

Using ReefBase to create customized maps







Prepared by the ReefBase team

One of the most popular sections of the ReefBase website is the online GIS that enables users to create an almost unlimited range of maps showing a wide variety of features. A new version of the GIS, offering an even larger array of facilities and data layers, is online as of early September. In this article, we will provide an introduction to the ReefBase GIS and also highlight some of the powerful but lesser used features of the system.

Basic features

The ReefBase GIS is accessed from the ReefBase homepage (www.reefbase.org) via the **Maps and Photos** menu link. Choosing "Online GIS" takes you to the introduction page where you can see an explanation of the components of the GIS screen. Click on **Start ReefBase GIS** to launch the mapping program. By default you are taken to the ReefBase World Map marked with country boundaries, coastlines and coral reefs. As you zoom in, mangroves and detailed map features such as rivers lakes and roads will automatically also become visible. The visible features are shown in the legend at the left of the screen (Fig. 1). A check box to the left of the layer name indicates that the layer has been turned on and is visible. You can make other layers such as coral bleaching or marine protected areas visible by clicking on the check box. The circular "radio button" to the left of the layer name indicates whether or not it is an "active layer" for the purposes of querying. If you would like to see more detailed legend information on a layer (such as the source of the data and an explanation of the symbol colors) just click on the name of the layer. By default, the Topography and Bathymetry layers are turned off, since they increase the time it takes for the map to be redrawn. However, these two features can dramatically increase the aesthetic appeal of the map, as long as you do not have too many other information layers turned on at the same time.


Table 1. Tools for moving and zooming a map

	Go to Lat-Long Clicking this button will open a small window where you can type the x and y (long./lat.) coordinates you would like to zoom in to. Coordinates must be in decimal degrees and separated by a comma.
	Zoom in Select this button and ((a) click on a point on the map or (b) draw a rectangle to zoom in.)
	Zoom out Click on the map after selecting this button to zoom out.
	Zoom all Click this button to zoom out to full extent of the map (e.g., entire world).
	Pan/move Select this button, then click on a point on the map and "move" it elsewhere (holding the mouse down). Once you release the mouse, the map will redraw and "move" as you indicated.
	Overview map Click this button to view a small overview map indicating the geographic extent of the map you are viewing.

Finding a particular area

Zooming in and moving around to a particular area of interest can be achieved through the zoom-in and pan tools from the column of icons at the right of the screen. Zooming back out can be achieved either by selecting a small area with the zoom out tool, or by clicking on the "show full extent" tool to go back to the full map of the world. If you know the latitude and longitude of the area you wish to view, simply click the pin icon and enter latitude and longitude in decimal degree format. If you are interested in going straight to a map of a particular country or region then use the drop down list in the top middle of the screen.


Getting information about a specific point

	Query map data
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Click this button, then click any data point or **draw a rectangle** (new!) on the map to find information on the point(s) or area(s) in the selected active layer (see above). After selecting data

points on the map, a popup window will display more detailed information on each record selected. A small pointing-hand indicates which data point on the map the information applies to.

Using a high resolution map in other applications

	Save map to disc
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Once you have the desired view and features displayed on the screen you can save this image for use in presentations or documents. A quick way is to right click on the map portion of the screen (option-click on a Mac) and choose **Copy**. You can then switch over to an application such as PowerPoint or Word and use **Paste** to insert the map. This method gives you an image that is the same resolution as your screen. However, by clicking on the save icon on the left hand toolbar you will be presented with a screen that lets you choose several higher resolutions, up to a maximum of about 2 000 x 2 000 pixels. This image is displayed in reduced size but can be copied or saved to your disc by "right clicking" on it and selecting "save image as".

