

# Ground Radar plugin for EuroScope

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- *version 1.6* -

General

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## 1 Acknowledgements

This plugin contains code and/or ideas from the following sources:

- Raw radar data aircraft shapes are based on Pierre Ferran's work on his [vSMR](#) plugin
- JSON parsing uses the [JSON for Modern C++](#) library
- File transfers use the [libcurl](#) library

## 2 Getting started

The Ground Radar plugin has two modes. "Ground" mode is based on the SAAB A3000 A-SMGCS system, and "Tower" mode on the SAAB RDP air situation display. Some settings are required in the used ASR file to determine which mode to use, and to set up some of the necessary parameters.

The plugin can be set up to represent one of two software versions. Their functionality is the same, the only difference is how windows, menus and lists appear on the screen. The images in this document are from the default GUI version (System\_GUI\_Version=0).

If the plugin was provided in a package, all the necessary settings are most likely set already. If not, refer to the Developer Guide for information on how to install and set up the plugin.

The plugin requires the [MSVC++ Redistributable package](#) to be installed. Without it, the plugin will either fail to load at all, or crash while trying to load.

### 2.1 Plugin updates

On startup, the plugin will attempt to check for updates. If the check fails or a new version is available, a message box will be presented. In case a mandatory update exists and the latest date to update has already passed, the plugin features will be blocked until it is updated.

When an update is available, the message box will show where to download the current version. The update package contains the plugin dll, the current manual set and the plugin data files that are common to all setups. Replace the existing files with the new ones but do not delete any files unless specifically asked to do so.

## 3 Global Menu

### 3.1 Pin

Left-click to toggle permanently displaying the Global Menu on the screen. A box will be displayed around the pin symbol when so. When not permanently displayed, the Global Menu will be hidden when the cursor is outside the menu area and none of its submenus are open.

### 3.2 Settings menu

- Units > Opens the Units submenu
- Display > Opens the Display submenu
- Labels > Opens the Labels submenu
- Lists > Opens the Lists submenu (Ground mode only)
- Raw Video > Opens the Raw Video submenu (Ground mode only)

#### 3.2.1 Units submenu

- Altitude Toggles displaying altitudes in feet or meters
- - reference Toggles the altitude reference between QNH and QFE
- Flight level Toggles displaying flight levels in feet or meters
- Distance Toggles displaying distances in nautical miles or kilometers
- Speed Toggles displaying speeds in knots or kilometers per hour

#### 3.2.2 Display submenu

##### 3.2.2.1 Ground mode

- Surveillance -----
  - o Pro mode Toggles the Pro mode on/off
- Tracks -----
  - o Display Toggles the label, track symbol, history dots and heading line on/off  
(Can't be set off if Settings > Raw Video > Raw Video is also off)
  - o History Sets the number of history dots to display (0-19)
  - o HDG line Toggles the heading line on/off  
(The heading line is a 10 pixels long line drawn from the position symbol showing the heading of the aircraft)
  - o AltFilter Hides tracks above specified height above airport elevation in 100's of feet (001-999) or meters (00030-30450)
- Label Filters -----
  - o Stby Toggles display of labels for tracks with transponder in standby
  - o SqError Toggles display of labels for tracks not squawking assigned code
  - o NoState Toggles display of labels for departures with no ground state
  - o OnFreq Toggles display of labels for departures with state ON FREQ
  - o Parked Toggles display of labels for arrivals with ground state PARKED

The 'Pro mode' setting determines what data will be displayed and how the radar tracks are correlated to flight plans. With the setting off, the airport area will have perfect primary and secondary radar coverage and all the aircraft are shown correctly correlated.

When ‘Pro mode’ is selected on, the radar coverage depends on the plugin and EuroScope setup, and for the correlation the plugin first checks mode S availability (radar coverage and flight plan equipment suffix). If available, it will be used for correlation. If not, the correlation state as reported by EuroScope (depending on the ‘Professional mode’ settings in EuroScope’s General Settings) will be used.

The five label filtering options only apply to stationary tracks. The filters can be temporarily disabled by moving the mouse cursor over an empty part of the Global Menu. When the cursor leaves the area, the filters will be automatically re-enabled.

### 3.2.2.2 Tower mode

- Surveillance -----
  - o Pro mode Toggles the Pro mode on/off
- Tracks -----
  - o History Sets the number of history dots to display (0-19)
  - o Prediction Sets the length of the prediction line in minutes (0-99)
  - o Filter Hi Hides labels above specified level  
in 100's of feet (-010-999) or meters (-305-30450)
  - o Filter Lo Hides labels below specified level  
in 100's of feet (-010-999) or meters (-305-30450)

### 3.2.3 Labels submenu

- Position -----
  - o X Sets the default label position x-offset in pixels (positive right)
  - o Y Sets the default label position y-offset in pixels (positive down)
- Fields -----
  - o <FieldName> Toggles the <FieldName> field on/off

### 3.2.4 Lists submenu

- Alerts >
- ARR >
- DEP >
- Dep Timer >
- Maps >
- Stands >
- TTT >

The Lists submenu provides access to changing some list parameters. For each, the options may contain:

- o Display -----
  - Items Number of items to display
- o Fields -----
  - <FieldName> Toggles the <FieldName> column on/off

### 3.2.5 Raw Video submenu

- Display Toggles the raw video display on/off  
(Can't be set off if Settings > Display > Tracks > Display is also off)
- Brightness Adjusts the general brightness of the radar returns (1-100)  
(Note that if the Ground Label is set “off”, having a low

- Afterglow brightness setting may make it very hard to see the traffic)
- History Controls how fast the returns fade (0-100)
- Sets the maximum number of history positions (0-10)

