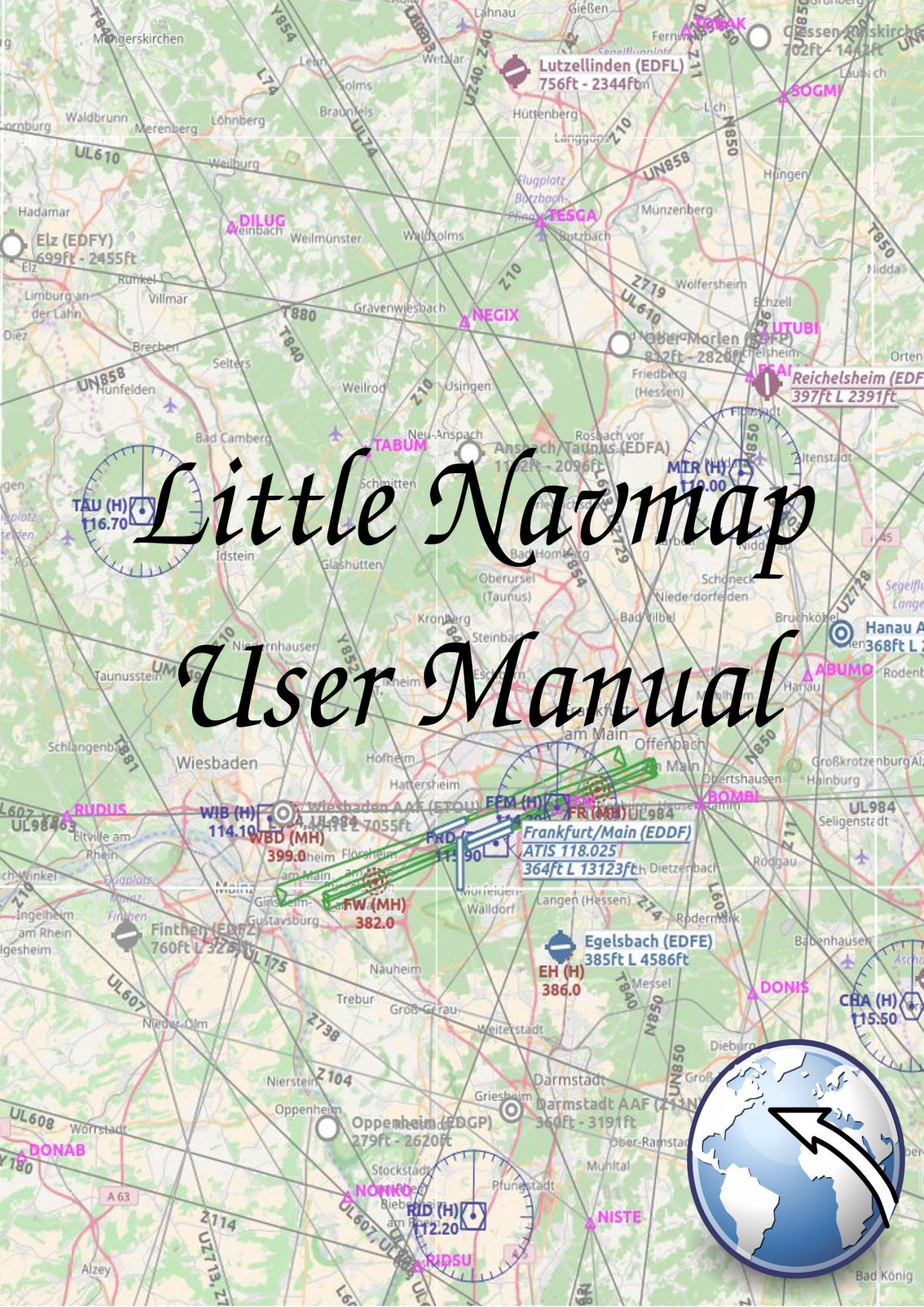


Little Navmap User Manual

Table of Contents

Little Navmap User Manual

Version 1.2

Little Navmap is a free open source flight planner, navigation tool, moving map, airport search and airport information system for Flight Simulator X and Prepar3D. The main focus is general aviation IFR and VFR planning.

Do not use this program for real world navigation.

More about my projects at **GitHub**.

Last updated Mon Dec 19 2016 20:05:26 GMT+0000 (UTC).

Features

General

- Supported platforms: Windows 7, 8, 10, Linux and macOS.
- Modern and easy to use interface: Using a main menu, context menus, toolbars, dock windows, undo, recent file lists and more.
- Support for Flight Simulator X, Flight Simulator - Steam Edition, Prepar3D v2 and Prepar3D v3.
- Data is collected from flight simulator stock and add-on files. No need to buy or download external data like AIRAC cycles.
- Scenery library databases for flight simulators are stored separately and can be changed on the fly.
- Display of METARs or decoded weather data from Flight Simulator, *Active Sky Next*, *AS16*, NOAA or VATSIM in tooltips and information windows.
- The program saves almost all settings including the flight plan, windows positions, searches and more and restores everything on start up.
- Most question or information dialogs can be disabled.
- *Little Navmap* can be run on computers that do not contain any simulator installations at all. Simply copy the scenery library database from your flight simulator computer.
- Information windows and tabs show detailed information about airports, navaids, airways, weather, AI aircraft, multiplayer aircraft and more.
- Exhaustive search function for airports and navaids that allows filtering by an extensive range of criteria.
- Distance and direction based spatial search for airports or navaids around a center point. Can be combined with all other search options.
- Search for airports or navaids by BGL file name or path.
- Support for navdata updates from **fsAerodata** and **FSX/P3D Navaids update**.
- Units can be changed between nautical, imperial and metric.
- Multiple GUI styles including a night mode.

Flight Plan and Routing

- Can read and write FSX PLN format (XML).
- Can export flight plans in GFP format used by the Flight1 GTN 750/650.
- Flight plans can be created from a route description copied from an online flight planner or other sources.
- Flight plans can be printed with options to include or exclude extensive detailed information.
- Flight plans can be created or edited using drag and drop on the map display.
- Easy flight plan editing in the table view including moving and deleting waypoints or whole flight plan fragments.
- Names of user defined waypoints can be changed.
- Can save, load and merge flight plans or flight plan snippets.
- Automatic fast flight plan calculation for high/low altitude airways, VOR/NDB and preset cruise altitude. Flight plan snippets can be calculated between any kind of departure and destination point.
- The automatic flight plan calculation is based entirely on flight simulator data. No third party data needed and no online services used.
- Elevation profile display for flight plan using online data. Shows minimum altitude for flight plan with a configurable altitude buffer.
- Undo/redo for all flight plan changes.
- Robust protection against malformed flight plans. Does not put unknown waypoints far off the route.
- Active flight plan leg is highlighted on flight plan table and on the map.
- Top of descent point is calculated using a configurable rule of thumb and displayed on the map.

Map

- Uses several free online maps (OpenStreetMap Mapnik, OpenTopoMap, Stamen Terrain and the OSM Roads layer

provided by Heidelberg University) as well as three simple offline maps. The offline maps are included in the *Little Navmap* download.
- Hill shading option for all *OpenStreetMap* variants. Two map themes feature worldwide hill shading.
- Option for adding additional user defined map themes.
- No need to download and install any additional elevation or map data for the flight plan elevation profile.
- Two projections: Mercator (flat) and spherical (round globe).
- Airport display iconography based on real world VFR maps thus combining plenty of information in a small symbol and a few lines of text.
- Detailed airport diagrams displayed in the map (not in a separate window) including parking, taxiways, displaced thresholds, overrun areas and much more.
- Add-on airport names are shown in italic text for easier recognition. Display settings allow only add-on airports to be shown.
- Distance and course measurement lines and configurable range rings also showing radio navaid ranges.
- Can load and display Google Earth KML files.
- History of map position and zoom distance like a web browser.
- Map display configuration including detail level on the toolbar.
- Symbol sizes, text sizes, text labels and colors are configurable in options dialog.
- Detailed tooltips on map display for airports, navaids, airways, AI aircraft, multiplayer aircraft and more.
- Map can be printed or saved as image.

Simulator aircraft

- Can connect directly to simulator.
- Autoconnect mode for remote or local connections. Order of program startup is not relevant.
- Shows simulator user aircraft on the map including flight plan progress, ambient parameters like wind, temperature, pressure and more (similar to a flight management computer). Requires Little Navconnect for remote computers which is also free.
- Shows track of simulator user aircraft.
- Shows AI and multi-player aircraft.
- Using *Little Navconnect* as an agent between the simulator and *Little Navmap* running on a remote computer saves the pain of remote SimConnect setup.

Installation

`Highlighted text` is used to denote window, menu, button, file or directory names.

The installation of *Little Navmap* does not change any registry entries (in Windows) and involves a simple copy of files therefore an installer or setup program is not required.

Do not extract the archive into the folder `c:\Program Files\` or `c:\Program Files (x86)\` since this requires administrative privileges for some Windows versions. Since Windows keeps control of these folders other problems might occur like replaced or deleted files.

Extract the Zip archive into a folder like `c:\Little Navmap`. Then start the program by double-clicking `littlenavmap.exe`. See First Start for more information on the first start after installation.

In some cases you have to install the MS Visual C++ 2013 Redistributable package. Install both 32 and 64 bit versions. Usually this is already installed since many other programs require it.

Little Navmap is a 32-bit application and was tested with Windows 7, Windows 8 and Windows 10 (32-bit & 64-bit).

Installing over a previous Release

I recommend to delete all installed files of a previous *Little Navmap* version before installing a new version. All files from the previous ZIP can be deleted since settings are stored in separate directories (except custom map themes). In any case do not merge the installation directories.

See Files for more information about configuration and database files. Do not delete these.

Other Simulators than FSX SP2

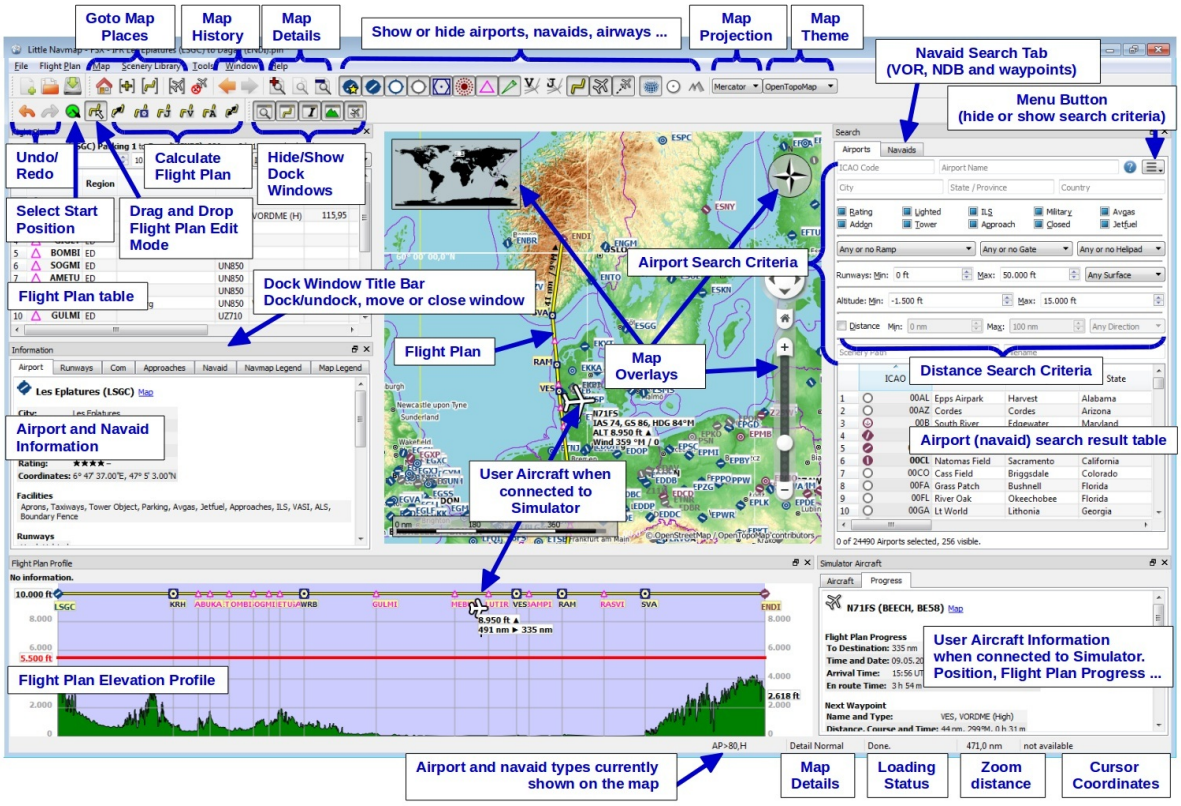
This program was compiled using plain FSX SP2 (no Acceleration) SimConnect version 10.0.61259.0.

