

# How to Use the Marine Realms Information Bank (MRIB) Digital Libraries

## Abstract

Marine Realms Information Bank (MRIB) digital libraries provide access to free online scientific resources about oceans, coasts, and coastal watersheds. MRIB allows category, geographic, and keyword searching, alone or in combination. Instructions for searching the three MRIB libraries and for refining the searches are explained in detail.

## MRIB Digital Libraries

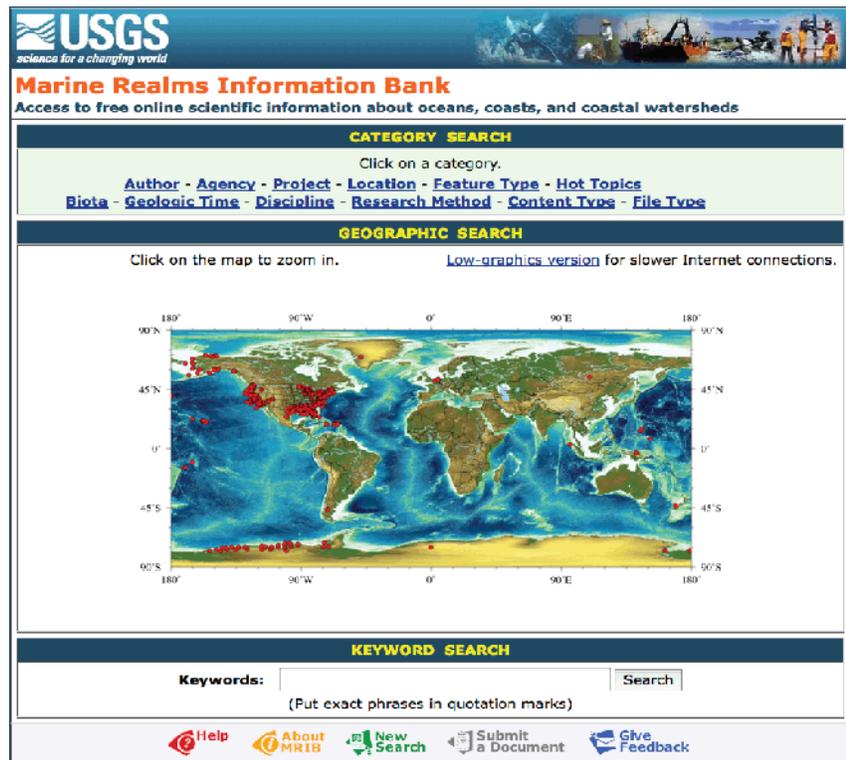
The U.S. Geological Survey (USGS) maintains three related digital libraries that provide access to *georeferenced* (geographically indexed) information for coastal and marine science (Lightsom and Allwardt, 2007; 2009). The **Marine Realms Information Bank** (MRIB; <http://mrib.usgs.gov/>) provides access to a general selection of free online scientific information about oceans, coasts, and coastal watersheds, including web sites, full-text reports, digital maps, and downloadable data. The **Monterey Bay Science Digital Library** (<http://mrib.usgs.gov/mbs/>) is a regional offshoot of MRIB for the Monterey Bay National Marine Sanctuary and vicinity. The **Coastal Change Hazards Digital Library** (<http://mrib.usgs.gov/cch/>) is a thematic offshoot of MRIB and provides information about natural hazards in, and human effects on, the coastal zone. The three MRIB digital libraries run on the same software and share a common database, but they employ different user interfaces targeting different audiences. This fact sheet presents the basic search strategies and describes how the ensuing search results can be viewed, refined, sorted, and exported. The illustrated examples in this fact sheet are taken from the Marine Realms Information Bank (the parent interface) but are also applicable to the two MRIB offshoots.