### 3.3 Window menu

- |                     |   |
|---------------------|---|
| - 2nd, 3rd, ...     | Opens the respective <a href="#">Traffic Situation Window</a>             |
| - APP 1, APP 2, ... | Opens the respective <a href="#">Approach Window</a>                      |
| - Approach Path >   | Opens an <a href="#">Approach Path Window</a> (select approach from list) |
| - TTT >             | Opens a <a href="#">Time To Threshold List</a> (select runway from list)  |
| - Dep Timer >       | Opens a <a href="#">Departure Timer List</a> (select runway from list)    |
| - Lists >           | Opens the Lists submenu   |
| - Runway Conf       | Opens the <a href="#">Runway Configuration Window</a>                     |
| - RVR               | Opens the <a href="#">RVR Window</a>                                      |
| - QNH               | Opens the <a href="#">QNH Window</a>                                      |
| - METAR             | Opens the <a href="#">METAR Window</a>                                    |
| - Wind Rose >       | Opens a <a href="#">Wind Rose Window</a> (select runway from list)        |

The items in the menu are active only in the ground mode of the plugin. Traffic Situation, Approach and Approach Path windows are only shown when at least one has been enabled in the plugin settings.

#### 3.3.1 Lists submenu

- |          |  |
|----------|--|
| - ARR    | Opens the <a href="#">Arrival List</a>   |
| - DEP    | Opens the <a href="#">Departure List</a> |
| - Stands | Opens the <a href="#">Stands List</a>    |

### 3.4 Functions menu

- |                 |  |
|-----------------|--|
| - Flight Plan   | Opens the Flight plan setting dialog (enter callsign)  |
| - Text notes >  | Opens the Text notes submenu   |
| - Map Selection | Opens the <a href="#">Map Selection Window</a><br>(Lists only maps defined to be visible on the main screen) |

#### 3.4.1 Text notes submenu

- |              |                            |
|--------------|----------------------------|
| - Create...  | Creates a new text note    |
| - Delete...  | Deletes a single text note |
| - Delete all | Deletes all text notes     |

It is possible to insert text notes on the radar screen to act as reminders. They will stay fixed at the geographical coordinates they are inserted to, the coordinates defining the center point of the note.

When creating a note, a text entry field opens to enter the note text. When the **[Enter]** key is pressed, the note will be created at the current mouse cursor position.

The notes can be deleted one by one or all of them at the same time. When deleting one by one, the notes are boxed to display their click areas. Clicking on one will delete the note. Pressing the **[Esc]** key or selecting the “Delete...” menu item again will abort the operation.

### 3.5 Alerts

Displays a filled warning triangle whenever there is at least one alert active, hollow otherwise. Left-clicking the symbol opens the [Alerts List](#).

### 3.6 QNH

Displays the latest QNH if a METAR for the airport has been received by EuroScope. When the QNH changes, the background will be set to yellow color. Left-click to acknowledge the change.

### 3.7 Low Visibility Procedures status

Left-click to toggle between “NORMAL” and “LVP”. This sets the runway related alert settings accordingly and may be used for automatic map activation.

### 3.8 Safety Nets

- |       |                          |
|-------|--------------------------|
| - APM | Toggle APM alerts on/off |
| - APW | Toggle APW alerts on/off |
| - RIM | Toggle RIM alerts on/off |
| - CBM | Toggle CBM alerts on/off |
| - ICM | Toggle ICM alerts on/off |
| - OSM | Toggle OSM alerts on/off |
| - RVM | Toggle RVM alerts on/off |
| - ECM | Toggle ECM alerts on/off |
| - RUM | Toggle RUM alerts on/off |

When a safety net is switched off, its button is shown with a yellow background. See the [Safety Nets](#) chapter for information on which alerts are connected to which system.

### 3.9 Developer menu

Depending on the GUI mode, left-click on either the blue “HITT” label or the round logo to open the menu

- |                          |   |
|--------------------------|---|
| - Reload Settings        | Reloads the information in the settings files |
| - Reload Data Files      | Reloads the information in the data files     |
| - Show/Hide Airport Data | Toggles airport related data display on/off   |

When selected on, the airport data displays the following for development use:

- On mouse-over, Traffic Situation Windows, Approach Windows and Approach Path Windows display some of their current setting values to help with settings file setup.
- Airport reference point (green crosshairs and circle), ICAO code and elevation
- Airport area, i.e. airport radius circle around the reference point (green dotted line)
- Runway end and threshold locations (marked with runway id in red color)
- Runway areas (red polygons, LVP versions with dotted lines)
- Runway buffer areas (yellow polygons, LVP versions with dotted lines)
- Runway crossings (red crosses)
- Aircraft stands
  - o Occupied and blocked in red
  - o Assigned in yellow
  - o Free but blocked from automatic assignment in dotted green
  - o Free and available for automatic assignment in solid green

## 4 Track presentation

In both the ground and tower modes, the track symbols and labels are colored according to the flight's status (arrival, departure or overflight/unknown). By default, the arrivals are yellow, departures light blue and overflight/unknown tracks light grey. In the tower mode also the history dots and prediction lines use the same coloring. In the ground mode all history dots use the overflight/unknown color and there is no prediction line available. Hovering the mouse cursor over a label will show all data fields even if not selected on in the settings. The symbols and track labels displayed here are the default sets.

