

Geo Alerts Plug-in

US Naval Research Laboratory

Code 5773

**4555 Overlook Ave., SW
Washington, DC 20375**

<https://simdis.nrl.navy.mil>

simdis@enews.nrl.navy.mil

Purpose of Geo Alerts

- **Geo Alert enables you to create one or more boundary zones and uses live position data to monitor the location of platforms when they enter or exit an active zone.**
- **Audio and/or visual effects can be used to alert a user of a zone violation.**
- **Violations can be saved to a time stamped history log file.**
- **Platforms can be whitelisted from triggering alerts.**
- **How accurately violations are triggered depends on the reporting device and whether or not there is a means to receive data from the device at it's present location.**

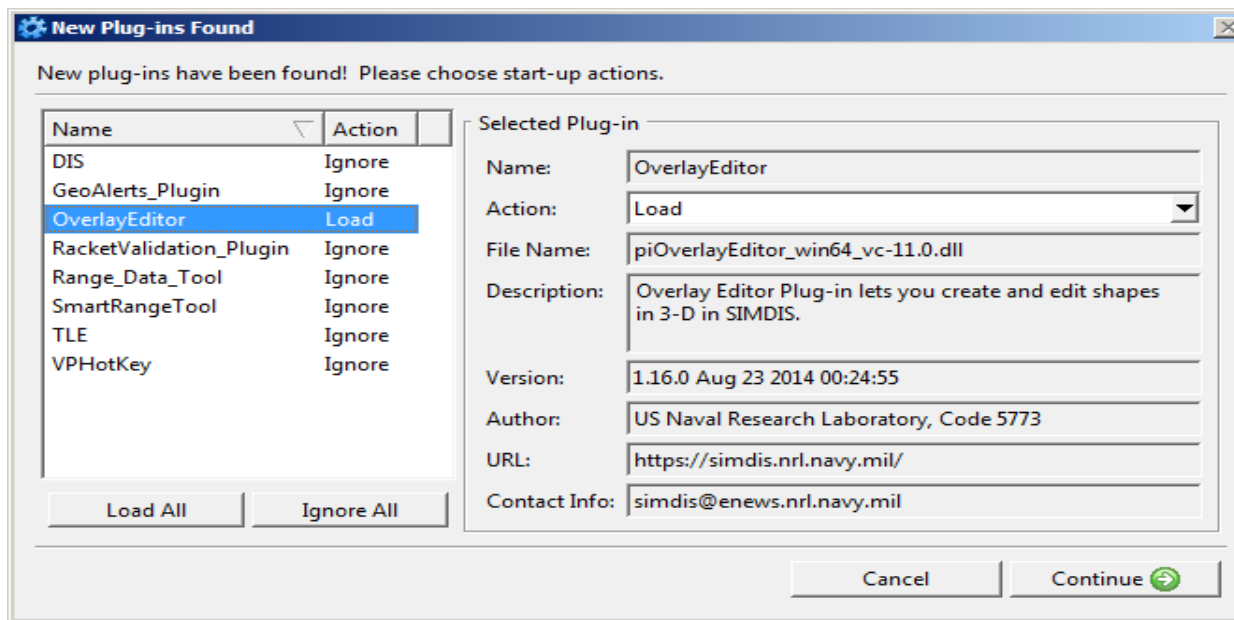


- **Geo Alerts are divided into 3 main categories:**
 - Zones, Alerts and a Whitelist
- **Zones define a specific geographic boundary.**
 - Circle, 2D Polygon or 3D Volume (Concave polygons not supported)
 - Zones can be toggled on or off.
- **Alerts associate an action to a specific zone.**
 - Types are either “Keep In” or “Keep Out” of a zone.
 - User Alert Effects
 - » Alarm Sound, Screen Text, Blinking Platform and/or History Log
 - » One or more alert notifications can be associated to a single zone.
- **Whitelist is a list of those platforms allowed to enter or exit a zone without triggering an alert.**
 - Platforms can be set via a name or a category data filter.
 - A blacklist would be an inverse alert type where a Keep In would become a Keep Out or vice versa.
- **Active zones and alerts are updated each time a data point is added to or removed from SIMDIS.**

- Geo Alerts only works in SIMDIS. It is neither part of the standard nor core SIMDIS installations. It is found in the **Optional Plug-ins Distribution** and it will need to be manually loaded in order to access its functionality.
- Plug-ins may be loaded into SIMDIS in a number of ways:
 1. Through the application's Plug-in Manager
 2. The preferences file
 3. The command line
- When SIMDIS starts for the first time or when the application detects new plug-ins in the **\$SIMDIS_DIR/plugins** directory, the user is presented with the "New Plug-ins Found" dialog. Here a user can indicate whether to load or ignore individual plug-ins.



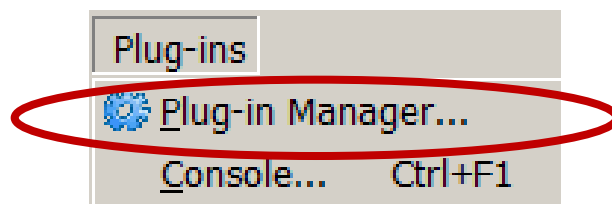
New Plug-ins Found Dialog



- On the left side of the window is a listing of all new plug-ins that SIMDIS has found, along with an indication of whether the plug-in will be loaded or ignored.
- You can double click the entry to change its status, or use the "Action" drop down menu on the right side of the window.
- Alternatively, clicking **Load All** or **Ignore All** will apply the selected action to all plug-ins in this window.

