



NOAA's NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION



Sea Turtle Stranding Analysis Tools Beaching Probability Index Web Application User Guide

**September 2023
Version 1.0**

Table of Contents

1. Beaching Probability Index (BPI) Web Application Layout.....	4
2. Header	4
3. Subheader	5
3.1. Navigation Menu.....	5
3.2. Option Panel and Time Series Toggle Switches	5
3.3. Help Menu	6
4. Map Area	6
4.1. BPI Date Widget	7
4.2. Zoom in/out and Map Home Widget	7
4.3. Color Palette Widget.....	7
4.4. Coordinates, Map Scale and Zoom Level Widget	8
4.5. Map Legend Widget	8
4.6. Sketch (Pen) Tool (available when “New User Region” tab is active).....	8
5. Option Panel	9
5.1. “Time Series & Export” Tab	9
5.1.1. Date Range.....	10
5.1.2. Region Lists	10
5.1.2.1. Default Regions	10
5.1.2.2. User Regions In Session	11
5.1.3. Time Series Action Buttons	11
5.1.3.1. “Default Time Series” Button.....	11
5.1.3.2. “Draw Time Series” Button.....	12
5.1.4. Export Panel	13
5.1.4.1. “All Files” Checkbox.....	13
5.1.4.2. “Daily Index Data” Checkbox	13
5.1.4.3. “Daily Index Plots” Checkbox.....	13
5.1.4.4. “Time Series Data” Checkbox.....	13
5.1.4.5. “Time Series Plot” Checkbox	14
5.1.4.6. “Export” Button	14
5.2. “New User Region” Tab	16
5.2.1. New Region by Sketch (Pen) Tool	16
5.2.2. New Region by Latitude and Longitude Bounds	18

5.2.3. New Region by Importing File	18
6. Time Series Area	20
7. Footer	20
8. List of Figures.....	21

1. Beaching Probability Index (BPI) Web Application Layout

The BPI web application consists of six major divided areas. Figure 1 shows the BPI Layout with the header, the subheader, the map area, the option panel, the time series area, and the footer.

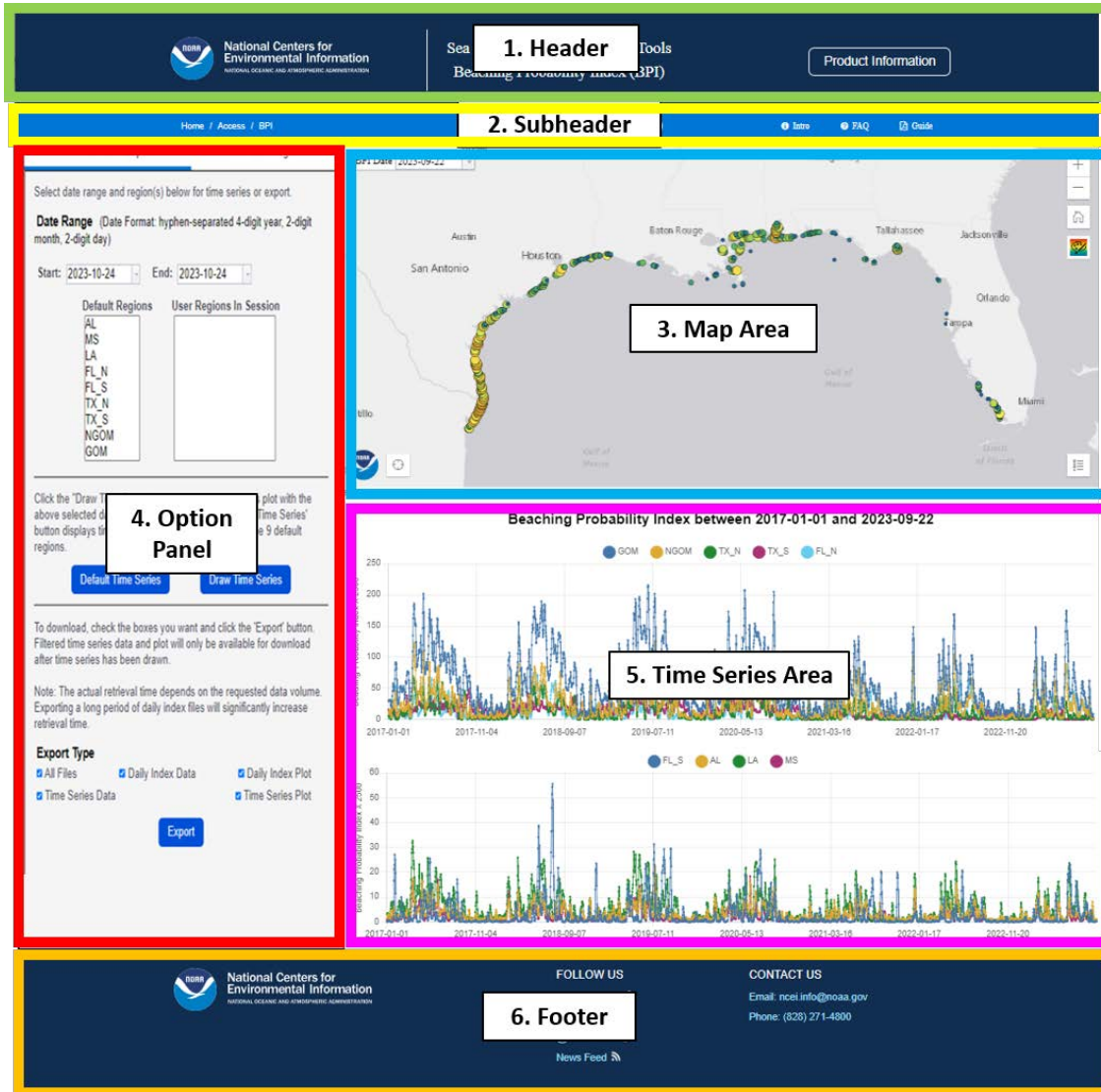


Figure 1. The Beaching Probability Index (BPI) web application layout.

2. Header

The header contains the NOAA NCEI logo and web link, the BPI web application title, and the product information web link which opens the Sea Turtle Stranding Analysis Tools product page (Figure 2).

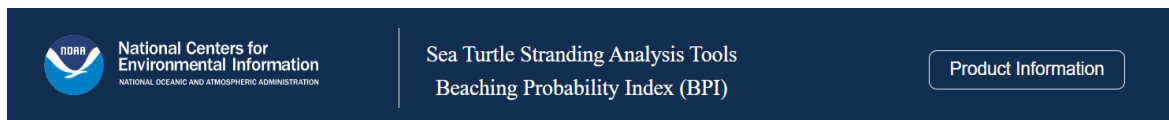


Figure 2. The BPI web application header.

3. Subheader

The subheader contains the BPI navigation menu, the display option toggle switches, and the BPI help menu (Figure 3).



Figure 3. The BPI web application subheader.

3.1. Navigation Menu

The navigation menu provides web links to open the NCEI home page and access page. The last navigation menu item is the current web page (BPI web application).

3.2. Option Panel and Time Series Toggle Switches

The “Option Panel” toggle switch is initially “on” which allows the display of the option panel when the web application is first loaded. User can switch this to the “off” position to remove the option panel to display a larger map area if preferred.

Similarly, the “Time Series” toggle switch is initially “on” which allows the display of the time series area when the web application is first loaded. User can switch this to the “off” position to remove the “Time Series Area” to display a larger map area if preferred.

See Figure 4 for the BPI web application with both toggle switches in the “off” position.