### 4.1 Ground mode

#### 4.1.1 Track symbol

- Primary track
- Secondary (mode A or S) or combined track

Right-clicking on the track symbol toggles the heading line

#### 4.1.2 Uncorrelated track label

ALRT
CALLSIGN FLTID

- ALRT Safety net alert indicator
- CALLSIGN Transponded SSR code ("----" for primary tracks)
- FLTID Mode S downlinked callsign

#### 4.1.3 Correlated track label

Departure

Arrival

Overflight/unknown

ALRT	FLTID_E	ASSR_E	COMM
CALLSIGN	DRWY	DEP	
ATYP	WTC	MALRT	RMK

ALRT	FLTID_E	ASSR_E	COMM
CALLSIGN	STAND		
ATYP	WTC	MALRT	RMK

ALRT	FLTID_E	ASSR_E	COMM
CALLSIGN			
ATYP	WTC	MALRT	RMK

- ALRT Safety net alert indicator
- ASSR\_E Assigned SSR code if different from the transponded code
- ATYP Aircraft type
- COMM "t" if text only, "r" if voice receive only
- CALLSIGN Callsign
- DRWY Departure runway identifier, automatically displayed when either:
  - there is more than one active departure runway, or
  - RUM is enabled and the assigned runway is not an active departure runway
- DEP Assigned heading or SID designator
- FLTID\_E "S" (unselected)/mode S callsign (selected) if different from correlated flightplan callsign
- MALRT Manual alerts
- RMK Scratchpad contents
- STAND Assigned arrival stand
  - Highlighted after a change until acknowledged
- WTC Wake turbulence category

## 4.2 Tower mode

### 4.2.1 Track symbol

- ○ Primary track
- □ Uncorrelated secondary or combined track
- ◇ Correlated secondary or ADS-B only track
- ♦ Correlated combined track

Note: Tracks with only a mode S return (no primary or mode A data) are considered ADS-B only.

### 4.2.2 Uncorrelated track label

CALLSIGN	FLTID
AFL+VS	GS

- AFL+VS Actual flight level and an arrow to indicate climb or descent
  - altitudes prefixed by "A"
- CALLSIGN Transponded SSR code
- FLTID Mode S downlinked callsign
- GS Groundspeed in knots (rounded to nearest 10 knots)

### 4.2.3 Correlated track label

A	
CALLSIGN	COMM
AFL+VS	GS
MALRT	RMK

- A Manual alerts flag
- AFL+VS Actual flight level and an arrow to indicate climb or descent
  - altitudes prefixed by "A"
- CALLSIGN Callsign
- COMM "t" if text only, "r" if voice receive only
- GS Groundspeed in knots (rounded to nearest 10 knots)
- MALRT Manual alerts
- RMK Scratchpad contents

## 4.3 Label field mouse functions

The following mouse functions are available (left-click unless specified):

- ARWY Open runway setup popup list
- CALLSIGN Open Callsign menu
- DEP Left-click: Open SID setup popup list  
Right-click: Open assigned heading popup list
- STAND New assignment: Acknowledge it  
Otherwise: Open [Stand assignment menu](#)
- RMK Edit scratch pad string

## 5 Track label menus

### 5.1 Callsign menu

The Callsign menu for correlated tracks contains the following (unavailable ones shown with grey text):

- <Ground state> (Displays current ground state) Opens the [Ground state menu](#)
- Assume Assumes the track
- Trans <ID> Transfers the track to the indicated controller
- Man Tfr Opens a menu to manually transfer the track to any controller
- Free Drops the track
- FPL Opens the EuroScope Flight plan setting dialog
- Stand Opens the [Stand assignment menu](#)
- Uncorrelate Uncorrelates the flight plan from the radar track
- [] MissedApp Toggle “Missed approach” manual alert
- [] Inbd Est Toggle “Inbound estimate” manual alert
- [] Irregular Toggle “Irregular” manual alert
- [] Weather Toggle “Weather” manual alert

For uncorrelated tracks, the menu only contains one item:

- Correlate Correlate the radar track with a flight plan (enter the callsign)

### 5.2 Ground state menu

The Ground state menu includes the default and custom ground states:

Departure:

- ON FREQ Sets the custom “On Freq” state
- DEICE Sets the custom “De-Ice” state
- START UP Sets the default or custom “Start-Up” state depending on EuroScope version
- PUSH Sets the default “Push” state
- TAXI Sets the default “Taxi Out” state
- LINE UP Sets the custom “Line Up” state
- TAKE OFF Sets the default “Depa” state
- (empty) Clears the ground state

Arrival:

- TAXI Sets the default “Taxi In” state
- PARKED Sets the default “Parked” state
- (empty) Clears the ground state

For compatibility reasons, the custom states set the following default states:

- On Freq Clears any default state if one had already been set
- De-Ice Clears any default state if one had already been set
- Line Up “Taxi Out”
- (empty) Departure: Clears any default state if one had already been set  
Arrival: If “Parked” state had been set, sets “Taxi In”.

### 5.3 Stand assignment menu

The Stand assignment menu is used for various tasks related to arrival stand assignment. It will not open if another controller is tracking the aircraft. The menu contains the following options:

- Auto Assigns a new arrival stand automatically
- Manual Opens the [Manual stand assignment menu](#)
- Publish Communicates the current stand assignment to other controllers
- Clear Clears the stand assignment

In addition to the manual “Publish” method to communicate stand assignments, an assignment is automatically communicated to all controllers in range when the assignment is made, when the aircraft is transferred or dropped using the Callsign menu functions, and also using the flight strip when the track is transferred (by this method only to the next controller).

### 5.4 Manual stand assignment menu

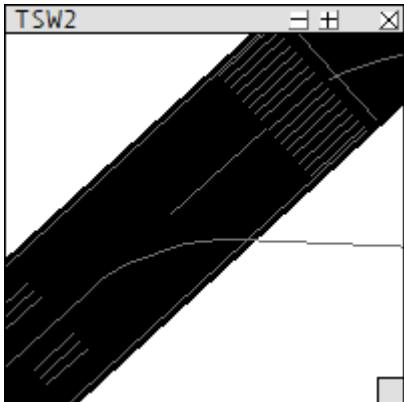
This menu lists the stands at the airport for manual assignment. Stands that are occupied, blocked or already assigned are displayed in grey color. The “[--]” item allows to manually type in the stand designator.

## 6 Windows

To move a window, drag it from the title bar. To close it, click on the [X] button in the top right corner. To resize (where available), drag the box in the bottom right corner. To move a window on top of all other windows and lists, left-click on the title bar. To move it below all others, right-click the title bar.

