
ZERO SUM GAMES

I. Welcome to Realm Studio

A. Description

Thank you for your interest in Realm Studio. Realm Studio is an open-source Windows application intended for making fantasy maps for gamers, world builders, authors, and anyone else that has a need to make nice-looking maps quickly and easily.

Using Realm Studio is completely free of charge. Just download RealmStudio.msi, then double-click it to install the Realm Studio application and a default set of assets (symbols, textures, frames, boxes, and so on) for your maps. More information on map assets is in the sections below.

B. Support

Because Realm Studio is open source and free, support is limited. This Help file provides all the information needed to create maps using Realm Studio, but if you have questions, feature suggestions, or bugs to report, please email support@brookmonte.com.

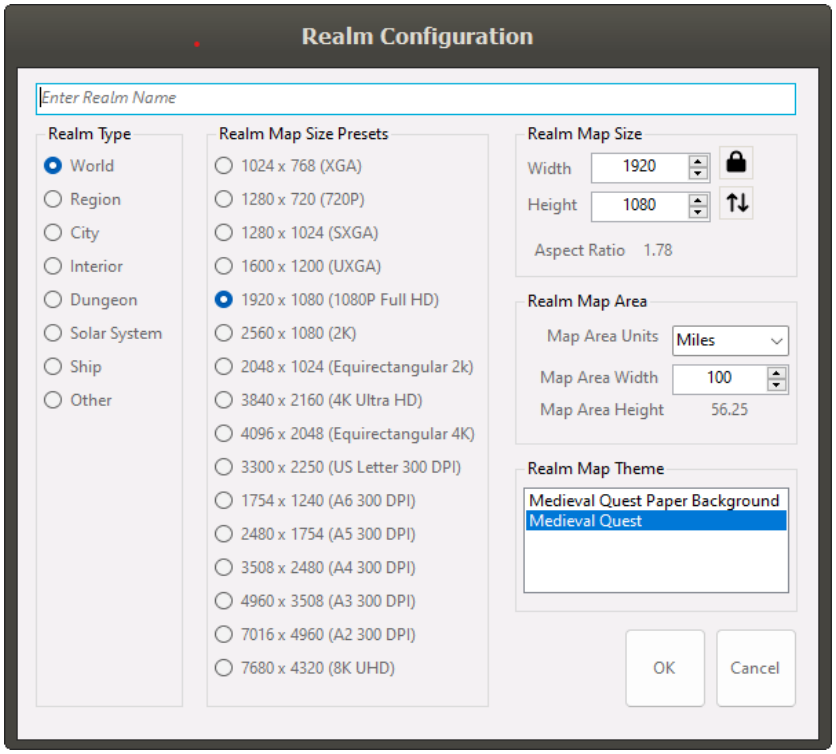
C. How to Make Maps with Realm Studio

1. When Realm Studio Starts

Configuring Your Realm

After the application splash screen closes, the main application window and a dialog box titled "Realm Configuration" are shown. The dialog allows you to select the type of realm (map), the size of the map in pixels, the size of the map (map area) in real world units (square miles, kilometers, meters, feet, etc.), and the initial theme for the map. The theme can be changed after it is created. There is more information on themes later.

You should give your realm (map) a name by entering the name in the text box at the top of the Realm Configuration dialog. If you do not give your realm a name, it will be called "Default." You can change the name of your realm later, if you don't give it a name in the Realm Configuration dialog.



At this time, changing the Realm Type only changes the default Map Area Units, but in future versions, changing the Realm Type will cause other changes to the application functionality to support creation of specialized maps for building interiors, dungeons, solar systems, etc.

2. The Title Bar Controls

There are several controls in the title bar of the Realm Studio application that give you quick access to some basic functions.

The Autosave Switch

The Autosave switch enables and disables the Autosave function of Realm Studio. When enabled, Realm Studio will periodically save a backup copy of your map. The backup copies are saved in your Documents folder in a subdirectory named “RealmStudio/Realms/autosave.” More information on Realm Studio directories and the Autosave functionality is below.

The File Open Icon

The File Open icon opens a Windows File Open dialog to allow you to open a previously saved map.

The File Save Icon

The File Save icon opens a Windows File Save dialog to allow you to save the map you are currently working on. The file name defaults to the name of your realm (map), if it was set in the Realm Configuration dialog or in the Realm Properties dialog.

The UI Switch

The UI switch allows you to change the look of the Realm Studio user interface from the default dark borders to light borders. At this time, switching the UI look has not been implemented.

3. The Main Menu

The File Menu

Starting a New Map

Choosing the New option from the File menu allows you to create a new map. If you are working on a map, you will be prompted to save it before creating a new one. When you select this option, the Realm Configuration dialog will be displayed to let you choose the map size, area size, etc. as shown above.

Opening a Map

Choosing the Open option from the File menu will open a Windows File Open dialog to allow you to open a previously saved map. Realm Studio maps are saved with a `.rsmapx` extension, and they are XML files, so you can open a Realm Studio map with Notepad or an XML editor application to view the map structure. Though they are XML files, it is not recommended that you edit the Realm Studio map XML directly, as the map structure could be damaged, rendering it unopenable by Realm Studio.

Saving a Map

Choosing the Save and Save As options from the File menu will open a Windows File Save dialog to allow you to save the map you are working on. By default, your maps will be saved in your Windows Documents folder in a subfolder called “RealmStudio/Realms. You are free to change the location of your saved maps, but it is recommended that you save them to the default location. If future functionality changes require the structure of Realm Studio maps to change, any upgrade functions will be able to locate your maps more easily if they are saved to the default location.

Exporting a Map

Choosing the Export option from the File menu lets you save your map as an image. Maps can be exported as Portable Network Graphics (`.png`) file, a Joint Photographic Experts Group

(`.jpg`) file, or a Windows bitmap (`.bmp`) file. Currently, export options are limited: the size of the exported file (resolution), color depth, transparency color, and so on cannot be changed. Additional options may be added to the export function in the future.

Printing a Map

Choosing the Print and Print Preview options from the File menu allow you to print your map on your printer. This functionality has not yet been implemented.

The Edit Menu

Undo/Redo

Many (but not all) of the functions in Realm Studio can be undone/redone using either the Edit Undo/Redo menu options of the standard **`ctrl+z`** and **`ctrl+y`** keyboard shortcuts.

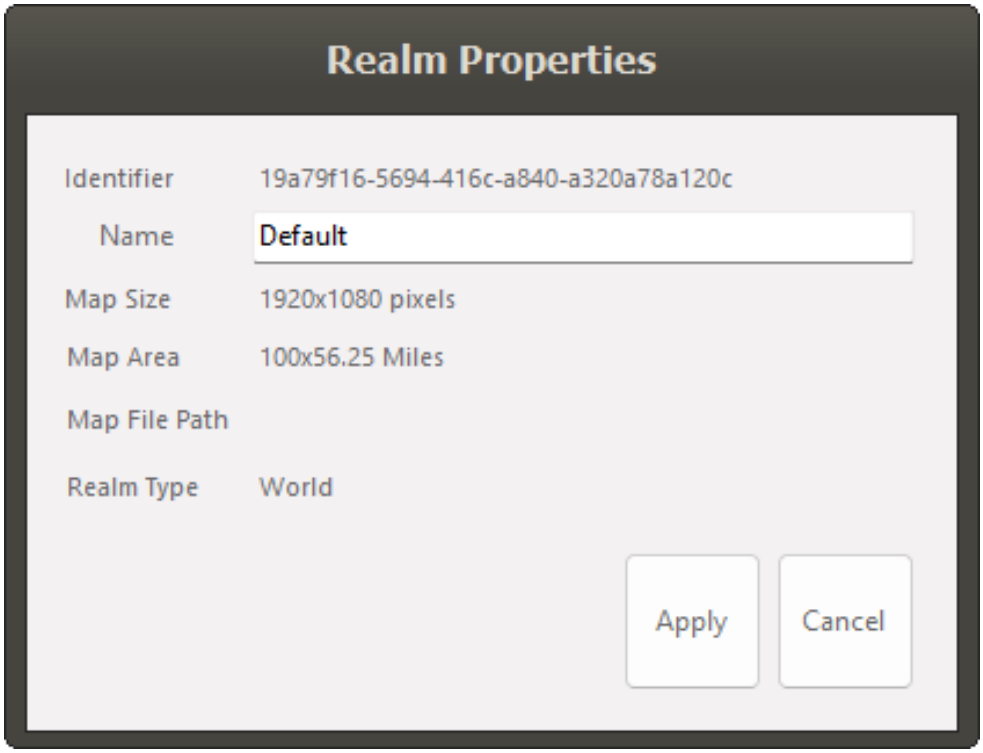
Cut/Copy/Paste

Currently, cut, copy, and paste functions have not been implemented. They are planned for future releases.