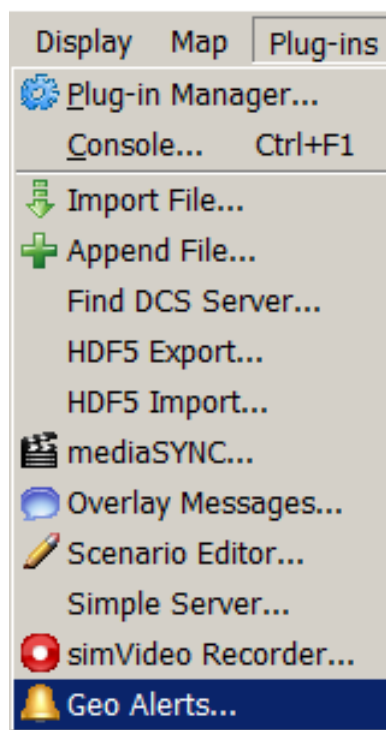


- Another method used to manage the loading and unloading plug-ins is to use the **Plug-in Manager**. To access the Plug-in Manager, select the Plug-in Manager menu item from the Plug-ins menu.



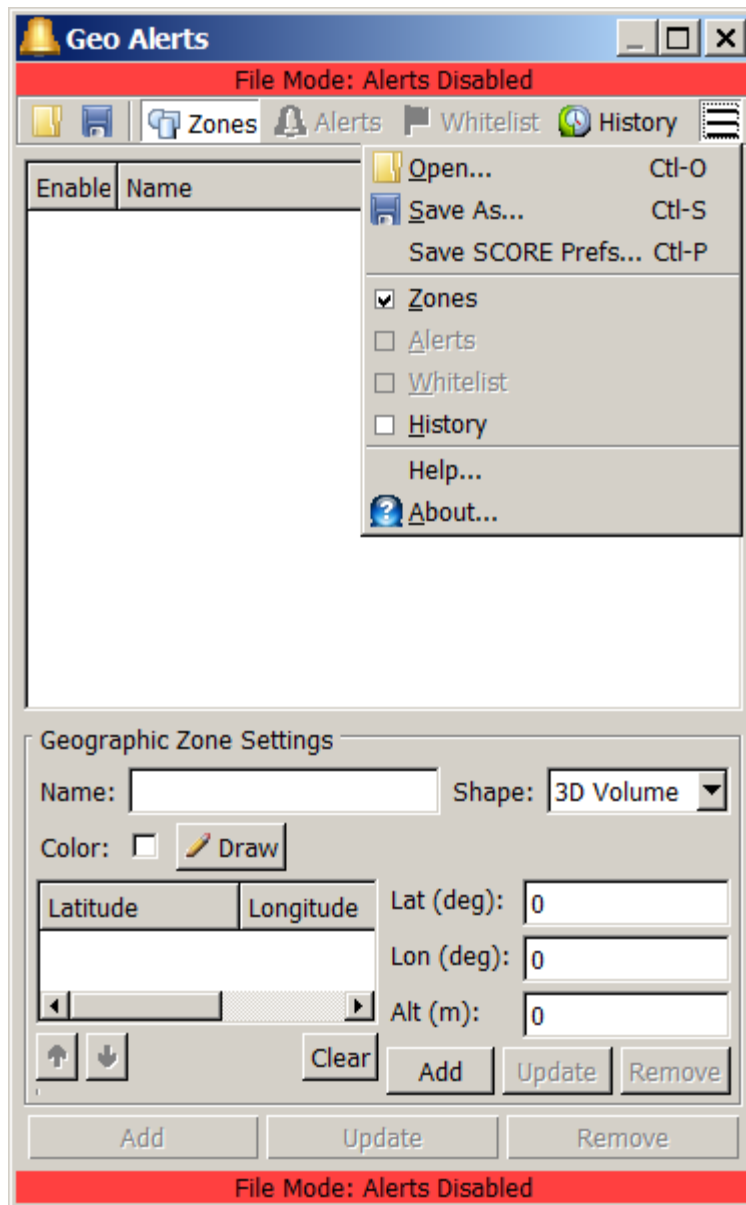
- The Plug-in Manager shows all plug-ins currently loaded in the application.
- There are two types of plug-ins that can be loaded. **Non-registered** plug-ins may be loaded and unloaded from any location. **Registered** plug-ins are installed to a specific directory based on the system settings, and are loaded automatically every time SIMDIS starts.


Geo Alerts Dialog



- **Once the Geo Alerts plug-in has been loaded it will appear in the Plug-ins menu.**