### 6.1 Traffic Situation Window

Global Menu -> Window -> 2nd, 3rd, ...



Additional Traffic Situation Windows can be opened to display other views of the airport. The windows can be set up to display the same background as the primary one but it requires specific plugin maps to be created. The number of additional windows available depends on the setup, by default there is one.

To pan the view, drag somewhere on the display area. Left-double-clicking centers the view on that position. Right-clicking on the window background area opens a window menu.

Left-clicking on the [+] button zooms the display in, [-] zooms it out. The available zoom range is 1-100000 pixels/nm, the initial value being 100 pixels/nm. Each click increases or decreases the scale by 25%. The mouse wheel can also be used for zooming.

#### 6.1.1 Window menu

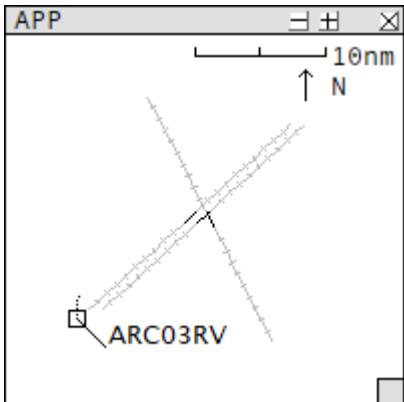
- Display > Opens the Display submenu
  - o General - - - - -
    - Rotation Rotates the view (-360.0 to 360.0 degrees or empty to set “auto”) (“Auto” rotation sets the rotation to match the primary window)
  - o Tracks - - - - -
    - Display Toggles the label, track symbol, history dots and heading line on/off.  
(Can't be set off if Raw Video > Raw Video is also off)
    - History Sets the number of history dots to display (0-19)
    - HDG line Toggles the heading line on/off  
(The heading line is a 10 pixels long line drawn from the position symbol showing the heading of the aircraft)
    - AltFilter Hides tracks above specified height above airport elevation in 100's of feet (001-999) or meters (00030-30450)
  - o Label Filters - - - - -
    - Stby Toggles display of labels for tracks with transponder in standby
    - SqError Toggles display of labels for tracks not squawking assigned code

- NoState              Toggles display of labels for departures with no ground state
  - OnFreq              Toggles display of labels for departures with state ON FREQ
  - Parked              Toggles display of labels for arrivals with ground state PARKED
- Labels              >              Opens the Labels submenu
  - Position - - - - -
  - X     Sets the default label position x-offset in pixels (positive right)
  - Y     Sets the default label position y-offset in pixels (positive down)
  - Fields - - - - -
  - <FieldName>      Toggles the <FieldName> field on/off
- Raw Video              >              Opens the Raw Video submenu
  - Display              Toggles the raw video display on/off.  
Can't be set off if Display > Tracks is also off.
  - Brightness              Adjusts the general brightness of the radar returns (1-100).  
Note that if the Display > Tracks is set "off", having a low brightness setting may make it very hard to see the traffic.
  - Afterglow              Controls how fast the returns fade (0-100)
  - History              Sets the maximum number of history positions (0-10)
- Maps              >              Opens the [Map Selection Window](#)  
(Lists only maps defined to be visible on TSWs)

The selections in the Labels submenu are synced between all Traffic Situation Windows and the primary window. By default, the other selections (besides Rotation) are as well, but they can also be set to be window-specific.

## 6.2 Approach Window

Global Menu -> Window -> APP 1, APP 2, ...



The Approach Windows display traffic around the airport (traffic on the ground at the airport is hidden). The window displays the runway centerlines, and optionally extended centerlines and various maps. The number of Approach Windows available depends on the setup, by default there is one.

To pan the view, drag somewhere on the display area. Left-double-clicking centers the view on that position. Right-clicking on the window background area opens a window menu.

Left-clicking on the [+] button zooms the display in, [-] zooms it out. The available zoom range is 1-100 pixels/nm, the initial value being 10 pixels/nm. Each click increases or decreases the scale by 25%. The mouse wheel can also be used for zooming.

The arrow below the scale, shown if the display has been rotated, points to true north.

Hovering the mouse cursor over a label will display all data fields even if not selected on in the settings.

For the mouse functions in labels, refer to [Label field mouse functions](#).

### 6.2.1 Uncorrelated track label

ALRT
CALLSIGN
FLTID
AFL GS

- AFL Actual flight level
  - altitudes prefixed by "A"
- ALRT Safety net alert indicator
- CALLSIGN Transponded SSR code
- FLTID Mode S downlinked callsign
- GS Groundspeed in knots

### 6.2.2 Correlated track label

Departure	Arrival	Overflight/unknown
ALRT MALRT FLTID_E ASSR_E COMM CALLSIGN DRWY DEP AFL GS ATYP WTC RMK	ALRT MALRT FLTID_E ASSR_E COMM CALLSIGN ARWY STAND AFL GS ATYP WTC RMK	ALRT MALRT FLTID_E ASSR_E COMM CALLSIGN AFL GS ATYP WTC RMK

- AFL Actual flight level
  - altitudes prefixed by "A"
- ALRT Safety net alert indicator
- ARWY Arrival runway identifier, automatically displayed when either:
  - there is more than one active arrival runway, or
  - the assigned runway is not an active arrival runway
- ASSR\_E Assigned SSR code if different from the transponded code
- ATYP Aircraft type
- COMM "t" if text only, "r" if voice receive only
- CALLSIGN Callsign
- DRWY Departure runway identifier, automatically displayed when either:
  - there is more than one active departure runway, or
  - the assigned runway is not an active departure runway
- DEP Assigned heading or SID designator
- FLTID\_E "S" (unselected)/mode S callsign (selected) if different from correlated flightplan callsign
- GS Groundspeed in knots
- MALRT Manual alerts
- RMK Scratchpad contents
- STAND Assigned arrival stand
  - Highlighted after a change until acknowledged
- WTC Wake turbulence category