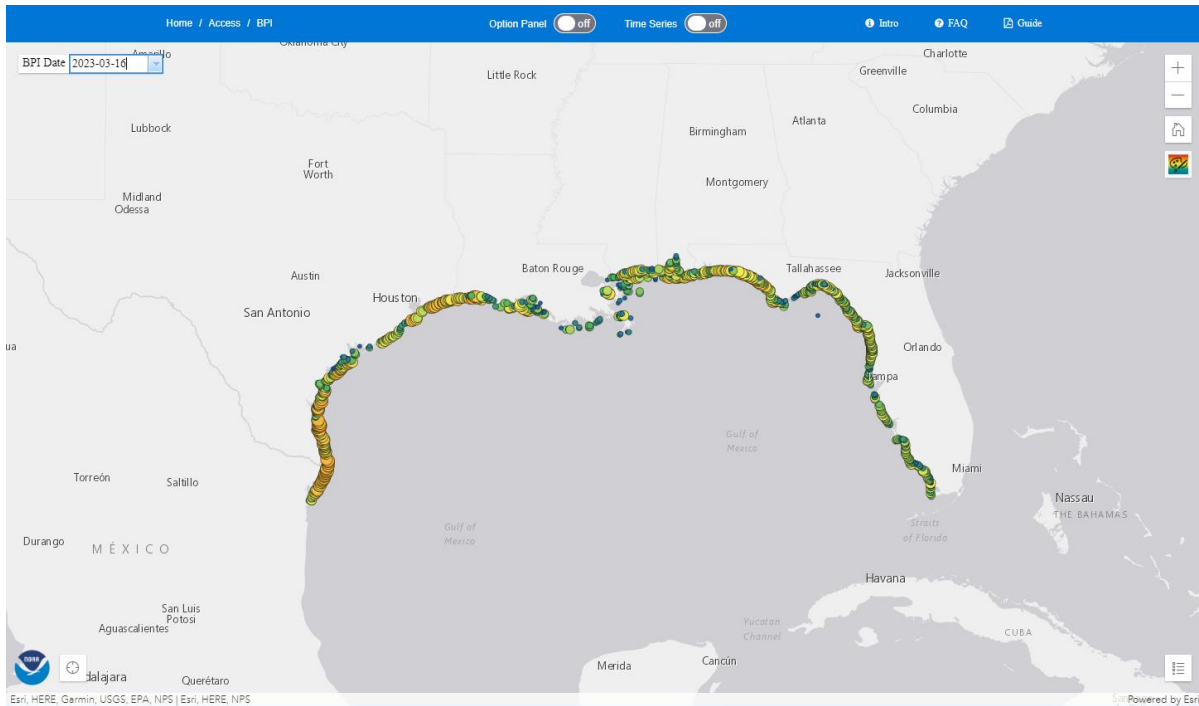


Figure 4. The BPI web application with both the option panel and time series toggles in the “off” position.

3.3. Help Menu

The help menu contains web links to the “introduction”, “frequently asked questions”, and “user guide” (this document). Clicking any of these links will open the corresponding web page on a separate tab in the current browser window.

- [Introduction](#)
- [Frequently Asked Questions](#)
- [User Guide](#)

4. Map Area

The BPI web application uses ESRI ArcGIS web map for all drawings on the map. A plain gray basemap is chosen as the map background to minimize color conflicts with the display of the colorful BPI data. The default basemap settings for the map center and the zoom level are defined as below:

```
map: {  
  centerLon: -89.8,  
  centerLat: 28.0,  
  zoomLevel: 6,  
}
```

All standard mouse key operations work on this map.

To pan, press the leftmost mouse key down and drag to different area of the map.

To zoom in/out, roll the mouse wheel up/down to the desired zoom level.

To rotate, press the rightmost mouse key down and turn clockwise/anticlockwise.

User can look at the BPI accumulation value of any colored circle by zooming to the desired area and clicking the circle. A popup window will appear showing the location and its BPI accumulation value (Figure 5).

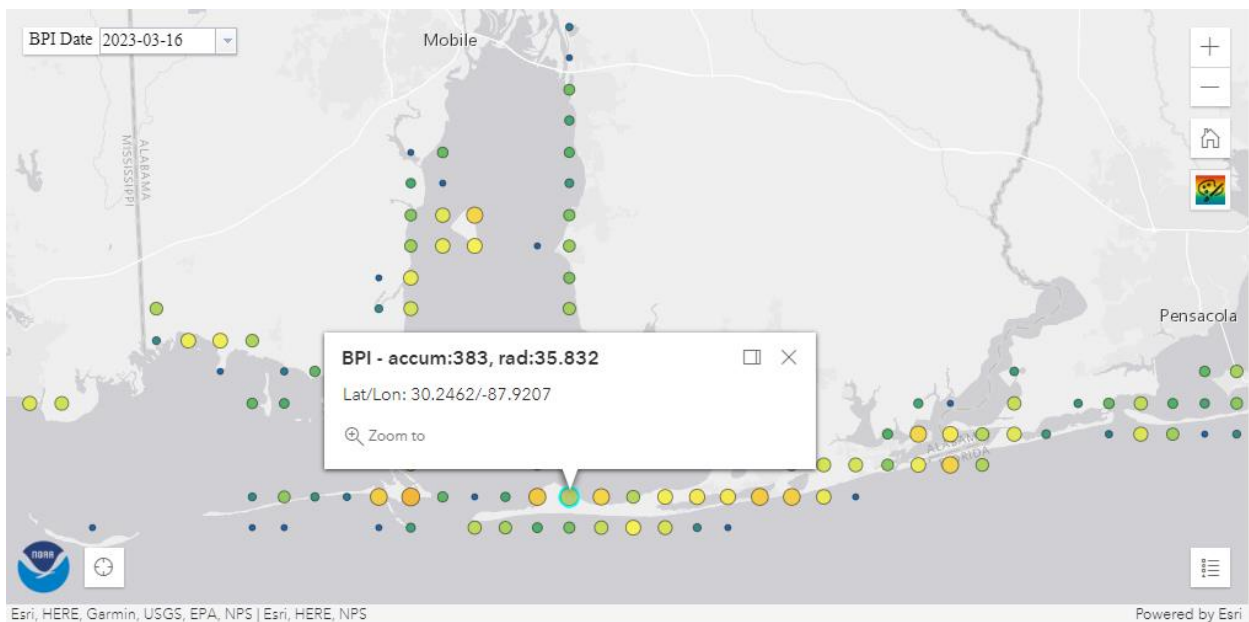


Figure 5. Example of a zoomed area with a popup window showing the BPI value and coordinates of a selected point.

4.1. BPI Date Widget

The BPI date widget on the top left corner allows the user to change the date of the BPI index being displayed on the map. User can either manually type in the date in the “YYYY-MM-DD” format or click on the down arrow icon to select a date from the calendar picker (Figure 6). The default date of the BPI index being displayed on the map is “today”. However, if there is no data available for “today” due to unforeseen problem, the latest available date will be displayed instead.

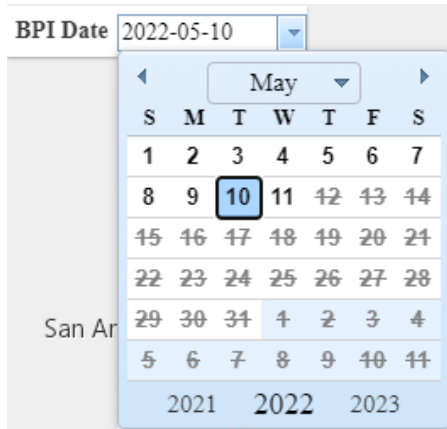





Figure 6. The BPI date widget with editable text and calendar picker.

4.2. Zoom in/out and Map Home Widget

The “Zoom in/out and Map Home” widget is located at the top right-hand corner of the map. The plus icon  is for zooming in, and the minus icon  is for zooming out. The home icon  returns the map to its original settings (i.e. viewing scale, zoom level, and map center).

4.3. Color Palette Widget

The ‘Color Palette’ widget is located at the top right-hand side of the map. Clicking this widget allows the user to switch to a different BPI color palette. The five available color palettes are the default, the legacy, the reversed Hawaii, the reversed Imola, and the reversed Buda. The legacy color palette is used to create all default daily BPI region plots in the archive. The current selected BPI color palette is shown as an icon on top of the widget as seen in Figure 7.

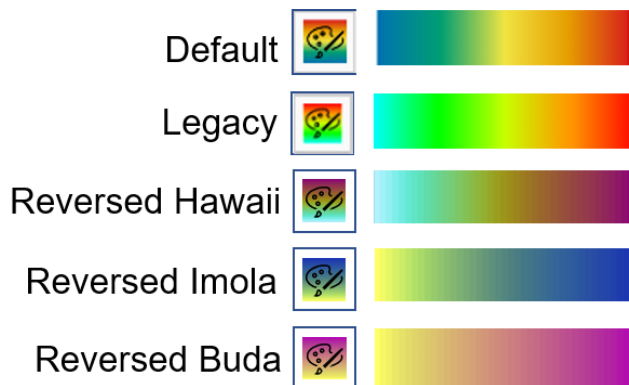


Figure 7. The five color palettes (default, legacy, reversed Hawaii, reversed Imola and reversed Buda).

4.4. Coordinates, Map Scale and Zoom Level Widget





The “Coordinates, Map Scale and Zoom Level” widget, represented by the locate icon , is located at the bottom left-hand corner of the map. When expanded, this widget displays the longitude and latitude of the current cursor location, the current map scale as well as the current zoom level (Figure 8). This widget is for display purpose only, and is collapsible by clicking the double arrow icon  directly adjacent to it.



Figure 8. The coordinates, map scale and zoom level widget.

