (GENC) Standard, the US Government profile of ISO 3166, has subsequently been designated as the replacement standard for FIPS PUB 10-4. The GENC Standard will provide a list of the basic geopolitical entities in the world, together with the principal divisions that comprise each entity. The names of the political entities are derived from official meeting records of the Foreign Names Committee of the US Board on Geographic Names (US BGN). GENC Edition 1 was published on 27 November 2012 and only includes codes at the country level. GENC Edition 2 was published on 31 March 2014. The GENC Standard may be found online at: [https://nsgreg.nga.mil/](https://nsgreg.nga.mil/). The GENC content may be found in the GENC Registry online at: [https://nsgreg.nga.mil/genc/discovery](https://nsgreg.nga.mil/genc/discovery).

NGA has discontinued maintenance of Geopolitical Entities and Codes (Formerly FIPS PUB 10-4) as of 31 December 2014. Updates to the GEC content will no longer be posted. The GNS will internally continue to use GEC-like codes for the near future. Once implementation of GENC codes begins, there will likely be a transition period during which both GEC-like (FIPS 10-4) and GENC codes are available to the GNS user.

In this context, the use of country is synonymous with geopolitical entity.

5 In the NGA/BGN Geographic Names Database, a historical feature is a feature known to no longer exist, or evidence of the feature can no longer be found.

A termination date field is employed in the Geographic Names Database to identify historical features. This field is exposed on GNS when the Include Historical Features option is selected. The presence of a date in this field indicates a historical feature.

This policy applies only to the NGA/BGN Geographic Names Database of foreign place-name information.
Show ADM1 Names is selected by default where Include Historical Features is not.

Effective Date and Termination Date fields are shown in the query results when Include Historical Features is selected.

Selecting a country activates the first-order administrative division list (ADM1 Names). Select more than one country and/or more than one ADM1 Name using the Ctrl key and the left mouse button.
All Name Type(s) are selected by default. Select one using the left mouse button, or select any combination using the CTRL key and the left mouse button, or use the provided selection buttons.

Limit the query by modify date, scale range, etc.
Limit the query by feature designation (feature type). Selecting none returns all; selecting one or more excludes non-selected.
Limit the query using a bounding box.
Or limit the query using a radius.
Compose a Query - export results to a file:

To export a query, activate the export function by selecting the Export button. An active export button will have a yellowish tint and bold text, and will present a few more options:

- Export data in Reading Order (default)
- Export data in Reverse Generic
- Export File Format tab
- Export Fields tab
- Export File Names

Export function active.

Export File Format selection tab.
Export Fields selection tab. If the Effective & Termination Date option is selected, then historical features will be included.

After activating the Export button, follow the same process for composing a query, make a selection for the output file as reading order or reversed generic, and finally select the file format and desired fields.

Once a name is provided for the query in the Export File Name dialogue box (file name cannot contain spaces or special characters; a-z, A-Z, and 0-9 combinations are valid for the file name), submit the query using any of the Search Database buttons scattered throughout the page. A progress dialogue box pops up showing current activity and will provide a download link to the file when the process completes - Click to download.
Dialogue box indicating that the export file is ready for download.

Your file is ready for download. Click on the link to download the file.

Click to download

This window will auto close in 8 seconds after you click on the download option.
Larger files will take a few minutes to start the download.
This window will close but the download will still take place. Please be patient.

If you do not want to wait for the timer to complete, you can close this window and check back later using the Download File option (left pane under Tools/Misc). You need this file name: MyExport.zip
Example Scenarios

Can be queried or exported

Find this named feature - name **Starts With** Kabul; other name search operators include **Exact Match**, **Contains**, and **Ends With**.

Find all these named features - name **Starts With** Kabul or name **Starts With** Kandahar.
Find this named feature in this country or list of countries - name **Starts with** Kabul in Afghanistan.

Find this named feature in this country or list of countries having this feature type - name **Starts With** Kabul in Afghanistan or Iran having a feature type of populated place (PPL).
When multiple countries are selected, the **ADM1 Names** listing starts with each selected country's name, alphabetically, surrounded by dashes.