### 6.2.3 Window menu

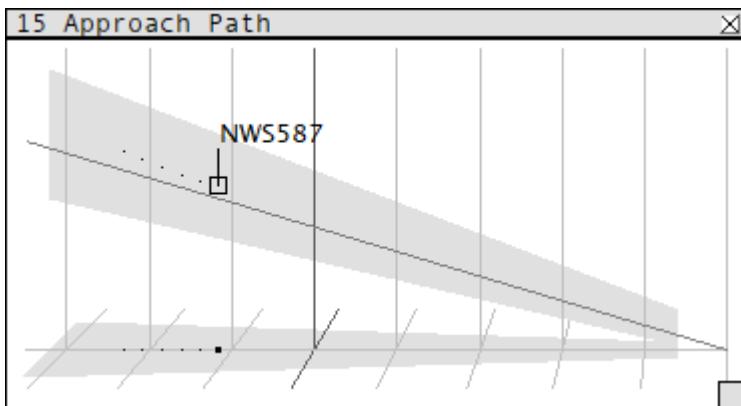
- Display > Opens the Display submenu
  - o General -----
  - Rotation Rotates the view (-360.0 to 360.0 degrees or empty to set "auto")  
("Auto" rotation sets the rotation to match the primary window)
  - o Tracks -----
  - History Sets the number of history dots to display (0-19)
  - Prediction Sets the length of the prediction line in minutes (0-99)
  - Extensions Sets the extended centerlines length  
in nautical miles or kilometers (0-999)
  - AltFilter Hides labels above specified level  
in 100's of feet (000-999) or meters (00000-30450)
- Labels > Opens the Labels submenu
  - o Position -----
  - X Sets the default label position x-offset in pixels (positive right)
  - Y Sets the default label position y-offset in pixels (positive down)
  - o Fields -----

- Maps >
  - <FieldName> Toggles the <FieldName> field on/off
  - (Lists only maps defined to be visible on Approach Windows)

The selections in the Labels submenu are synced between all Approach Windows. By default, the other selections (besides Rotation) are as well, but they can also be set to be window-specific.

## 6.3 Approach Path Window

Global Menu -> Window -> Approach Path -> (select approach)



The Approach Path Window displays a vertical and horizontal view of a pre-defined approach. Distance lines are shown at 1 nm intervals. Having an Approach Path Window open activates Approach Path Monitoring for that approach, if the alert parameters have been defined in the settings.

Hovering the mouse cursor over a label will display all data fields even if not selected on in the settings. Right-clicking on the window background area opens a window menu.

For the mouse functions in labels, refer to [Label field mouse functions](#).

### 6.3.1 Window menu

- Display > Opens the Display submenu
  - o Tracks - - - - -
    - History Sets the number of history dots to display (0-19)
    - Prediction Sets the length of the prediction line in **seconds** (0-999)
- Labels > Opens the Labels submenu
  - o Position - - - - -
    - X Sets the default label position x-offset in pixels (positive right)
    - Y Sets the default label position y-offset in pixels (positive down)
  - o Fields - - - - -
    - <FieldName> Toggles the <FieldName> field on/off

All selections in the menu are synced between all Approach Path Windows.

### 6.3.2 Uncorrelated track label

ALRT
CALLSIGN FLTID
AFL GS

- AFL Actual flight level
  - altitudes prefixed by “A”
- ALRT Safety net alert indicator
- CALLSIGN Transponded SSR code
- FLTID Mode S downlinked callsign
- GS Groundspeed in knots

### 6.3.3 Correlated track label

Departure

Arrival

Overflight/unknown

ALRT MALRT FLTID_E ASSR_E COMM CALLSIGN DRWY DEP AFL GS ATYP WTC RMK	ALRT MALRT FLTID_E ASSR_E COMM CALLSIGN ARWY STAND AFL GS ATYP WTC RMK	ALRT MALRT FLTID_E ASSR_E COMM CALLSIGN AFL GS ATYP WTC RMK
---	---	--

- AFL Actual flight level
  - altitudes prefixed by “A”
- ALRT Safety net alert indicator
- ARWY Arrival runway identifier, automatically displayed when either:
  - there is more than one active arrival runway, or
  - the assigned runway is not an active arrival runway
- ASSR\_E Assigned SSR code if different from the transponded code
- ATYP Aircraft type
- COMM “t” if text only, “r” if voice receive only
- CALLSIGN Callsign
- DRWY Departure runway identifier, automatically displayed when either:
  - there is more than one active departure runway, or
  - the assigned runway is not an active departure runway
- DEP Assigned heading or SID designator
- FLTID\_E “S” (unselected)/mode S callsign (selected) if different from correlated flightplan callsign
- GS Groundspeed in knots
- MALRT Manual alerts
- RMK Scratchpad contents
- STAND Assigned arrival stand
  - Highlighted after a change until acknowledged
- WTC Wake turbulence category

## 6.4 Runway Configuration Window

Global Menu -> Window -> Runway Conf

RWY Conf	X
RWY MODE	
04L	
04R	
15 ARR	
22L	
22R DEP	
33	

The Runway Configuration Window displays the current activity state of the airport's runways as either "DEP", "ARR", "MIX", "CLOSED" or "N/U".

## 6.5 RVR Window

Global Menu -> Window -> RVR

RVR	X
STRIP	RVR
04L/22R	1500
04R/22L	0550U
15/33	0800D

The RVR Window displays the RVR values if available in a received VATSIM METAR. For values reported as variable, the minimum value is shown.

