

# Met. Display Console<sup>©</sup> (Previously 'Satellite Squall Tracker'<sup>©</sup>) Ver. 3.1.5

# **User's Manual**



## **Table of Contents**

## Contents

Introduction
Minimum Hardware Requirements4
Available Plugins4
Ess Satellite Manager4
BoM Satellite Manager4
Slider Satellite Manager4
Ceres Satellite Manager5
BoMRadar Image Manager5
NoaaSteering Wind Manager5
Sat Algorithm Manager5
Starting Met Display Console
Met Display Console Status Bar and Menu8
Error Indicator Panel
Menu Items
The Display Specific Settings:
Coast Lines Settings:
Movie Settings:
Warning Sound Settings:14
Plugin Manager Settings
Setting Up Sites of Interest
Basic Help17
About Met Display Console
Appendix
Creation of Coastline File

**NOTE**: For users who hate reading manuals, please at least look at page 11 for important tips, in yellow boxes like this one.

## Introduction

In the field of Meteorology, there is a requirement to be able to visualise various environmental parameters in a geographical mapping format, such that one parameter may be visually superimposed upon another in the same time frame, in order to see the effect of one parameter on another. This requirement is further enhanced when a time series of superimposed images is displayed over a suitable period.

This Display Console allows Meteorological data to be layered one on top of another (e.g. satellite channel imagery on radar imagery, on a map of Steering Winds) in a time series. Each layer's imagery is downloaded or computed by a Plugin DLL (Dynamic Linked Library) that is loaded only when necessary. Each DLL runs in its own process (thread) thereby making maximum usage of today's multi-threaded processors.

At startup, the Display Console waits for the user to select a pre-configured Display Setting, which specifies various sub-settings pertaining to the display, the Plugins required and the Site(s) to display on the final display.

Once the Display Setting has been selected, the Display Console will load the Plugin DLLs and instruct them to start preparing their respective images. One Plugin is designated the 'primary' Plugin, and this Plugin controls the timing of the other Plugins, e.g. Satellite channel(s) received every 10 minutes acting as the 'primary', will dictate that other images from 'secondary' Plugins will also display every 10 minutes (to the nearest time frame available).

Each Plugin reports back to the Display Console when their images are ready, but the display is not updated until the 'primary' Plugin is ready. At that time, the 'primary' images are used as a base upon which the other images are superimposed, which is finally displayed.



The Display Console also offers the following functionality:

- Saving the current image as a JPG, PNG or BMP
- Saving the current image loop as an animated GIF
- Saving the current image loop as a movie (MPEG4)
- Displaying a vertical profile graph of data specified by a user drawn line on the image (providing the Plugin can offer this data)
- Displaying Pixel or Lat/Long co-ordinates of the mouse pointer's current position over the display
- Displaying the value of the pixel directly under the mouse pointer (if the data is available from the Plugin), for any of the layers, on the Status Bar
- Ability to change the configuration of the Display Setting, and each loaded Plugin's settings
- Ability to sound a warning or alarm if a site is deemed to be in danger from some weather phenomenon computed within a Plugin

### **Minimum Hardware Requirements**

Processor: 64-bit architecture, i5 or better (or equivalent). Operating System: Windows 10. Memory: 8GB of RAM (preferably 16GB) Storage: 20GB of free space or more Screen resolution: 1920 x 1080.

### **Available Plugins**

The following Plugin DLLs (aka Managers) are available (at time of writing):

#### **Ess Satellite Manager**

This Plugin supplies satellite images derived from data sourced from OWS (Offshore Weather Services). The multi-channel data are downloaded and saved to a local repository. The data (reflectance and temperature values) are converted to images for each channel, together with appropriate colour bars. No re-projection is required. The images, colour bars and data values are made available to the Display Console.

#### **BoM Satellite Manager**

This Plugin supplies satellite images sourced from the Australian Bureau of Meteorology. The VIS (Red Band) and IR1 (Band 13) images are downloaded and saved to a local repository. The data (reflectance and temperature values) are computed from the image colours for each channel, together with appropriate colour bars. No re-projection is required. The images, colour bars and data values are made available to the Display Console. Note that IR2 (Band 15) images are not available. *A licence is required from BoM for commercial use*.

#### **Slider Satellite Manager**

This Plugin supplies satellite images sourced from RAMMB/CIRA@CSU. The VIS (Red Band), IR1 (Band 13), IR2 (Band 15) and GeoColor (processed) images are downloaded as tiles, which are then stitched together and re-projected into a linear LAT/LON projection using the GDALWARP utility, and saved to a local repository. Unfortunately, the data (reflectance and temperature values) cannot be computed from the image colours for each channel, as they do not coincide with the online colour bars. The colour bars are created directly from the online versions. The images and colour bars (but not data values) are made available to the Display Console. *Can only be used for research purposes*.