Geo Alerts Dialog

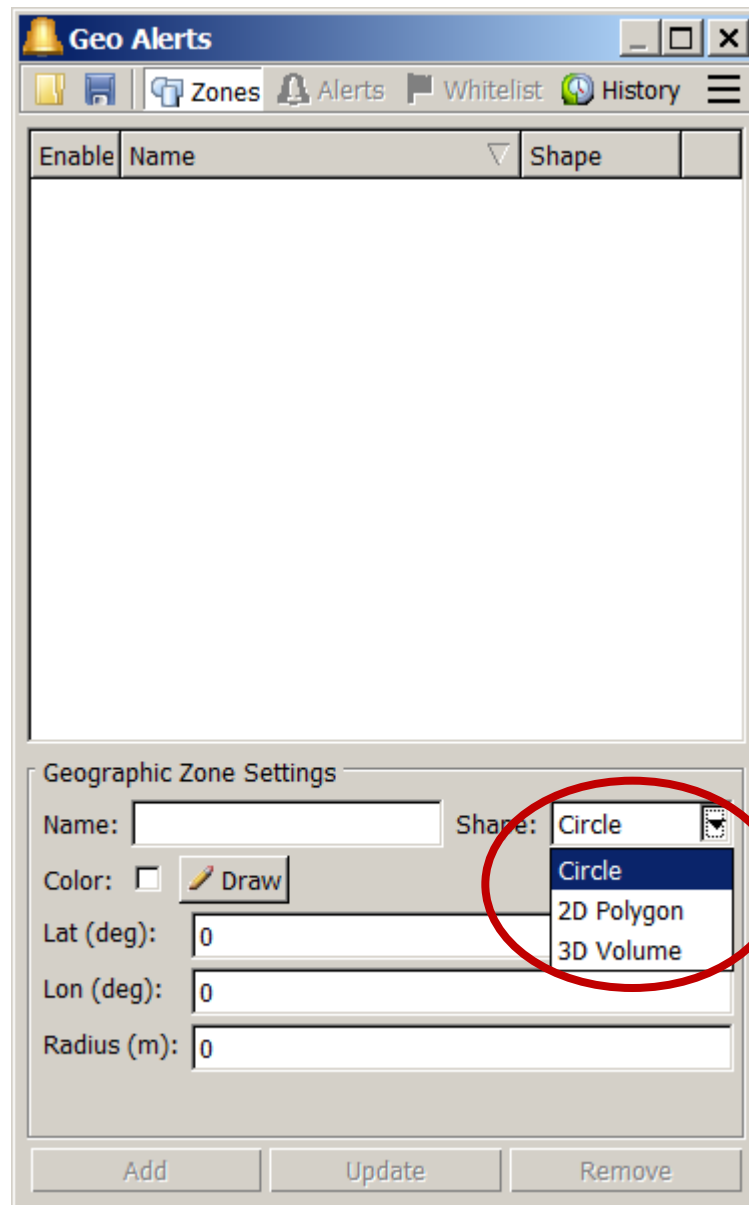


- Geo Alerts only work in Live Mode.
- Toolbar buttons allow the user to open and save alert configurations, edit the zones, alerts and whitelist as well as view the alert history.
- The menu button  allows the user to save zones in a SCORE file format as well as to configure the toolbar.
- Loading a Geo Alert file will clear everything. Loading a SCORE file will only append zones.



- **Live Mode Only:**
 - Alerts and history logging are operational.
- **File or Live Mode:**
 - Zones can be added, updated or removed.
 - Alert Options can be added, updated or removed.
 - Whitelisted platforms or categories can be added, updated or removed.
 - Configuration files can be loaded and saved.
- ***TIP: Configuration and setup of can be performed with an ASI file, however the actual alert notification will not occur until connected to a live data source.***

Adding a Zone



Geo Alerts

Enable Name Shape

Geographic Zone Settings

Name: Shape: Circle


Color: ☐ Draw

Lat (deg): 0

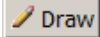
Lon (deg): 0

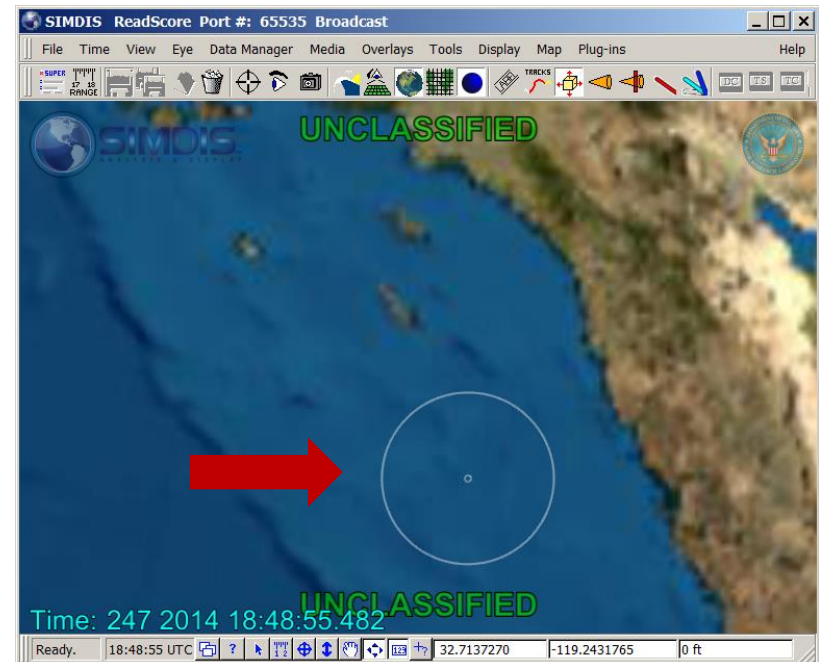
Radius (m): 0

Add Update Remove

- Enter zone name and select the zone shape you wish to add to the display. There are currently three shapes to choose from:
 1. Circle
 2. 2D Polygon
 3. 3D Volume
- Shapes can be entered manually or via the mouse in SIMDIS using the  Draw button.
- Concave shapes are not supported.