You might have to install an older version of SimConnect if you use *Prepar3D* or *FSX Steam Edition*. If not sure about this simply try *Little Navconnect* out. If it fails with an error message follow the instructions below:

Prepar3D: In the same directory as `Prepar3D.exe` is a `redist\Interface` directory (normally `C:\Program Files (x86)\Lockheed Martin\Prepar3D v3\redist\Interface`). There are multiple legacy versions of SimConnect available. You have to install `FSX-SP2-XPACK.msi` for *Little Navconnect*.

FSX Steam Edition: The installation adds the folder `C:\Program Files (x86)\Steam\SteamApps\common\FSX\SDK\Core Utilities Kit\SimConnect SDK\LegacyInterfaces` where you can find the legacy SimConnect interfaces.

Quick Overview



Picture above: *A quick overview of Little Navmap 1.0.5 showing the most important functions.*

General Remarks

User Interface

The user interface of *Little Navmap* consists of a main window containing the map view and several windows which can be undocked from the main window or docked and arranged in any order around the main window.

The docked windows can be moved around in their docked position and can be detached from the main window by simply dragging them outside of the main window, by double clicking their title bar or by clicking on the window symbol on the top left.

Double click on the docked window's title bar or click on the window symbol again to move the windows back into their docked position.

All docked windows can be closed if they are no longer needed. You can even drop docked windows on each other to create a tabbed view (tabs will appear at the bottom of the dock stack in this case).

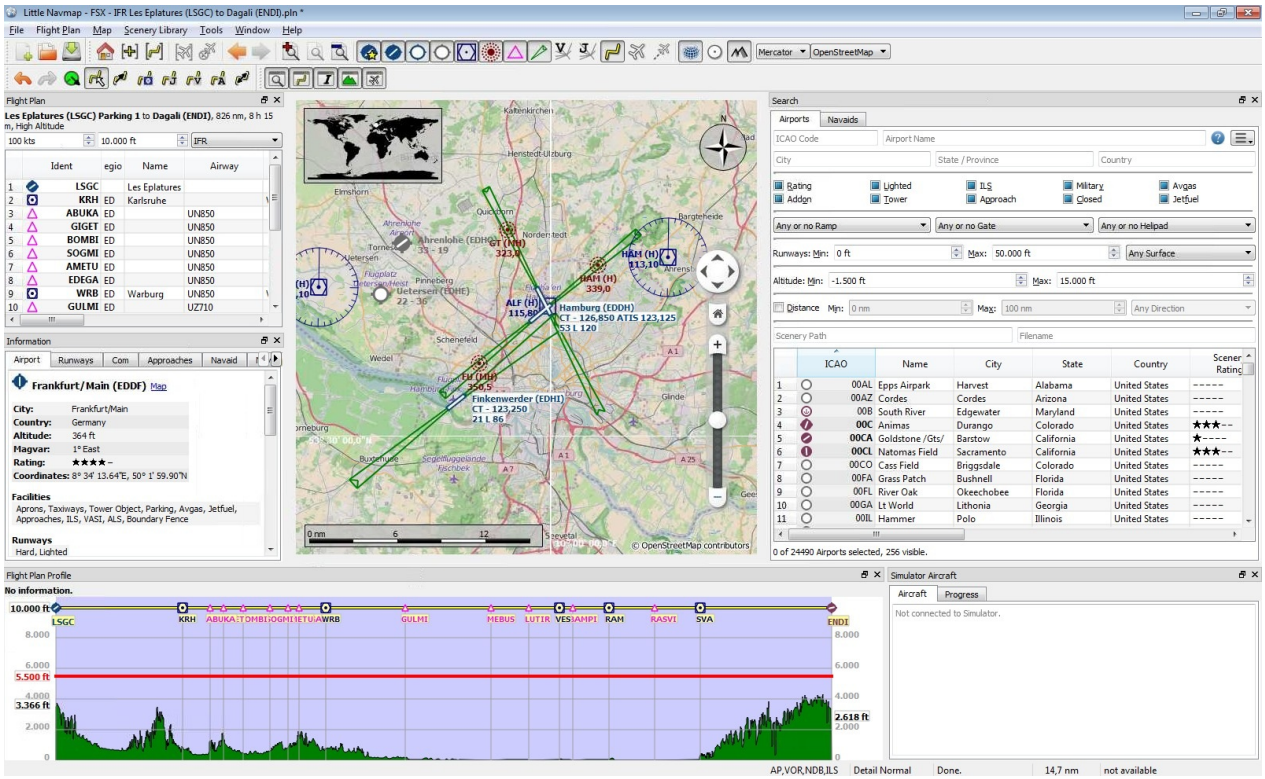
Toolbars are also movable by clicking on the left handle and can also be closed or undocked from the main window.

Use the `Main Menu` -> `Window` menu to bring docked windows or toolbars back.

The main window title indicates the currently selected flight simulator database (`FSX` , `FSXSE` , `P3DV2` or `P3DV3`), the flight plan file name and a trailing `*` if the flight plan was changed.

Almost all dialogs, text labels and all information windows in *Little Navmap* support copy and paste. You can select the text using the mouse and then either use `Ctrl-C` or the context menu to copy it into the clipboard. The information windows even support copying of formatted text.

The table views for the flight plan or airport/navaid search results allows copying of the results in CSV format into the clipboard.



Picture above: *Little Navmap 1.0.5 with map and sourrounding docked windows. Currently selected simulator database is FSX, current changed flight plan is* `IFR Les Eplatures (LSGC) to Dagali (ENDI).pln` .

Translation and Locale

Little Navmap is currently only available in English. I will happily support anybody who would like to translate the user interface into any other language. Despite using the English language in the user interface the locale settings of the operating system will be used. So, e.g. on a German version of Windows you will see comma as a decimal separator instead of the English dot.

Please note that the screenshots in this manual were taken using German locale, therefore a comma is used as a decimal separator and a dot as a thousands separator.

Since Units are specifically for aviation use they cannot be changed currently and feet, nautical miles and knots are used.

Map Legend

The legend explains all the map icons and the `Flight Plan Elevation Profile` icons. It is available in the `Legend` dock window or in this manual: Legend

Naming Conventions used in this Manual

- `Highlighted text` is used to denote window, menu, button, file or directory names.
- Empty airport: An airport that has no taxiways, no parking positions or gates, no aprons and is not an add-on airport and is not a water airport.
- Add-on airport: This is an airport that was found outside the Flight Simulator default scenery folder when loading the database.
- Scenery Library Database: This is an internal database (SQLite) that is created by *Little Navmap* by reading all the flight simulator BGL files. It allows indexing, fast searching and map display.
- Navaid: VOR, NDB or waypoint

- Radio navaid: VOR or NDB
- Parking: GA ramp, cargo ramp, fuel box or gate.
- Start position: Used for departure in flight plans. Either runway, helipad, GA ramp, cargo ramp, fuel box or gate.
- Rating: Airports get a zero to five star rating depending on facilities. Airports that have no rating are considered boring and will be displayed using a gray symbol below all other airports on the map (*Empty Airport*). This behavior can be switched off in the `Options` dialog on the `Map Display` tab. The criteria below are used to calculate the rating. Each item gives one star:
  1. Add-on
  2. Parking positions (ramp or gate)
  3. Taxiways
  4. Aprons
  5. Tower building (only if at least one of the other conditions is met).

First Start

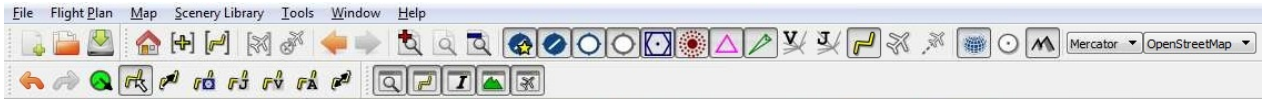
The Scenery Library Dialog dialog will be shown when starting *Little Navmap* for the first time. From there you can select all recognized Flight Simulators and load their scenery libraries into *Little Navmap*'s internal database. One database is kept for each simulator and can be changed on the fly in the Scenery Library menu.

A warning dialog will be shown when starting *Little Navmap* the first time on a system without any flight simulator installations. See chapter Running without Flight Simulator Installation for more information on this.

The scenery library database may need to be updated when you install a new version of *Little Navmap*. A question dialog will pop up prompting you to erase the now incompatible database. You can reload the scenery in the Scenery Library Dialog after erasing the database.

Menus and Toolbars

This chapter describes all the menu items of *Little Navmap*. You will find most of this functionality on the toolbars as well which are not be described separately. Key combinations can be seen on the menu items and are not listed in this manual.



Picture above: *Menu and toolbars docked in default positions.*

File Menu

New Flight Plan

Erases current plan and creates a new one.

Open Flight Plan

Opens a Flight Simulator PLN file. FS9 flight plan files are not supported.

An opened flight plan file will be reloaded on start up (reload and centering can be switched off in the `Options` dialog on the `Startup` and `User Interface` tab).

Append Flight Plan

Adds departure, destination and all waypoints to the current flight plan.

Using `Append Flight Plan` allows to load or merge complete flight plans or flight plan snippets into a new plan. All waypoints are added at the end of the current flight plan. Then you can use the `Delete selected Legs` and `Move selected Legs up/down` context menu items to arrange the waypoints and airports as required. See Flight Plan Table View Context Menu.

Save Flight Plan

Save Flight Plan as

Saves the flight plan to a FSX PLN file (XML format).

Little Navmap will allow flight plans to be created that while useful as a flight plan snippet they are unusable by the flight simulator. This occurs if a flight plan does not have a departure or destination airport and a warning dialog will be shown when saving the flight plan.

A warning dialog will also be shown if the departure airport has parking positions but none is assigned in the flight plan.

Save Flight Plan as GFP

Exports the flight plan in GFP format used by the Flight1 GTN 650/750.

The default directory to save the flight plans for GTN units is `C:\Program Files (x86)\Lockheed Martin\Prepar3D v3\F1TGTN\FPL`. Note that you might need to change the user priviledges on this directory. Give yourself full control on this directory, otherwise the flight plans might not show up in the GTN.

Add Google Earth KML

Allows to add one or more Google Earth KML or KMZ file to the map display. All added KML or KMZ files will be reloaded on start up. Reload and centering can be switched off in the `Options` dialog on the `Startup` and `User Interface` tab.

Clear Google Earth KML from Map

Removes all loaded KML files from the map.

Work Offline

Stops loading of map data from the internet. This affects the *OpenStreetMap*, *OpenTopoMap* and all the other online map themes as well as the elevation data.

You should restart the application after going online again.

Save Map as Image

Saves the current map view as an image file. JPG, PNG and BMP are allowed formats.

Print Map

Allows to print the current map view. See Printing the Map for more information.

Print Flight Plan

Opens a print dialog that allows you to select flight plan related information to be printed. See Map Flight Plan Printing for more information.

File -> Quit

Exits the application. Will ask for confirmation if there is a changed flight plan.