The Realm Menu

The Realm Properties Dialog

The Realm Properties dialog displays information about the map you are currently working on and allows you to change the name of your realm.



Changing the Map Size

Functionality to change the map size is planned for a future release of Realm Studio.

Creating a Detail Map

Functionality to create a detail map from the current map is planned for a future release of Realm Studio.

The Assets Menu

There are several types of "assets" that Realm Studio loads and uses to allow you to create maps.

- **Boxes** are used to outline and emphasize labels that are placed on the map.
- **Brushes** are used to paint colors onto ocean areas, landforms, and water features (lakes, rivers, and so on).
- **Frames** are used as borders around your map.
- **Icons** are used in the user interface of Realm Studio.
- **Label presets** are XML files that describe preset formats for labels (font, size, color, outlining, and glow). You can create your own label presets in Realm Studio in addition to the default presets provided.
- **Name Generators** (and name bases) are files that drive the generation of random names that can be used in labels. If you can't think of a name for a continent, river, island, lake, or anything else on your map, the Name Generator function can generate one for you. Hundreds of thousands of unique names can be generated.
- **Symbols** are small images of objects that can be placed on your map (houses and buildings of all types, trees, bushes, grass, and other kinds of vegetation, mountains, hills, volcanoes and other landscape features, as well as other kinds of objects). Much more information on symbols is in the sections below.
- **Textures** are bitmaps that are used as the background for the map, for ocean areas, and for landforms.
- **Themes** are XML files that define the look of a map: textures, colors, frames, label styles, and several others. You can define your own themes in addition to those that are provided. Themes are described in more detail below.
- **Vectors** are used to define some user interface elements, like some path styles.

Creating a Symbol Collection

As mentioned above, symbols are small images (usually `.png` files) of various types of objects that can be placed on your map as representations of those objects – mountains, hills, houses, taverns, trees, rocks, banners, mermaids, clouds, and many, many others.

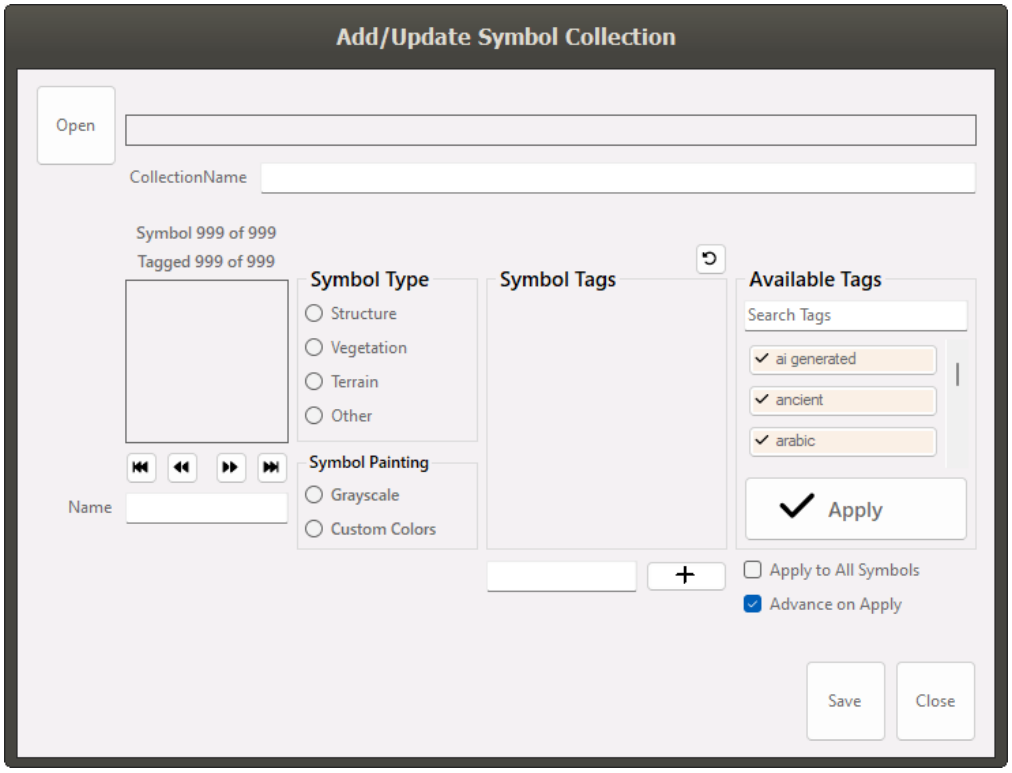
You can create your own symbols if you like, but most people use collections of symbols created by artists. Websites like Cartography Assets (https://cartographyassets.com/) have packs

(usually zip files) of many kinds of assets (symbols and others) that can be downloaded, both for free and for sale. Realm Studio can import and use assets created for Wonderdraft (https://www.wonderdraft.net/). More information on downloading and importing symbols created for Wonderdraft is below. Future versions of Realm Studio may be able to import symbols created for other mapmaking software.

To use symbols on your map, they must be added to a Realm Studio Symbol Collection. A Realm Studio Symbol Collection has two parts: 1) a subfolder for the collection found in your Windows Documents folder under the RealmStudio/Assets/Symbols subfolder that contains all the image files for the symbols, and 2) a `collection.xml` file that describes the collection and all the symbols in the collection. The `collection.xml` file is stored in the same folder as the symbol images for the Symbol Collection.

Since you may (probably will) have several thousand different symbols to use when making maps, Realm Studio uses Symbol Collections to organize your symbols so that you can find the ones you want to use more quickly. In addition, Realm Studio allows you to tag the symbols so that all the symbols with selected tags can be quickly retrieved for use on your map.

Symbol collections originally created for use in Wonderdraft do not have a `collection.xml` file that Realm Studio can read. However, Realm Studio has functionality to load the `.wonderdraft_symbols JSON` file provided with the Wonderdraft collection and a dialog and functionality to allow you to tag and categorize the symbols in the collection and then create the Realm Studio `collection.xml` file for the collection. The dialog looks like this:



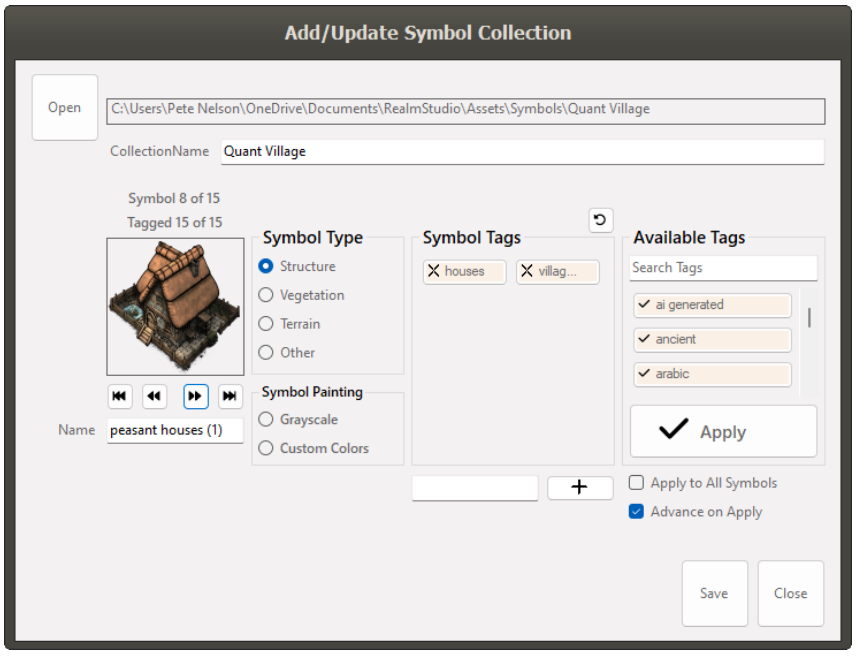
Creating a Symbol Collection for Realm Studio can be a tedious process, but Realm Studio does its best to make it easy. First, it examines the file name and name of the symbol and of the collection and applies tags to the symbol based on them. So, if the symbol contains the word "house," for example, it will apply the "house" tag to the symbol. Similarly, Realm Studio will try to derive the Symbol Type (Structure, Vegetation, Terrain, or Other) based on the tags it applies. There are synonym files in the Assets folder that are used to associate tags with symbol types.