## Search Strategies

MRIB offers three types of searches: by category, by location, and by keyword (fig. 1). Users can select search parameters from 12 indexing categories (A), select place names from the gazetteer, zoom in on a map (B), or search MRIB metadata for specific keywords or phrases (C). These operations can be applied repeatedly, in any combination, until the search is appropriately focused. At each stage of the process, MRIB displays the search results in tables or interactive maps (at the user's discretion) and provides links to the online information resources.

The first step in using MRIB is to choose a search strategy.

- Are you looking for information on a particular topic or from a particular organization or author? Choose the appropriate category and browse the entries to find the desired search parameter.
- Are you interested in a particular place? Use the geographic search to zoom into an area of interest on the map or browse the Location category (gazetteer) to identify an appropriate place name.
- Are you searching for a particular title? Use the keyword search to find an exact phrase.



**Figure 1.** The home page for the Marine Realms Information Bank (MRIB) web site (<http://mrib.usgs.gov/>), with (A) links to 12 search categories, (B) an interactive map for geographic searching, (C) a keyword search box, and (D) additional navigation buttons that provide documentation and allow the user to contribute new information resources to the MRIB database. Two MRIB offshoots, the Monterey Bay Science Digital Library (<http://mrib.usgs.gov/mbs/>) and Coastal Change Hazards Digital Library (<http://mrib.usgs.gov/cch/>), differ in layout but not in functionality.

## Category Search

MRIB encourages its users to discover online scientific information by browsing a faceted classification with 12 indexing categories. Each category includes indexing terms arranged in simple lists or in conceptual hierarchies, which can be browsed for appropriate search parameters.

- *Author, Agency, and Project* list the names of the persons, organizations, and activities responsible for an information resource.
- *Location* includes a gazetteer of place names, including natural geographic features like oceans, islands, and watersheds, as well as political and administrative entities like states and specific marine sanctuaries.
- *Feature Type* offers lists of generic features, including landforms (for example, mountains and oceans), geological features (such as landslides and earthquake zones), biological features (such as coral reefs and kelp forests), administrative areas (for example, marine sanctuaries in general), and human constructions (such as dams and canals).
- *Hot Topics* includes issues of concern to scientists, policy makers, and the general public, including the environment (for example, climate change and pollution), hazards and disasters (such as earthquakes, storms, and tsunamis), resources (such as energy, minerals, and water), and “science and scientists” (for example, methodology and policy).
- *Biota* includes the common names of organisms, arranged in five kingdoms: animals, plants, fungi, protists, and bacteria. A subcategory for viruses is also included. (The subcategories of *Biota* are intentionally broad. Scientific or common names of individual species are not included, although the MRIB indexer may enter them as supplemental keywords.)
- *Geologic Time* is a simplified relative time scale (eon, era, period, and epoch) for studies that address the geologic past.
- *Discipline* includes a list of traditional academic fields, like geology and biology.

- *Research Method* includes techniques commonly used to conduct scientific investigations, such as field observation, laboratory analysis, data processing, and modeling.
- *Content Type* and *File Type* characterize the “intellectual” form and “transmission” form of an information resource, respectively.

More complete descriptions of the 12 indexing categories can be found at <http://mrrib.usgs.gov/doc/facets.html>.

After the user selects a category, a list of subcategories will appear in the SEARCH RESULTS box (fig. 2). In most cases, these subcategories are the main branches of a hierarchical tree of terms. Clicking a linked subcategory will limit the search to one branch of the hierarchy and display the narrower terms that are included in it. Alternatively, clicking the Expanded tree link (A) at the top of the page will display the complete hierarchy of terms within the chosen category (B). Once the user has found the desired search term, a click on the linked number of matches (C) will display the corresponding search results.

## Geographic Search

To start a geographic search, click the map on the home page. (In the Coastal Change Hazards Digital Library, the user will first choose a region.) On the map navigation page (fig. 3), the center point of each georeferenced study area is depicted as a red dot. To zoom into a region of interest, continue clicking the desired location on the map, or use the control panel (A) to enter precise bounding coordinates. Click the compass in the control panel to pan (move) in any direction without changing the scale of the map, or click the magnifying glass icons to zoom in and out from the center of the map. More information about map search functions can be found at <http://mrrib.usgs.gov/doc/map.html>.