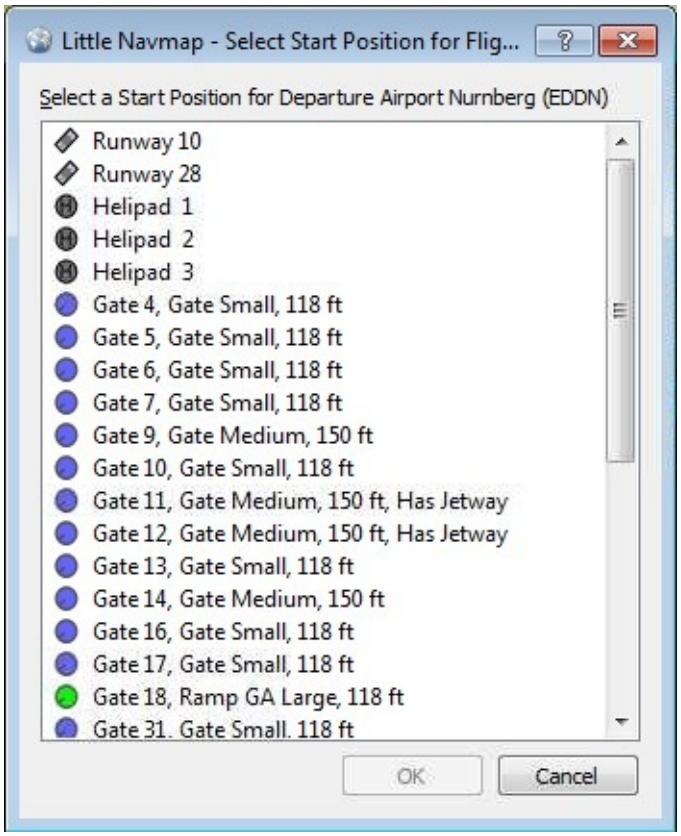
Flight Plan Menu

Undo/Redo

Allows to undo and redo all flight plan changes.

Select a Start Position for Departure

A parking spot (gate, ramp or fuel box), runway or helipad can be selected as a start position at the departure airport. A parking position can also be selected in the map context menu item Set as Flight Plan Departure when right clicking on a parking position. If no position is selected the longest primary runway end is selected automatically as start.



Picture above: *The start position selection dialog for EDDN.*

Edit Flight Plan on Map

Toggles the flight plan drag and drop edit mode on the map. See Flight Plan Editing.

New Flight Plan from Route Description

Opens a dialog with the route description of the current flight plan that also allows to modify the current flight plan or enter a new one. Flight Plan from Route Descpription gives more information about this topic.

Copy Flight Plan Route to Clipboard

Copies the route description of the current flight plan to the clipboard. See here for more information.

Calculate Direct

Deletes all intermediate waypoints and connects departure and destination using a great circle line.

You can calculate a flight plan between any kind of waypoints, even user defined waypoints (right click on the map and select `Add Position to Flight plan` to create one). This allows the creation of snippets that can be merged into flight plans. For example you can use this feature for crossing the North Atlantic with varying departures and destinations. This applies to all flight plan calculation modes.

 Calculate Radionav

Creates a flight plan that uses only VOR and NDB stations as waypoints and tries to ensure reception of at least one station along the whole flight plan. Note that VOR stations are preferred before NDB and DME only stations are avoided if possible. Calculation will fail if not enough radio navaids can be found between departure and destination. Buid the flight plan manually if this is the case.

This calculation can also be used to create a flight plan snippet between any kind of waypoint.

 Calculate high Altitude

Uses Jet airways to create a flight plan.

The resulting minimum altitude is set into the flight plan altitude field. The flight plan altitude field is not changed if no altitude restrictions were found along the flight plan.

A simplified east/west rule is used to adjust the cruise altitude to odd/even values (this can be switched off in the `Options` dialog on the `Flight Plan` tab).

The default behavior is to jump from the departure airport to the next waypoint of a suitable airway and vice versa for the destination. This can be changed in `Options` dialog on the `Flight Plan` tab if VOR or NDB stations are preferred as transition points to airways.

The airway network of Flight Simulator is not complete (the north Atlantic tracks are missing for example - these change daily), therefore calculation across large ocean areas will fail.

Create the airway manually as a workaround or use an online planning tool to obtain a "route string" and use the `New Flight Plan from String` option to create the flight plan.

This calculation can also be used to create a flight plan snipped between any kind of waypoint.

 Calculate low Altitude

Uses Victor airways to create a flight plan. Everything else is the same as in `Calculate high Altitude`.

 Calculate based on given Altitude

Use the value in the altitude field of the flight plan to find a flight plan along Victor and/or Jet airways. Calculation will fail if the altitude value is too low. Everything else is the same as in `Calculate high Altitude`.

 Reverse Flight Plan

Swaps departure and destination and reverses order of all intermediate waypoints. A default runway is assigned for the new departure start position.

 Adjust Flight Plan Altitude

Changes the flight plan altitude according to a simplified East/West rule and the current route type (IFR or VFR).

Map Menu

 Goto Home

Goes to the home area that was set using Set Home using the saved position and zoom distance. The center of the home area is highlighted by a  symbol.

 Go to Center for Distance Search

Go to the center point used for distance searches. See Set Center for Distance Search.The center for the distance search is highlighted by a  symbol.

 Center Flight Plan

Zooms out the map (if required) to display the whole flight plan on the map.

 Center Aircraft

Zooms to the user aircraft if directly connected to a flight simulator or remotely connected using Little Navconnect and keeps the aircraft centered on the map.

The centering of the aircraft can be changed in the `Options` dialog on the `Simulator Aircraft` tab.

 Delete Aircraft Trail

Removes the user aircraft trail. It is also deleted when connecting to a flight simulator. The trail is saved and will be reloaded on program startup.

 Map Position Back/Forward

Jumps forward or backward in the map position history. The complete history is saved and restored when starting *Little Navmap*.

More/Default/Less Details {#more-default-less-details}

Increases or decreases details on the map. More details means more airports, more navaids, more text information and bigger icons.

Note that map information will be truncated to 3000 objects if too much detail is chosen.

Projection

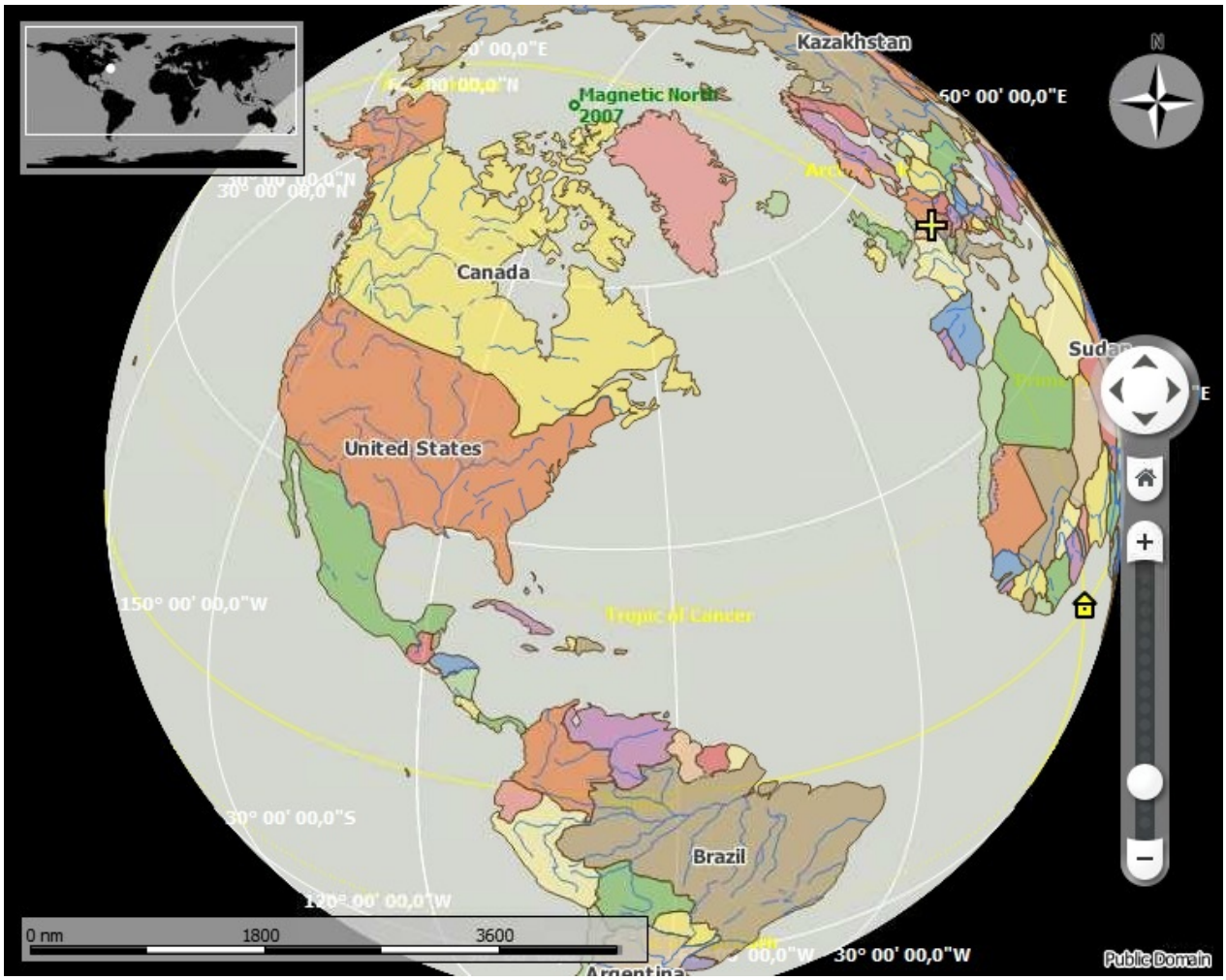
Mercator

A flat projection that gives the most fluid movement and the sharpest map when using picture tile based online maps themes like *OpenStreetMap* or *OpenTopoMap*.

Spherical

Shows earth as a globe which is the most natural projection. Movement can stutter slightly when using the picture tile based online maps themes like *OpenStreetMap* or *OpenTopoMap*. Use the `Simple`, `Plain` or `Atlas` map themes to prevent this.

Online maps can appear slightly blurred when using this projection. This is a result from converting the image tiles to the spherical display.



Picture above: *Spherical map projection with* `Simple` *offline map theme selected.*

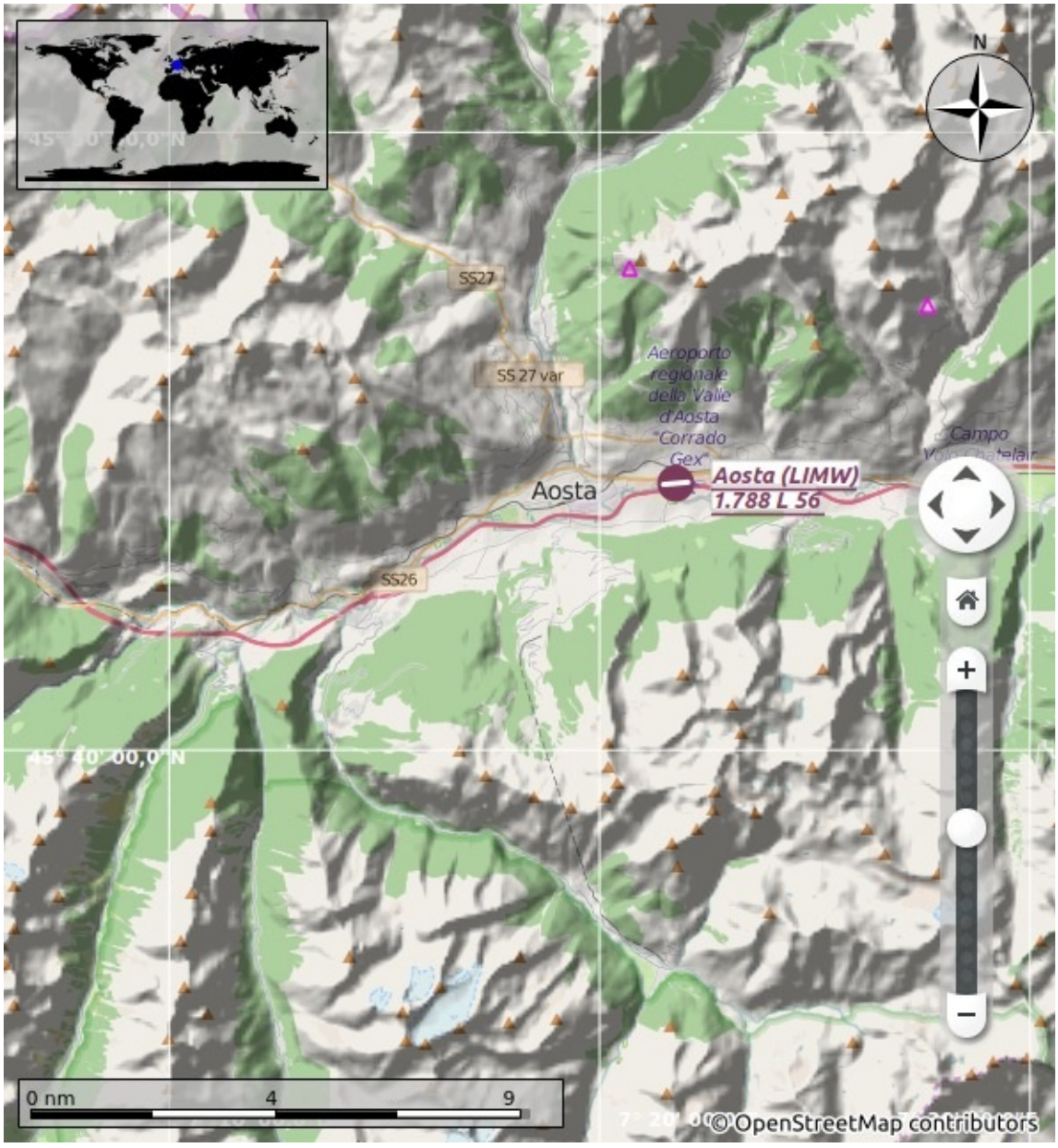
Theme

Please note that all the online maps are delivered from free services therefore fast download speeds and high availability cannot be guaranteed. In any case it is easy to deliver and install a new online map source without creating a new *Little Navmap* release. See Creating or adding Map Themes for more information.