You must select a Symbol Type for each symbol in the collection, but you don't have to apply any tags to the symbols in the collection. However, symbol tags can help you find symbols more quickly. For example, if you are creating a village on your map, you might want to gather all the symbols of houses to see which ones you want to use. By tagging your symbols, you can easily do that by filtering the symbols by tag on the Symbols tab. There is more information on how to filter symbols below.

There are many symbol collections provided when Realm Studio is installed, but not all have had a **`collection.xml`** file created for them. If you want to use the symbols in the collection, use the process outlined in the next section to categorize and tag the symbols and create the **`collection.xml`** file.

Using the Add/Update Symbol Collection Dialog to Create a Symbol Collection

1. Click the Open button at the top-left of the dialog. This will open a Windows Folder Selection dialog. Select the folder under the Windows Document/RealmStudio/Assets/Symbols folder that the collection is in. The dialog will show the collection path and name in the boxes in the dialog, and the first symbol in the collection will be displayed, as shown:



Use the buttons under the image of the symbol to navigate back and forth through the set of symbols in the collection.

As you can see in the image above, Realm Studio has figured out the symbol type and has automatically tagged the symbol. At this point, you can change the name of the symbol, change the symbol type, and add or remove symbols tags. You can also add new tags to the list of available tags, and the new tags you add will be saved.

2. If Realm Studio was not able to figure out the symbol type, select a type from the Symbol Type radio button.
    a. The **Structure** type is for things that have been made by people: buildings, bridges, fences, signs, and so on.
    b. The **Vegetation** type is for plants of all kinds.
    c. The **Terrain** type is for mountains, hills, cliffs, ravines – anything that is part of the natural landscape that doesn't grow,
    d. The **Other** type is for miscellaneous symbols that don't fit into the previous three categories.
3. In the Symbol Painting group, you can select if the symbol image is grayscale (black, white, and shades of gray) or can be painted with custom colors.

    Symbols that are grayscale can be painted with a single color using the controls on the Symbols tab.

    Symbols that can be painted with custom colors are initially displayed in the Add/Update Symbol Collection dialog using red, green, blue, black, and white. When they are displayed on the Symbols tab and on your map, the red, green, and blue areas of the symbol are replaced by the three custom colors selected on the Symbols tab. There is more information on coloring symbols below.

    Very rarely will you have to change what is automatically selected here. Realm Studio can accurately figure out which symbols are grayscale, and which can be colored.

4. The tags currently applied to the symbol are shown in the Symbol Tags box. The tags that are available to apply to the symbol are shown in the Available Tags box. To add a tag to the symbol, click on the tag in the Available Tags box. To remove a tag from the symbol, click on the X next to the tag in the Symbol Tags box. When you click the X, a small dialog with buttons to confirm or cancel removal of the tag is shown. Clicking the green button confirms removal of the tag; clicking the red button cancels removal.

5. Once you've assigned a Symbol Type and any tags you want to apply to the symbol, click the Apply button. Clicking the Apply button commits the changes you've made (all the values shown on the dialog) to that symbol. If the "Advance on Apply" checkbox is

checked, the next symbol in the collection will be shown in the dialog. If you click the Apply button without assigning a Symbol Type, a warning will be displayed, and the dialog will not advance to the next symbol in the collection.

6. Once all the symbols in the collection have been assigned a Symbol Type and have been tagged, click the Save button. When the Save button has been clicked, the `collection.xml` file for the Symbol Collection will be created.

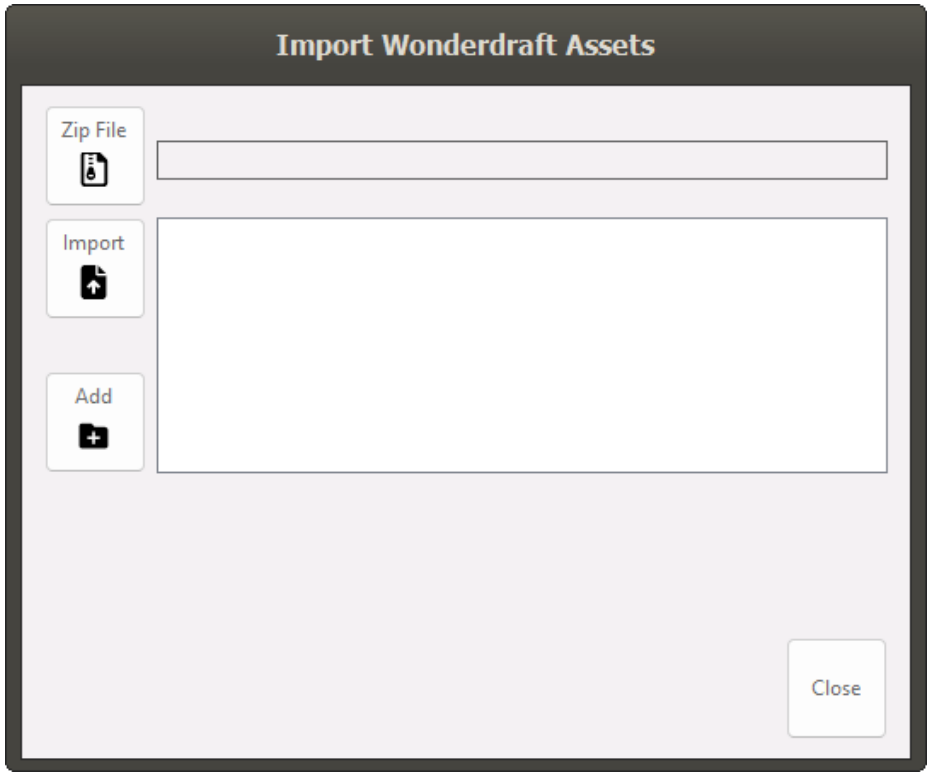
   If you open a collection that already has a `collection.xml` file, Realm Studio will read the file to determine the Symbol Type and tags for each symbol. You can then modify the Symbol Type and tags, as well as the symbol name, and then save the changes by clicking the Save button.

   If you click the Save or Cancel button before all the symbols have been assigned a Symbol Type, a warning will be displayed to remind you to assign a type to all the symbols in the collection.

Importing Assets

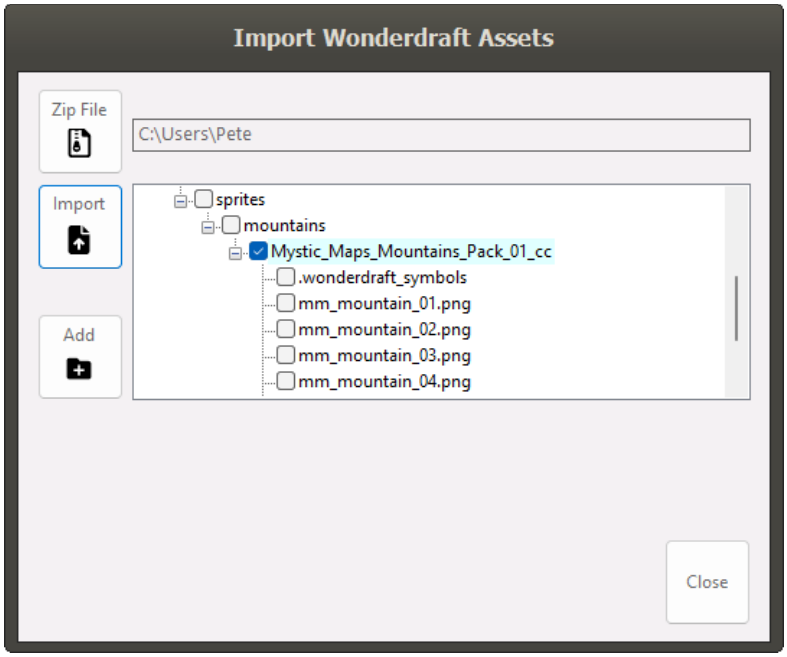
Importing Wonderdraft Assets from a Zip File

Wonderdraft assets downloaded from the Cartography Assets website are packaged as zip files. Realm Studio provides a dialog to import the assets from the zip files into your `Documents/RealmStudio/Assets` folder. The dialog is opened from the `Assets -> Import Assets From -> Wonderdraft Assets Zip File...` menu option. It looks like this:



To import assets from a downloaded zip file, follow these steps:

1. Click the Open button. Realm Studio will display a Windows File Open dialog. Navigate to the folder containing the zip file containing the assets (usually they will be in your `Downloads` folder) and click Open in the File Open dialog. The path to the zip file will be shown in the box next to the Open button.
2. Click the Import button. Realm Studio will read and analyze the zip file to find the folders in the zip file containing assets of any kind that Realm Studio uses (textures, frames, boxes, symbols, and so on). The folders and assets are displayed in a tree structure in the box next to the Import button with the folders containing assets highlighted with a color indicating the type of asset in the folder:

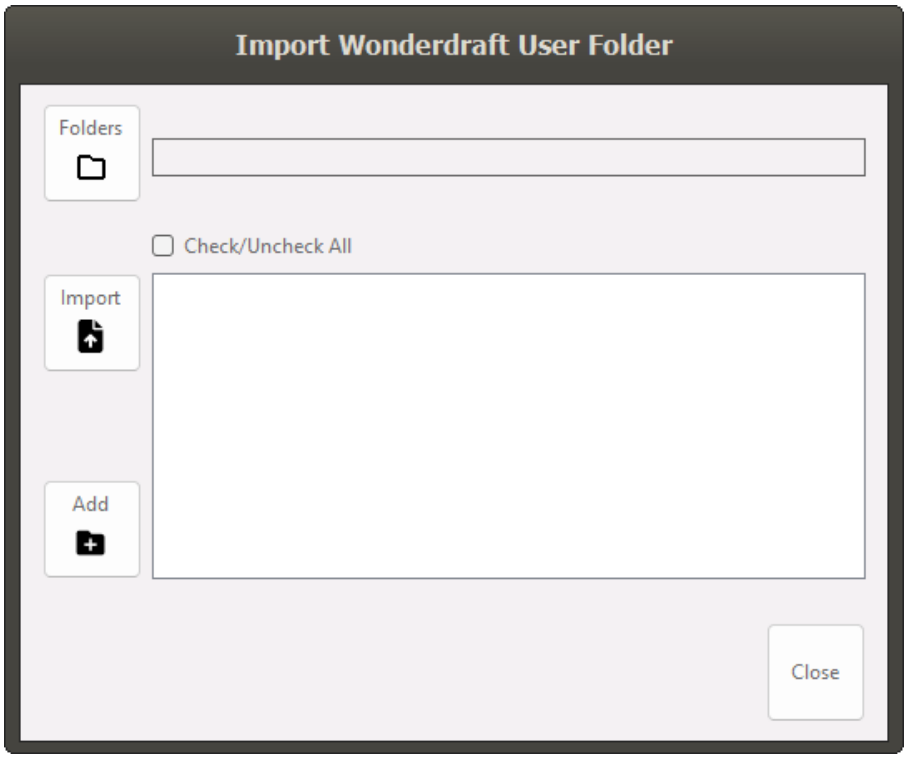


   You can select and deselect the assets you want to add to Realm Studio by clicking the check box next to the highlighted folders.

3. Click the Add button. Realm Studio will display a message asking you to confirm that you want to copy the assets from the zip file into the Realm Studio Assets directory. When you click OK will direct Realm Studio to copy the assets. When the assets have been copied, a message is displayed to let you know. **Important Note:** copying symbol assets from the asset zip file into the Realm Studio assets directory does **not** create the `collection.xml` file for the symbols. You must use the Add/Update Symbol Collection dialog described previously to create the `collection.xml` file before the symbols are available to be used by Realm Studio.

Importing Assets from the Wonderdraft User Folder

If you have already purchased and installed Wonderdraft, Realm Studio is able to import assets from the Wonderdraft user folder. Selecting the `Assets -> Import Assets From -> Wonderdraft User Folder...` menu option will open a dialog similar to the Import Wonderdraft Assets dialog described in the previous section.



This dialog operates in almost the exact same way, also.

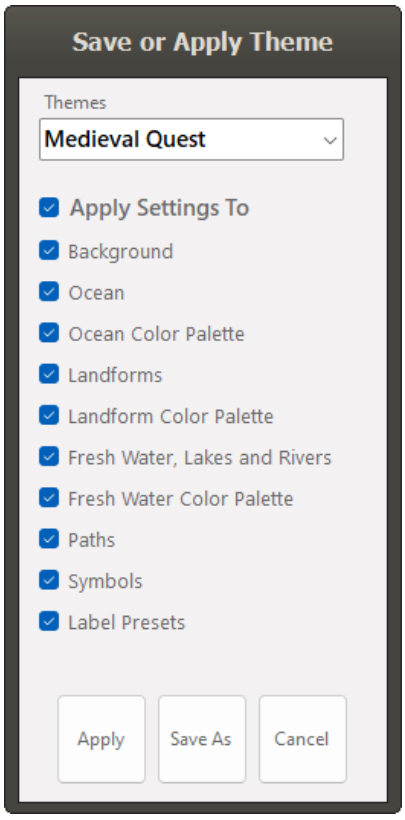
1. Click the Open button to open a Windows Folder Selection dialog that allows you to select the subfolders of the Wonderdraft user folder from which you want to import assets. Realm Studio automatically locates the Wonderdraft user folder and sets the default location of the Windows Folder Selection dialog to that folder.
2. Select the Assets subfolder of the Wonderdraft user folder, then click the Select Folder button on the Windows Folder Selection dialog.
3. Back in the Realm Studio Import Wonderdraft User Folder dialog, click the Import button. Realm Studio will find all the folders containing assets, and display them in a tree structure, as in the Import Wonderdraft Assets dialog.
4. Select the folders holding assets you want to import, then click the Add button. Realm Studio will import the assets from the selected Wonderdraft folders into the Realm Studio assets folder. For imported symbol collections, you must still use the Create Symbol Collection dialog to complete importing Wonderdraft symbol collections into Realm Studio. Other types of assets don't require any additional steps to make them available in Realm Studio.

Reloading Assets

When new assets are imported or new symbol collections are created, the assets must be reloaded for Realm Studio to be able to use them. Selecting `Assets -> Reload All Assets` will load all the assets from the Realm Studio Assets folder.

The Theme Menu

Choosing the Theme menu option on the main menu opens the Save or Apply Theme dialog. This dialog allows you to select a theme, select which settings the theme will change, apply the selected theme to the map settings, and to create a new theme from the currently selected map settings in the Realm Studio user interface.



To apply a theme, select it from the dropdown, select which settings you want to change, then click Apply. The settings from the theme will be applied to the theme will be applied to the associated user interface controls. However, unlike Wonderdraft, applying a theme in Realm Studio will **not** change objects already drawn on your map. This is because of some fundamental differences between Realm Studio and Wonderdraft in how maps are constructed.