#### **Ceres Satellite Manager**

This Plugin supplies satellite images sourced from CERes. The VIS (vis.01), IR1 (tir.01), IR2 (tir.03) and IR3 (tir.08) data channels are downloaded (for the entire hemisphere), which are then cropped to the area of interest, and saved to a local repository. The images, data and colour bars are made available to the Display Console. *Can only be used for research purposes*.

#### **BoM Radar Image Manager**

This Plugin supplies radar images sourced from the Australian Bureau of Meteorology. The images are downloaded and saved to a local repository. Sprites are (optionally) removed from the images (actually all white pixels are removed, which also removed light rain, leaving only blue values and above). The images (but not data values) are made available to the Display Console.

#### **Noaa Steering Wind Manager**

This Plugin supplies forecast wind map images derived from data sourced from NOAA (nomads.ncep.noaa.gov). Multi-level wind data can be downloaded and saved to a local repository. The data are converted to images (from a GRIB format), and the images and data values are made available to the Display Console.

#### Sat Algorithm Manager

This Plugin alerts the user of an impending squall within a given radius of one or more specific locations of interest. It imports temperature data from other satellite Plugins (via the Display Console) to produce images and squall tracks. Various algorithms are incorporated within the Plugin, specifically the **Indonesian Squall** algorithm, and the **Indonesian Cloud** (both require IR1 and IR2 temperature data), the **ESS Convection** algorithm (requires IR1, IR2 and IR3 temperature data), and the naive **Temperature Only** algorithm which requires IR1 temperature data only.

Each Plugin can reference different settings for its type, e.g. the Slider Satellite Manager can reference settings for the Perth area (SliderSatelliteImageManager-Perth.json), or the North West Shelf area (SliderSatelliteImageManager-NWS.json).

## **Starting Met Display Console**

The Display Console can be started in two ways, 1) via user interaction, or 2) via a Windows short-cut in which the command line argument (-startWith: SliderSatelliteImageManager-NWS.json) is given. The first method requires that the user choose a Display Setting:



Where the user **right** clicks anywhere on the Console window:



And selects "Open Display Settings File":

🧱 Open Display Settings File			×
$\leftarrow \rightarrow \checkmark \uparrow$ 🗌 « Local Di	sk (C:) → MetDisplayConsole → ~	ල් Search MetDis	playConsole 🔎
Organise 🔻 New folder			H • 🔳 🕐
Documents	Name	Date modified	Туре
Pictures	Data	18/07/2019 2:59 PM	File folder
💻 This PC	📙 Logs	19/07/2019 12:00	File folder
3D Objects	Plugin Files	18/07/2019 2:58 PM	File folder
Desktop	SavedImages	19/07/2019 7:50 AM	File folder
Documents	Andaman.EssSat-Wind-Algorithms.json	18/07/2019 10:30	JSON File
Downloads			
b Music			
NephiSys Folder			
E Pictures			
🐺 Videos			
Windows Phone			
🐛 Local Disk (C:)			
🛥 Windows (D:) 🛛 👻	<		
File <u>n</u> ame:	Andaman.EssSat-Wind-Algorithms.json	✓ Display Settin	gs files (*.json) 🛛 🗸
		<u>O</u> pen	Cancel

The second start method is via a Windows short-cut which specifies the name of the Display Settings file to run. Windows will invoke the Display Console with the specified file name and the Console will start by automatically running the Settings file. The command line argument is "-startWith", e.g.

"C:\Program Files\Meteosoft\Met Display Console\MetDisplayConsole.exe" -startWith: ExampleManager-NWS.json

Once the user has selected the Display Settings, the Console will load the Plugins specified in the settings and downloads will begin.



Depending on what data or images have already been downloaded, the periods before the image loop appears can differ considerably. The length of the image loop (default is 60 minutes, but can be 180 - 240 minutes) will also affect the initial load time.

No images will be displayed until the 'primary' (usually a satellite manager) Plugin has completed its download. If the 'primary' Plugin images complete before the other Plugins, then the 'primary' images will be displayed without the other images, until those images are available, in which case the image loop will update to include those images.