OpenStreetMap

This is an online raster (i.e. based on images) map that includes a hill shading option. Note that the *OpenStreetMap* hill shading does not cover the whole globe.

OpenStreetMap data is not loaded directly from the OSM servers but from the MapTiles proxy service.



Picture above: *View at an Italian airport using _OpenStreetMap* theme and hill shading._

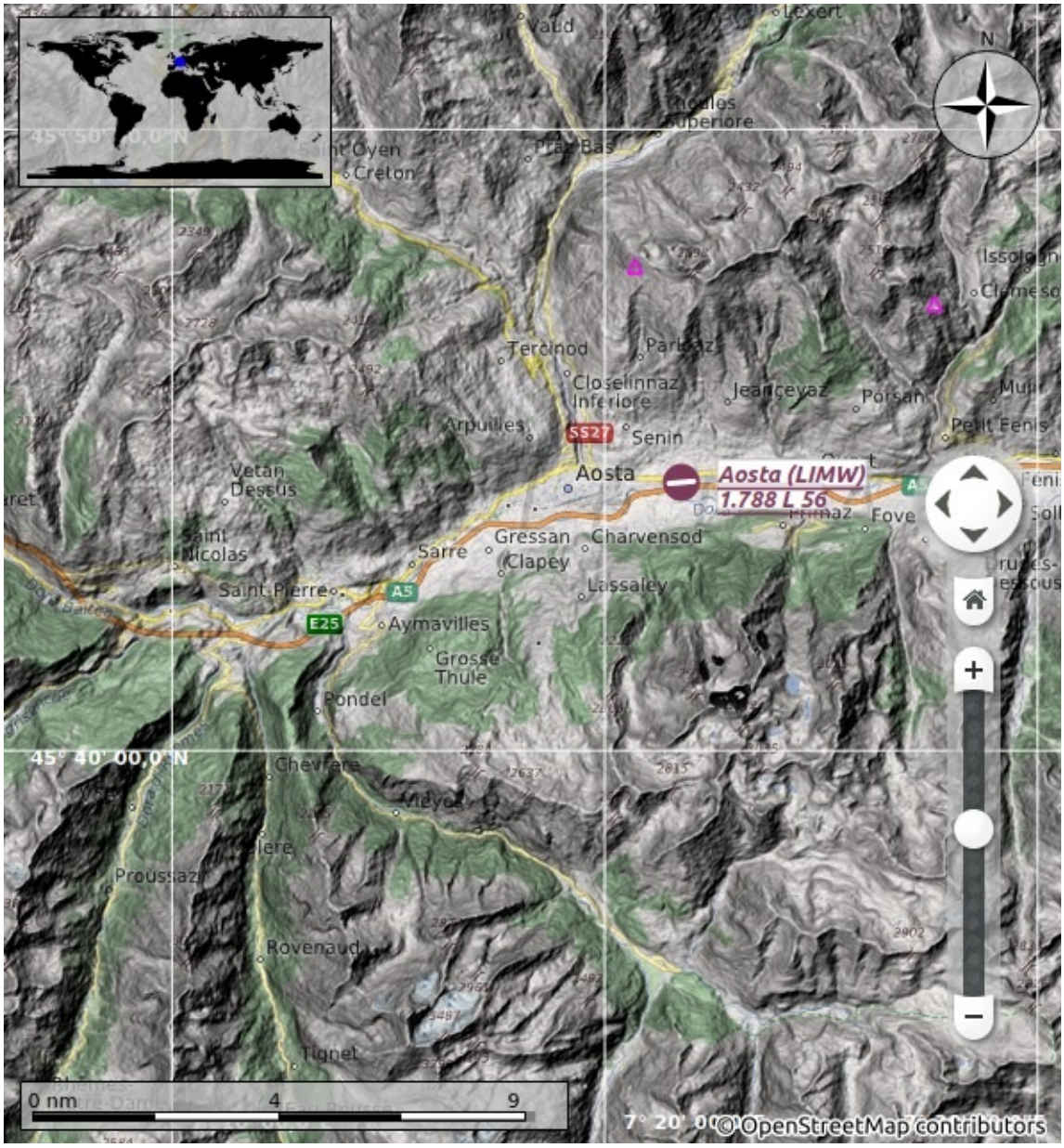
OpenMapSurfer

The OSM Roads layer provided by Heidelberg University. This theme includes optional hill shading which is available worldwide.

Note that the hill shading option of this map is marked experimental.

Map data for this map is provided by © OpenStreetMap contributors, rendering by GIScience Research Group @ Heidelberg University and map styling by Maxim Rylov.

SRTM; ASTER GDEM is a product of METI and NASA.

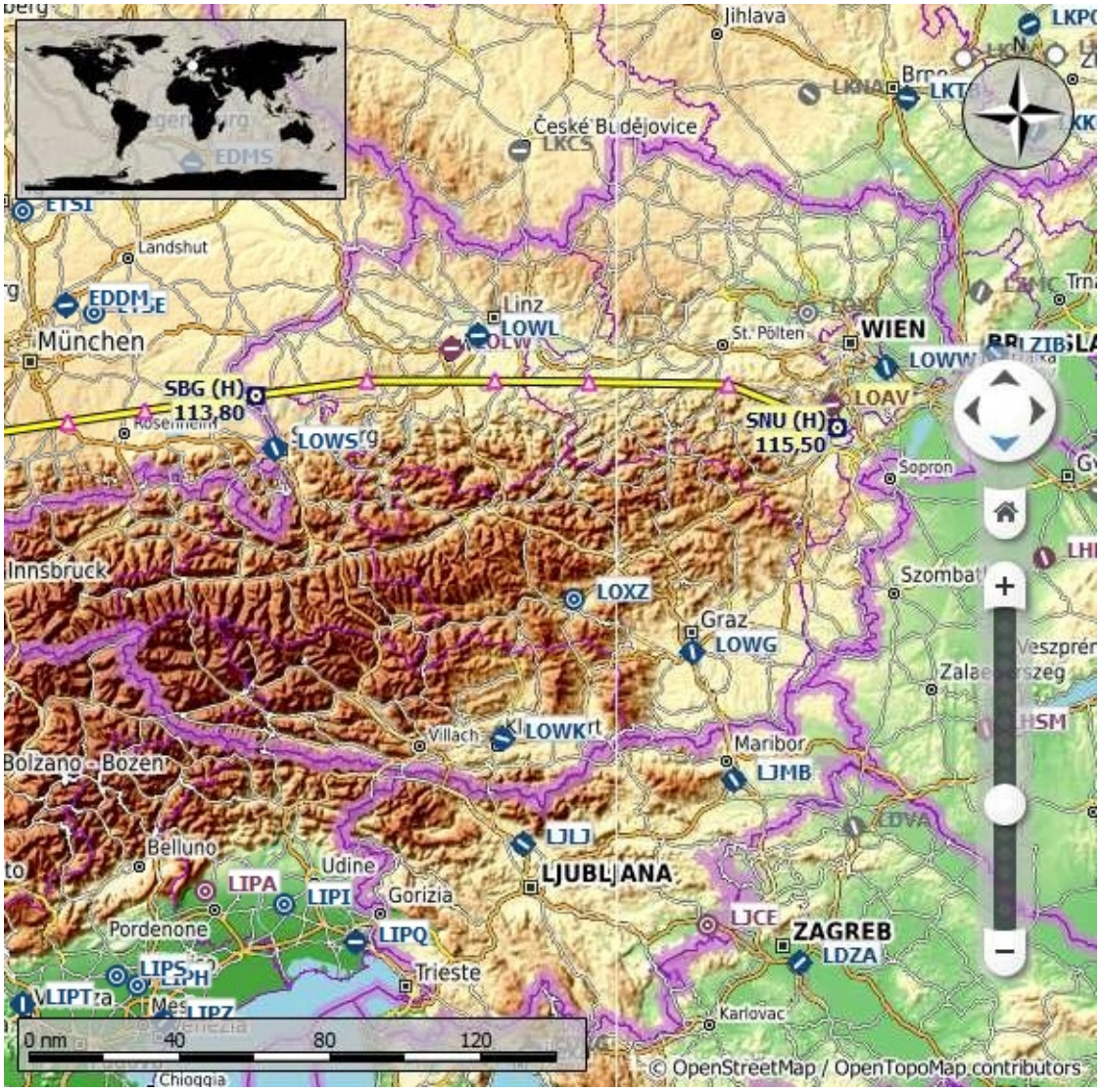


Picture above: *View at an Italian airport using the OpenMapSurfer theme and hill shading.*

OpenTopoMap

An online raster map that mimics a topographic map. Includes hill shading and elevation contour lines at lower zoom distances.

The tiles for this map are provided by OpenTopoMap.



Picture above: *View at the eastern Alps using OpenTopoMap theme. A flight plan is shown north of the Alps.*

Stamen Terrain

A terrain map featuring hill shading and natural vegetation colors. The hill shading is available worldwide.

Map tiles by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.

Picture above: *View showing Stamen Terrain theme.*

Simple (Offline)

This is an political map using colored country polygons. Boundaries and water bodies are depicted coarse. The map included in *Little Navmap* has an option to display city and country names.

Plain (Offline)

A very simple map. The map included in *Little Navmap* has an option to display city and country names. Boundaries and water bodies are depicted coarse.

Atlas (Offline)

A very simple map including coarse hill shading and land colors. The map included in *Little Navmap* has an option to display city and country names. Boundaries and water bodies are depicted coarse.

Force Show Addon Airports

Add-on airports are always shown independent of the other airport map settings if this option is selected. This allows viewing only add-on airports by checking this option and disabling the display of hard, soft and empty airports.

Show Airports with hard Runways

Show airports that have at least one runway with a hard surface.

Show Airports with soft Runways

Show airports that have only soft surfaced runways or only water runways. This type of airport might be hidden on the map depending on zoom distance.

Show empty Airports

Shows empty airports. This button or menu item might not be visible depending on settings in the `Options` dialog on the `Map Display` tab. The status of this button is combined with the other airport buttons. This means, for example: You have to enable soft surfaced airport display and empty airports to see empty airports having only soft runways.

An empty airport is defined as one which has neither parking nor taxiways nor aprons and is not an add-on. These airports are treated differently in *Little Navmap* since they are the most boring of all default airports. Empty airports are drawn gray and behind all other airports on the map.

Airports having only water runways are excluded from this definition to avoid unintentional hiding.

Show VOR Stations

Show NDB Stations

Show Waypoints

Show ILS Feathers

Show Jet Airways

Show Victor Airways

Shows or hides these facilities or navaids on the map. Navaids might be hidden on the map depending on zoom distance.

Show Flight Plan

Shows or hides the flight plan. The flight plan is shown independent of the zoom distance.

Show Aircraft

Shows the user aircraft if connected to the simulator. The user aircraft is always shown independent of the zoom distance.