Find all named features that fall within this bounding box.
Find all named feature that fall within this radius from this center point coordinate.

Find all instances of this named feature within this radius from this other named feature - all instances of a name that Starts With Kandahar (Secondary Name) within a 15KM radius from a name that Starts With Kabul (Primary Name) - returns limited to 15 features, so there is a possibility the query might need to be restricted further, by introducing a country and/or other parameters, to arrive at that magic number.
Results of such a radial search, **Find all instances of this named feature within this radius from this other named feature**, would display the following types of information:

<table>
<thead>
<tr>
<th>Primary Name</th>
<th>Country</th>
<th>Latitude/Longitude</th>
<th>Feature Type</th>
<th>Matches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doha (Variant)</td>
<td>Qatar</td>
<td>25° 15' 00&quot; N 051° 32' 00&quot; E</td>
<td>harbor(s)</td>
<td>408</td>
</tr>
<tr>
<td>Doha (Conv)</td>
<td>Qatar</td>
<td>25° 15' 12&quot; N 051° 30' 00&quot; E</td>
<td>capital of a political entity</td>
<td>403</td>
</tr>
<tr>
<td>Doha (Variant)</td>
<td>Qatar</td>
<td>25° 15' 00&quot; N 051° 30' 00&quot; E</td>
<td>first-order administrative division</td>
<td>403</td>
</tr>
</tbody>
</table>

**Primary Name**: The Primary feature Name used to anchor the search.

**Country**: The country of the primary feature name - can include multiple countries for shared features.

**Latitude/Longitude**: Geographic location of feature.

**Feature Type**: Type of feature located - feature designation code.

**Matches**: The number of secondary feature names that matched the search criteria - this number is a link that will open another window listing the matched record set when selected.

A zero count (0) under the **Matches** field indicates found matches to the primary feature name string with no matches to the secondary feature name string.

Searching for any feature name that starts with **Umm** (secondary) that falls within a radius of 200KM from a feature name that starts with **Doha** (primary) will yield results similar to the following:
The entry second from the bottom, **Doha** (Conventional, capital of a political entity), indicates 403 matches to the secondary feature name that starts with **UMM**. Clicking on the number under **Matches** will display a list of the matching record set.

<table>
<thead>
<tr>
<th>Secondary Name</th>
<th>Country</th>
<th>Latitude/longitude</th>
<th>Feature Type</th>
<th>Distance (KM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umm Kharoush (Approved)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>island</td>
<td>87</td>
</tr>
<tr>
<td>Ayn Umm Jibril (Approved)</td>
<td>Bahrain</td>
<td>26° 11' 43&quot; N</td>
<td>water well</td>
<td>118</td>
</tr>
<tr>
<td>Umm Yazdir (Variant)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>water well</td>
<td>118</td>
</tr>
<tr>
<td>Umm Jadari Summan (Approved)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>area</td>
<td>118</td>
</tr>
<tr>
<td>Naqsh Umm Abd Allah (Approved)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>grove</td>
<td>135</td>
</tr>
<tr>
<td>Umm Abd Allah (Approved)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>locality</td>
<td>135</td>
</tr>
<tr>
<td>Umm Jibril (Approved)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>populated place</td>
<td>129</td>
</tr>
<tr>
<td>Ras Umm al Hassam (Variant)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>point(s)</td>
<td>138</td>
</tr>
<tr>
<td>Ras Umm al Hassam (Approved)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>point(s)</td>
<td>138</td>
</tr>
<tr>
<td>Ayn Umm aan Shum (Variant)</td>
<td>Bahrain</td>
<td>26° 15' 43&quot; N</td>
<td>spring(s)</td>
<td>139</td>
</tr>
</tbody>
</table>

Besides displaying the secondary feature name and name type, country, latitude/longitude, and feature type, the secondary feature name record set also includes the **Distance** (straight line) away from the primary feature name for each match, in the units selected - Kilometers (KM) or Miles. This **Distance** value only appears for searches and export to HTML; it's not included in any of the other export formats.