To start Display Console in **manual** mode (i.e. to visit some historical data), the Console must be invoked from the command line or from a Windows Shortcut, using the argument:

MetDisplayConsole.exe -m

The user may now click on 'Open a Display Settings File' in the menu. They are then required to specify the date/time of the **LAST** image in the loop of images they wish to view:

Specify Last Date/Time of Image					
Specify the End of the Sequence Date/Time:	07-Aug-2019	9 12:21			
	Cancel	Start			

It is assumed that the files containing the data they wish to peruse are already in the appropriate data folders. They are then asked to wait while the program loads and processes the files, before displaying the images in a loop.

## Met Display Console Status Bar and Menu

The status bar (bottom of the Console's window) shows the status of various application variables.

#### **Error Indicator Panel**



Should an error occur within the Display Console, a Red cross will replace the Green tick that appears on the left hand side of the status bar:

X 28.000°S 113.529°E	Auto Sound	On No Warnings	11/07/19 05:16:30Z
*			

Û

Clicking on the tick or cross will open the Debug Log window, where a real-time view of what the Console or the Plugins are doing, is displayed:

	Debug Log			×
	Filter: 🔘 A	I O Information O Warning O Error O Satellite O Radar O Winds		
11	13:10:0	O Memory Used: 1441 MB		~
11	13:10:0	3 SliderSatelliteImageManager: Downloading files for: VIS at 11/02:40		
11	13:10:0	3 SliderSatelliteImageManager: Image: VIS at 11/02:40 not available		
11	13:10:0	3 SliderSatelliteImageManager: Downloading files for: IR1 at 11/02:40		
11	13:10:0	3 SliderSatelliteImageManager: Image: IR1 at 11/02:40 not available		
11	13:10:0	3 SliderSatelliteImageManager: Downloading files for: IR2 at 11/02:40		
11	13:10:0	4 SliderSatelliteImageManager: Image: IR2 at 11/02:40 not available		
11	13:10:0	4 SliderSatelliteImageManager: Images for 11/02:40 took 3ms to process		
11	13:10:0	4 SliderSatelliteImageManager: Images for 11/02:30 took 27ms to process		
11	13:10:0	4 SliderSatelliteImageManager: Images for 11/02:20 took 24ms to process		
11	13:10:0	4 SliderSatelliteImageManager: Images for 11/02:10 took 23ms to process		
	13:10:0	6 Retrieved new images from SliderSatelliteImageManager		
	13:10:0	6 Retrieved new images from RadarImageManager		
	13:10:0	7 Retrieved new images from PerthSteeringWindManager		
	13:10:0	2 Creating the final image		
	13:10:1	Z Radarimagemanager: Retrieved bom FIP directory listing		
	12.10.1	5 Radarimagemanager: Gelimages() Look Joins Lo run		
	12.11.0	O Magner Lead, 820 MB		
	13.11.0	G Memory Used. 620 Mb		
111	13.11.0	2 SliderSatelliteImageManager, Image, VIS at 11/02:40 not available		
11	13-11-0	2 SliderSatelliteImageManager: Downloading files for: TR1 at 11/02:40		
11	13:11:0	3 SliderSatelliteImageManager: Image: TR1 at 11/02:40 not available		
11	13:11:0	3 SliderSatelliteImageManager: Downloading files for: IR2 at 11/02:40		
11	13:11:0	3 SliderSatelliteImageManager: Image: IR2 at 11/02:40 not available		
11	13:11:0	3 SliderSatelliteImageManager: Images for 11/02:40 took 4ms to process		
11	13:11:0	3 SliderSatelliteImageManager: Images for 11/02:30 took 27ms to process		
11	13:11:0	4 SliderSatelliteImageManager: Images for 11/02:20 took 31ms to process		
11	13:11:0	4 SliderSatelliteImageManager: Images for 11/02:10 took 29ms to process		
11	13:11:0	5 Retrieved new images from SliderSatelliteImageManager		
11	13:11:0	6 Retrieved new images from RadarImageManager		
11	13:11:0	6 Retrieved new images from PerthSteeringWindManager		
11	13:11:0	6 Creating the final image		
				×

#### Menu Items

The other menu items perform the following:



**Reload Images**: Forces the Display Console to reload the images from the Plugins

Save Image:

As Single Image As Animated GIF As Movie Allows the user to save the current image, or to save the image loop as an animated GIF or MPEG4 file

**Draw Profile Line**: Allows the user to draw a profile line on the image for when they wish to view the reflectance, temperatures or wind data along that profile line, on a graph. The user first clicks on the "Draw Profile Line" menu item, when a cross cursor appears. They then click on a start point (and RELEASE the mouse button) and move to an end point, when a red line will appear from the start position to the mouse pointer (the loop will automatically pause):