A click on the user aircraft shows more information in the `Simulator Aircraft` dock window.

The aircraft centering will be switched off when using one of the following functions:

- Double click into a table view or map display to zoom to an airport or a navaid.
- Context menu item `Show on map`.
- `Goto Home` or `Goto Center for Distance Search`.
- `Map` link in `Information` dock window.
- `Show Flight Plan`. Either manually in a menu item or after loading.
- Centering a Google Earth KML/KMZ file after loading

This allows a quick inspection of an airport or navaid during flight. To display the aircraft again use `Map Position Back` and enable `Show Aircraft`.

Show Aircraft Trail

Shows the user aircraft trail. The trail is always shown independent of the zoom distance. It is saved and will be reloaded on program startup.

The trail is deleted when connecting to a flight simulator or it can be deleted manually by selecting `Main Menu` -> `Map` -> `Delete Aircraft Trail`.

The size of the trail is limited for performance reasons. Points will be removed from the beginning when it gets too long.

Show AI and Multiplayer Aircraft

Shows all AI and multiplayer aircraft on the map. Multiplayer aircraft can be displayed from e.g. FSCloud, VATSIM or Steam sessions.

A click on the AI aircraft shows more information in the `Simulator Aircraft` dock window.

Note that the displayed aircraft are limited by the multiplayer system used. Multiplayer aircraft will disappear depending on distance to user aircraft. For flight simulator AI this is currently about 100 nautical miles or around 200 kilometers.

Show Map Grid

Shows a latitude/longitude grid as well as the meridian) and anti meridian (near the date line) on the map.

Show Country and City Names

Show county, city and other points of interest. Availability of these options depends on the selected map theme. See Theme.

Show Hillshading

Shows hill shading on the map. Availability of these options depends on the selected map theme. See Theme.

Scenery Library Menu

Flight Simulators

One menu item is created for each Flight Simulator installation or database found. These menu items allow switching of databases on the fly. The menu item is hidden if only one Flight Simulator was found.

This menu is synchronized with simulator selection in the Load Scenery Library Dialog. Once a database is successfully loaded, the display, flight plan and search will switch over to the newly loaded simulator data.

Show Database Files

This opens *Little Navmap*'s database directory in a file manager. See Running without Flight Simulator Installation for more information on copying database files between different computers. This allows *Little Navmap* to be run on a remote computer (e.g. Windows, Mac or Linux) using the same database that was created on the computer running the flight simulator.

 Load Scenery Library

Opens the `Load Scenery Library` dialog. See Load Scenery Library Dialog for more information. This menu item is disabled if no flight simulator installations are found.

Tools Menu

 Flight Simulator Connection

Opens the `Connect` dialog allowing *Little Navmap* to be connected directly to a Flight Simulator or remotely connected using the Little Navconnect agent. See Connecting to a Flight Simulator for more information.

Reset all Messages

This will re-enable all dialogs that were disabled by selecting `Do not show this dialog again` or similar messages.

 Options

Opens the Options dialog.

Window Menu

Map Overlays

Allows to hide the floating map overlays, like the overview on the top left or the compass on the top right corner of the map window.

 Search

 Flight Plan

 Information

 Flight Plan Elevation Profile

 Simulator Aircraft

 Legend

Opens or closes these dock windows.

Main Toolbar, Map Toolbar, Map Options Toolbar, Flight Plan Toolbar, Dock Window Toolbar, Statusbar

Shows or hides these toolbars and the statusbar.

Help Menu

 Contents (Online)

Shows this online help in the default web browser.

 Contents (Offline, PDF)

Shows the included PDF help document in the default PDF viewer.

 NavMap Legend

Shows the navigation related map legend in the `Legend` dock window. You can also access it here: Navmap Legend.

 Map Legend for current Map Theme

Shows the map theme dependent base legend in the `Legend` dock window. Note that the legend is not available for all map themes.

 About Little Navmap

Shows version and revision number for *Little Navmap*, also contains links to the database directory, configuration file, log file and the author's e-mail address.

 About Marble

Information about the Marble widget that is used to download and show the maps.

 About Qt

Information about the Qt application framework that is used by *Little Navmap*.

Statusbar

The statusbar shows various indications (from left to right):

- Last action or short help to explain a menu item or toolbar button.
- Indicator that shows airport types and navaids currently visible on the map. The tooltip gives more details.

- Connection status for a local or remote connection. The tooltip gives more details about the status like the hostname for remote connections.
  - `Connecting...` : The program is trying to establish a connection which was initiated either manually or automatically.
  - `Connected` : A connection was established.
  - `Disconnected` : The simulator or *Little Navconnect* exited.
- Map detail level.
- Online map download progress indicator. This shows the state of the current map download:
  - `Done.` : All map data loaded successfully.
  - `Waiting for Data ...` : Map data is missing in the cache and was requested. Now waiting for reply.
  - `Waiting for Update ...` : Map data is already loaded but expired after two weeks. Waiting for new data after requesting an update.
  - `Incomplete.` : Download failed.Note that the progress indicator can look like it is stuck in the message `Waiting for Data ...` if no hill shading is available for a *OpenStreetMap* region.
- Zoom distance (viewpoint to earth surface) in nautical miles.
- Cursor position on map in degrees/minutes/seconds latitude and longitude.

Picture above: *Status bar with message about the last action on the left side and a tooltip that indicates what is currently shown on the map. The map shows only airports with runways longer than 4000 feet. No navaids are shown. The map detail level was increased once and the map coordinates are not shown since the cursor is not inside the map window. The online map download progress indicator is empty.*

Map Display

See the  for details about the various symbols shown by the map.

Moving

Use click and drag to move the map and the mouse wheel to zoom in or out. You can also use the overlay buttons on the right side of the map (overlay buttons not avaialble for MacOS).

Alternatively use the cursor keys to scroll the map and `+` and `-` to zoom in and out. `Alt+Left` and `Alt+Right` goes forward or backward in the map position history. Do not forget to activate the map window by clicking into it before using any keys for movement.

Mouse Clicks

A single click on an airport, navaid, airway line shows details in the `Information` dock window.

A single click on an user aircraft, AI aircraft or multiplayer aircraft shows details in the `Simulator Aircraft` dock window.

A double click zooms in showing either the airport diagram or the navaid closely and also shows details in the `Information` dock window. The same applies for all aircraft.

The double and single click functionality does not work for flight plan waypoints or airports if the flight plan edit mode is enabled. The edit mode can be disabled using the toolbar or `Main Menu` -> `Flight Plan` -> `Edit Flight Plan on Map`.

The mouse click sensitivity can be adjusted in the `Options` dialog on the `Map Display` tab.

Aircraft

The user aircraft and AI or multiplayer aircraft will be shown on the map if the program is connected to a flight simulator. Aircraft color indicates user or AI/multiplayer aircraft and the symbol shape indicates if the aircraft is an piston/turboprop, jet or helicopter. The symbol outline changes to grey if an aircraft is on ground.

AI and multiplayer aircraft on ground are shown only on small zoom distances to avoid cluttered airports. This means that an AI aircraft can dissapear from the map when landing on an airport.

On the lowest zoom distance all aircraft are drawn to scale as are the parking spots. That means you can easily check if your aircraft fits on an apron, parking spot or taxiway.

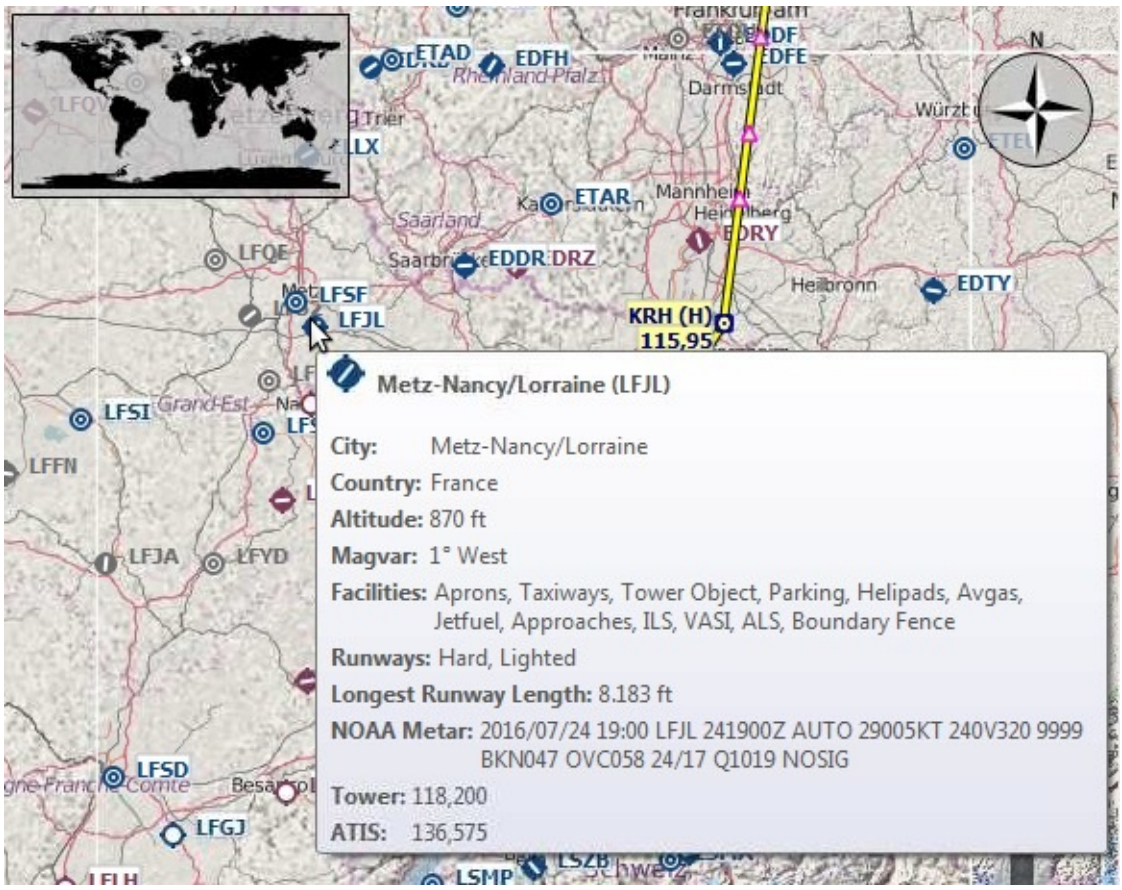
A yellow wind arrow and labels for the situation around the user aircraft can be displayed can be displayed optionally on the top center of the map.

See the Nav Map Legend for details about the aircraft type.

Tooltips

Hovering the mouse over the map will show tooltips for all map objects including airports, VOR, NDB, airways, parking, fuel box, towers and all aircraft. The tooltip is truncated and shows a message `More...` if it gets too long. In that case reduce details or zoom in.

The sensitivity for the tooltip display can be adjusted in the `Options` dialog on the `Map Display` tab.



Picture above: *Tooltip with information for a French airport.*

Highlights

Airports or navaids that are selected in the flight plan table or in the search result table are highlighted on the map with a green/black or a yellow/black ring respectively.

These highlight rings provide all functionality of visible map objects, even if the objects are not shown at the current zoom distance (ring is empty). This allows double click for zoom in, single click for information dock window and all context menu entries.