After the bounding coordinates of the map have been adjusted to show the region of interest, search results can be obtained in two ways.

1. To retrieve all of the search results within the current map region, click the View Table link (C) above the map.

The screenshot shows the Marine Realms Information Bank search results page. At the top, there is a navigation bar with links: MRIB Home, New Search, About, Submit a Document, Give Feedback, Help. Below this is a section for 'CURRENT SEARCH' with 'Hot Topics: None selected'. The 'REFINE SEARCH' section allows users to click on a category to add a search parameter, with links for Author, Agency, Project, Location, Feature Type, Hot Topics, Biota, Geologic Time, Discipline, Research Method, Content Type, and File Type. The 'SEARCH RESULTS' section shows 2120 matches and provides links for 'Expanded tree', 'Map', and 'Table'. A red box labeled 'A' highlights the 'Expanded tree' link. Below this, the 'Hot Topics' section lists various categories with their respective match counts. A red box labeled 'B' highlights the list of subcategories under 'Environment', including 'Climate Change' (110 matches), 'Conservation' (31 matches), 'Ecological Change' (70 matches), 'Habitat' (867 matches), 'Pollution' (141 matches), 'Sediment' (390 matches), and 'Waste Disposal' (71 matches). A red box labeled 'C' highlights the match count for 'Climate Change'.

**Figure 2.** The Marine Realms Information Bank category view, with two levels of nested subcategories. Note the links to (A) fully expand the hierarchy, (B) display the subcategories of a given term, and (C) display matches associated with a given term.

- To retrieve individual search results within the current map region, go to the Map Action pull-down menu (E), choose Select Study, and then click the appropriate red dot on the map. The resulting table will display all studies with center points corresponding to the latitude and longitude of the selected dot.

## Using the Keyword Search

MRIB allows its users to search for keywords or phrases that are stored in the metadata profile of a given information resource, including the title of the resource and all applicable terms from the 12 indexing categories. (MRIB does not search the full text of the information resource itself.) To use the keyword search, type one or more words related to the subject of interest. To search for an exact phrase, enclose the words in quotation marks. The results of the keyword search will be displayed in a table, which can be sorted, refined, and exported. Keyword searches can be combined with category and map searches.

## Working with a Table of Search Results

When MRIB offers a table of search results (fig. 4), users can modify or refine the search parameters, view and evaluate the information resources listed in the table, and export the table in a variety of formats.

## Modifying or Refining the Search

The CURRENT SEARCH box at the top of the page in figure 4 shows the search parameters that have been selected, including map coordinates, categories, and keywords. To modify a category search parameter, click the general term to the left of the current term, and follow the prompts. This action will reopen the category search interface and allow the user to choose a different term from that category, or no term at all. A similar procedure is followed to modify zoom coordinates or keywords. For more information, see [http://mrrib.usgs.gov/doc/search\\_history.html](http://mrrib.usgs.gov/doc/search_history.html).

To refine the search by adding a new category search parameter, go to the REFINE SEARCH box, choose one of the top-level categories, and follow the steps for a category search. To refine the search geographically, click the View

The screenshot shows the USGS Marine Realms Information Bank (MRIB) interface. At the top, there's a navigation bar with links like MRIB Home, New Search, About, Submit a Document, Give Feedback, and Help. Below that, the 'CURRENT SEARCH' section shows the current search parameters: Zoom Location (100W / 70W / 40N / 20N) and Hot Topics (Hazards and Disasters > Storm > Hurricanes and Typhoons). The 'REFINE SEARCH' section offers various filters like Author, Agency, Project, Location, Feature Type, Hot Topics, Biota, Geologic Time, Discipline, Research Method, Content Type, and File Type. The 'SEARCH RESULTS' section displays 72 total matches, with 72 matches plotted on a map of the Gulf of Mexico. A control panel on the right includes a 'Map Action' pull-down menu, 'Zoom Rate' (Medium), 'Map Type' (Shaded Relief), 'Map Resolution' (Medium), and 'Display Study Areas' (On). A 'View Table' link is also present. At the bottom, there's a 'KEYWORD SEARCH' box with a search input field and a 'Search' button.