The user then clicks (and releases) the end point to finish and a graph will appear showing the reflectance values or temperatures of the cloud tops along the profile line:

	$\bigwedge$	A			
	$\int$	A	$\beta$	$\gamma$	
	$\square$	A	$\sim$		
					• • • • • • • • • • • • • • • • • • • •
•••••••		1 /han			
				····{····	
$\sim$	$\mathcal{I}$	~~~	$\neg$		
					• • • • • • • • • • • • • • • • • • • •
	10	11	12		13
	· · · · · · · · · · · · · · · · · · ·		9 10 11 Coordinates: Latitude (Dista	9 10 11 12 Coordinates: Latitude (Distance: 423kms)	9 10 Coordinate: 1 atiliude (Distance: 421km)

Note that in the above example, the X-Axis shows the Latitude, as the profile line is orientated more North-South than East West. If the line were more horizontal, the X-Axis would show Longitude.

Also note that the distance between the two points is displayed in brackets after the X-Axis label.

To revert to normal mode, press the [Esc] key to hide the graph, and press [Esc] again to remove the red profile line from the image.

If the data being profiled happens to be wind data (see "Display StatusBar Values From" below), then the following graph is displayed:



✓ **Display Pixel Coordinates On Status Bar (Ticked)**: The mouse pointer position is displayed in Pixels: X pos, Y pos:



**Display Pixel Coordinates On Status Bar (Unticked):** The mouse pointer position is displayed in Latitude and Longitude:

 ✓ 33.201°S 114.612°E
 PAUSED
 Auto
 Sound On
 No Warnings
 11/07/19 05:49:46Z

**Display StatusBar Values From...:** 



Provided the Plugin has data for the image it displays, this menu item allows the user to choose what values to display on the status bar (and profile graphs) when the mouse is moved over pixels on the display, e.g. The VIS channel (Band 3) will display Reflectance data (0-100%), or IR channels will display temperature data. The Steering Wind Plugin will display wind values at the current mouse pointer position:

```
✓ 34.168°S 113.001°E [241/22kts] PAUSED Auto Sound On No Warnings 11/07/19 06:05:27Z
```

If the sound is On, then **Sound On** is displayed on the status bar, otherwise it will show **Sound Off**.

#### **Paused Panel**

If the image loop is currently paused, then **PAUSED** is displayed on the status bar, otherwise it will display **Auto** in normal mode, or **MANUAL** in manual mode.

**NOTE**: The image loop can be paused and unpaused by hitting the [**P**] key or **SPACE** bar on the keyboard. The [ $\leftarrow$ ] or [ $\rightarrow$ ] keys will also pause the loop, and then move the display to the previous or next time frame in the loop.

#### Warnings Panel

If a warning is currently in place, then this panel will display **WARNING** in red. If an alert is in place then the panel displays **DANGER**.

#### **Date and Time Panel**

This panel displays the date and time in UTC.

**NOTE**: The Plugin managers specify their own short-cut keys. For example, the satellite Plugins may specify their short-cut key to be 'S', which when pressed, will cause the next available Plugin image to be displayed, i.e. from VIS, to IR1 to IR2, to OFF. Conversely, [Shift] 'S' will cycle backwards to the previous image type. Radar and Wind images typically use 'R' and 'W' respectively, and will cycle from ON to OFF. The Algorithm Plugin (using 'A') will cycle through the available algorithms. The Algorithm Plugin also allows the user to change the algorithm's minimum squall value, by pressing [Alt] plus a number representing that value.

#### **Change Settings**

To edit the currently loaded Display Settings, click on the menu item 'Change Settings':

NOTE: A separate utility, MDC Config, is available to edit any Display Settings without having					
to run Met Display Console. Run the utility and after the initial dialog is presented:					
Met Display Console Configuration					
Configuration File Name: C:\MetDisplayConsole\Andaman.EssSat-Wind-Algorithms Select Configuration Configure Existing New Configuration Close					
Select the Display Settings (Configuration File) to edit and click on [Configure	Existing], then				

Select the Display Settings (Configuration File) to edit and click on [Configure Existing], then configure the settings as described below. The user may also create a new Display Settings by clicking [New Configuration].

**NOTE**: Although the Display Console does not have a zoom capability, the user may enlarge the Display Console by pressing the numeric keyboard '+' key, or reduce the size by pressing the numeric keyboard '-' key. Menu options are also available to increase or decrease the window size.