4.5. Map Legend Widget

The map legend widget, represented by the legend icon , is located at the bottom right-hand corner of the map. When expanded, it shows a description of the BPI color scale and sizes as well as their corresponding accumulation values (Figure 9). This legend is collapsible by clicking the double arrow icon  directly adjacent to it.

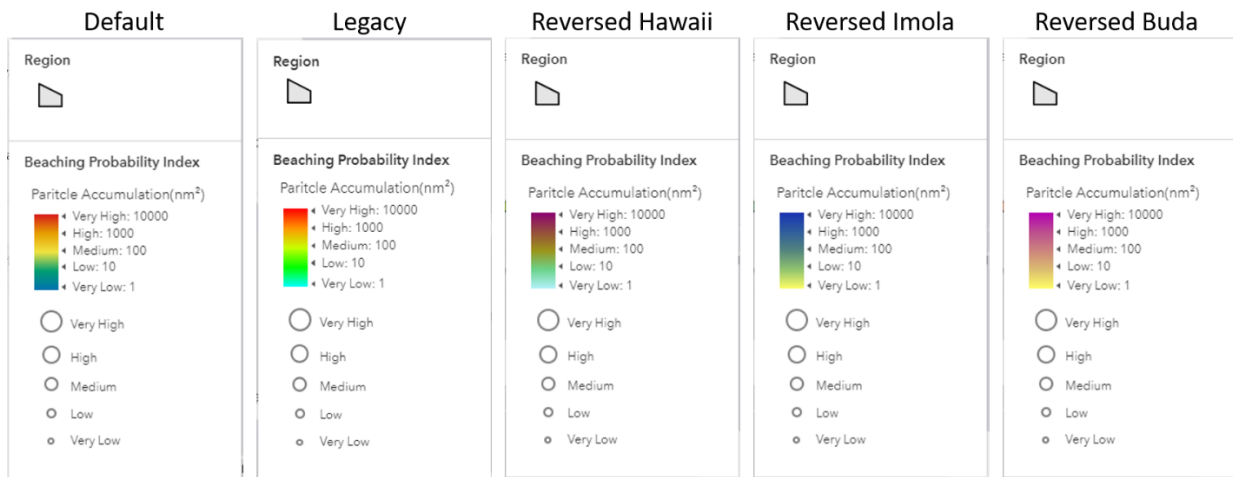





Figure 9. The five BPI color legend options (default, legacy, reversed Hawaii, reversed Imola, and reversed Buda).

4.6. Sketch (Pen) Tool (available when “New User Region” tab is active)

The sketch (pen) tool, represented by the pen icon , is located at the top left-hand corner of the map. When expanded, user can draw shapes  (polygon, rectangle, and circle) on the map to define a new user region for the time series plot. See [section 5.2.1](#) for detailed instructions on drawing these shapes. User can minimize this tool by clicking the double arrow icon  next to it.

5. Option Panel

The option panel contains 2 option tabs named “Time Series & Export” and “New User Region”. The default option tab is “Time Series & Export” when the BPI web application is first loaded.

5.1. “Time Series & Export” Tab

The “Time Series & Export” tab (Figure 10) allows the user to subset date range and regions for the time series plot and export data files.

The screenshot shows the "Time Series & Export" tab selected. At the top, there are two tabs: "Time Series & Export" (active) and "New User Region". Below the tabs, a text prompt reads: "Select date range and region(s) below for time series or export." The "Date Range" section specifies the format: "(Date Format: hyphen-separated 4-digit year, 2-digit month, 2-digit day)". The "Start" date is set to "2023-10-24" and the "End" date is also "2023-10-24". Below this, there are two columns of region selection. The "Default Regions" column contains a list of region codes: AL, MS, LA, FL_N, FL_S, TX_N, TX_S, NGOM, and GOM. The "User Regions In Session" column is currently empty. Below the region lists, there is a text instruction: "Click the 'Draw Time Series' button to draw time series plot with the above selected date range and region(s). The 'Default Time Series' button displays time series of the entire database for the 9 default regions." There are two blue buttons: "Default Time Series" and "Draw Time Series". Below these buttons, another instruction reads: "To download, check the boxes you want and click the 'Export' button. Filtered time series data and plot will only be available for download after time series has been drawn." A note follows: "Note: The actual retrieval time depends on the requested data volume. Exporting a long period of daily index files will significantly increase retrieval time." The "Export Type" section contains five checkboxes, all of which are checked: "All Files", "Daily Index Data", "Daily Index Plot", "Time Series Data", and "Time Series Plot". At the bottom of this section is a blue "Export" button.

Figure 10. The “Time Series & Export” tab on the option panel.

5.1.1. Date Range

The date range subset area allows the user to set the start date and the end date for two purposes: to subset the BPI time series data within the date range and display new time series, or to subset BPI data files for export. User can manually type in the date in the text areas using the “YYYY-MM-DD” format or click the down arrow button to select the dates on the calendar pickers as seen previously in [Figure 6](#). The default start date and end date are “today”.

5.1.2. Region Lists

There are two region lists. One to store the default regions and the other for the user-defined regions in the current browser session.

5.1.2.1. Default Regions

There are nine pre-defined default regions of interest. They are Gulf of Mexico (GOM), northern Gulf of Mexico (NGOM), Alabama (AL), Mississippi (MS), Louisiana (LA), north Florida (FL_N), south Florida (FL_S), north Texas (TX_N), and south Texas (TX_S). Figure 11 shows the geographical boundaries of these 9 regions in the map. Daily BPI values and plots of these 9 default regions are automatically created every morning in the archive, and ready for the user to download at any time.

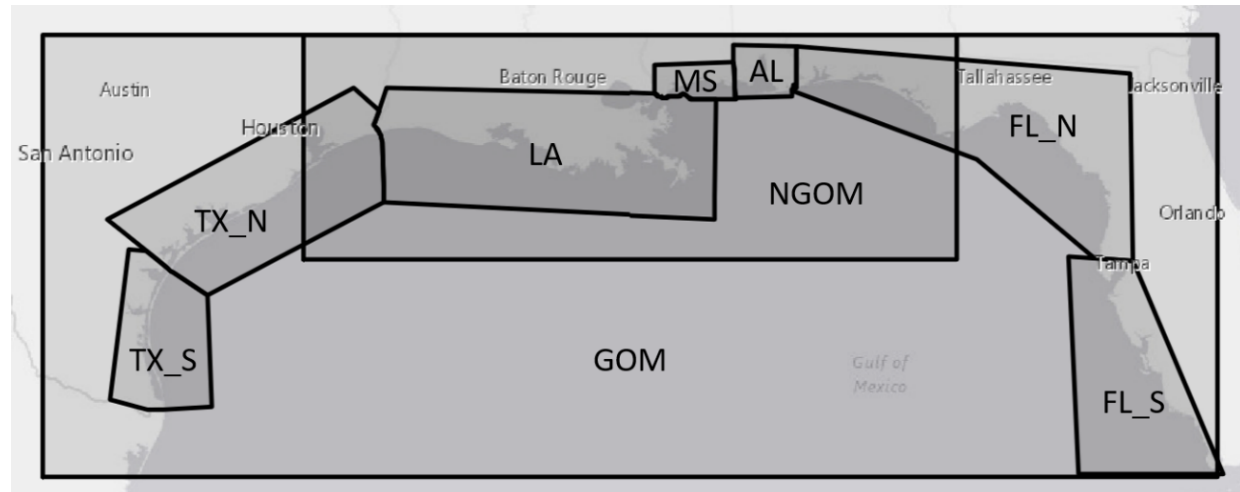


Figure 11. The 9 default regions including GOM, NGOM, AL, MS, LA, FL_N, FL_S, TX_N, and TX_S.

User can select one or more of these default regions in the list for plotting time series or data export. The multi-select options can be done by pressing the “Shift” or “Ctrl” key simultaneously with the left-most mouse button during the selection. When a default region is selected, the boundaries of the region will be shown on the map as a shaded area as seen in Figure 12.