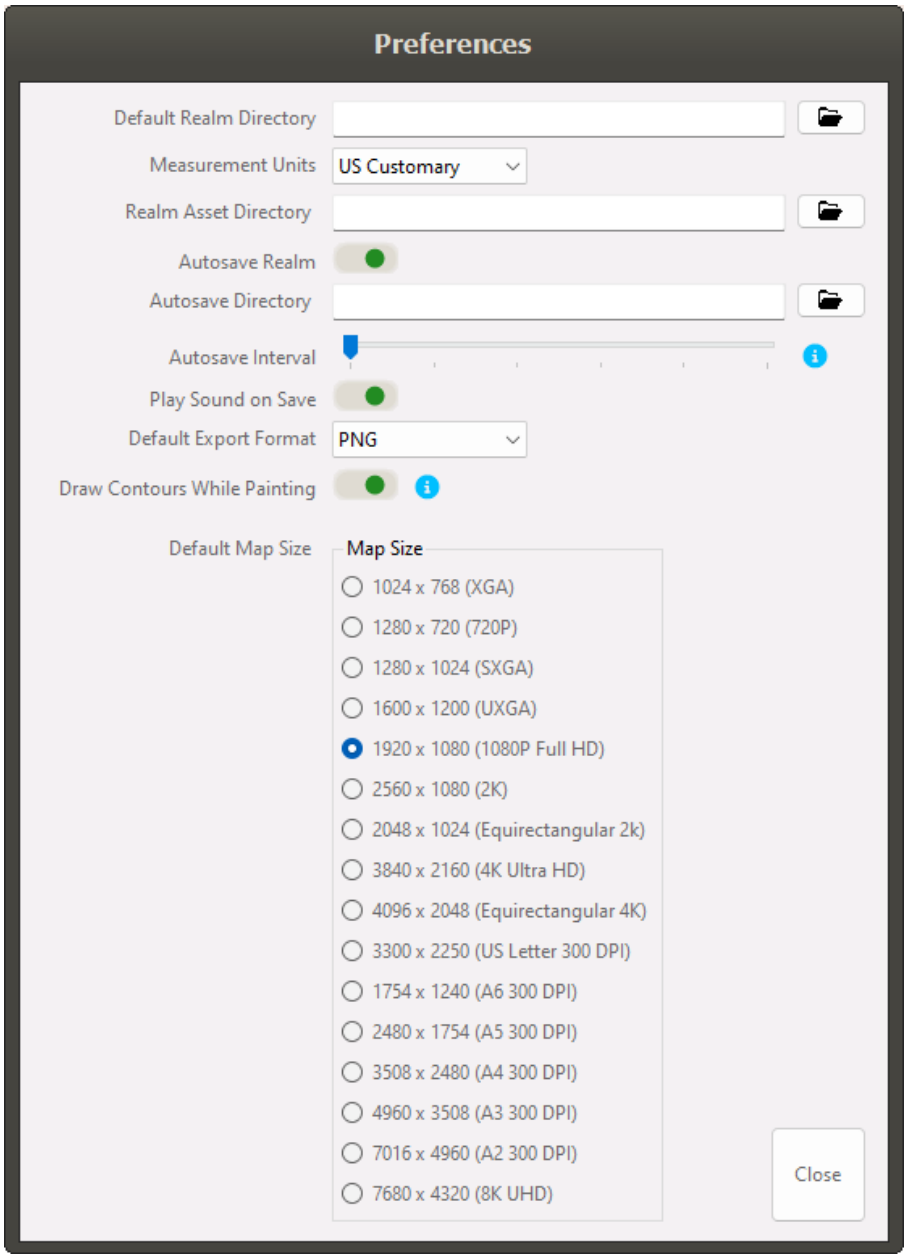
To create a new theme, set all the controls in the Realm Studio user interface to the values you want saved in the theme – colors, textures, label, coastline pattern, and so on. Then click the Save As button on the dialog. Another small dialog will be displayed to let you enter a name for

the new theme. Enter the name, then click OK. The new theme will be created with the name you entered. You must reload the Realm Studio assets before the new theme will be available.

The Options Menu

Changing User Preferences

There are several preferences that you can set that change how Realm Studio works and where it finds and saves files. The preferences that you set are saved, so Realm Studio will use the value that you set whenever it is opened. The user preference dialog looks like this:

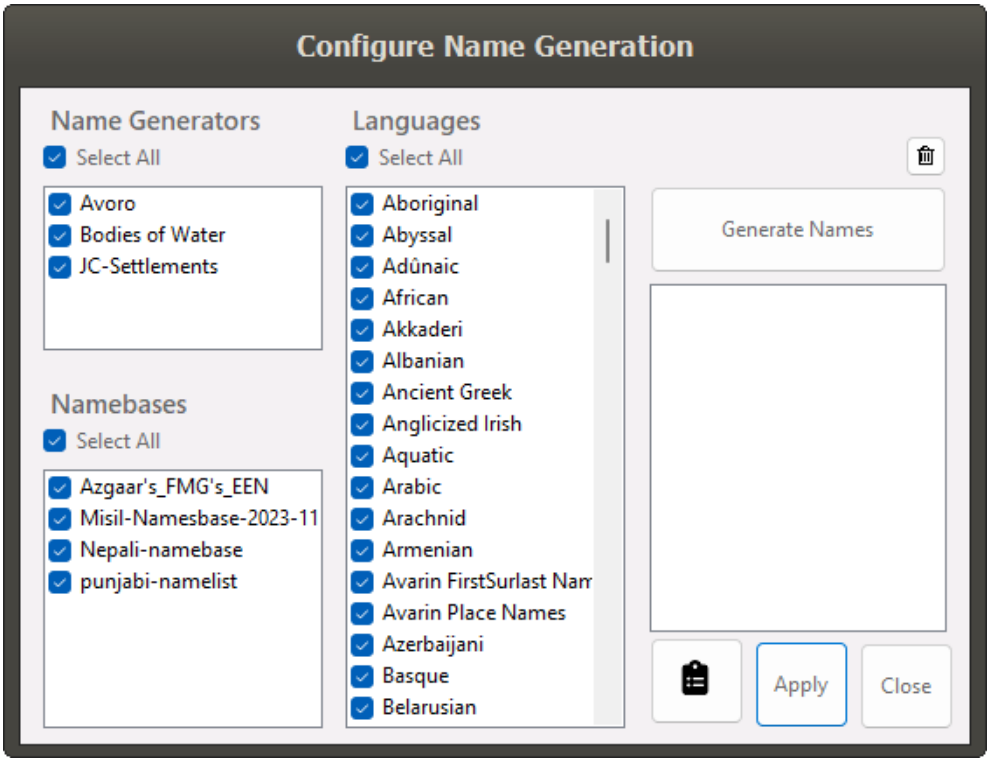


- The **Default Realm Directory** preference tells Realm Studio where to save your maps. When Realm Studio is installed, this value is set to a subfolder of your Windows Documents folder called `RealmStudio/Realms`. If you change this value, Realm Studio will set the default location of saved maps to the folder that you select.
- The **Measurement Units** preference allows you to set the default measurements to either US Customary units (inches, feet, miles) or metric units (centimeters, meters, kilometers).
- The **Realm Assets Directory** preference sets the location of Realm Studio assets folder. When Realm Studio is installed, this value is set to a subfolder of your Windows Documents folder called `RealmStudio/Assets`. If you change this value, Realm Studio will load assets from the folder you select. Be careful when changing this value. If Realm Studio cannot locate the assets it requires, it will cause application errors.
- The **Autosave Realm** switch enables or disable automatic saving of backup copies of your map. When enabled, Realm Studio periodically saves a backup copy of your map. The interval between automatic backups is set by the Autosave Interval trackbar. A maximum of five backup copies are kept; although, at times six may be retained for a short period of time.
- The **Autosave Directory** preference sets the folder in which backup copies of your map are saved. When Realm Studio is installed, the folder is set to a subfolder of your Windows Document directory called `RealmStudio/Realms/autosave`. It is not recommended that you change the folders in which your maps are saved or the backup location, as future functionality will allow you to restore your map from a backup in case of an application error or a problem with the map.
- The **Autosave Interval** trackbar allows you to set the time between automatic backups from five minutes up to thirty minutes in five-minute increments.
- The **Play Sound on Save** switch allows you to enable or disable playing of a sound indicating that your map has been successfully saved.
- The **Default Export Format** preference allows you to indicate your preferred format for maps that are exported as an image file.
- The **Draw Contours While Painting** switch is important when creating large maps (larger than 4K Ultra HD or 3840x2160 pixels). By default, Realm Studio calculates the boundaries of landforms while you are painting the landform. You can see this happening as you paint. On very large maps, calculating landform boundaries can cause painting of landforms to lag and affect performance. By turning this feature off, calculation of landform boundaries is delayed until you release the left mouse button, which improves performance somewhat.
- The **Default Map Size** radio buttons allow you to set the default size of maps that you create.

Setting the Name Generator Configuration

Realm Studio has a built-in random name generator function that uses "name generators" and "name bases" that are in the same format as those used by Wonderdraft, and you can download and install additional name generators and name bases from Cartography Assets and install them in the Realm Studio Assets folder to be used by Realm Studio. You can also easily create your own name generator or name base files using a simple text editor (like Notepad) and save them into the Realm Studio Assets directory. The format of these files is described in the Technical Information section below.

The set of name generators and name bases installed with Realm Studio allows hundreds of thousands of different names to be generated in dozens of real and fantasy languages. In some cases, you may want to limit the random names generated to one or more specific languages or only for bodies of water, or only from specific name generators or name bases. The Name Generator Configuration dialog (opened from the `Options -> Name Generator Configuration…` menu option) lets you do that.



You can select specific name generators or name bases to use or specific languages. Clicking the Generate Names button will generate ten random names based on the selections you've made. A rolling list of the last thirty random names generated is kept. Selecting a name and clicking the Apply button will copy the selected name to a label being created. Clicking the Clipboard button will copy the selected name to the clipboard so you can paste it wherever you like. If no name is selected, all the names in the list are copied to the clipboard.