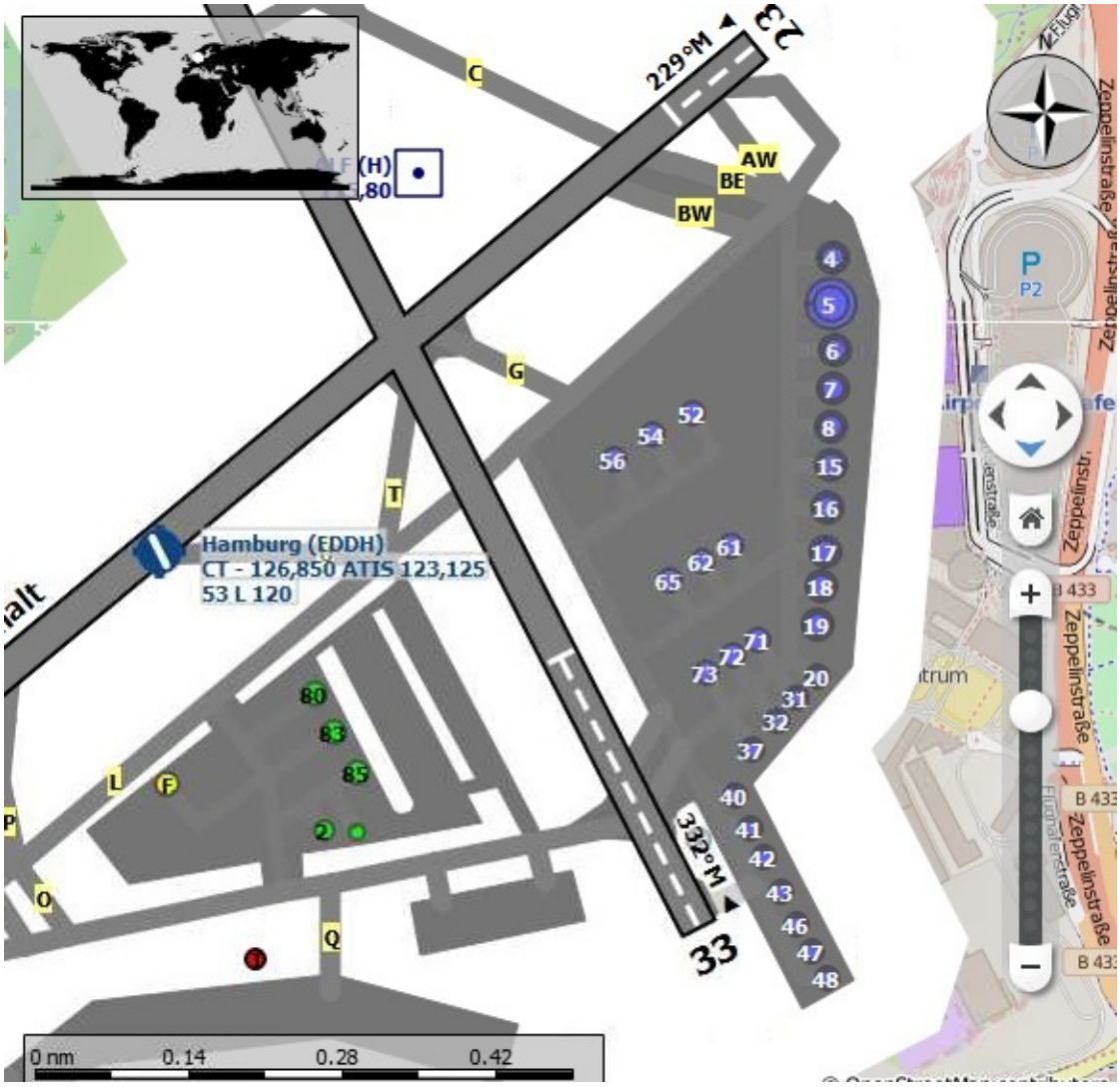
Airport Diagram

The display will change from a single icon to an airport diagram if you zoom in deep enough to an airport. The diagram shows all taxiways, parking positions, gates, runways and much more.

The airport diagram provides more information through tooltips for parking and tower positions. A right click on a parking position opens the context menu and allows to select the start position for flight plan departure.

See the Nav Map Legend for details about the airport diagram.

Picture above: *High level view of the airport diagram of EDDH.*



Picture above: *Detailed view of the airport diagram. Shows blue gates on the right and a few green general aviation ramp parking on the left. Long displaced threshold of runway 33 is visible.*

Map Context Menu

The map context menu can be activated using right click or the menu key.

Show Information

Shows detailed information in the `Information` dock window for the nearest airport, airways or all navaids near the cursor.

See the Information Dock Window for details.

Measure GC Distance from here

Starts a measurement line on the first click. Second click ends measuring and keeps the line. All measurement lines are saved and will be restored on next start up.

You can use the keyboard, mouse wheel or the map overlays to scroll and zoom while dragging a line.

Right click, pressing the escape key or any click outside of the map window cancels the measurment line editing.

Measurement lines use nautical miles as unit. Feet will be added as unit if the lines are short enough e.g. takeoff distance for crossing takeoffs and moving around an airport.

A great circle gives the shortest distance from point to point on earth but does not use a constant course. For that reason the measurement line will show two course values. One for the start and one for the end position.

Course is indicated in degrees true. Additional information like ident or frequency will be added to the line if the measurement starts at a navaid or an airport.

See the Nav Map Legend for details on measurement lines.

 Measure Rhumb Distance from here

A rhumb line is a line of constant course and used between the waypoints of an airway or when approaching a VOR or NDB station. Distance between points is longer than the great circle route.

The course for a rhumb line is normally indicated in degrees true. Course will be indicated in degrees magnetic if the measurement starts at a navaid or at an airport that has a magnetic variation. Additional information like ident and frequency will be added to the line in this case.

 Remove Distance measurement

This menu item is active if you right click at the end of a distance measurement line (small cross). Removes only the selected line.

 Show Range Rings

Shows multiple red range rings around the clicked position. The number and distance of the range rings can be changed in the `Options` dialog on the `Map Display` tab. A label indicates the radius of each ring in nautical miles.

 Show Navaid range

Shows a ring around the clicked radio navaid (VOR or NDB) indicating the navaid's range. A label shows ident and frequency and the ring color indicates the navaid type.

 Remove Range Ring

Menu item is active if you right click at the center point of a range ring (small circle). Removes the rings from the map.

 Remove all Range Rings and Distance measurements

Removes all rings and distance measurement lines from the map.

 Set as Flight Plan Departure

This is active if the click is at an airport, an airport parking position or a fuel box. It will either replace the current flight plan departure or add a new departure if the flight plan is empty.

The default runway will be used as starting position if the clicked object is an airport. The airport and parking position will replace both the current departure and start position if a parking position is clicked within an airport diagram.

 Set as Flight Plan Destination

This is active if the click is at an airport. It will either replace the flight plan destination or add the airport if the flight plan is empty.

Add Position to Flight Plan

Inserts the clicked object into the nearest flight plan leg. The object will be added before departure or after destination if the clicked position is near the flight plan end points.

The name of the navaid or airport is shown in the menu item.

A user defined position is added to the flight plan if no airport or navaid is near the clicked position.

Delete from Flight Plan

Deletes the clicked airport, navaid or user position from the flight plan.

Edit Name of User Waypoint

Allows to change the name of a user defined waypoint. The length of the name is limited to 10 characters.

Show in Search

Shows the nearest airport or navaid in the search dialog. The current search parameters are reset.

Set Center for Distance Search

Sets the center point for the distance search function. See Distance search. The center for the distance search is highlighted by a symbol.

Set Home

Sets the home position and zoom distance. The center of the home area is highlighted by a symbol.

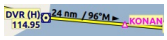
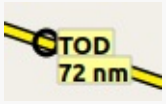
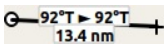
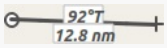
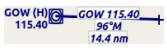
Legend

All speeds are per default in knots, distances in nautical miles, altitude in feet. The units can be changed to imperial or metric in the dialog `Options` on the tab `Units` .

Colors, size and text labels of some map elements can be changed in the dialog `Options` on the tab `Map Display` . This legend shows the default values.

Heading and course are suffixed with `°T` for true course or `°M` for magnetic course.

Map Marks

Symbol	Description
	Center of the home position.
	Center point that will be used for distance searches.
	Flight plan with distance, direction and magnetic course at each leg.
	Active flight plan segment
	Flight plan departure position on airport. Either parking, fuel box, helipad, water or runway.
	Top of descent point with distance to destination.
	Range rings labeled with distance.
	VOR or NDB range rings labeled with ident and frequency. Color indicates Navaid type.
	Great circle distance and course measurement line indicating length and true heading at start and destination. The two heading values will be equal for small distances. For shorter distances length is also shown in feet or meters.
	Rhumb line of equal bearing distance measurement indicating distance and true heading. Rhumb lines are used to approach a VOR or NDB or travel along airways. For shorter distances length is also shown in feet.
	Measurement lines starting from an airport or navaid have the same color and additional ident and frequency labels. Course for rhumb lines will be shown in magnetic if the navaid has a magnetic variation attribute.
	A highlighted airport or navaid selected in the search result table.
	A highlighted airport or navaid selected in the flight plan table.

Aircraft

Symbol	Description
	Current user aircraft if connected to the flight simulator. Labels vary and can be customized in `Options` on the tab `Map Display` . The user aircraft depends on selected aircraft (jet, piston/turboprop or helicopter). Optionally a black needle protruding from the aircraft nose can show the current aircraft track.
	User aircraft on ground
	Needle showing the current track of the aircraft. Aircraft nose shows heading.
	User aircraft trail if connected to the flight simulator.
	Wind around the user aircraft with direction in degrees magnetic and speed.
	AI or multiplayer aircraft. Labels vary and can be customized in `Options` on the tab `Map Display` . The symbol depends on aircraft type (jet, piston/turboprop or helicopter).

Airports

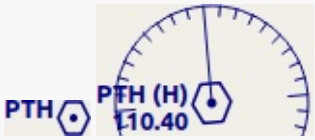
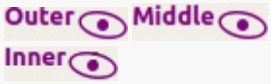
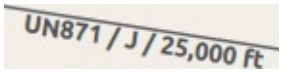
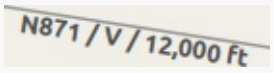
Airports having control towers are shown in dark blue others in magenta. Add-on airport names and idents are shown italic and underlined. Airports that are part of the flight plan have a light yellow text background.

The symbol is shown smaller if an airport has no runways. This is the case for some add-on airports that use another technique like photoscenery to display runways.

Symbol	Description
	Airports with hard surface runways longer than 8,000 ft or 2,400 meters. All runways longer than 4,000 ft or about 1,200 meters are shown. Only for lower zoom distances.
	Airports with hard surface runways. White line shows heading of longest runway.
	Airports with soft surface runways.
	Empty airports shown in gray. No taxiways, no parking spots and no aprons.
	Seaplane base having only water runways.
	Military airport.
	Heliport having only helipads and no runways.
	Abandoned airport. All runways are closed.
	Airports that have fuel available.
	Airport label showing name, ident, ATIS frequency, elevation, lighted runways (`L`) and length of longest runway. The text labels for an airport can be changed in the dialog `Options` on the tab `Map Display` .

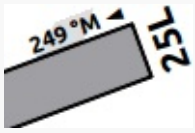
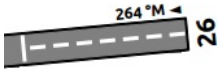
Navaids

Navaids that are part of the flight plan have a light yellow text background.

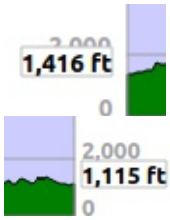
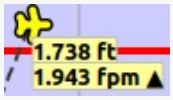
Symbol	Description
	VOR DME including ident, type (High, Low or Terminal) and frequency. Compass rose shows magnetic variation on lower zoom distances.
	VOR including ident, type and frequency.
	DME including ident, type and frequency.
	NDB including ident, type (HH, H, MH or CL - compass locator) and frequency.
	Waypoint with name.
	User defined waypoint with name.
	Invalid airport, waypoint, VOR or NDB that is part of the flight plan but could not be found in the Scenery Database.
	Marker with type and heading indicated by lens shape.
	Jet airway with label showing name, type (Jet or Both) and minimum altitude. Text depends on zoom distance.
	Victor airway with label showing name, type (Victor or Both) and minimum altitude. Text depends on zoom distance.
	ILS with glideslope. Label shows ident, frequency, magnetic heading, glideslope pitch and DME indication if available.
	Localizer. Label shows ident, frequency, magnetic heading and DME indication if available.

Airport Diagram

Runway, taxiway, helipad and apron colors indicate surface type. White is used for an unknown or invalid surface type given by an add-on developer.

Symbol	Description
	Runway with length, width, light indicator (`L`) and surface type.
	Runway end with ident and magnetic heading.
	Displaced threshold. Do not use for landing.
	Overrun area. Do not use for taxi, takeoff or landing.
	Blast pad. Do not use for taxi, takeoff or landing.
	Taxiway with name.
	Closed taxiway.
	Semi transparent dotted aprons and taxiways indicate that no surface is drawn. It might use a photo texture or simply the default background.
	Tower. Red if a tower frequency is available. Otherwise just view position.
	Fuel
	GA ramp with parking number and heading tick mark.
	Gate with number and heading tick mark. Second ring indicates availability of jetway.
	Cargo ramp
	Military combat parking or cargo ramp.
	Helipads. Red text indicates medical helipad.