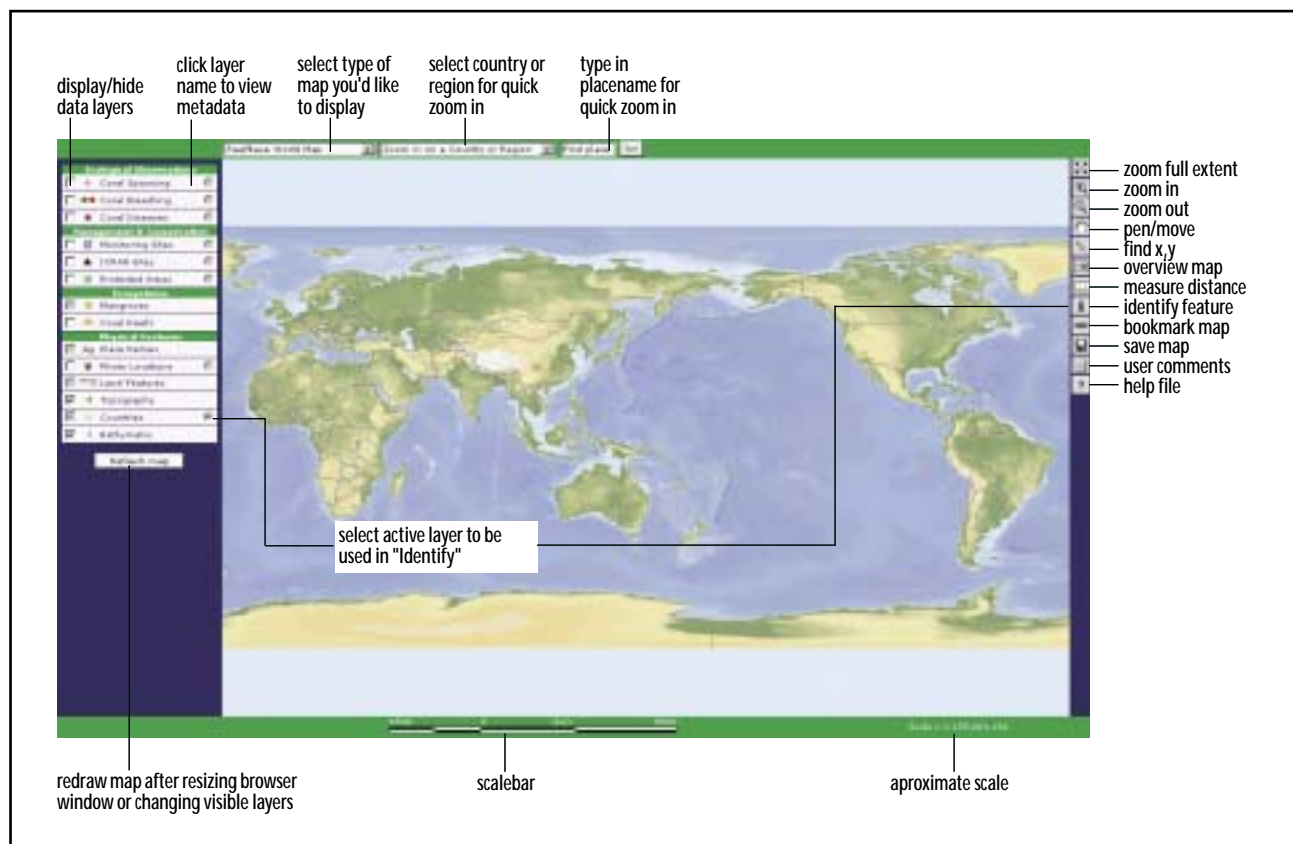
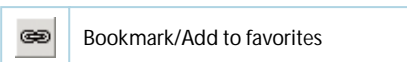


Fig. 1. Functions of the various tools and displays on the initial GIS screen

Saving your favorite map configuration



With this feature you can add the exact settings of the current map to your Favorites (IE) or Bookmarks (Netscape) folder. Next time you're online, simply select the saved link to send your browser to the exact same map.

Selecting other types of maps

While the ReefBase world map provides a great standard map onto which you can overlay a number of key datasets, there is a range of other special thematic maps that can be chosen from the pull down menu on the top right of the screen.

Reefs At Risk maps

These maps display the potential threats to coral reefs from human activities, as modeled by the Reefs At Risk project. You can select from the following views:

Coral reefs classified by overall (combined) threat:

- Overall threat (combined from the four individual threat layers)
- Threat: Overexploitation
- Threat: Coastal development
- Threat: Marine pollution
- Threat: Inland pollution and sedimentation

Reefs at Risk analyses have been completed at the global level at 4 km resolution, and at a more detailed resolution (1 km) for Southeast Asia. Currently, a regional Reefs at Risk analysis is being completed for the Caribbean and will be made available here in due time.