The Help Menu

Displaying this Help File

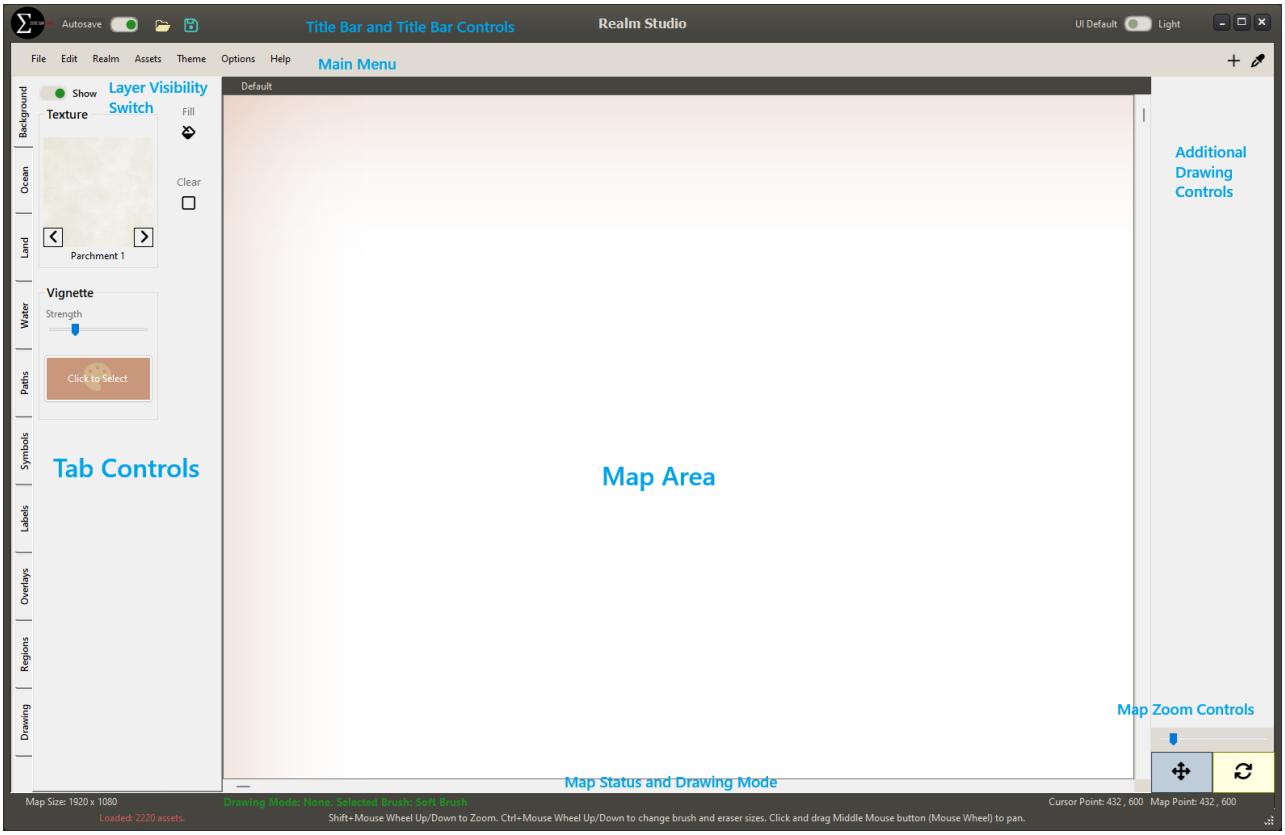
Selecting the Help -> Contents menu option opens this Help file in your browser from the RealmStudioDocs Github repository web pages created for the Realm Studio documentation. The URL is: https://petenelson372.github.io/RealmStudioDocs/.

The About Dialog

Selecting the Help -> About menu option opens the About dialog for Realm Studio. The About dialog displays important implementation, copyright, and licensing information, as well as credits for libraries and images used to create Realm Studio. Links to the Realm Studio source code on Github are shown, as are links to release notes and to create an email to the Realm Studio support email address (which is support@brookmonte.com).

D. Creating Maps with Realm Studio

1. The Realm Studio Main Window



- At the center of the Realm Studio main window, the Map Area is where the map is displayed as you draw/paint it.
- On the left side of the main window, the Tab Controls group the Realm Studio functions according to the features of the map.
- At the top of the main window is the application Title Bar and the title bar controls.
- Just below the title bar is the application Main Menu.
- To the right of the Map Area is a panel in which additional drawing controls are displayed. The controls displayed on the Additional Drawing Controls panel change when tabs are selected.
- At the bottom-right of the Main Window are controls for controlling zooming of the map.
- At the bottom of the Main Window are controls showing the status of the map and the current drawing mode.
- Just underneath and on the right of the Map Area are scrollbars that allow you to pan the map right/left and up/down. There are other ways to pan the map that are usually more convenient than the scrollbars, however, that will be discussed below.

Selecting a tab causes Realm Studio to display a set of controls on the left and right side of the main window (in the Tab Controls and Additional Drawing Controls areas) that give you access to functions for creating maps. Realm Studio maps are organized in layers, and drawing on a layer does not affect the other layers. There are many more layers than just the ten implied by the tabs, but for the purposes of creating maps, you can think of the map as having ten layers, one for each tab. For display, each of the layers is composited into a final image that is displayed in the map area of Realm Studio.

The Tab Controls area on each of the tabs is divided into two sections. On the left is a set of controls for selecting colors, textures, and other options that affect what will be drawn or painted on the map for the selected map layer. On the right side of the Tab Controls area, immediately next to the Map Area is a set of buttons that (usually) either change the "drawing mode" of Realm Studio or apply a selected value (texture, color, etc.) to the map. Each of the controls and buttons is described in more detail below.

2. The Tabs

The Background Tab

Realm Studio allows you to set a background texture for your map. Usually, this is not necessary, as your map will have an ocean texture or be filled with a landform what has a texture. However, the option is available, should you choose to use it.

Setting a Background Texture

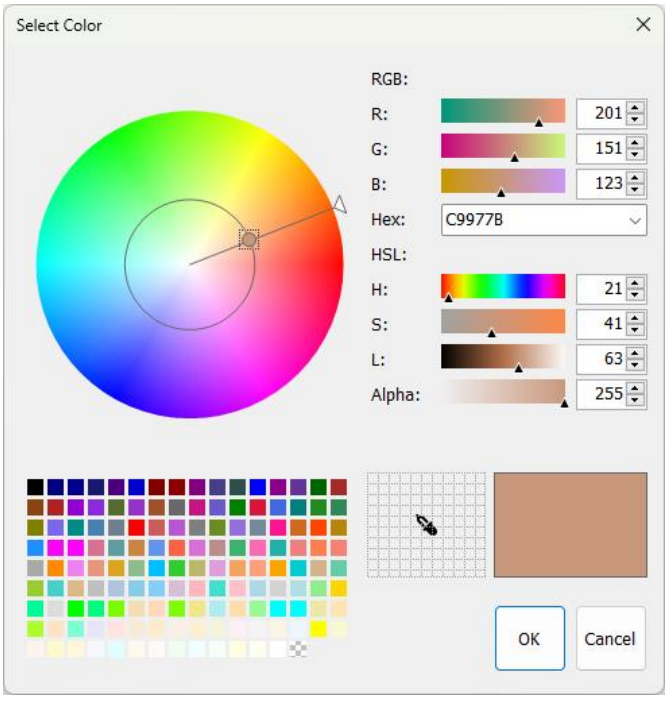
To set a background texture, scroll through the available background textures using the arrow buttons at the bottom of the texture preview window until you find the one you want to use, then click the Fill button. To clear the background texture, click the Clear button.

The Map Vignette

The map vignette is the shaded area around the outer edges of the map. You can change the color of the vignette and the strength of the vignette (how dark it is and how much of the map it fills). Though the controls for the vignette are shown on the Background tab, it is painted on top of most of the other map layers, so the vignette color and strength may affect the appearance of other things painted near the edges of your map.

To change the color of the vignette, click the Color Palette button in the Vignette box.

A Color Selection dialog will be displayed.



Use the controls in the Color Selection dialog to select a color, then click OK. The selected color will be shown as the background of the Color Palette button and applied to the map vignette. In general, buttons with the palette icon allow you to select a color for something to be drawn or painted on your map, and the process for selecting a color is the same throughout Realm Studio.

The “strength” of the map vignette (how dark it is and how much of the map area it fills) can be changed by adjusting the trackbar slider in the Vignette box. The appearance of the vignette is changed as you move the slider. If you don’t want a vignette for your map, adjust the slider all the way to the left to make the vignette strength zero.

The Ocean Tab

Clicking the Ocean tab displays the controls for creating the background ocean for your map. The ocean area of your map can have a texture applied and/or a color applied. In addition, you can “paint” on the ocean to make it look however you want.