Display Console	e Settings						
Display Spo ap Display Name relude. EssSat-R bocal Data Path of Data \ it.Resize Factor: 2.0	ecific Setti :: adar-Wind-Alo ff Working Dir Label > 20	porithms rectory (Offset:	Loop 2 Long. 3 Start Labe 5	Period (ms): M 50 🔹 Line Gap°: La d Y Pos: Lab	nutes To Loop: Km 60 🗼 t. Line Gap*: Tin 3 ÷ IY Gap: Im 15 ÷	ns Per Pixel: 4.0 ÷ ne Gap (Mins) 10 ÷ age Label Size 8 ÷	□ Resize Labels?       Default Map Extent         Top Left Lat*:       Top Left Long*:         9.0 (*)       118.0 (*)         Change these in the primary plug in!       Bot Right Lat*:       Bot Right Long*:         13.0 (*)       13.0 (*)
Plugin Man	agers						Coast Lines Coastline File Name: Coastline Colour:
DII Name		Run Dll? U	serKey C	an Be Primary?	Is Primary?		Coastline Corr (X): Coastline Corr (Y): Coast Pen Size:
Essoatellitelmag	eManager	Yee 5		Ven	Tes No		-3 -3 0 - 1 - Show Coast?
Noss Steering W	lindManager	Yee V	N N	Yes	No	1	
Sat Algorithm Ma	nager	Yes A		No	No		
	- age					500	Movie Settings
							G Smoot Maria and 10 pin to 2
							Export Movies every 10 minutes?
							Export Destination Path:
		Delete A		Eda Managara	Add Manager	i l	Itp://ttp.dsduncs.com/www/latest/
		Delete IV	lanager	Edit Manager	Add Manager	- J.	Movie File (No Ext): FTP User Name: FTP Password:
							meteosoft@dsduncs.com ?
Sites Of Int	erest						
				-1		, I	Cound Corners Image Catting
Site Name	Site Label Po	os Latitude	Longitude	e Show Site?	Warning Radius 🔨		Saved Screen Image Setungs
Dampier B10E	TopLeft	20.64°S	118.00°E	Yes	0		Days To Keep Images: Saved Images Sub Dir
EnfieldRegion	TopLeft	21.50°S	114.10°E	Yes	0		3 🗧 Prelude
Broome	TopLeft	17.95°S	122.23°E	Yes	0	4	<u></u>
Port Hedland	TopRight	20.33°S	118.61°E	Yes	0		Warning Sounds
Prelude	TopLeft	13.79°S	123.31°E	Yes	180		warning Sounds
Browse	Bottom Right	14.11°S	123.55°E	Yes	0	9	Warning Wave File Name: Danger Wave File Name:
Troughton	TopLeft	13.75°S	126.15°E	Yes	0		Notify.wav Alam.wav
Lombadina	TopLeft	16.52°S	122.92°E	Yes	0		Warning Wave File Period: Danger Wave File Period:
Donuin K	Tool off	10 / 5°C	100 00°⊏	Voo	^ ````		15 🔹 30 🜲
•					/		Time For Sound Reset:
				Ca E la	Ca. Add Ca.		
			Del	Site Edit	Site Add Site		0

#### The Display Specific Settings:

Display Specific Settings			
Map Display Name:	Loop Period (ms): Minutes To Loop:	Kms Per Pixel:	Default Map Extent
Prelude.EssSat-Radar-Wind-Algorithms	250 🜩 30 🜩	4.0 Resize Labels?	Top Left Lat°: Top Left Long°:
Local Data Path off Working Directory	Long. Line Gap°: Lat. Line Gap°:	Time Gap (Mins)	-9.0 🜲 118.0 🜲
Data	3 🔹 3 🔹	10 🖨	Channel Hannel, Day Distant and Day Distant and
Init.Resize Factor: Label X Offset: St	tart Label Y Pos: Label Y Gap:	Image Label Size:	in the primary
2.0 🗘 20 🖨	5 💠 15 🜩	8 🖨 🔍	plug-in! -21.0 V 133.0 V

Map Display Name: The name of the map display. This value is displayed on the title bar of the Display Console: Met. Display Console © Ver: 3.1.3 - Prelude.EssSat-Radar-Wind-Algorithms (Scale: x2.00). It is suggested that the

name gives some idea of what functionality is available.

Loop Period: Number of milliseconds between frames when looping.

Minutes To Loop: The number of minutes of data to loop.

**Kms Per Pixel**: The default number of kilometres per pixel of base image. This is overridden by the primary plugin when it is loaded.

Long. Line Gap: The gap between drawn lines of longitude on the display.

Lat. Line Gap: The gap between drawn lines of latitude on the display.