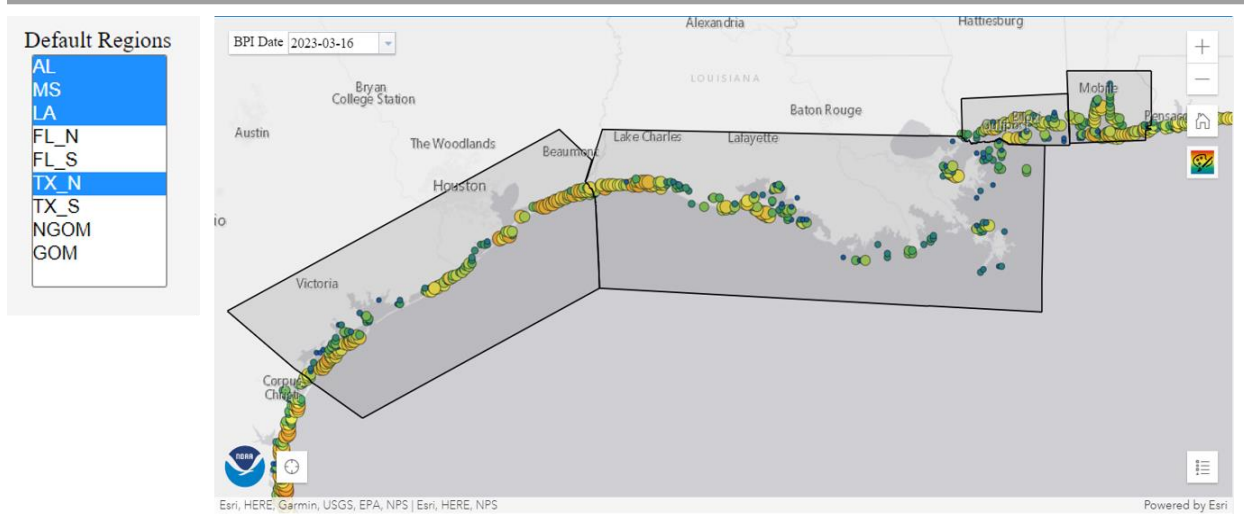


Figure 12. Example of multiple selections of regions in the default list and their boundaries on the map.

5.1.2.2. User Regions In Session

The “User Regions In Session” List is originally empty. When the user uses the “New User Region” tab to create new region(s), then this list will be populated with the user defined regions. See [section 5.2](#) for more details in the usage of the “New User Region” tab and how to define new user regions.

5.1.3. Time Series Action Buttons

Two action buttons, “Default Time Series” and “Draw Time Series”, are available for the drawing of time series in the time series area.

5.1.3.1. “Default Time Series” Button

The “Default Time Series” button puts the default time series plot image of the nine default regions on the time series plot area. The default time series plot begins on January 1, 2017 and ends on “today”. So, new default time series plot is being generated for the nine regions daily. Currently, the update of the time series data and the subsequent generation of the new time series plot are scheduled to happen at 11 a.m. Greenwich Mean Time (GMT) daily. Since nine time series lines are too crowded in one plot, they are divided into two sub-plots as shown in Figure 13.

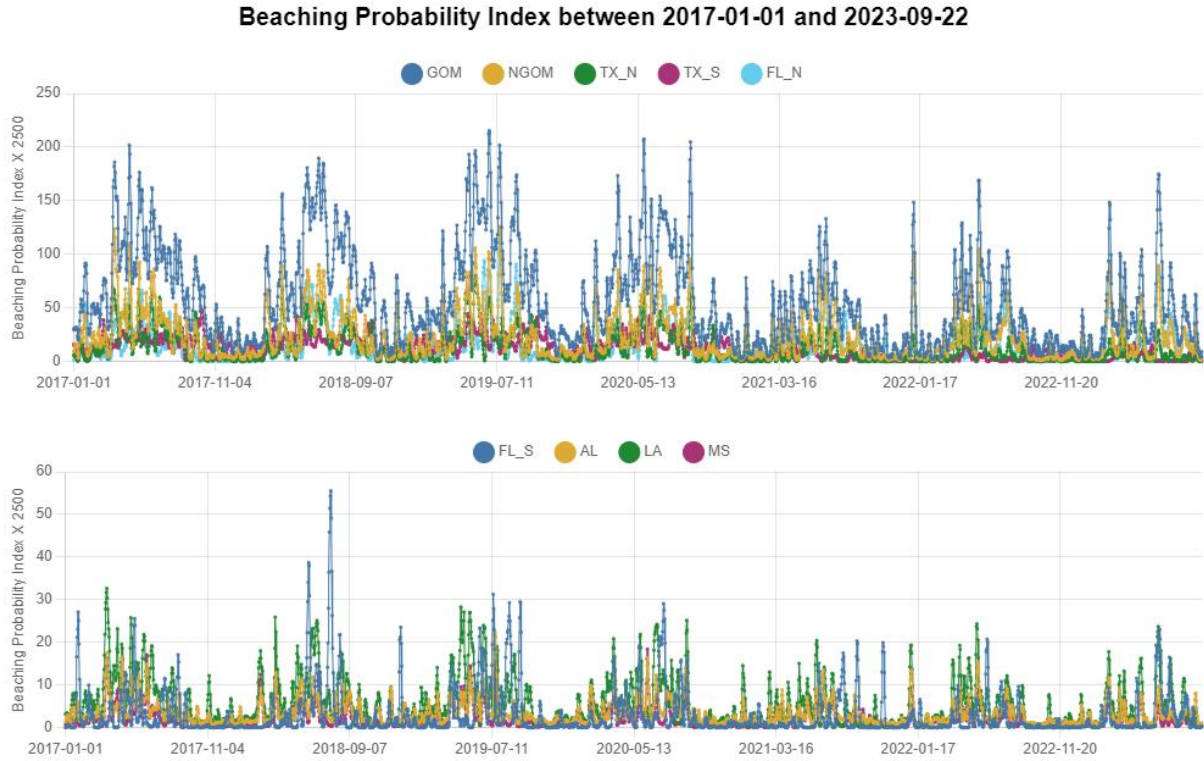


Figure 13. Example of daily time series plot generated for the 9 default regions. The time series shown is from January 1, 2017 to September 22, 2023.

5.1.3.2. “Draw Time Series” Button

The “Draw Time Series” button allows the user to draw a new time series plot using the start and end dates in the date range as well as the selected regions in both the default and user region lists. As soon as this button is clicked, data in the selected regions and time of interest will be subsetted to create a new time series plot. Once the new time series plot is ready, it will be displayed in the time series area. Figure 14 shows a time series plot for 4 predefined regions (AL, LA, MS, TX_N) between January 1, 2018 and December 31, 2020.

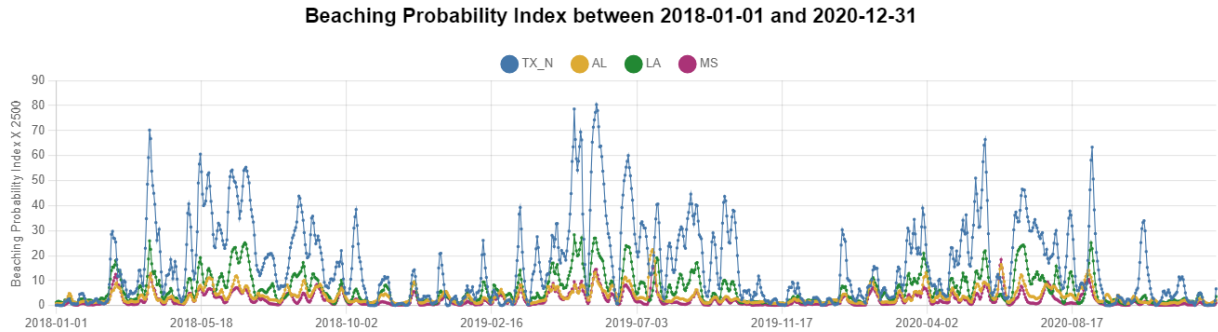


Figure 14. The time series plot for the default AL, LA, MS and TX_N regions from January 1, 2018 to December 31, 2020.

5.1.4. Export Panel

The export panel contains a group of checkboxes (“All Files”, “Daily Index Data”, “Daily Index Plots”, “Time Series Data”, “Time Series Plot”) for the different types of data files to export, and the “Export” button.

Note: Standard browser settings may have popup blocker blocking the BPI web application from popping up any window for the export. A warning may appear to allow user to decide if popup should be allowed for the website. If user does not see the warning, then permission can be explicitly given by adding the BPI web application’s web address into the “sites allowed” list in the browser settings.

In Chrome, for example, this setting is under “Settings -> Privacy and security -> Site Settings -> Pop-ups and redirects”.

5.1.4.1. “All Files” Checkbox

The “All Files” checkbox allows the user to select/deselect all the export type checkboxes in the export panel with one click.

5.1.4.2. “Daily Index Data” Checkbox

The “Daily Index Data” checkbox determines if the daily BPI data files (“YYYYMMDD.csv”) within the start and end date range will be exported.

5.1.4.3. “Daily Index Plots” Checkbox

The “Daily Index Plots” checkbox determines if the 9 default daily regional BPI image plots within the start and end date range will be exported. If no region is selected in the region lists, the default behavior is to download all 9 default regions within the time range. However, a courtesy popup window will appear to ask the user to confirm downloading all 9 regions (Figure 15).