The Ocean layer is on top of the map Background layer, but under all other layers, so when you paint land areas and create other objects on the map (grids, map scales, labels, etc.) they are show “on top” of the Ocean layer.

Setting an Ocean Texture

Applying a texture to your Ocean layer works the same way as it does for the Background. Select a texture from the texture preview box on the Ocean tab, then click the Apply button with the Paint Roller icon. Remove the ocean texture by clicking the Remove button.

Setting an Ocean Fill Color

You can fill the entire Ocean area with a selected color. Select the color you want to fill the Ocean area with by clicking the Color Palette button in the Color box. It works the same way as the Color Palette button on the Background tab. When you’ve selected the color, click the Fill button. The entire Ocean area will be filled with the color you’ve selected. Clear the color by clicking the Clear button.

The ocean fill color can be combined with the ocean texture to create interesting effects. By selecting a color that is more transparent (the Alpha value in the Color Selection dialog is low), the ocean texture will show through the ocean fill color, in effect letting you apply a color overlay “on top” of the texture. This technique is especially effective when used to apply color to a black-and-white or grayscale texture.

Painting on the Ocean Layer

In addition to the controls displayed in the tab control on the left side of the main window, clicking the Ocean tab will cause a set of controls to be displayed in the Addition Drawing Controls panel on the right side of the main window. These controls can be used to paint on top of the ocean texture and on top of the ocean fill color. To paint on top of the ocean layer, click the Color button with the paint brush icon. The Drawing Mode of Realm Studio will be changed to “Ocean Paint” (as shown in the green text at the bottom left of the main window in the Map Status and Drawing Mode area), and the cursor will be changed to a dotted-line circle with crosshairs at the center.

The Ocean Tab
Painting Controls

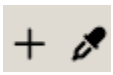
At the top of the Painting Controls, you can select either the soft-edged brush or the hard-edged brush. Future versions of Realm Studio will have more brush styles to select.

The three sliders control the size of the brush (reflected in the size of the dotted-line circle cursor), the "brush velocity" and the eraser size.

The Color and Erase buttons set the Drawing Mode to either paint on the ocean or erase the painted color from the ocean. Erasing painted color does not affect the ocean background texture or color.

The Color Palette button lets you select the color to be painted on the ocean. Clicking it will display a Color Selection dialog as shown earlier.

The set of buttons here are color preset buttons. There are four predefined color presets. The white boxes are for preset colors that you can define. At the top right of the main menu bar (just above the Ocean Tab Painting Controls) are two buttons:



Clicking the "+" button opens the Color Selection dialog. Choosing a color in the Color Selection dialog and clicking "OK" will assign the selected color to the first color preset button that doesn't already have a color assigned. Clicking a color preset button that has a color assigned will set the selected color (shown by the background color of the Select Color Brush button changing to the preset color).

Clicking the eyedropper button changes the cursor to an eyedropper icon and allows you to click anywhere on the map to select the color at that place on the map and assign it as the brush color.

Creating Wind Roses

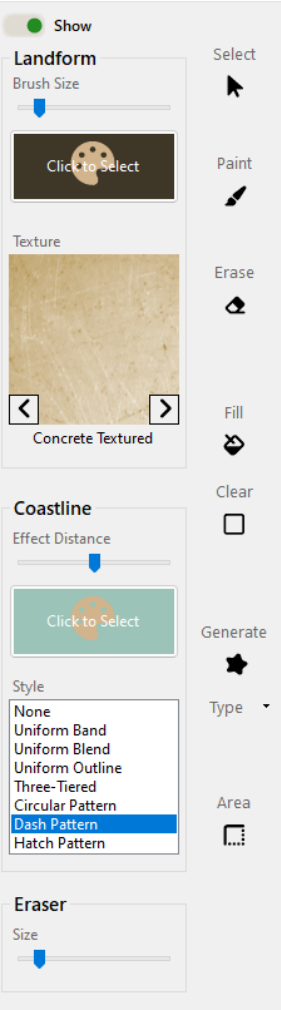
A wind rose is a set of lines radiating from a central point placed on a map. Wind roses were used long ago by cartographers and navigators to indicate directions to sail to get from one place to another (usually from city to city). Realm Studio allows you to create, style, and place wind roses on your map.

You can change the color and style of your wind roses using the controls in the Wind Rose box. Place wind roses by clicking the Windrose button, then clicking anywhere on your map. Each time you click on the map, a map will be placed, centered at the location where you clicked. When you are done placing wind roses, click the Windrose button again. You can remove all the wind roses you've placed by clicking the Remove button.

Future versions of Realm Studio may add more options for styling wind roses.

Land Tab

Painting Landforms



To create landforms on a Realm Studio map, you "paint" them like colors are painted onto the ocean layer.

To paint a landform, click the Paint button with the paintbrush icon. Like when painting color on the ocean, the cursor will change to a dotted-line circle with crosshairs at the center. The circle area is the area that will be painted. Holding the left mouse button down and dragging the circle will paint the landform. As you paint the landform, Realm Studio fills the landform area with the selected background texture, paints the coastline with the selected style and size, and paints a gradient around the borders of the landform. It also (by default) calculates the contour (border) of the landform.

You can paint each landform you create with a different background texture, border color, coastline color and style, and coastline effect distance. This is one difference between Realm Studio and Wonderdraft. In Wonderdraft, all landforms have the same style and colors, and changing the style or colors changes all landforms that have been painted. In Realm Studio, all landforms are independent objects with their own style and colors.

You can also erase landforms by clicking the Erase button (with the eraser icon).

Landform Brush Size

You can change the size of the landform brush by using the Brush Size trackbar slider or by holding down the **ctrl** key on your keyboard and rolling the mouse wheel forward or backward.

Landform Outline Color

Clicking the Color Palette button under the Brush Size trackbar allows you to select a color for the landform outline. Clicking the button will display a Color Selection dialog. Select the color you want to use for the landform outline. Changing the landform outline color also changes the color of the shading around the outer edges of the landform (just inside the outline).

Landform Texture

You can change the texture used as the background of landforms. Scroll through the texture using the buttons at the bottom left and bottom right of the texture preview to find the one you want to use. The texture that is displayed in the texture preview will be used as the background texture of the landforms you paint.

Coastline Effect Distance

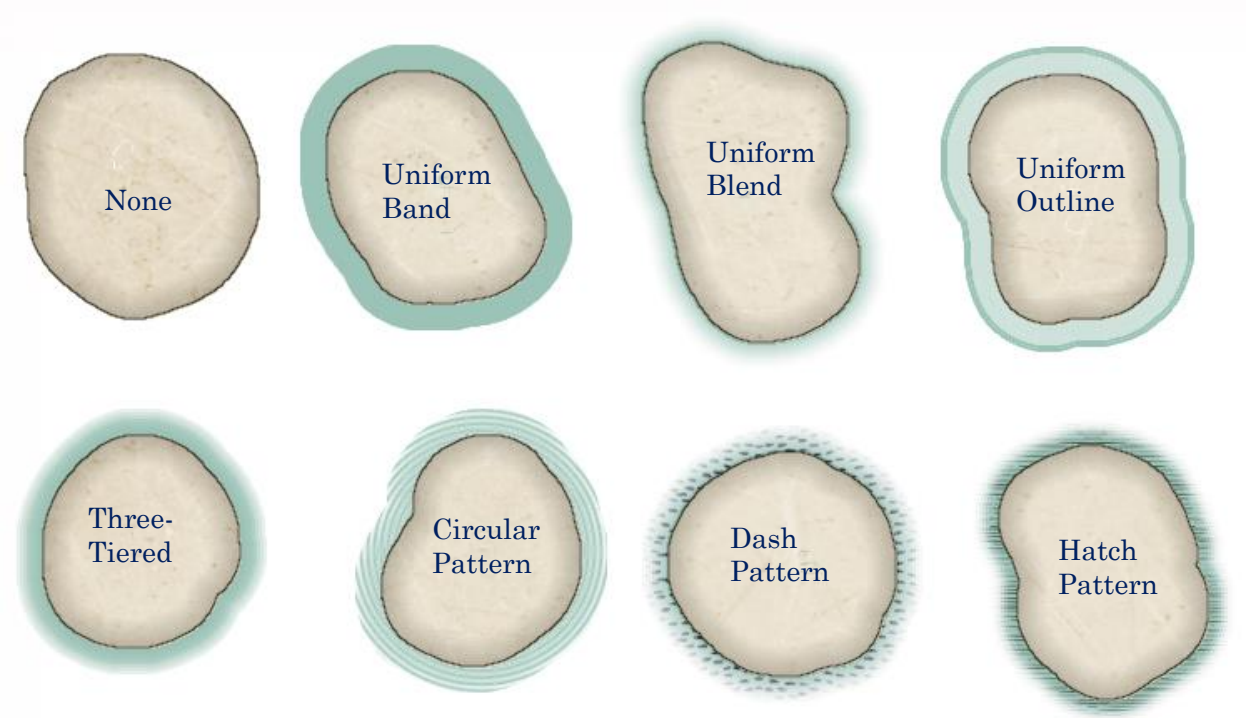
Realm Studio paints a coastline effect (or you might think of it as a shallow water effect) around the landforms you paint. The Coastline Effect Distance trackbar slider changes how wide the coastline effect is. Setting the Coastline Effect Distance to zero will result in no coastline effect being painted. The slider also governs how wide the shaded area around the outer edge of the landform is, so setting it to zero also causes no shading to be painted.