## 6.6 QNH Window

Global Menu -> Window -> QNH

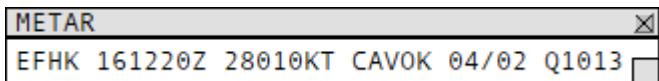
QNH	X
QNH	
1013 hPa	

QNH	X
QNH	
1013 hPa    2991 inHg    759 mmHg	
QFE	
1006 hPa    2971 inHg    754 mmHg	

The QNH window displays the current QNH value if available in a received VATSIM METAR. Left-clicking the "QNH" text in the top left corner below the title bar toggles the display of QFE. Left-clicking the pressure units label toggles the display of other pressure units (inHg if the METAR value is in hPa and vice versa, and mmHg).

## 6.7 METAR Window

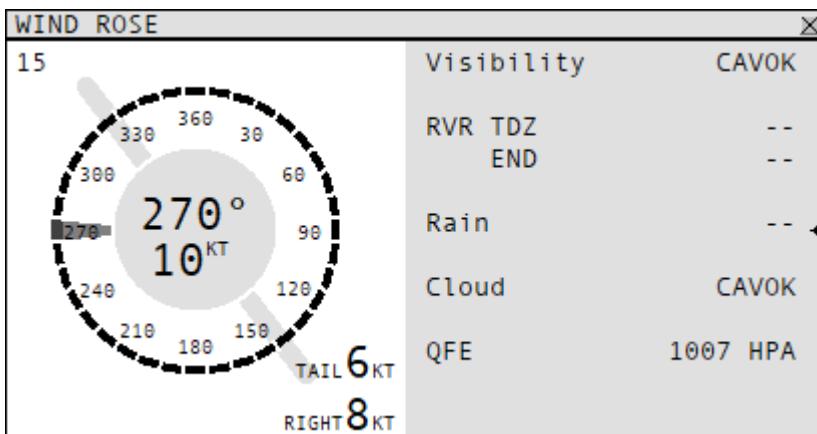
Global Menu -> Window -> METAR



The METAR window displays the latest received VATSIM METAR.

## 6.8 Wind Rose Window

Global Menu -> Window -> Wind Rose -> (select runway)

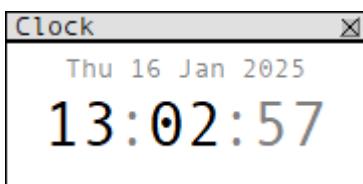


The Wind Rose window displays the weather from a received VATSIM METAR. The basic display shows only the wind information. Average wind is displayed in the center, gusts – if reported – in the bottom left corner, and wind components in the bottom right corner. Variable wind direction is indicated by coloring the relevant sectors of the wind rose with a different color.

Left-clicking the panel with a triangle symbol in the right edge of the window toggles an extended weather display, showing the visibility, RVR, precipitation type, cloud layers, and optionally the QFE (if the runway threshold elevation has been defined in the plugin settings).

## 6.9 Clock Window

Global Menu -> left-click on the date/time area



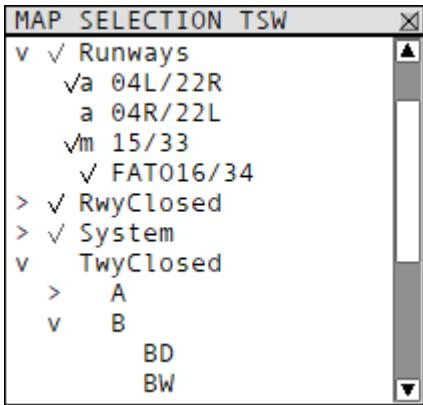
The Clock window displays the current UTC date and time.

## 6.10 Map Selection Window

Global Menu -> Functions -> Map Selection

Traffic Selection Window -> Window menu -> Maps

Approach Window -> Window menu -> Maps



The Map Selection Window is used to select maps for display. It can contain a number of folders, subfolders and maps within them. It will only list maps available in the window it was opened from.

**Folders:** Displayed as <state> <mapinfo> <name>, where:

- <state> displays the folder state:
  - o > closed
  - o v open
- <mapinfo> displays map activity information:
  - o v the folder contains at least one active map
  - o (empty) the folder contains no active maps
- <name> displays the folder name

Left-click the line to toggle the folder between closed and open.

**Maps:** Displayed as <state> <name>, where:

- <state> displays the map state:
  - o maps with automatic activation
    - va active, automatic mode
    - vm active, manual mode
    - a inactive, automatic mode
    - m inactive, manual mode
  - o maps without automatic activation
    - v active
    - (empty) inactive
- <name> displays the map name

Left-click the line to toggle the map state between active and inactive. If the map is in automatic mode, left-clicking will also set it to manual mode.

For maps with automatic activation, right-clicking the line toggles the map between automatic and manual mode. When changing from automatic to manual mode, the current activation state is kept.

## 7 Lists

To move the lists, drag from the title bar. To close them, click on the [X] button in the top right corner.

When a scrollbar is displayed, the displayed items can be scrolled one at a time by using the “up” and “down” triangle buttons above and below the scrollbar, by dragging the scrollbar or by clicking the scrollbar area above or below the scrollbar itself (left-clicking scrolls by the number of items displayed, right-clicking moves the scrollbar to the clicked position). Columns in **BOLD** text below cannot be toggled on/off.

### 7.1 Time To Threshold List

Global Menu -> Window -> TTT -> (select runway)

15 INBOUND								
TTT	C/S	DTT	TYPE	W	SSR	RULE	ETA	STAND
02:53	NWS587	8.0	B738	M	2704	I	12:56	S47

The Time To Threshold List displays a list of aircraft approaching that runway. The aircraft are added to the list when they are established on the extended centerline (less than 0.6nm cross track error and ground track within 20 degrees of the runway heading), are less than 30nm from the threshold and at an altitude not more than 5000ft above the airport elevation. The list is sorted according to distance from the threshold, with the closest aircraft at the top.

When an aircraft is on final to a runway other than the one it is supposed to land on, it will be added to the list when it is a bit closer to the threshold, when the plugin code assumes that it will land on the runway regardless of the runway assignment (less than 0.3nm cross track error, ground track within 10 degrees of the runway heading and less than 4nm from the runway threshold).