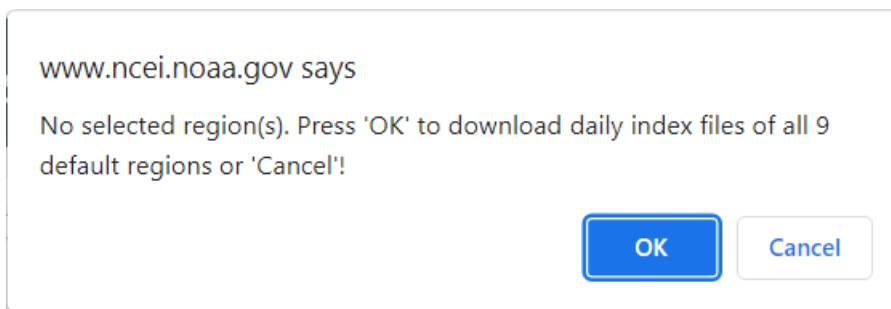


Figure 15. The warning window to download daily index files of all 9 default regions.

5.1.4.4. “Time Series Data” Checkbox

The “Time Series Data” checkbox indicates if the time series data file for the selected regions within the start and end date range will be exported. If no new time series is drawn, then the default time series data file will be exported. Otherwise, a subsetted time series data file for the selected regions within the date range will be exported. The time series data file name is “timeSeries_{\$startDate}-{\$endDate}.csv”.

5.1.4.5. “Time Series Plot” Checkbox

The “Time Series Plot” checkbox indicates if the time series image plot for the selected regions within the start and end date range will be exported. If no new time series is drawn, then the default time series image plot will be exported. Otherwise, the current displayed time series plot will be exported. The time series image plot file name is “timeSeries_{\$startDate}-{\$endDate}.jpg”.

5.1.4.6. “Export” Button

The “Export” button allows the user to download the daily BPI index data files, the daily default regional BPI image plots, the time series csv data file, and the time series image plot for the specified start and end dates in the date range. The export type checkboxes determine which data files will be included in the download.

The maximum number of files allowed to be exported is currently set at 1000. If the total number of files with the selected checkboxes exceeds this maximum number, an error window will appear as seen in Figure 16, and no file will be downloaded. User needs to shorten the date range, reduce the number of selected regions or reduce the number of export checkboxes in order to try again.

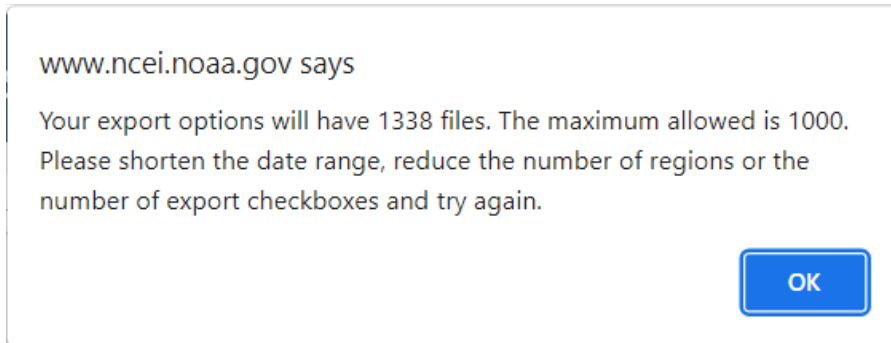


Figure 16. The error window explaining that the maximum number of export files have been exceeded.

If the total number of files is below the maximum allowed, a popup window will appear to inform the user about the number of files for the download before the actual download process will begin (Figure 17). Press “OK” to start the download or “Cancel” to stop. If only one file is in the download, then the single file will be downloaded. Otherwise, a zip archive with all the qualifying files will be downloaded.

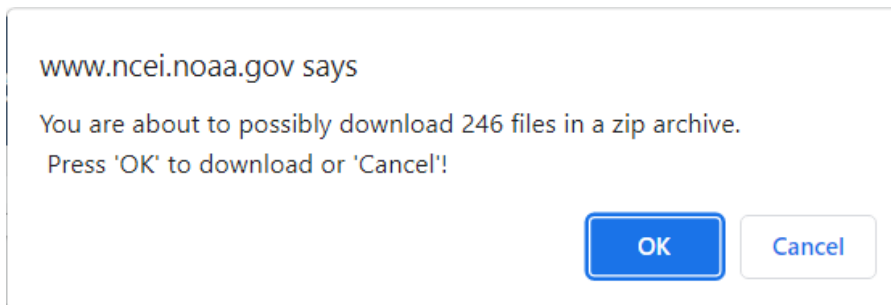


Figure 17. The confirmation window for the number of files in the zip archive to be downloaded.

A “Save As” dialog window may appear depending on the setting of your computer (Figure 18). The name of the zip file is “BPI_Export_{\$startDate}-{\$endDate}.zip” if any daily index files are included in the

download. Otherwise, the zip filename is “timeSeries_{\$startDate}-{\$endDate}.zip” if only time series data and plot are exported. User can change this filename if preferred.

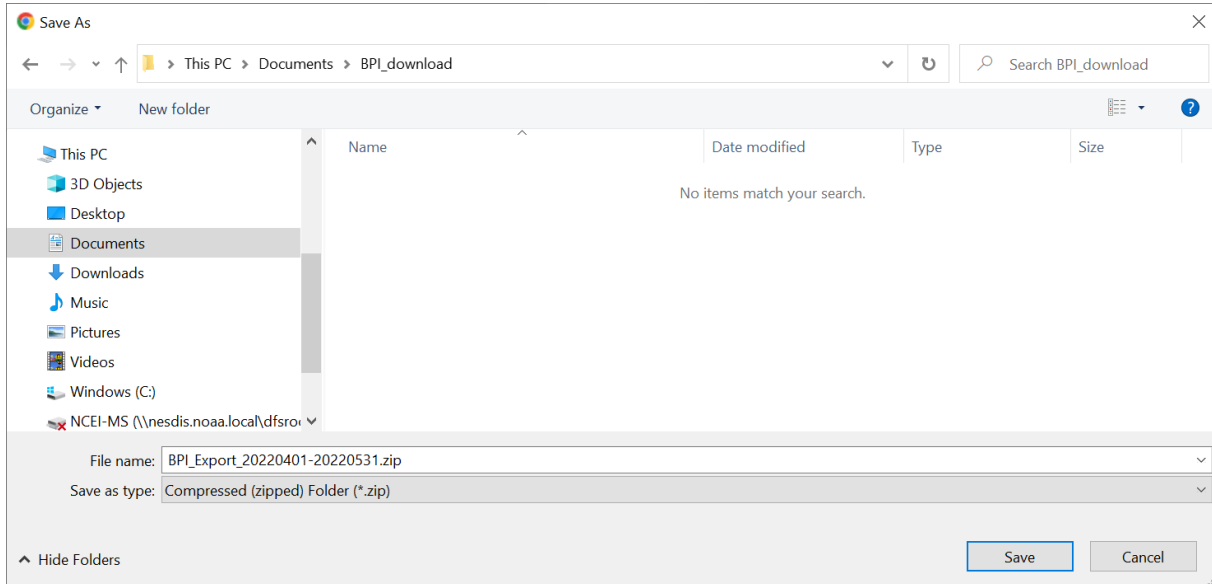


Figure 18. The “Save As” dialog window for the zip archive.

Figure 19 shows the content of a zip file which includes the daily BPI data csv file, the selected regional daily BPI plot image files, the time series data csv file, and the time series plot image file.