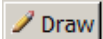
Adding a Circle Zone

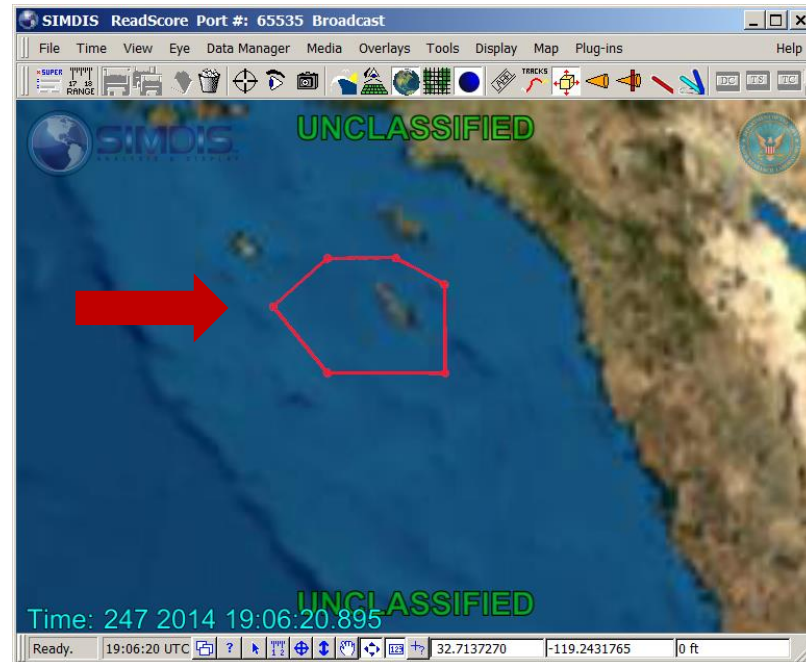
- Select the  **Draw** button and click to set the center in the display, drag to change the radius of the circle. A circle based on the selected color will appear in the display.
- Moving the mouse near the circle will increase the line width of the circle. This indicates the circle can be moved or resized via dragging when the left mouse button is pressed. Double clicking the left mouse will also change the location.
- Press **Add** to finalize the zone.
- Select the zone in the list to either update or remove it.
- A circle can also be added by entering the geodetic points and radius manually.





Adding a 2D Polygon Zone

- Select the  **Draw** button and click to enter the polygon vertices in the display. A polygon based on the selected color will appear in the display.
- Moving the mouse near the vertices will increase their line width. This indicates the vertices can be moved by dragging when the left mouse button is pressed. Clicking away from a vertex will add a new one.
- Concave polygons are not supported.
- Press **Add** to finalize zone.
- Select the zone in the top list to either update or remove it.











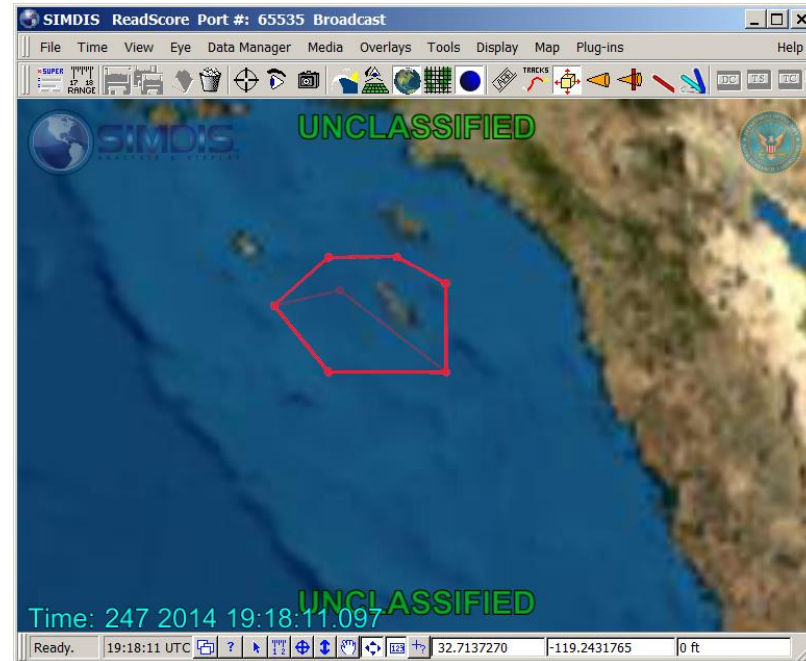
Manipulating Individual 2D Vertex

- Select an individual vertex in the list, then use buttons on left of list to **Add**, **Update** or **Remove**. The position of a vertex, relative to others, can also be changed via the yellow **Up** and **Down** arrow buttons.

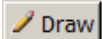
Latitude	Longitude		Lat (deg):	33.1846
32.909836	-119.344817		Lon (deg):	-118.983
33.184570	-118.983281			

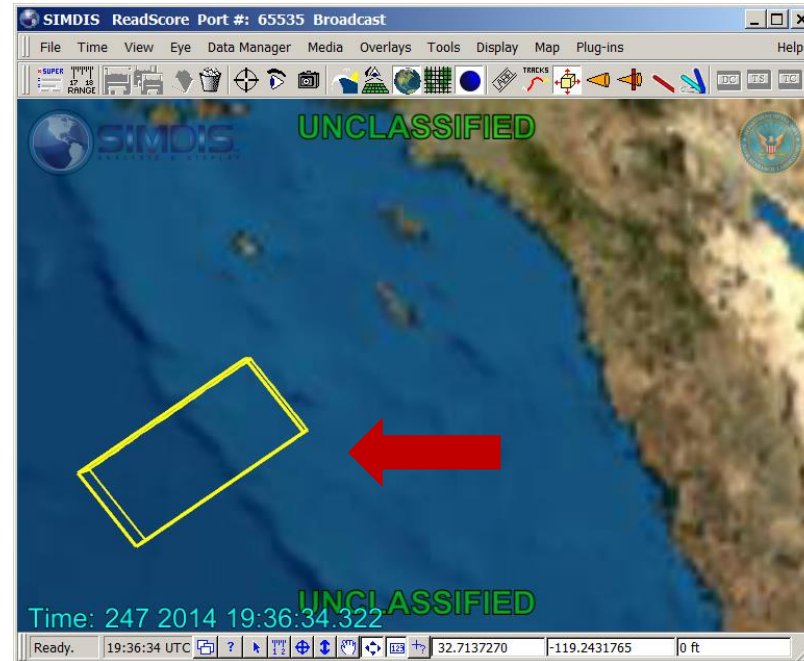
     

- Individual vertex access is useful for fixing convex polygons.
- If the entire shape is no longer desired, use the **Clear** button to remove all vertices.