Reefs from space

NASA Imagery (New)

This new map enables you to see where ReefBase has photographs from space (Space Shuttle, International Space Station) and to zoom into these. The background global map is based on

MODIS satellite data from NASA. Reef data, such as monitoring and MPAs, can still be included on these maps.

NASA SEAWiFS bathymetry (New)

This satellite data has been passed through depth-algorithm, showing shallow water bathymetry. It also provides an attractive alternative backdrop for point data.

ReefCheck

All of the thematic maps in the ReefCheck reports of the last five years can be viewed at any scale. There are a total of 11 maps showing human impact, and 29 separate maps indicating the relative abundance of different reef organisms.

NOAA Degree Heating Weeks (New)

As a result of a collaborative effort between NOAA and ReefBase, these

maps bring together NOAA's Degree Heating Weeks (satellite-based maps indicating areas of thermal stress), and ReefBase's database on coral bleaching observations. A new map is added every month. You can select Degree Heating Weeks maps for any particular year and month and then display all bleaching records on top of this map for the same period.

World Ocean Atlas 2001 (New)

This is a collection of maps showing annual, seasonal, and monthly averages for various ocean variables: temperature, salinity, oxygen, nitrate, phosphate, silicate, and chlorophyll.


Statistical maps - Geographic areas

Color-coded marine areas indicate reef, continental shelf, marine, mangroves, and land areas, as well as coastline length per country.

Statistical maps - Socio-economics

Color-coded marine areas indicate total population, population living in the coastal zone, GDP/capita, and fish consumption per capita by country.

Giving us feedback on the ReefBase GIS



While we have included a number of new and improved features in the current version of the ReefBase GIS, we realize that there is always room for improvement. Users are encouraged to send comments on any particular map view using this tool. ReefBase will remember the exact area you have selected and the layers that are turned on. You can then provide comments on this map, including advice on errors, omissions, and additional data availability. With this feedback we will be able to continuously upgrade the ReefBase GIS.



Fig. 2. MODIS image of Cuba and southern Bahamas with NASA photos superimposed. Insert shows detail available for the NASA photos when zoomed in

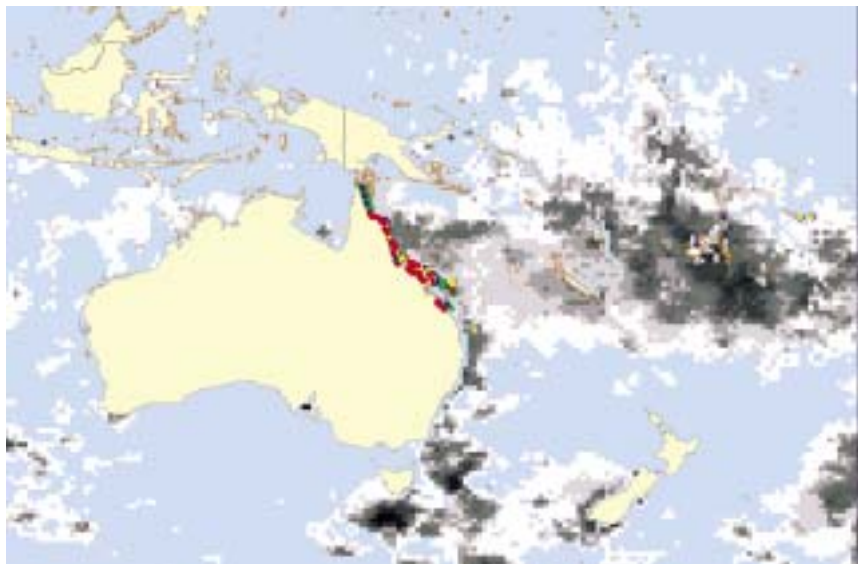


Fig. 3. Degree Heating Week map for April 2002 with coral bleaching records overlaid

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