- **Time Gap**: The default time gap between the images. This is overridden by the primary plugin when it is loaded.
- **Init. Resize Factor**: The amount the Display Console should be enlarged (> 1.0) or reduced (< 1.0) from the base satellite image size.

Label X Offset: The X offset of all labels on the image.

Start Label Y Pos: The starting Y offset of all labels on the image from the top of the display.

Label Y Gap: The Y offset gap between labels on the image.

Image Label Size: The default label font size for the all labels.

**Resize Labels?** : Should we resize labels as we resize the map? Otherwise the labels are always the original size

**Top Left Lat**: The Top/Left latitude of the map display.

**Top Left Long**: The Top/Left longitude of the map display.

Bot Right Lat: The Bottom/Right latitude of the map display

Bot Right Long: The Bottom/Right longitude of the map display

#### **Coast Lines Settings:**

Coast Lines				
Coastline File Name:	Coastline Colour:			
SandwichCoastlineHiRes.txt Aqua 🗸				
Coastline Corr (X): Coastline Corr (Y): Coast Pen Size:				
0 0 1	Show Coast?			

**Coastline File Name**: The full path and file name of the coast line table. If no path is given, the working directory is assumed.

[...]: Select a coast line file to use.

Coastline Colour: The colour to use to draw the coast line.

Show Coastline? : Should we display the coast line?

**Coastline Corr (X)**: The horizontal coastline correction.

**Coastline Corr (Y)**: The vertical coastline correction.

**Coast Pen Size**: The pen size to draw the coastline - default is 1.

#### **Movie Settings:**

Movie Setting	a	
Export Movies even	ery 10 minutes?	
Export Destination Pa	th:	
ftp://ftp.dsduncs.con	n/www/latest/	
Movie File (No Ext):	FTP User Name:	FTP Password:
	meteosoft@dsduncs.com	?

**Export Movies every 10 minutes?** : Export movies after each image update? **Export Destination Path**: ETP Destination path for movies

**Export Destination Path**: FTP Destination path for movies.

**Movie File (No Ext)**: The default destination movie file name to use, without an extension. Leaving this blank (default) will force the Console to use the machine name on which the Console is running as the movie name.

FTP User Name: Destination movie FTP user name.

**FTP Password**: Destination movie FTP password.

[?]: Toggle the password between clear text and asterisk characters.

Saved Screen Image Settings:

Saved Scre	en Image Settings	
Save Images?	Days To Keep Images:	Saved Images Sub Dir: Prelude

Save Images? : Should we save an image of the latest map, every 10 minutes? Days To Keep Images: The number of days to keep the images. Old images will be deleted automatically.

Saved Images Sub Dir: The subdirectory, off the directory "SavedImages", to save the images.

#### Warning Sound Settings:



Warning Wave File Name: The 'Warning' wave file name, residing in the working directory.
Danger Wave File Name: The 'Danger' wave file name, residing in the working directory.
Warning Wave File Period: The interval in seconds that the warning sound should repeat.
Danger Wave File Period: The interval in seconds that the danger sound should repeat.
Time For Sound Reset: The maximum time, in minutes, that the sound may be turned off. The value 0 will disable the sound automatically switching on.

#### **Plugin Manager Settings**

ll Name	Run DII?	User Key	Can Be Primary?	Is Primary?	
SliderSatelliteImageManager	Yes	S	Yes	Yes	
RadarlmageManager	Yes	R	Yes	No	
PerthSteeringWindManager	Yes	W	Yes	No	20
					0

This is a list of Plugin managers currently assigned to this Display Setting. Here the user can: **Delete a Manager**: Select then press [Delete Manager]



**Edit a Manager**: Select then hit [Edit Manager], OR just double click a Plugin in the list. If the user wishes to edit the Plugin's own settings (handled by the Plugin itself), then the following form offers a [**Dll Configuration**] button to access this functionality.

Edit Plugin X
Plugin Settings
Plugin Name:
SliderSatelliteImageManager
Plugin DII Name:
SliderSatelliteImageManager.dll
Plugin Class Type:
SliderSatelliteImageManager.ManageSliderSat
Menu Entry:
Satellite Temperature or Reflectivity [Alt-S]
Plugin Sub Directory (off Working Directory):
PlugIn Files\
Configuration File to Use:
SliderSatelliteImageManager-Perth.json
Plugin Debug Log Name
Satellite
Run DII? Can this Plugin be a Primary?
✓ Is this the primary plugin?
DII Configuration Cyclic Key: S V
Close Save

This form is discussed below.