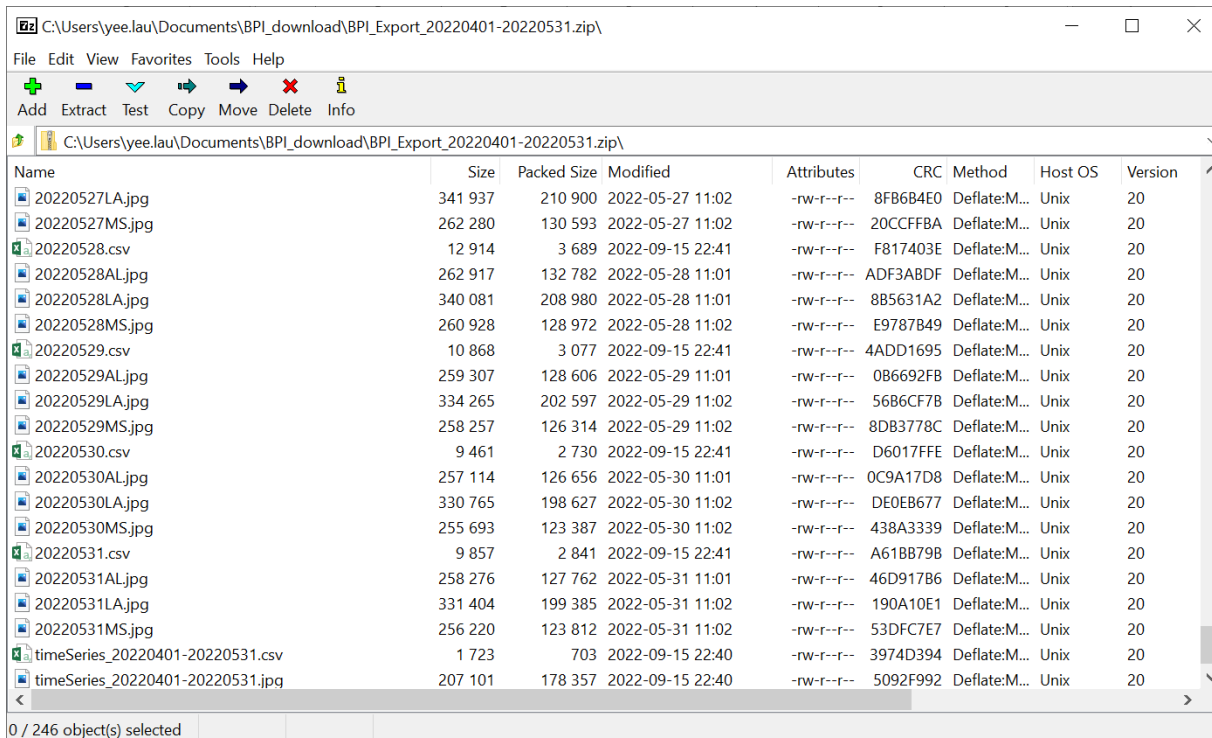


Figure 19. Example of the content of a downloaded zip archive.

5.2. “New User Region” Tab

The “New User Region” tab (Figure 20) allows user to define his/her area of interests as new regions for the time series plot and the export function. There are three ways to define new user regions: 1) draw a shape on the map area using the sketch (pen) tool, 2) type the latitude and longitude bounds on the provided text area, 3) import a comma-delimited region file.

Note: These user-defined new regions are valid and visible only for the current user browser session, and will not be stored for future use.

The screenshot shows the 'New User Region' tab selected in a navigation bar. Below the navigation bar, there is a text box with instructions: 'To create new user region, use any method below to define the domain. New user regions defined here will only be valid for this session, and will not be stored for future use.' Below this, there is a section titled 'New Region' with three numbered steps. Step 1 describes using a pen icon on a map to draw shapes. Step 2 involves entering min/max longitude and latitude values in text boxes and clicking an 'Add Region' button. Step 3 describes uploading a region file using a 'Choose File' button. At the bottom, there is a section titled 'User Regions In Session' with a large empty rectangular box.

Time Series & Export **New User Region**

To create new user region, use any method below to define the domain. New user regions defined here will only be valid for this session, and will not be stored for future use.

New Region

1. Click the pen icon on the map to show the shape tools. Then, select a specific tool to define the region.
For a rectangle or circle, press the left-most mouse button on the map and drag the mouse to define the shape.
For a polygon, click the left-most mouse button at each vertex location. To close the region, either click the first vertex again or double-click the last vertex.

2. Enter minmax latlon values, click the 'Add Region' button, then enter region name.

minLon maxLon
minLat maxLat

Add Region



3. Upload a region file (.csv or .txt) in csv (comma-separated values) format. Multiple regions can be defined in one file by specifying one region per line. See user guide for region file details.


Choose File No file chosen


User Regions In Session


Figure 20. The “New User Region” tab on the option panel.

5.2.1. New Region by Sketch (Pen) Tool

ArcGIS provides a convenient sketch (pen) tool widget, represented by the pen icon , to draw different shapes on an ArcGIS map. The sketch tool is located at the top left-hand corner of the map. User must click the pen icon to expand it to see the available polygon, rectangle and circle tools . Then, user can select one tool to define new regions.

To draw a rectangular region, click the rectangle icon  on the sketch tool. Then, press the left-most mouse button at the starting location of the map, hold and drag the mouse to the ending location, and release the mouse button.

To draw a circular region, click the circle icon  on the sketch tool. Then, press the left-most mouse button at the center of the circle on the map, hold and drag the mouse to increase/decrease the radius of the circle, and release the mouse button when the desired circle is drawn.

To draw a polygonal region, click the polygon icon  on the sketch tool. Click the left-most mouse button at each vertex of your polygon on the map, then close the polygon by clicking the first vertex again or double-clicking the last vertex of the polygon.

A popup window will appear for the user to enter a name of the new region. Enter a name, and press “OK” to confirm or “Cancel” to stop. Once validated, the new region will be added to the “User Regions In Session” list.

Figure 21 shows a rectangle was drawn around Mobile Bay, AL, the user entered “MobileBay” as a name in the popup window, and the “MobileBay” region was added to the “User Regions In Session” list.

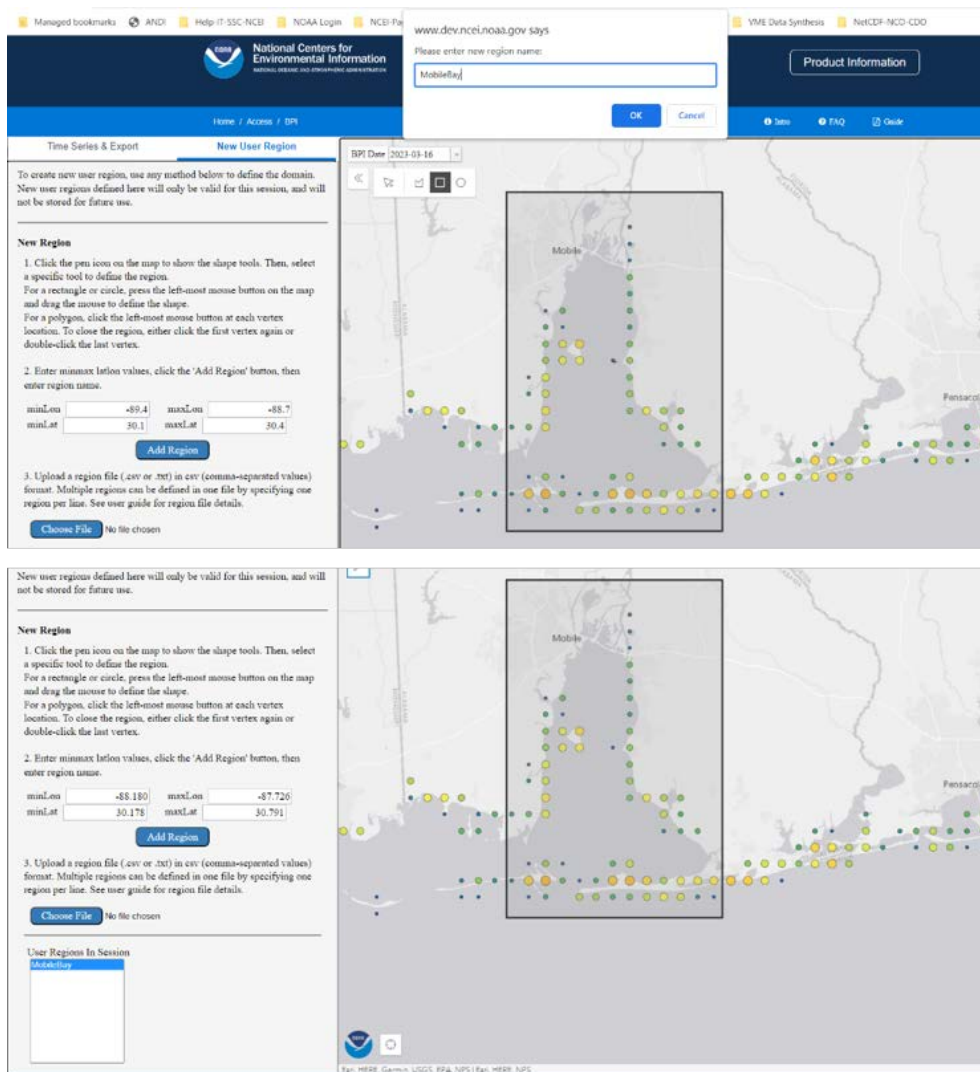


Figure 21. User drew a rectangle using the sketch tool and entered a region name “MobileBay” in the popup window. The new region was then added to the “User Regions In Session” list.