Adding a 3D Volume Zone

- Select the  **Draw** button and click to enter the polygon vertices in the display. A volume based on the selected color will appear in the display.
- The volume has top and bottom planes that are exactly the same, but at different altitudes. The value in the **Altitude** text field is used for the top plane, the bottom plane uses 0 m. A value of 1000 m is used if no altitude is specified.
- Concave polygons are not supported.
- Press **Add** to finalize zone.
- Select the zone in the top list to either update or remove it.



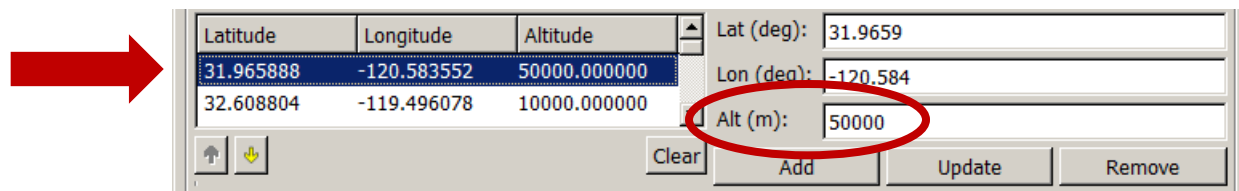
3D Volume Draw Mode

- Draw mode only works on initial creation, if no points are in the vertices list.
- Users cannot edit/add any vertices when in draw mode.
- Users cannot edit an existing volume with draw mode.
- Users can hand-edit vertices after draw mode is turned off.

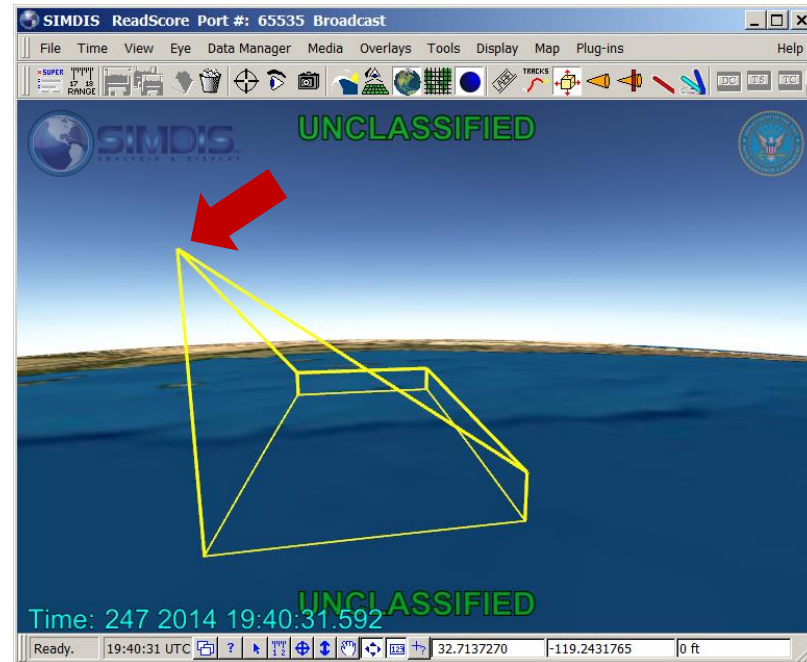


Manipulating Individual 3D Vertex

- Select an individual vertex in the list, then use buttons on left of list to **Add**, **Update** or **Remove**. The position of a vertex, relative to others, can also be changed via the yellow **Up** and **Down** arrow buttons.

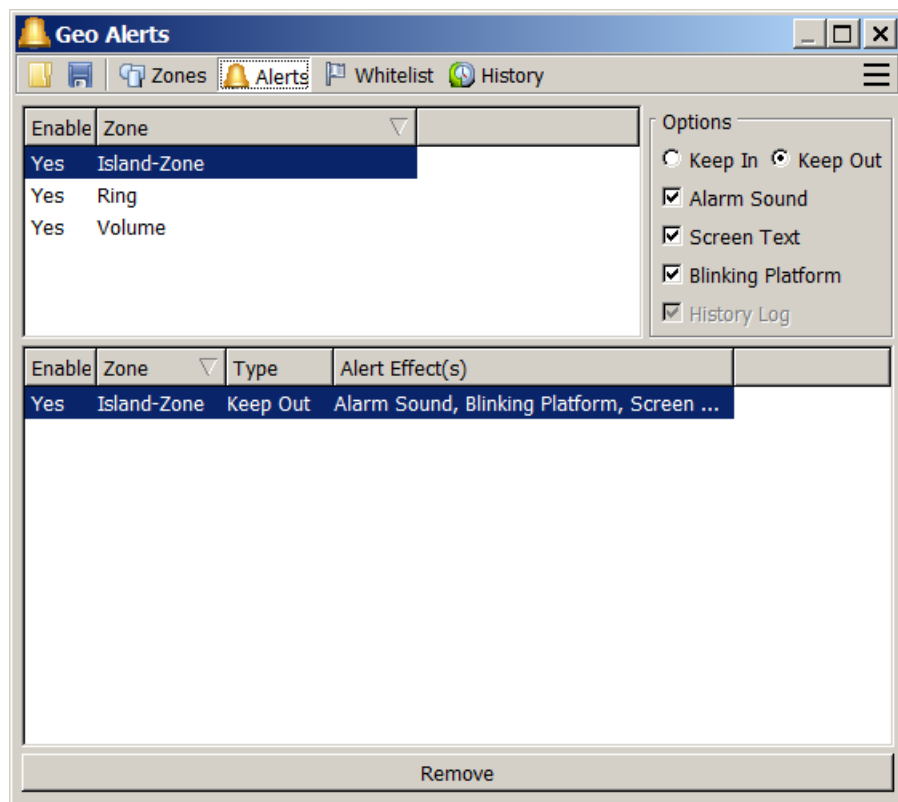


- Use the individual vertex access to change the altitude. A **Update** of the point as well as a **Update** of the Zone is needed to change the shape shown in the display.
- If the entire volume is no longer desired, use the **Clear** button to remove all vertices.