Add a Manager: Press [Add Manager]

Add Plugin X
Plugin Settings
Plugin Name:
Plugin DII Name:
Plugin Class Type:
Menu Entry:
Plugin Sub Directory (off Working Directory):
Configuration File to Use:
Plugin Debug Log Name
Run DII? Can this Plugin be a Primary?
Is this the primary plugin?
Dll Configuration Cyclic Key: ~
Close Save

**Plugin Name**: The name of the Plugin, e.g. BoMSatelliteImageManager.

[...]: Instead of filling out all the Plugin settings, the user may wish to clone an new plugin from an existing configuration:

lugin Name	Dll Name	Config File
SliderSatellite Image Manage	r SliderSatelliteImageManager.dll	SliderSatelliteImageManager-Pe
RadarlmageManager	RadarlmageManager.dll	RadarlmageManager-Perth.jsor
PerthSteeringWindManager	SteeringWindManager.dll	SteeringWindManager-Perth.jsc
BoMSatelliteImageManager	BoMSatelliteImageManager.dll	BoMSatelliteManager-NWS.jso
SatAlgorithmManager	SatAlgorithmManager.dll	BoMSatAlgorithmManager.json
SteeringWindManager	SteeringWindManager.dll	SteeringWindManager-NWS.jsc
EssSatelliteImageManager	EssSatelliteImageManager.dll	EssSatelliteManager-NWS.json

Select a manager to clone, and press [Save], or [Close] to cancel.

Plugin Dll Name: The name of the plugin's DLL

- Plugin Class Type: The Namespace/ClassName of the main process method within the plugin's DLL
- **Menu Entry**: The menu entry that allows the user to select what gets displayed on the status bar when the current mouse cursor hovers over a pixel that has a specific value, e.g. Satellite Temperature or Reflectivity, Wind Dir/Speed, Algorithm result etc.
- **Plugin Sub Directory (off Working Directory)**: The sub-directory (off the working directory) where the plugin DII's and configuration files are placed

**Configuration File to Use**: The configuration file to use for this plugin

- **Plugin Debug Log Name**: The name that appears on the Debug Log, that allows users to select debug messages from this plugin only, e.g. Satellite, Radar, Winds, Algorithms
- **Run Dll?** : Should we run the Dll? Use this to disable Dll functionality. This will require a restart to the program!
- **Can this Plugin be a Primary?** : Can this plugin act as a primary plugin? If it requires data input from another plugin, it cannot be a primary!
- **Is this the primary plugin?** : Should we use this DII to get the initial reference date/time and size?

**Cyclic Key**: The shortcut key used to cycle through the plugin's resultant images

[DII Configuration] : Edit the plugin's configuration. Each Plugin is responsible for its own configuration, and is handled by the Plugin. Please see the relevant manual for the Plugin. This button invokes this functionality.

#### **Setting Up Sites of Interest**

ite Name	Site Label Pos	Latitude	Longitude	Show Site?	Warning Radius	D ^
Zawtika	TopRight	14.20°N	96.10°E	Yes	60	4
Bongkot	TopLeft	8.00°N	102.30°E	Yes	60	4 2
Bangkok	TopLeft	13.75°N	100.49°E	Yes	0	(
Songkhla	BottomLeft	7.19°N	100.60°E	Yes	0	(
Pattaya	TopRight	12.93°N	100.88°E	Yes	0	(
Surat Thani	BottomLeft	9.13°N	99.33°E	Yes	0	( 🗸   🖷
< .						>

This is a list of locations for which the user wants warnings from approaching squalls. Here the user can:

Delete a Site: Select then press [Del Site]



Edit a Site: Select then hit [Edit Site], OR just double click a Site in the list.

Edit Site	×
Site Settings Site Name: Dampier B10E	
Site Name Position: TopLeft ~	
Site Latitude*:         Site Longitude*:           -20.640 ♀         116.710 ♀	
Warning Radius (kms): Alert Radius (kms) 60 + 40 +	s):
Display Site? Save	

Site Name: The name of the site

**Site Name Position:** Enter the site name position, with respect to its position on the map. Choices are: TopLeft, TopRight, BottomLeft, BottomRight.

**Site Latitude**<sup>°</sup>: The site's latitude in decimal degrees.

**Site Longitude**°: The site's longitude in decimal degrees.

**Warning Radius (kms)**: Radius of circle (in kms) around location in which a squall warning must be issued if a squall enters the area. If no warnings are required, set this value to 0.

Alert Radius (kms): Radius of circle (in kms) around location in which a squall alert must be issued if a squall enters the area. If no alerts are required, set this value to 0.