5.2.2. New Region by Latitude and Longitude Bounds

There are 4 text area for the user to manually enter the minimum/maximum latitude/longitude values to define a new region. Click the “Add Region” button, a shaded rectangle representing the new region will be drawn on the map area and a popup window will appear for the user to enter the name of the new region. Click the “OK” button to confirm your new region or “Cancel” to stop. After the name and the boundaries are validated, this new region will be added to the ‘User Regions In Session’ list (Figure 22).

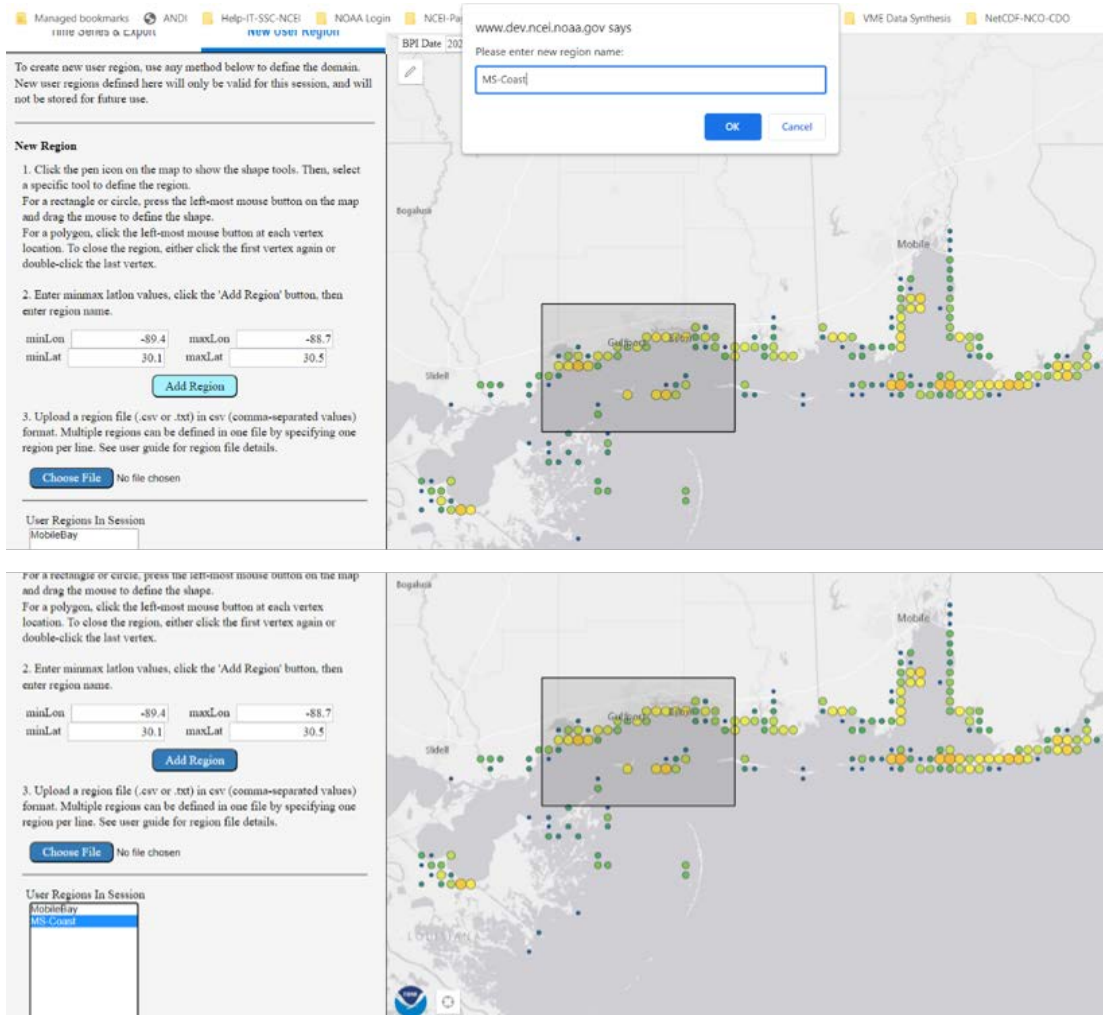


Figure 22. User entered the latitude and longitude bounds of a region in the four text area and clicked the “Add Region” button. After confirming the new region name “MS-Coast” in the popup window, the new region was then added to the “User Regions In Session” list.

5.2.3. New Region by Importing File

The BPI web application allows the user to import a comma-delimited region file with extension “.csv” or “.txt” to define new regions of interest. Press the “Choose File” button to pop up the open file dialog to select a local file to be imported (Figure 23).

The comma-delimited region file must be formatted correctly with one header line followed by one or more rows of region definition lines. See below for the content of “MobileBayRegions.txt” which contains 2 new regions named “MobileBay1” and “MobileBay2”.

Line1: region,minLon,maxLon,minLat,maxLat,numPts,lon1,lat1,lon2,lat2,...,lonN,latN,
 Line2: MobileBay1,-88.16166381835839,-
 87.75791625976484,30.284705807187148,30.746104947659294,4,-
 88.16166381835839,30.746104947659294,-87.75791625976484,30.746104947659294,-
 87.75791625976484,30.284705807187148,-88.16166381835839,30.284705807187148,
 Line3: MobileBay2,-88.16990356445214,-
 87.76340942382733,30.158922250066702,30.289449205548227,4,-
 88.16990356445214,30.289449205548227,-87.76340942382733,30.289449205548227,-
 87.76340942382733,30.158922250066702,-88.16990356445214,30.158922250066702,

where “region” is the name of the new region, “minLon” is the minimum longitude of the region, “maxLon” is the maximum longitude of the region, “minLat” is the minimum latitude of the region, “maxLat” is the maximum latitude of the region, “numPts” is the number of points of the region, “lon1,lat1,lon2,lat2,...,lonN,latN,” are the longitude and latitude values of the points either in clockwise or counterclockwise direction.

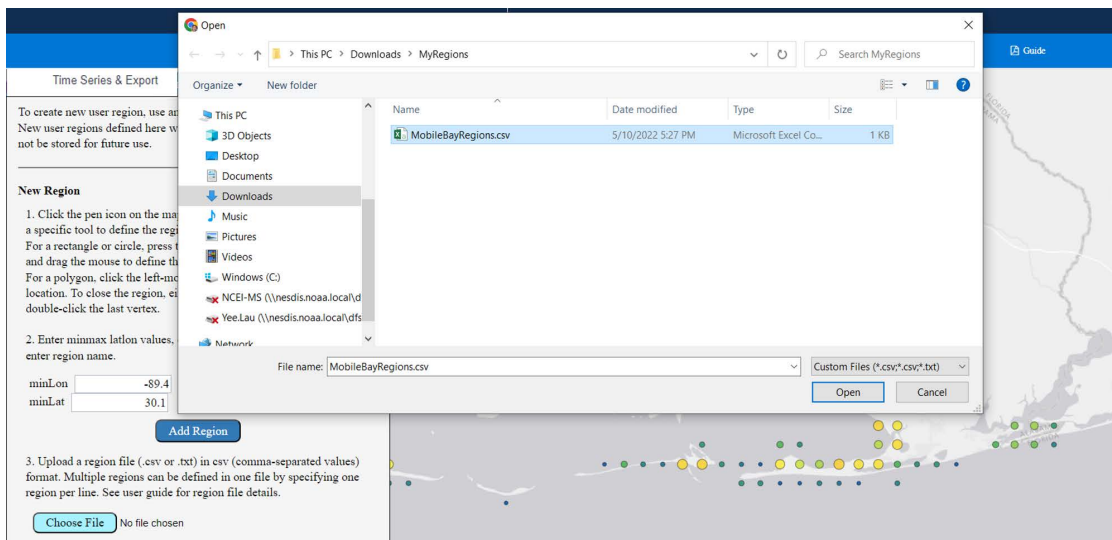


Figure 23. After the “Choose File” button is clicked, a “Open” dialog appears for the user to import a region file.

Once validated, the new regions will be added to the “User Regions In Session” list (Figure 24).