**Figure 3.** The map navigation page with georeferenced study sites displayed as red dots. The bounding coordinates of the map can be modified by clicking on the map image or by using the (A) control panel to zoom in or out, pan, or enter specific coordinate values; (B) the Advanced Options link permits the user to select a number of background layers for the map, including the U.S. Exclusive Economic Zone, Minerals Management Service (MMS) Official Protraction Diagrams, and USGS watersheds; (C) the View Table link above the map and (D) the View Table button in the control panel display a table of all search results for the current map region; and (E) the Map Action pull-down menu offers the option of selecting individual studies for display in a table.

Map link in the SEARCH RESULTS box and follow the steps for a map search. To start a new search, return to the MRIB home page by clicking the New Search icon located in the REFINE SEARCH box.

## Viewing and Evaluating Information Resources

The table of search results shown in figure 4 contains the title and a short description of the information resource, the record type (document or collection), the author(s), and the date created or last modified. A table of search results can be sorted by record type, title, author, or date. Click View Metadata (A) to see a more detailed description of the information resource, along with a thumbnail location map (if applicable). Click the linked title (B) of an entry to view the information resource in a new window. Choosing "All" in the Records per page

pull-down menu (C) allows the results to be searched for keywords using the web browser's "find" function. To weed the search results, browse the titles, use the check boxes (D) to mark records to keep, then click View Selections (E). Click the View Map link to see the locations of the georeferenced studies listed in the table. Click the Export All link (F) to display a menu of export formats. For more information, see <http://mrrib.usgs.gov/doc/table.html>.

## Exporting Search Results

Search results can be exported in several formats and stored on a local computer for later review or further processing (fig. 5). Exports in Keyhole Markup Language (KML) can also be displayed in external mapping applications like Google Earth and Google Maps. For more information, see <http://mrrib.usgs.gov/doc/export.html>.

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**Marine Realms Information Bank**

[MRIB Home](#) [New Search](#) [About](#) [Submit a Document](#) [Give Feedback](#) [Help](#)

**CURRENT SEARCH**  
Click on a link to modify a search parameter.  
**Zoom Location:** 100W / 70W / 40N / 20N  
**Hot Topics:** [Hazards and Disasters](#) > [Storm](#) > Hurricanes and Typhoons

**REFINE SEARCH**  
Click on a category to add a search parameter.  
[Author](#) - [Agency](#) - [Project](#) - [Location](#) - [Feature Type](#) - [Hot Topics](#) - [Biota](#) - [Geologic Time](#) - [New Search](#)  
[Discipline](#) - [Research Method](#) - [Content Type](#) - [File Type](#)

**SEARCH RESULTS**  
Showing records 1 - 10 of 72 **E** Records per page: 10 **C** Go

[View Map](#) [Export All](#) [View Selections](#) [New Search](#) 1 2 3 4 5 6 7 8 >>