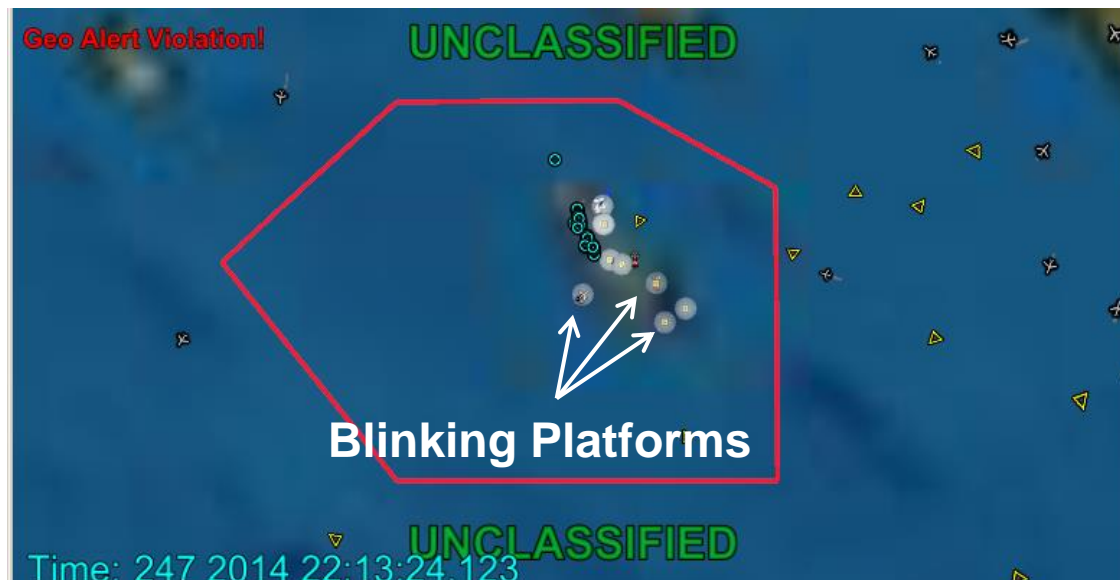
- A user can multi-select zones for removal.
- Only one zone can be selected for update.
- A zone name cannot be empty.
- Latitude and Longitude can be entered as D.D, DM.D or DMS
 - 32.7137270
 - 32 42.82362
 - 32 42 49.417
- Zones are sortable by column.
- Double clicking on a zone will center the view in SIMDIS on the first vertex.
- Change a zone active state by toggling the **Enable** checkbox.
- Disabling a zone also turns off the drawing in SIMDIS.
- A selected zone is always drawn in SIMDIS regardless of the **Enable** state.



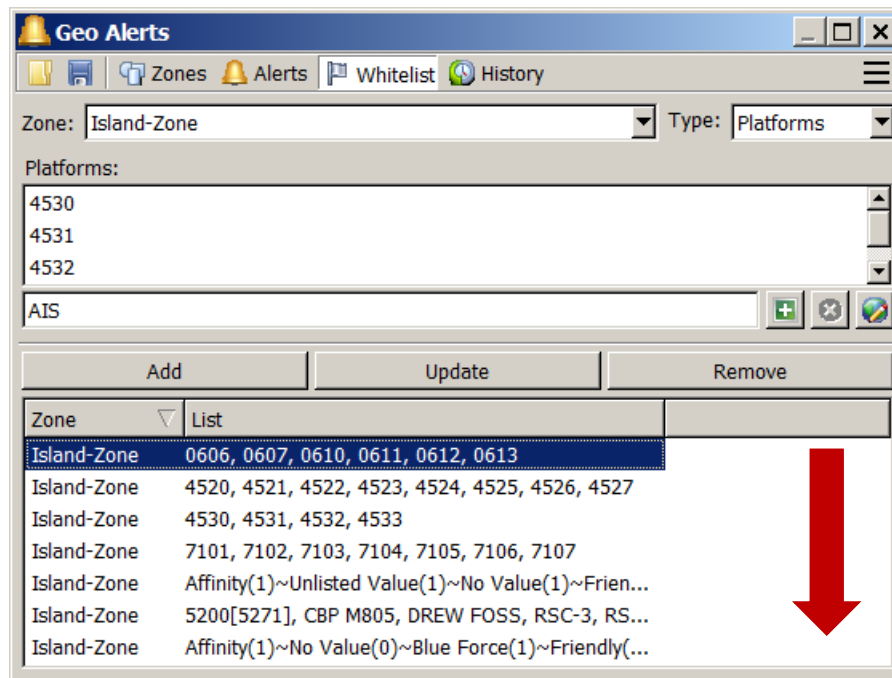
- Alerts Tab is enabled when there is at least one zone.
- The list of zones is sortable.
- Zones that are disabled are not monitored for alerts.
- **Keep In** will trigger an alert if any non-whitelisted platform appears outside a zone.
- **Keep Out** will trigger an alert if any non-whitelisted platform appears inside a zone.
- One or more alert effects can be assigned to a zone.
- History Log is automatically selected if any effect is enabled.

Alert Notifications

- **Alarm Sound:** A default beep is repeated until a zone has no more violations.
- **Screen Text:** Red text appears in the top left SIMDIS display.
- **Blinking Platform:** Highlights any platform violating a zone in SIMDIS.
- **History Log:** Log of tracks violating/clearing areas are kept. Logs are automatically kept whenever any alert is triggered for a zone, but users can specify to only log history.