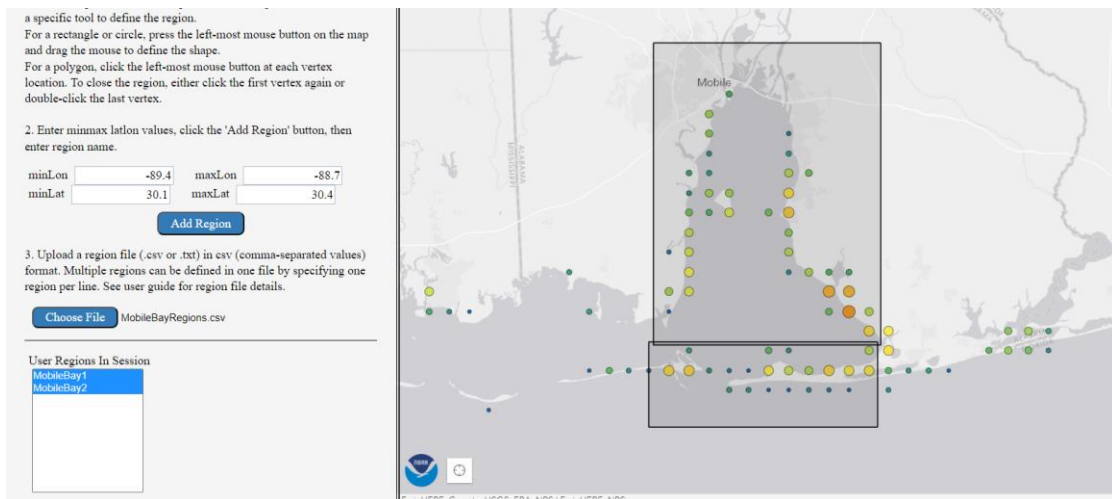


Figure 24. The new imported regions have been added to the “User Regions In Session” list.

6. Time Series Area

The “Time Series Area” displays the time series plot of the currently selected date range and regions. When the BPI web app is first loaded, the default time series plot (from January 1, 2017 to the latest BPI date) of the 9 default regions will be displayed. User can redraw by selecting different date range and regions and clicking the “Draw Time Series” button in the “Time Series & Export” tab.

When the mouse pointer hovers over any BPI data point in the time series area, an information popup will appear as shown in Figure 25. To show the time series plot in its own separate browser tab, click any part of the time series area.

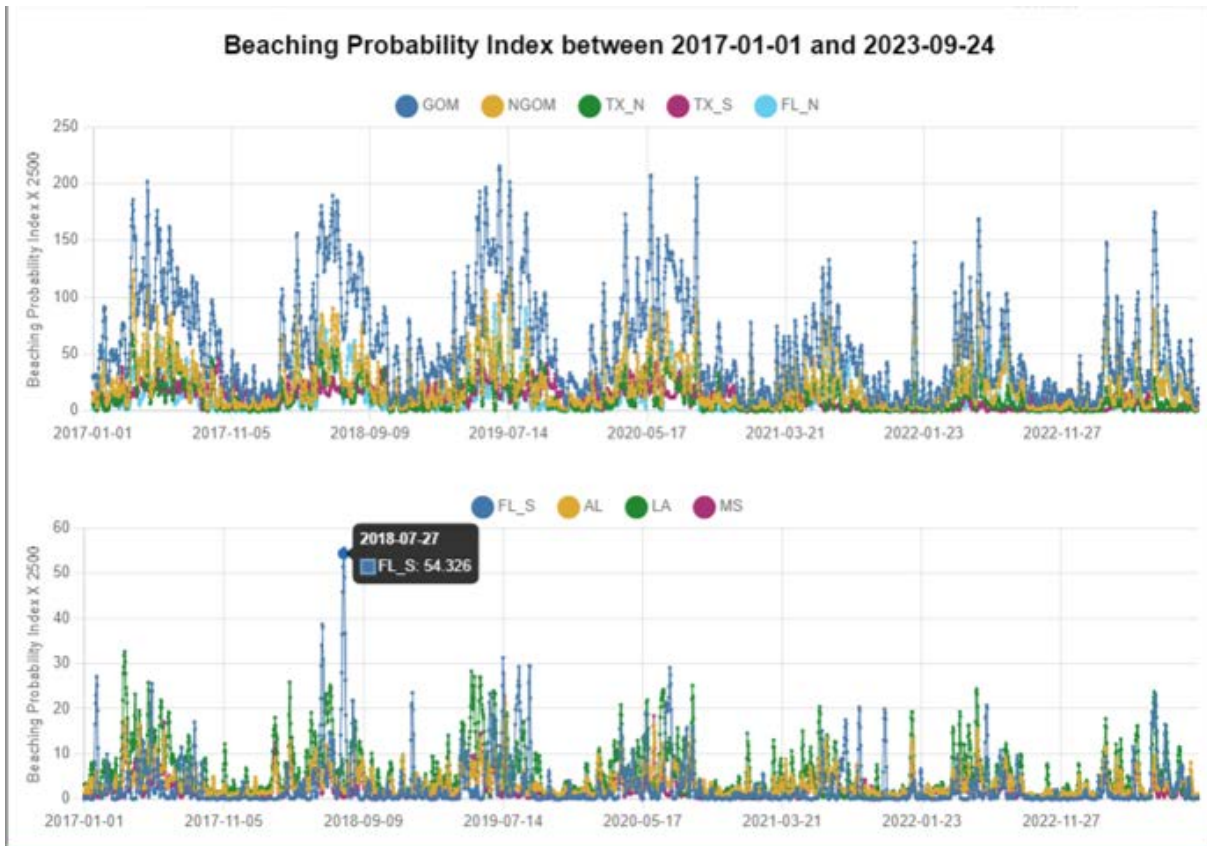


Figure 25. The default time series plot on September 24, 2023 with a BPI data value popup.

7. Footer

The footer contains the social media web links for NCEI as well as contact information (Figure 26).

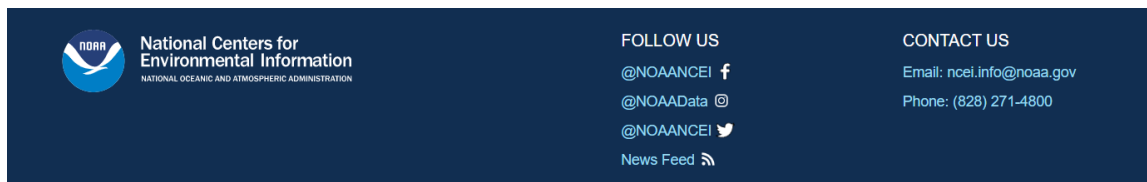


Figure 26. The BPI web application footer.

8. List of Figures

[Figure 1](#). The Beaching Probability Index (BPI) web application layout.

[Figure 2](#). The BPI web application header.

[Figure 3](#). The BPI web application subheader.

[Figure 4](#). The BPI web application with both the option panel and time series toggles in the “off” position.

[Figure 5](#). Example of a zoomed area with a popup window showing the BPI value and coordinates of a selected point.

[Figure 6](#). The BPI date widget with editable text and calendar picker.

[Figure 7](#). The five color palettes (default, legacy, reversed Hawaii, reversed Imola and reversed Buda).

[Figure 8](#). The coordinates, map scale and zoom level widget.

[Figure 9](#). The five BPI color legend options (default, legacy, reversed Hawaii, reversed Imola, and reversed Buda).

[Figure 10](#). The “Time Series & Export” tab on the option panel.

[Figure 11](#). The 9 default regions including GOM, NGOM, AL, MS, LA, FL_N, FL_S, TX_N, and TX_S.

[Figure 12](#). Example of multiple selections of regions in the default list and their boundaries on the map.

[Figure 13](#). Example of daily time series plot generated for the 9 default regions. The time series shown is from January 1, 2017 to September 22, 2023.

[Figure 14](#). The time series plot for the default AL, LA, MS and TX_N regions from January 1, 2018 to December 31, 2020.

[Figure 15](#). The warning window to download daily index files of all 9 default regions.

[Figure 16](#). The error window explaining that the maximum number of export files have been exceeded.

[Figure 17](#). The confirmation window for the number of files in the zip archive to be downloaded.

[Figure 18](#). The “Save As” dialog window for the zip archive.

[Figure 19](#). Example of the content of a downloaded zip archive.

[Figure 20](#). The “New User Region” tab on the option panel.

[Figure 21](#). User drew a rectangle using the sketch tool and entered a region name “MobileBay” in the popup window. The new region was then added to the “User Regions In Session” list.

[Figure 22](#). User entered the latitude and longitude bounds of a region in the four text area and clicked the “Add Region” button. After confirming the new region name “MS-Coast” in the popup window, the new region was then added to the “User Regions In Session” list.

[Figure 23](#). After the “Choose File” button is clicked, a “Open” dialog appears for the user to import a region file.

[Figure 24](#). The new imported regions have been added to the “User Regions In Session” list.

[Figure 25](#). The default time series plot on September 24, 2023 with a BPI data value popup.

[Figure 26](#). The BPI web application footer.