Coastline Color

You can change the color of the coastline effect by clicking Color Palette button in the Coastline box and selecting a color in the Color Selection dialog that is displayed. As for the other Color Palette buttons, the color you select is shown as the background color of the Color Palette button, so you always know what color is selected.

Coastline Style

There are several different patterns that can be selected from the Style list to paint the coastline effect. If you select “None” in the list, then no coastline effect is painted, but the shading gradient around the outer edge of the landform will still be painted. The picture below shows an example of each of the patterns.



Merging Landforms

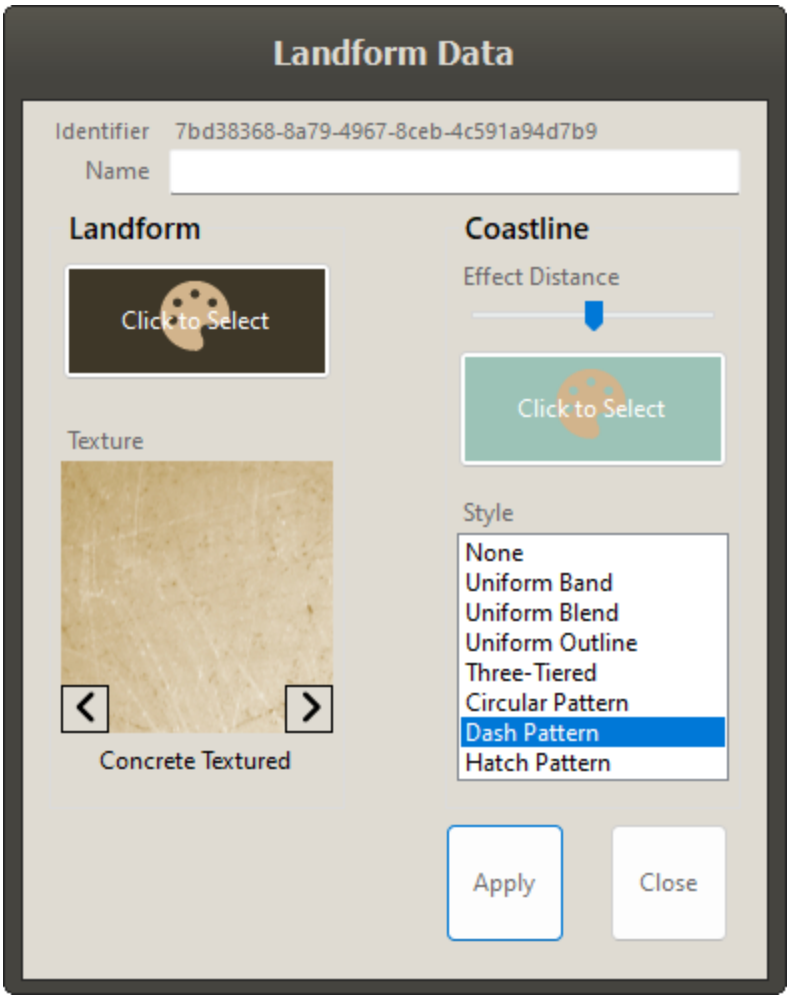
When you are painting your landforms, if the area you paint overlaps with another landform that you previously painted, Realm Studio "merges" the landforms when you release the mouse button; that is, the two landforms are merged into a single landform. The merged landform takes on the characteristics of the *previous* landform that was painted. You don't have to take any action to merge overlapping landforms; Realm Studio merges them automatically.

Erasing Landforms

You can erase landforms (or parts of a landform) by clicking the Erase button (with the eraser icon). As for painting landforms, the cursor changes to a dashed circle with crosshairs. Hold down the left mouse button and drag it to erase. The size of the eraser can be changed by using the Eraser Size trackbar slider. A useful technique for creatin landforms is to paint the rough shape you want for the landform, then "sculpt" the landform by using a small eraser to make more detailed changes to the shape,

Changing Painted Landforms

Clicking the Select button (with the arrow icon) will change the Drawing Mode to "Landform Select." When in this mode, clicking on a landform will select it. The selected landform will have a dashed box drawn around it. When a landform is selected, you can make changes to it or delete it entirely. When the Drawing Mode is "Landform Select," right-clicking on the landform will open a dialog showing the current data for the landform. The dialog looks like this:



In the dialog, you can give the landform a name and change the outline color, background texture, coastline effect distance, coastline effect color, and coastline effect style. Clicking the Apply button will apply the changes to the selected landform (and only the selected landform). Future versions of Realm Studio will use the name of the landform to automatically create a label for it and possibly for integration with other applications/

Filling the Entire Map Area with a Landform

Clicking on the Fill button (with the fill icon) will fill the entire map with a single landform. Before filling the map, Realm Studio verifies that no landforms have been painted. It will prompt you to clear the existing landforms.

Once the map has been filled, you can sculpt the edges of the using the landform Eraser to create coastlines.

Clearing Landforms

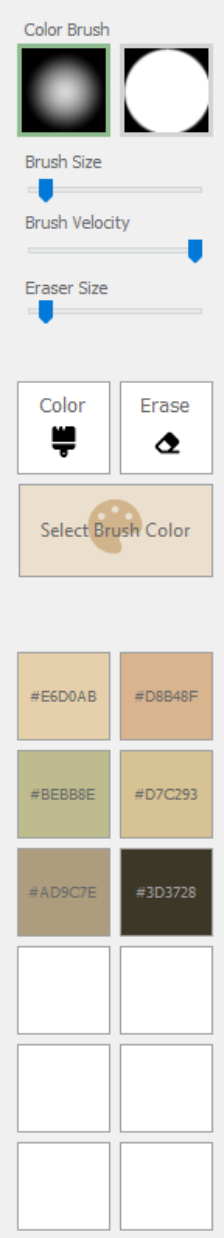
Clicking the Clear button (with the empty square icon) will clear all painted landforms from the map. Before clearing the landforms, Realm Studio prompts you for confirmation.

Generating Random Landforms

Realm Studio includes functionality to generate random landforms of various kinds. Clicking the Type dropdown under the Generate button allows you to select what kind of landform(s) you want to generate. Clicking the Generate button will then generate a random landform shape of that type. The generated landform(s) will have the border color, background texture, coastline effect width, color, and style currently selected.

Future versions of Realm Studio will expand on landform generation functionality and include automatic generation of cities and other map features.

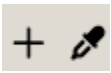
Painting on Landforms



Just as for the Ocean layer, you can paint and shade colors on top of landforms. Painting on landforms works the same as it does on the Ocean.

Select a Color Brush, the click the Color icon to change the Drawing Mode to "Landform Color." The cursor will turn into the usual dashed circle with crosshairs. Paint color on top of your landforms by holding down the left mouse button and dragging. You can change the brush size and brush velocity using the sliders. Erase color that you have painted by clicking the Erase button. Change the painted color by clicking the Color Palette button and selecting a color from the Color Selection dialog.

You can also select a preset color by clicking one of the color presets. There are six default preset colors. As on the Ocean layer, you can create your own preset colors by clicking the "+" button:



You can clear a preset color you have selected and holding the **ctrl** key and clicking the preset button. You can only clear preset buttons that you have defined; the default presets cannot be changed or cleared.

Clicking the eyedropper button changes the cursor to an eyedropper and lets you click anywhere on your map use the color at that location as the selected color for painting.

Colors painted on landforms are clipped to the outer boundary of the landform; that is, you cannot paint landform colors outside of the landforms.

F. Technical Information