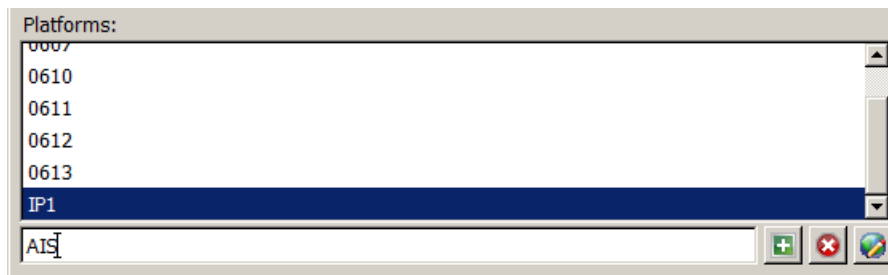
- Allows specific platforms or categories of platforms to be excluding from zone alerts.
- Select a zone to configure from the drop down menu.
- Select the type of whitelist to create.
- Multi-select can be used to remove multiple list types.
- Update only works on one list item.






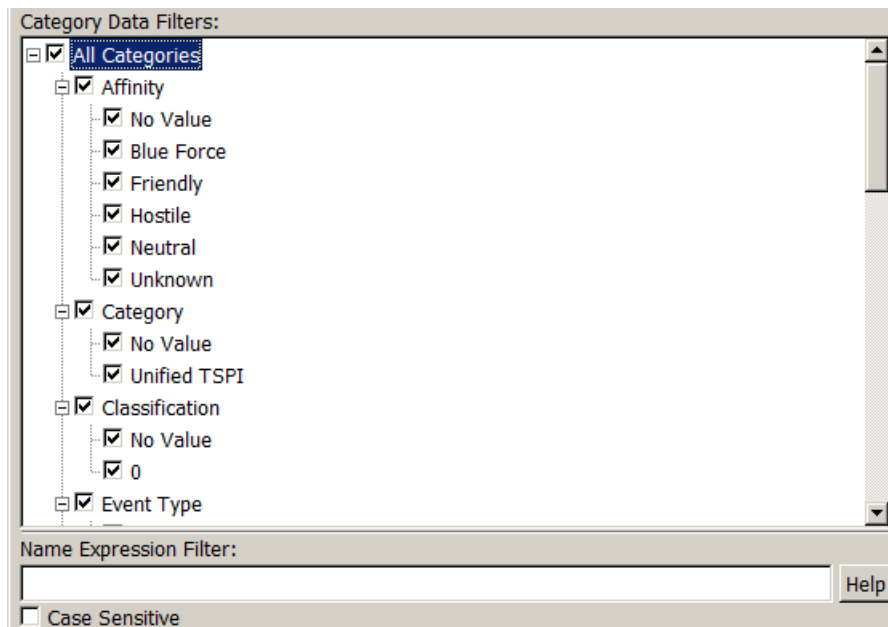
The screenshot shows the 'Geo Alerts' application window with the 'Whitelist' tab selected. The 'Zone' dropdown is set to 'Island-Zone' and the 'Type' dropdown is set to 'Platforms'. Below these, there is a list of platforms: 4530, 4531, 4532, and AIS. At the bottom, there is a table with columns 'Zone' and 'List'. The table contains several rows of data, with the first row highlighted. A large red arrow points downwards from the table area, indicating the processing order from top to bottom.

Zone	List
Island-Zone	0606, 0607, 0610, 0611, 0612, 0613
Island-Zone	4520, 4521, 4522, 4523, 4524, 4525, 4526, 4527
Island-Zone	4530, 4531, 4532, 4533
Island-Zone	7101, 7102, 7103, 7104, 7105, 7106, 7107
Island-Zone	Affinity(1)~Unlisted Value(1)~No Value(1)~Frien...
Island-Zone	5200[5271], CBP M805, DREW FOSS, RSC-3, RS...
Island-Zone	Affinity(1)~No Value(0)~Blue Force(1)~Friendly(...

Whitelists are processed from top to bottom.