- **TTT** Time to threshold (mm:ss) assuming current groundspeed
- **C/S** Callsign
- **DTT** Distance to threshold (nm or km)
- **TYPE** Type
- **W** Wake turbulence category
- **ETA** Estimated time of arrival
- **STAND** Assigned arrival stand

## 7.2 Departure Timer List

Global Menu -> Window -> Dep Timer -> (select runway)

22R OUTBOUND							✖
DT	C/S	TYPE	W	SSR	RULE	SID	ADES
00:47	IBK124	B738	M	5233	I	TEVRU4N	EFRO
04:58	FIN24SP	A320	M	6047	I	TEVRU4N	EFRO

The Departure Timer List displays aircraft that have recently departed from that runway. The aircraft are added to the list when their groundspeed exceeds 40 knots and are automatically removed after a defined time, 10 minutes by default. They can also be manually removed at any time by left-double-clicking on the DT field. The list is sorted according to departure time, with the most recently departed aircraft at the top.

- **DT** Elapsed time (mm:ss) from departure
- **C/S** Callsign
- **TYPE** Type
- **W** Wake turbulence category
- **SID** SID designator
- **ADES** Destination ICAO code

## 7.3 Alerts List

Global Menu -> left-click on warning triangle

ALERTS	
C/S	ALERT
C-AIDA	No taxi clearance

The Alerts List displays the active alerts and informations provided by the safety nets. The list is sorted to display the alerts first, sorted according to the callsign, and then the informations.

- **C/S** Callsign
- **ALERT** Alert or information type

It is possible to cancel APM “Area penetration” and RVM “Restriction” alerts for a stationary track by left-clicking the callsign in the Alerts List. The alerts will be automatically activated again when the track starts moving.

## 7.4 Arrival List

Global Menu -> Window -> Lists -> ARR

ARR									
RWY	C/S	TYPE	W	SSR	RULE	ADEP	ETA	STAND	CLEARANCE
15	NWS587	B738	M	2704	I	UUEE	13:03	S47	

The Arrival List displays flights inbound to the airport, estimated to arrive within the next 60 minutes. The list is by default sorted according to ETA. The other available sorting option is C/S. Click on the respective column title to sort based on it, left-click for ascending, right-click for descending.

Setting a flight's ground state to "Parked" will remove it from the list.

<u>Column</u>		<u>Left-click mouse action</u>
- RWY	Arrival runway	Open runway setup popup list
- C/S	Callsign	Open Callsign menu
- TYPE	Type	
- W	Wake turbulence category	
- SSR	Assigned transponder code	
- RULE	Flight rules	
- ADEP	Departure airport ICAO code	
- ETA	Estimated time of arrival	
- STAND	Assigned arrival stand	Open Stand assignment menu
- CLEARANCE	Ground state	Open Ground state menu

## 7.5 Departure List

Global Menu -> Window -> Lists -> DEP

DEP										
C/S	TYPE	W	SSR	RULE	EOBT	STAND	ADES	RWY	SID	CLEARANCE
BAW136K	A319	M		I	15:10		EFRO	22R	TEVRU4N	Taxi
FIN24VR	A319	M		I	17:00		EFRO	22R	TEVRU4N	Taxi
FIN6EB	A319	M	0510	I	00:00		EFRO	22R	TEVRU4N	Take off
FIN7	A319	M	3615	I	17:20	12	EFRO	22R	TEVRU4N	
FIN9PE	A319	M	2011	I	17:30	21	EFRO	22R	TEVRU4N	
FNI92T	A319	M		I	17:40	28	EFRO	22R	TEVRU4N	

The Departure List displays flights departing from the airport. The list is by default sorted alphabetically on C/S. The other available sorting options are EOBT and CLEARANCE. Click on the respective column title to sort based on it, left-click for ascending, right-click for descending.

<u>Column</u>		<u>Left-click mouse action</u>
- <b>C/S</b>	Callsign	Open Callsign menu
- TYPE	Type	
- W	Wake turbulence category	
- SSR	Assigned transponder code	
- RULE	Flight rules	
- EOBT	Estimated off-block time	
- STAND	Departure stand	Open Manual stand assignment menu
- ADES	Destination airport ICAO code	
- RWY	Departure runway	
- SID	SID designator	Open SID setup popup list
- CLEARANCE	Ground state	Open Ground state menu

## 7.6 Stands List

Global Menu -> Window -> Lists -> Stands

EFHK STANDS		
STAND	PARKED	INBOUND
20	FIN24VR	
21	SAS8268	
22		
23		
24		
25		
26		
27	EIN125	
28		
29		

The Stands List shows an overview of the stand allocation status at the airport. It also allows to manually assign arrival stands, mark stands as occupied by a specific aircraft, or to block stands from automatic allocation. Blocked stands are displayed with grey text if automatically blocked, red text if manually blocked.

In addition to the Settings menu, the number of displayed stands can be adjusted by dragging the “down” triangle button below the scrollbar when it’s visible.

<u>Column</u>		<u>Left-click mouse action</u>
- <b>STAND</b>	Stand designator	Toggle manually blocked status
- <b>PARKED</b>	Parked aircraft callsign	Open a menu to mark the stand occupied by an aircraft, or to clear the information when it exists
- <b>INBOUND</b>	Inbound aircraft callsign	Open a menu to manually assign the stand

Stands defined as an area (capable of parking multiple aircraft) will display the number of aircraft parked and assigned to park there in the “PARKED” and “INBOUND” columns. It is not possible to manually set an area stand as occupied by an aircraft.

The “Parked” menu shows all aircraft within 5nm of the airport reference point, and the “Inbound” menu all aircraft arriving at that airport regardless of distance to the airport. When assigning a stand, it may take a couple of seconds until it shows in the window as the stand assignments are refreshed every 5 seconds within the plugin.