**Display Site**? : Should the site be displayed? The user should untick this checkbox when the site is to be hidden from view

Note that sites with warning or danger radii are **active** sites (will be included by optional algorithms that produce squall warnings), whilst those without warning or danger radii in **inactive**.

## **Basic Help**

Basic help is available to navigate the Display Console:

🧱 Basic Help	×
Pause the Loop The image loop can be paused and unpaused by hitting the [P] key or SPACE bar on the keyboard. The [←] or [→] keys will also pause the loop, and then move the display to the previous or next time frame in the loop.	^
Turn Sound Off The key 'H' (for Horn) will toggle the sound off and on.	
Other Shortcut Keys The Plugin managers specify their own short-cut keys. For example, the Satellite Plugins may specify their short-cut key to be 'S', which when pressed, will cause the next available Plugin image to be displayed, i.e. from VIS, to IR1, to IR2, to GeoColor, to OFF. Conversely, [Shift] 'S' will cycle backwards to the previous image type. Radar and Wind images typically use 'R' and 'W' respectively, and will cycle from ON to OFF. The Algorithm Plugin (using 'A') will cycle through the available algorithms. Summary:	,
S - Next Satellite image (VIS → IR1 → IR2 → IR3 → OFF → VIS etc) W - Toggles the Wind overlay On/Off (Starts as Off) A - Next Algorithm Type ('ESS Convective Area' → 'Indonesian Squall' → 'Indonesian Cloud' → Off	~
Close	

## About Met Display Console

🤮 About Met. Disp	lay Console	×
About Met.	Display Console	
	Met. Display Console © aka Satellite Squall Tracker © aka SatSquallDetector © aka SatSquallTracker © Version 3.1.3 (Expires 31-Aug-2021) Copyright © Rob Munn - 2018-2020	
This Software ma images in order to client of the Lice The Software is p and without any other payment in failure, bugs and Licensee's end-e end-equipment, o	ay be used for the purpose of overlaying data as o detect squalls on the Licensee's server[s], for one nsee, for 1 year. To the extent permitted under Law, provided under an AS-IS basis. Licensor shall never, limit, be liable for any damage, cost, expense or any curred by Licensee as a result of Software's actions, /or any other interaction between The Software and equipment, computers, other software or any 3rd party, computer or services.	
If for sor please o email Ro found in	me reason the program crashes (unlikely :-)), click the link below. The link will automatically ob Munn and attach the current log file n C:\MetDisplayConsole\Logs. Thankyou.	
Release Notes	rob@meteosoft.net Close	

#### **Release Notes**

A list of all changes made to the Met. Display Console and associated Plug-Ins, together with the version changes.

🔜 Release Notes	×
	^
MetDisplayConsole Version 3.1.5	
This release includes:	
Change: The saved images introduced in 3.1.4 are now saved to a specified (in settings) subdirectory off the directory 'SavedImages'. Default subdirectory name is 'Unspecified'. BugFix: When saving the settings, the program now checks whether it is read-only, instead of crashing the program.	
BugFix: MDC was saving the wrong images to 'SavedImages' every 10 minutes. Fixed! SatAlgorithmManager Plugin (new Version 1.0.3):	
<b>Enhancement</b> : The user can now see which minimum squall value (that would signify a possible squall) is set, and whether tracking is enabled, in the Algorithm annotation on the top left corner of the map.	
<b>Enhancement</b> : The user may now select a different minimum squall value (that would signify a possible squall) by pressing [Alt], and one of the numeric keys (either top row of keyboard or numeric keypad), e.g. typing [Alt] + '1' will set the minimum squall value to 1. NOTE: This change is NOT saved, and the original value will be in force next the time application is started, unless another setting is changed and saved. <b>BugFix</b> : A maximum squall value was added (different for each algorithm) to avoid any inadvertent numeric key presses.	J
	Y
Close	:

## Appendix

## **Creation of Coastline File**

The coast line file was created using 'gmt' (General Mapping Tool) in the format (section text removed):

```
#!/usr/bin/bash
TOPLAT=-00:30
BOTTOMLAT=-23:00
LEFTLON=115
RIGHTLON=141
# RANGE='115/141/-23:30/-00:30'
RANGE=${LEFTLON}/${RIGHTLON}/${BOTTOMLAT}/${TOPLAT}
echo ${RANGE}
# ((f)ull, (h)igh, (i)ntermediate, (l)ow, and (c)rude)
RESOLUTION='1'
gmt pscoast -R${RANGE} -JM -D${RESOLUTION} -W -M > out_${RESOLUTION}.txt
```