Record Type sort: [ up   down ]	Title and Description sort: [ up   down ]	Author sort: [ up   down ]	Date sort: [ up   down ]
Type: Document <input type="checkbox"/> Select <a href="#">View Metadata</a> <b>A</b>	<a href="#">Louisiana Barrier-Island Erosion Study: Isles Dernieres Beach Profiles -- September 1987 through September 1988</a> <b>B</b> U.S. Geological Survey Open-File Report 89-89. [ Translate ] [ Open URL ]	Dingler, John R. <a href="#">Reiss, Thomas E.</a>	1989
Type: Document <input type="checkbox"/> Select <a href="#">View Metadata</a>	<a href="#">Storm-Tide Elevations Produced by Hurricane Hugo Along the South Carolina Coast, September 21-22, 1989</a> U.S. Geological Survey Open-File Report 90-386. [ Translate ] [ Open URL ]	Schuck-Kolben, R. Erik	1990
Type: Document <input type="checkbox"/> Select <a href="#">View Metadata</a>	<a href="#">Beach Profile Measurements after Hurricane Hugo: Sullivan Island and Isle of Palms, South Carolina</a> U.S. Geological Survey Open-File Report 91-110. [ Translate ] [ Open URL ]	<a href="#">Reiss, Thomas E.</a> <a href="#">Wertz, Robert Ray, Jr.</a> Katuna, Michael P.	1991
Type: Document <input type="checkbox"/> Select <a href="#">View Metadata</a>	<a href="#">Atlas of Shoreline Changes in Louisiana from 1853 to 1989 [full text]</a> U.S. Geological Survey Miscellaneous Investigations Series I-2150-A, a product of the Louisiana Barrier Island Erosion Study (U.S. Geological Survey and Louisiana Geological Survey). [ Translate ] [ Open URL ]	Williams, S. Jeffress Penland, Shea <a href="#">Sailenger, Asbury H., Jr.</a>	1992

**Figure 4.** A table of search results, sortable by record type, title, author, and date. Other user-controlled actions include (A) the View Metadata link, which opens a detailed metadata profile of the information resource; (B) the linked title, which opens the information resource itself; (C) the Records per page pull-down menu; (D) the Select check box (see text); (E) the View Selections link (see text); and (F) the Export All link, which opens a menu of export formats (see fig. 5).

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**Marine Realms Information Bank**

[MRIB Home](#) [New Search](#) [About](#) [Submit a Document](#) [Give Feedback](#) [Help](#)

**CURRENT SEARCH**  
Click on a link to modify a search parameter.  
**Zoom Location:** 100W / 70W / 40N / 20N  
**Hot Topics:** [Hazards and Disasters](#) > [Storm](#) > Hurricanes and Typhoons

**REFINE SEARCH**  
Click on a category to add a search parameter.  
[Author](#) - [Agency](#) - [Project](#) - [Location](#) - [Feature Type](#) - [Hot Topics](#) - [Biota](#) - [Geologic Time](#) - [New Search](#)  
[Discipline](#) - [Research Method](#) - [Content Type](#) - [File Type](#)

**SEARCH RESULTS**  
You have chosen to export your current search results (72 records).  
Please select one of the following export formats:  Export

**Format Descriptions:**

**TXT:** A simple plain-text format. This format consists of name=value pairs separated by newlines. Records are separated by double newlines (blank lines). See a [sample](#) of an exported TXT record.

**CSV:** Comma Separated Value format, a universally recognized format supported by nearly all spreadsheet programs. The first row consists of field names; each row below consists of the corresponding field values for an individual record. The EIC ID number for each record is prefixed by "0x" so that spreadsheet programs such as Microsoft Excel treat the hexadecimal value as text. A good description of this format can be found at [http://en.wikipedia.org/wiki/Comma-separated\\_values](http://en.wikipedia.org/wiki/Comma-separated_values). See a [sample](#) of an exported CSV record.

**XML:** Extensible Markup Language. A simple, very flexible text format derived from SGML. See <http://www.w3.org/XML> for general information. View or download the actual MRIB XML Document Type Definition. See a [sample](#) of an exported XML record.

**KML:** Keyhole Markup Language. Export search results for viewing with [Google Earth](#) or [Google Maps](#). Because KML describes georeferenced information resources, the export will exclude topical resources that are not associated with specific locations. Learn more about [KML](#). Download [Google Earth](#). See a [sample](#) of an exported KML record.

**KEYWORD SEARCH**  
Keywords:  Search  
(Put exact phrases in quotation marks)

## References Cited

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**Figure 5.** The export menu with four options: plain-text format (TXT), comma-separated values (CSV), Extensible Markup Language (XML), and Keyhole Markup Language (KML). The KML format allows georeferenced MRIB records to be displayed in Google Earth or Google Maps.