## 8 Safety Nets

In the ground mode of the plugin, the following potentially unsafe situations are highlighted by presenting an alert indication in the track label. If more than one alert is active simultaneously, the first one in the below order is shown. The alerts are also shown in the [Alerts List](#), and by coloring the callsign item appropriately in other lists. The safety nets can be toggled on/off using the buttons on the Global Menu bar. The button that controls each alert is shown boxed before the alert name in the list below.

### 8.1 Runway Monitoring and Conflict Alerting (RMCA)

RMCA displays conflicts between aircraft on a runway or on approach. In addition to monitoring single runways, it also looks for conflicts on crossing runways. Whether the conflict is shown as an alert or information depends on its severity (closure rate, time to threshold, etc.)

**CONFLICT**

**RIM** RMCA conflict alert

**CONFLICT**

**RIM** RMCA conflict information

### 8.2 Conformance Monitoring Alerts for Controllers (CMAC)

CMAC provides alerts when aircraft deviate or potentially deviate from clearances or normal procedures.

**NO TOF CLR**

**CBM** No take-off clearance alert

*Departing aircraft above 20kts ground speed on runway without "DEPA" state*

**RWY INCURSION**

**RIM** Runway Incursion Monitoring alert

*Departing aircraft on:*

- *its departure runway with a ground state other than "LINE UP" or "DEPA"*
- *another runway with a ground state other than "TAXI"*
- *any runway with a ground state other than "TAXI", "LINE UP" or "DEPA" when no departure runway has been set*

*Arriving aircraft on:*

- *a runway other than its arrival runway with a ground state not "TAXI IN"*
- *any runway with a ground state other than "TAXI IN" when no arrival runway has been set*

**HIJACK**

**ECM** Emergency Code Monitoring alert

*Displayed for squawks 7500, 7600, 7601\* and 7700 within 30nm of the airport*

**COMFAIL VMC**

*\*) 7601 optional, can be disabled in settings*

**EMERG**

**RWY CLOSED**

**APW** Runway closed alert

*Aircraft on a closed runway*

<b>RWY TYPE</b>	<b>RVM</b> Runway type alert <i>Aircraft on a runway not suitable for it</i>
<b>TWY TYPE</b>	<b>RVM</b> Taxiway type alert <i>Aircraft on a taxiway not suitable for it</i>
<b>APM</b>	<b>APM</b> Approach Path Monitoring alert <i>Aircraft deviating from an approach path either laterally or vertically</i>
<b>APW</b>	<b>APW</b> Area Proximity Monitoring alert <i>Aircraft inside an area prohibited for all traffic</i>
<b>RESTRICTION</b>	<b>RVM</b> Restriction Violation Monitoring alert <i>Aircraft inside an area prohibited for it</i>
<b>TWY CLOSED</b>	<b>APW</b> Taxiway closed alert <i>Aircraft on a closed taxiway</i>
<b>HIGH SPEED</b>	<b>CBM</b> High speed alert <i>Aircraft moving very fast (over 55kts ground speed) outside a runway</i>
<b>STATIONARY RPA</b>	<b>CBM</b> Stationary within the runway protected area alert <i>Arriving aircraft stopped inside a runway protected area</i>
<b>RWY CLOSED</b>	<b>APW</b> Runway closed information <i>Aircraft assigned a closed runway</i>
<b>RWY TYPE</b>	<b>RVM</b> Runway type information <i>Aircraft assigned a runway not suitable for it</i>
<b>NO CONTACT</b>	<b>CBM</b> No contact information <i>Arriving aircraft still in "transfer in" state, less than 120sec/4nm to threshold</i>
<b>TRANSFER?</b>	<b>CBM</b> No transfer information <i>Departing aircraft still assumed and outside a defined volume (height above airport elevation, distance from reference point) (applicable only when logged in as GND or TWR)</i>
<b>HIGH SPEED</b>	<b>CBM</b> High speed information <i>Aircraft moving fast (40-55kts ground speed) outside a runway</i>
<b>NO TAXI CLR</b>	<b>CBM</b> No taxi clearance information <i>Departing aircraft moving forward with ground state "none", "ON FREQ", "DEICE" or "START UP", or over 10kts ground speed with ground state "PUSH"</i>
<b>NO PUSH CLR</b>	<b>CBM</b> No pushback clearance information <i>Departing aircraft moving backward with ground state "none", "ON FREQ", "DEICE" or "START UP"</i>

**DUPE**

**ICM** Duplicate squawk code infomation

*Duplicated mode A codes within 100nm of the airport*

**STAND**

**OSM** Occupied Stand Monitoring alert

*Arriving aircraft whose stand is currently occupied*

*(This alert is only displayed on the track label)*

**ARWY**

**RUM** Runway Usage Monitoring alert

*Arriving aircraft assigned an arrival runway that is not active for arrivals when there is at least one active arrival runway*

*(ARWY item shown with a red background)*

**DRWY**

**RUM** Runway Usage Monitoring alert

*Departing aircraft assigned a departure runway that is not active for departures when there is at least one active departure runway*

*(DRWY item shown with a red background)*

## 9 Tag items and functions

The plugin includes a number of tag items and functions to use in EuroScope flight lists or track labels.

### 9.1 Tag items

Arrival stand	Displays the assigned arrival stand. Colored with ES color “Emergency” if the stand is occupied or blocked, “Information” if the assignment has changed.
Departure stand	Displays the departure stand (only as long as the aircraft is still there)
Ground state	Displays the aircraft’s ground state using the plugin’s custom texts for them, including the plugin specific ground states. The displayed text for each state is adjustable using the plugin settings.

### 9.2 Tag functions

Open Ground state menu	Opens the <a href="#">Ground state menu</a>
Open Stand menu	Opens the <a href="#">Stand assignment menu</a> . When the aircraft has a changed stand assignment, instead of opening the menu, this tag function clears the “Information” color.