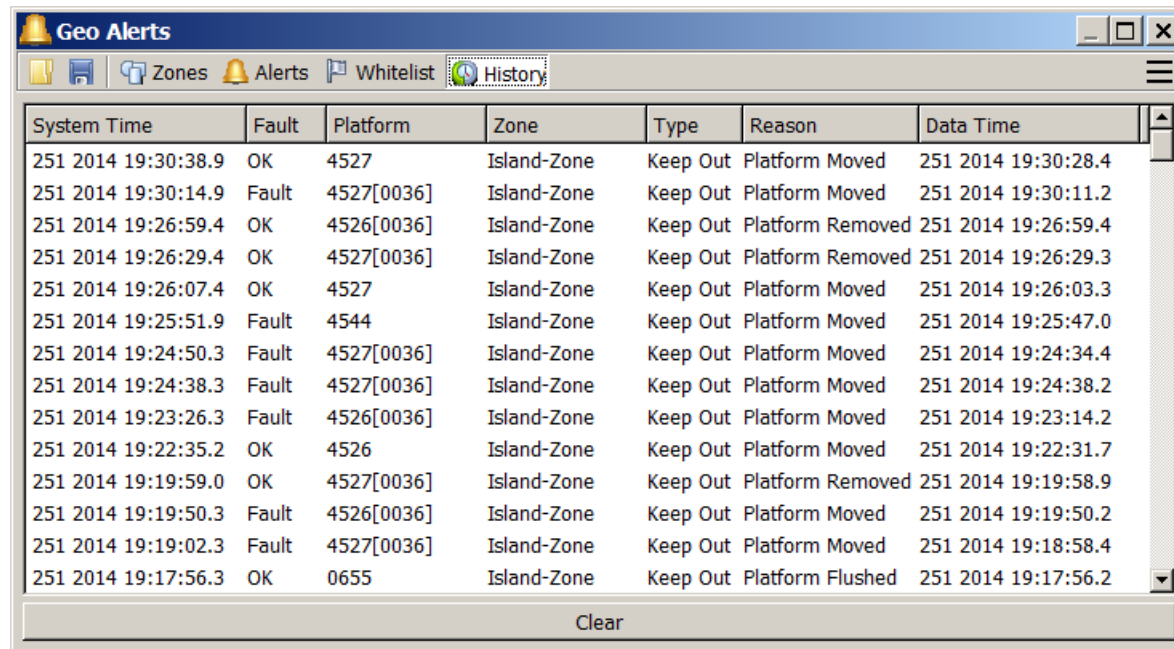


- Platform name must be identical to one found in SIMDIS.
 - Name comparison is case insensitive
 - » IP1 will match ip1
- Names can be typed in the text field or picked from SIMDIS via the  button.
- Enter a name into the platforms list via the  button.
- Remove a name from the platforms list via the  button.
- After creating all platform names to be whitelisted, click **Add** to add the new list.



- Select desired category, then click **Add** to create a new list.
- Use the **Name Expression Filter** to match platform names via regular expressions. The **Help** button lists typical examples.
- More than one set of categories or name expressions can be added to the whitelist.
- Behaves like preference rules, where a new whitelist may modify behavior of a previous entry.

- A history of all platforms that either trigger or clear violations are logged.
- The most recent time is at the top of the list.
- The maximum history shown in the dialog is 500 rows.
- The **Clear** button clears out all rows.
- Currently the log cannot be saved to a file.



The screenshot shows a window titled "Geo Alerts" with a menu bar containing "Zones", "Alerts", "Whitelist", and "History". The "History" tab is selected, displaying a table of alert events. The table has seven columns: System Time, Fault, Platform, Zone, Type, Reason, and Data Time. The data is sorted by System Time in descending order. At the bottom of the window is a "Clear" button.

System Time	Fault	Platform	Zone	Type	Reason	Data Time
251 2014 19:30:38.9	OK	4527	Island-Zone	Keep Out	Platform Moved	251 2014 19:30:28.4
251 2014 19:30:14.9	Fault	4527[0036]	Island-Zone	Keep Out	Platform Moved	251 2014 19:30:11.2
251 2014 19:26:59.4	OK	4526[0036]	Island-Zone	Keep Out	Platform Removed	251 2014 19:26:59.4
251 2014 19:26:29.4	OK	4527[0036]	Island-Zone	Keep Out	Platform Removed	251 2014 19:26:29.3
251 2014 19:26:07.4	OK	4527	Island-Zone	Keep Out	Platform Moved	251 2014 19:26:03.3
251 2014 19:25:51.9	Fault	4544	Island-Zone	Keep Out	Platform Moved	251 2014 19:25:47.0
251 2014 19:24:50.3	Fault	4527[0036]	Island-Zone	Keep Out	Platform Moved	251 2014 19:24:34.4
251 2014 19:24:38.3	Fault	4527[0036]	Island-Zone	Keep Out	Platform Moved	251 2014 19:24:38.2
251 2014 19:23:26.3	Fault	4526[0036]	Island-Zone	Keep Out	Platform Moved	251 2014 19:23:14.2
251 2014 19:22:35.2	OK	4526	Island-Zone	Keep Out	Platform Moved	251 2014 19:22:31.7
251 2014 19:19:59.0	OK	4527[0036]	Island-Zone	Keep Out	Platform Removed	251 2014 19:19:58.9
251 2014 19:19:50.3	Fault	4526[0036]	Island-Zone	Keep Out	Platform Moved	251 2014 19:19:50.2
251 2014 19:19:02.3	Fault	4527[0036]	Island-Zone	Keep Out	Platform Moved	251 2014 19:18:58.4
251 2014 19:17:56.3	OK	0655	Island-Zone	Keep Out	Platform Flushed	251 2014 19:17:56.2

Clear

History Tab Columns

- **System Time:** Host computer time when the event occurred.
- **Fault:** "OK" means platform cleared the zone, "Fault" means platform violated the zone.
- **Platform:** Name of platform that cleared or violated the zone.
- **Zone:** Name of zone that was violated or cleared.
- **Type:** Type of alert, i.e. alarm, screen text, blinking platform.
- **Reasons:** Reason for log entry.
- **Data Time:** For "Platform Moved" entries, the data time refers to the platform data point time, otherwise it is the system time when the event occurred.

History Entry Reasons

- **Alert Added:** The platform violates the zone because a new alert was just added for the zone.
- **Alert Removed:** The platform clears the zone because an alert was just removed for the zone.
- **Platform Flushed:** A data flush was executed by SIMDIS, which clears all data and violations.
- **Platform Moved:** The platform moved in/out of a zone.
- **Platform Removed:** The platform cleared because it was deleted from SIMDIS.
- **Whitelisted:** The platform no longer violates the zone because it was added to a whitelist.
- **Whitelist Removed:** The platform violates the zone because it was removed from a whitelist.
- **Zone Updated:** The zone moved or was updated (Keep In/Out), causing platforms to now violate/clear the zone.



- All events that are added to the History Tab are also logged to a file on disk
- Location
 - Windows: %APPDATA%\Naval Research Laboratory\logs
 - Linux: \$HOME/.config/Naval Research Laboratory/logs
- File Details
 - Cycled automatically every 14 days
 - CSV format, loadable in Microsoft Excel
 - Name: geoalerts_date_time_processid.log

The End