Elevation Profile Legend

Symbol	Description
	Ground with start and destination airport elevation.
	Flight plan altitude.
	Top of descent with distance to destination.
	Minimum safe altitude for flight plan. This is altitude plus 1000 feet rounded up to the next 500 ft. The 1000 feet buffer can be changed in the dialog `Options` on the tab `Flight Plan`
	Minimum safe altitude for a flight plan segment. The same rules apply as to the minimum safe altitude for flight plan.
	User aircraft if connected to the simulator. Labels show altitude and climb/sink rate.
	User aircraft trail if connected to the flight simulator.

Map Flight Plan Editing

The flight plan drag and drop editing mode is switched on per default but can be disabled using the toolbar or `Main Menu` -> `Flight Plan` -> `Edit Flight Plan on Map`.

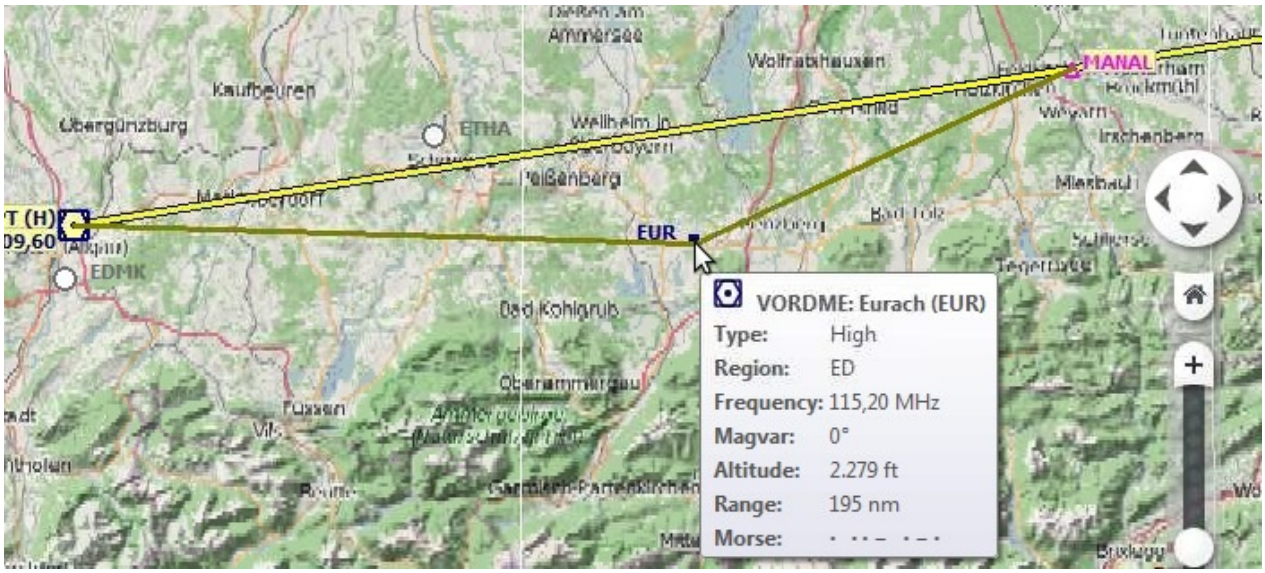
You can use the keyboard, the mouse wheel or the map overlays to scroll and zoom while editing the route.

Note that the flight plan drag and drop editing is based on the assumption that a direct connection between departure and destination already exists.

Always select departure and destination first if you would like to build you flight plan manually. This will connect both points with a great circle line. Based on this line you can start to add navaids to your flight plan.

The following functionality is available:

- Click on a flight plan leg: Starts editing and adds a new waypoint depending on where the next click is done:
  - On a single airport and navaid: Object is inserted into the flight plan segment.
  - On multiple airports or navaids: A menu pops up that allows you to select the object to be inserted.
  - No airport and no navaid: A user defined position is inserted to the flight plan.
- Click on waypoint: Starts editing and replaces the clicked waypoint with an object depending on where the next click is done:
  - On a single airport and navaid: Object replaces the clicked waypoint.
  - On multiple airports or navaids: A menu pops up that allows to select the object that should replace the clicked waypoint.
  - No airport and no navaid: A user defined position replaces the waypoint.
- Click on departure or destination: Replaces the departure or destination with an object depending on where the next click is done:
  - On a single airport: Airport replaces the departure or destination. A default runway is assigned as start position if the departure is replaced with a new airport.
  - On a navaid: Object replaces departure or destination which results in an invalid flight plan. The flight plan can be saved and loaded (a warning will be shown) but is unusable by Flight Simulator.
  - On multiple airports or navaids: A menu pops up that allows to select the object that replaces departure or destination.
  - No airport and no navaid: A user defined position replaces the waypoint resulting in an invalid flight plan.
- Right click, pressing the escape key or any click outside of the map window: Cancel current operation.



Picture above: *Inserting a navaid into a flight plan leg by clicking and moving the leg line. A tool tip for the navaid is shown.*

Picture above: *Replacing VOR TRA in the flight plan with another one by simply clicking and moving the waypoint TRA onto KLO. A selection menu pops up for disambiguation.*

 Search Dock Window

General

Two search tabs are available for airport and navaid (VOR, NDB and waypoints) search.

These tabs contain multiple rows of search filters that can be switched on and off with the drop down menu on the hamburger button  on the top right.

The drop down menu prefixes menu items with a change indicator `*` to show that the related filter row has modifications. You can use this to find out why a search does not give the expected results.

If you do not get the expected results or no results at all use the `Reset Search` menu item or press Ctrl-R to clear all search criteria.

Filters are defined by various controls which are mostly self explaining. Only text filters and the tri state checkboxes like `Lighted`, `Approach` or `Closed` need a few extra remarks below.

All filters can be used together where all conditions have to be met (`and` operator). All filters except the distance search filter are applied immediately. The distance search is applied after a short delay for each change.

A tooltip on the blue help button on the top right shows information about searching.

Text filters

The standard is to search for entries that start with the entered text.

The placeholder `*` stands for any text. Once a `*` is included in the term, the standard search (match start of text) is no longer used. In that case you might have to add a `*` at the end of the search term as well to get the expected result.

The search is negated (find all entries that do not match) if the first character in a search box is a `-`.

Note that all of the above does not apply to numeric fields like `Runways: Min` or `Altitude: Max`.

Tri state checkboxes

These are used to filter airports by presence of certain facilities or properties.

- Gray: Condition is ignored.
- Checked: Condition must match.
- Unchecked: Condition must not match.

Colors and look of these checkboxes vary with theme and operation system. So instead of gray another color might be used (red fill on Linux or a `-` for macOS).

Distance search

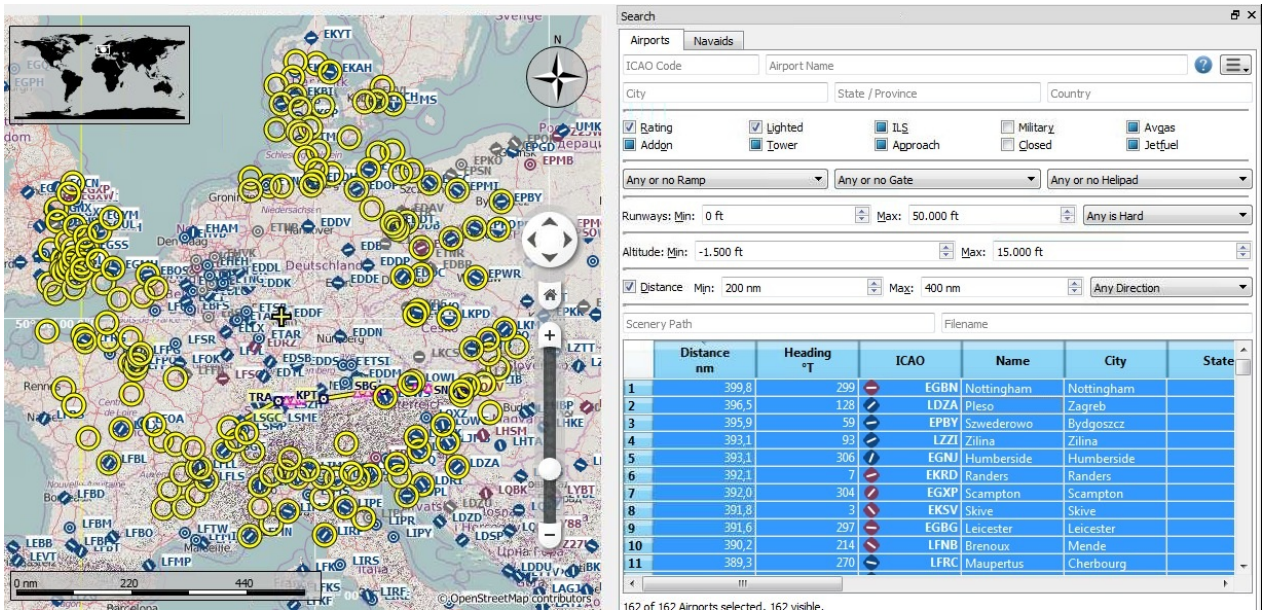
This function allows you to combine all other search options with a simple spatial search.

The checkbox `Distance` has to be selected to enable this search. The result will include only airports or navaids that are within the given minimum and maximum range of nautical miles from the search center. This allows you to quickly search for a destination that is within the range of your aircraft and fulfills other criteria like having lighted runways and fuel.

The center for the distance search is highlighted by a  symbol.

To restrict the search further you can select a direction (North, East, South and West).

Check the drop down menu for the change indicator `*` and the search fields for any remaining text if the distance search does not give any or unexpected results.



Picture above A complex search: Find all airports within a distance between 200 and 400 nautical miles from Frankfurt (EDDF). Airports should have a rating greater than 0 and should have at least one lighted runway. Military and closed airports are excluded. The resulting airports are highlighted on the map by selecting them in the search result table.

Search Result Table View

All selected elements in the table view will be highlighted on the map using a black/yellow circle. See Highlights for more information. Multi selection using `Shift-Click` or `Ctrl-Click` is possible.

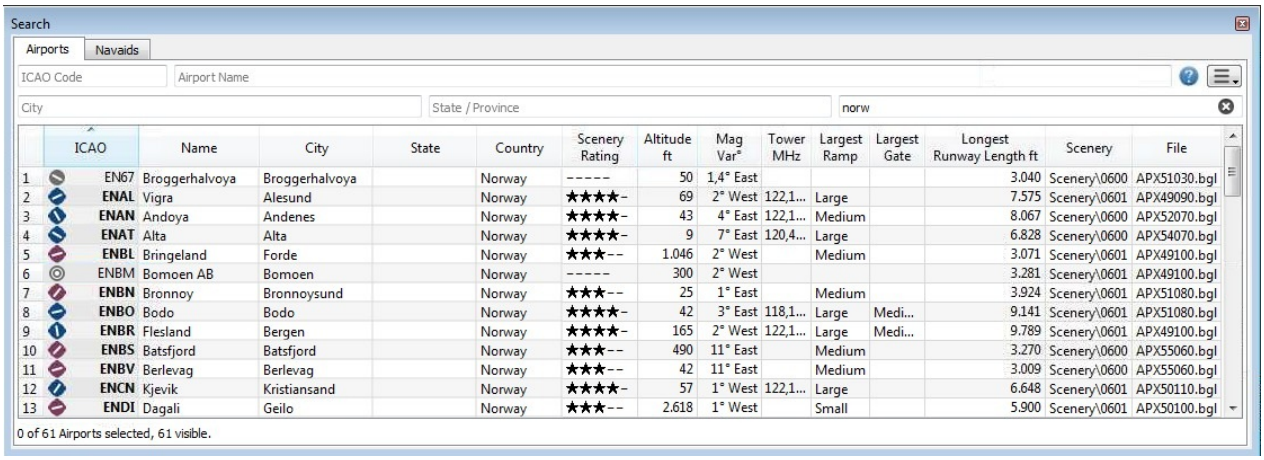
Table View

The header of all table views allows the following manipulation:

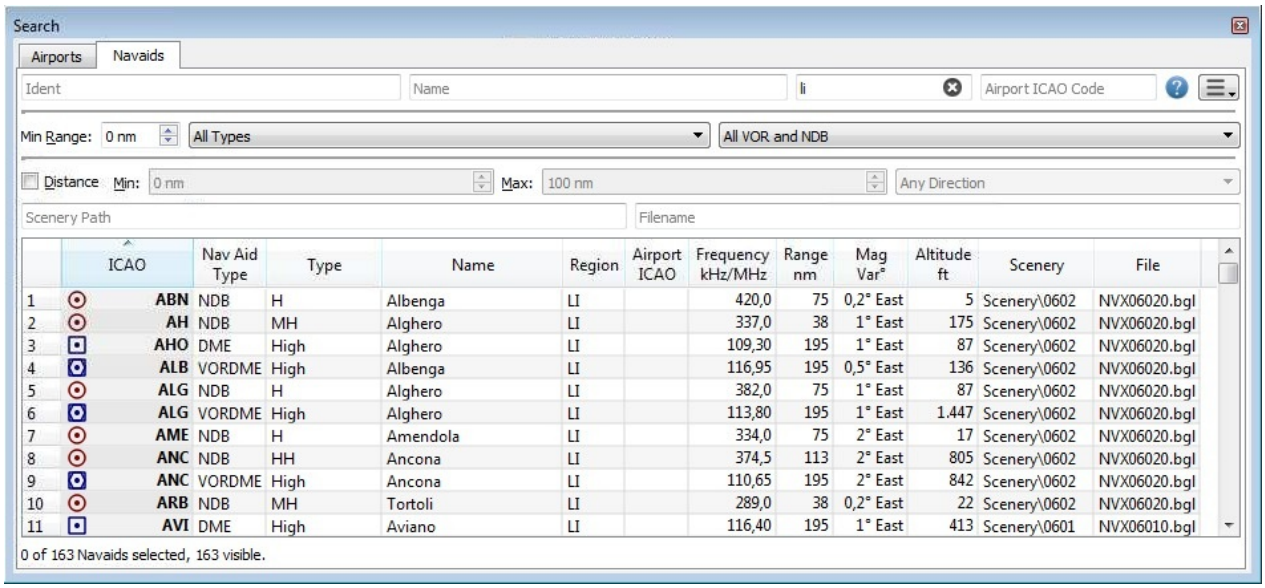
- Click on the top left corner of the column header: Select all result rows.
- Click on a column header: Sort ascending or descending (only for search result tables - not for flight plan table).
- Click and drag on the column header: Change column order.
- Double click on column border: Automatically fit column size to content.
- Click and drag on column border: Change column width.

The above applies to all table views in the program.

The program saves the sort order, column widths and positions until `Reset View` is selected in the context menu.



Picture above: *Airport search result table. All additional search options are hidden by using the drop down menu of the hamburger button on the top right.*



	ICAO	Nav Aid Type	Type	Name	Region	Airport ICAO	Frequency kHz/MHz	Range nm	Mag Var°	Altitude ft	Scenery	File
1	ABN	NDB	H	Albenga	LI		420,0	75	0,2° East	5	Scenery\0602	NVX06020.bgl
2	AH	NDB	MH	Alghero	LI		337,0	38	1° East	175	Scenery\0602	NVX06020.bgl
3	AHO	DME	High	Alghero	LI		109,30	195	1° East	87	Scenery\0602	NVX06020.bgl
4	ALB	VORDME	High	Albenga	LI		116,95	195	0,5° East	136	Scenery\0602	NVX06020.bgl
5	ALG	NDB	H	Alghero	LI		382,0	75	1° East	87	Scenery\0602	NVX06020.bgl
6	ALG	VORDME	High	Alghero	LI		113,80	195	1° East	1.447	Scenery\0602	NVX06020.bgl
7	AME	NDB	H	Amendola	LI		334,0	75	2° East	17	Scenery\0602	NVX06020.bgl
8	ANC	NDB	HH	Ancona	LI		374,5	113	2° East	805	Scenery\0602	NVX06020.bgl
9	ANC	VORDME	High	Ancona	LI		110,65	195	2° East	842	Scenery\0602	NVX06020.bgl
10	ARB	NDB	MH	Tortoli	LI		289,0	38	0,2° East	22	Scenery\0602	NVX06020.bgl
11	AVI	DME	High	Aviano	LI		116,40	195	1° East	413	Scenery\0601	NVX06010.bgl

Picture above: *Navaid search. All search options are visible. Search is limited to ICAO region* `LI` *(Italy) and VOR and NDB stations.*

Mouse Clicks

A double click on an entry in the table view shows either an airport diagram or zooms to the navaid. Additionally, details are shown in the `Information` dock window. Single click selects an object and highlights it on the map using a black/yellow circle.

Search Result Table View Context Menu

Show Information

Same as the Map Context Menu.

Show on Map

Shows either the airport diagram or zooms to the navaid on the map.

Filter by Entries including/excluding

Takes the text of the field under the cursor and sets the search filter for an including or an excluding search. This is only enabled for text columns.

Reset Search

Clears search filters and shows all entries again in the search result table view.

Show All

The table view does not show all entries initially for performance reasons. This menu item allows to load and show the whole search result. The view switches back to the limited number of entries after a search filter is modified or the sort order is changed. The number of all, visible and selected entries is shown at the bottom of the tab.

Be aware that showing all navaids and airports can take some time especially if they are highlighted on the map when selecting all in the search result. The program does not crash but needs a few seconds to highlight all on the map.

Show Range Rings

Show Navaid range

Remove all Range Rings and Distance measurements

Set as Flight Plan Departure

Set as Flight Plan Destination

Add Position to Flight Plan

Same as the Map Context Menu.

Copy

Copies the selected entries in CSV format into the clipboard. This will consider changes to the table view like column order and sort order. The CSV will include a header line.

Select All

Selects all visible entries. To select all available entries the function `Show All` has to be used first.

Reset View

Resets the sort order, the column order and column widths back to default.

Set Center for Distance Search

Same as the Map Context Menu.

Flight Plan Dock Window

Upper Part

The top shows a label that contains departure, departure position (parking, runway or helipad), destination, flight plan distance, traveling time and flight plan type.

Besides the label there are three input fields on top of this dock window:

- Speed (kts): Ground speed. The value of this field is used only for calculating traveling times in the table view: `Leg Time` and `ETA` (estimated time of arrival at a waypoint given 0:00 as start time). It is not saved with the flight plan and not used for simulator user aircraft calculations.
- Cruise altitude (ft): This value is saved with the flight plan and is also used to calculate an airway flight plan based on given altitude. This field receives the minimum altitude for a flight plan if a plan along Victor or Jet airways is calculated and altitude restrictions were found. See Calculate based on given Altitude.
- Flight Plan Type (IFR or VFR): This is saved with the flight plan.

Flight Plan Table

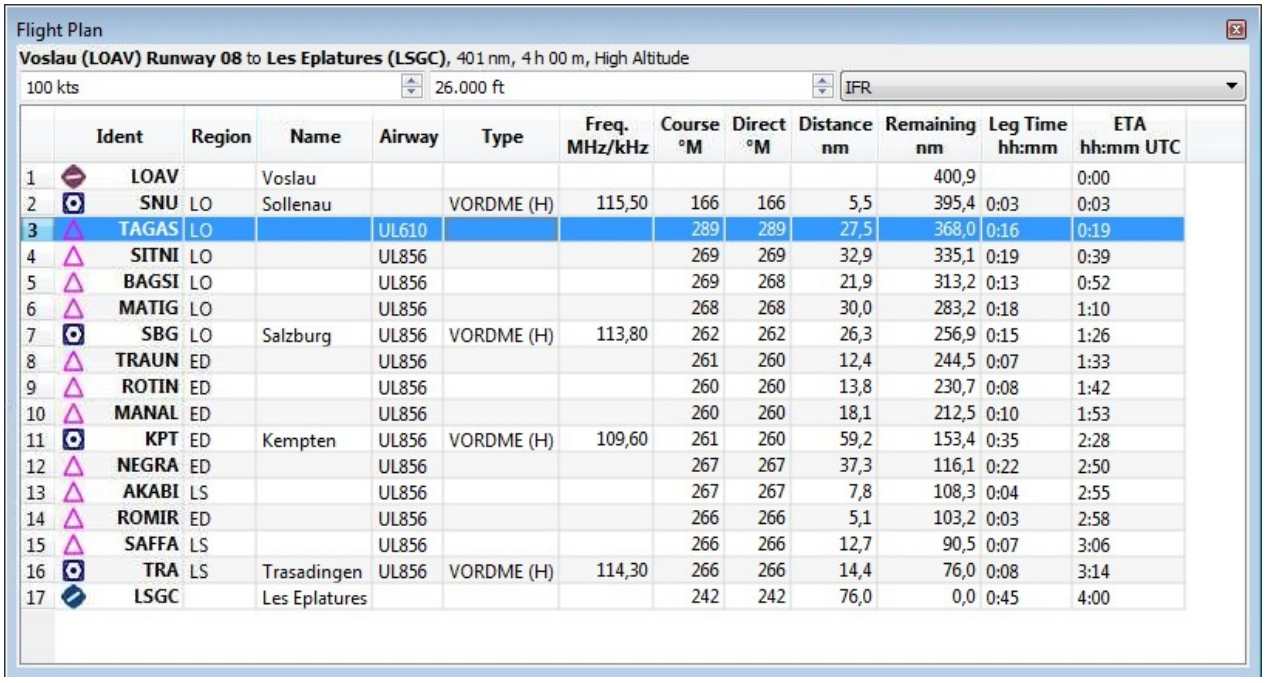
The table view allows the same operations as the search table view except sorting. See here for more information.

All selected elements in the flight plan table view will be highlighted on the map using a black/green circle. See Highlights for more information. Multi selection using `Shift-Click` or `Ctrl-Click` is possible.

The active flight plan leg is highligthed in magenta when *Little Navmap* is connected to a simulator.

Note on the table columns `Course °M` and `Direct °M`:

- `Direct °M:` This is the constant course of the rhumb line connecting two waypoints of a leg. Depending on route and distance it can differ from the course of the great circle line. Use this course if you travel along airways or towards VOR or NDB stations. Opposed to the course shown by the flight simulator GPS unit this will give you the precise radial when approaching a VOR or NDB on a flight plan.
- `Course °M:` This is the start course of the great circle route connecting the two waypoints of the leg. Use this course at departure if you travel long distances without navaids. Be aware that you have to change you course constantly when travelling along a great circle line.



	Ident	Region	Name	Airway	Type	Freq. MHz/kHz	Course °M	Direct °M	Distance nm	Remaining nm	Leg Time hh:mm	ETA hh:mm UTC
1	LOAV		Voslau							400,9		0:00
2	SNU	LO	Sollenau		VORDME (H)	115,50	166	166	5,5	395,4	0:03	0:03
3	TAGAS	LO		UL610			289	289	27,5	368,0	0:16	0:19
4	SITNI	LO		UL856			269	269	32,9	335,1	0:19	0:39
5	BAGSI	LO		UL856			269	268	21,9	313,2	0:13	0:52
6	MATIG	LO		UL856			268	268	30,0	283,2	0:18	1:10
7	SBG	LO	Salzburg	UL856	VORDME (H)	113,80	262	262	26,3	256,9	0:15	1:26
8	TRAUN	ED		UL856			261	260	12,4	244,5	0:07	1:33
9	ROTIN	ED		UL856			260	260	13,8	230,7	0:08	1:42
10	MANAL	ED		UL856			260	260	18,1	212,5	0:10	1:53
11	KPT	ED	Kempten	UL856	VORDME (H)	109,60	261	260	59,2	153,4	0:35	2:28
12	NEGRA	ED		UL856			267	267	37,3	116,1	0:22	2:50
13	AKABI	LS		UL856			267	267	7,8	108,3	0:04	2:55
14	ROMIR	ED		UL856			266	266	5,1	103,2	0:03	2:58
15	SAFFA	LS		UL856			266	266	12,7	90,5	0:07	3:06
16	TRA	LS	Trasadingen	UL856	VORDME (H)	114,30	266	266	14,4	76,0	0:08	3:14
17	LSGC		Les Eplatures				242	242	76,0	0,0	0:45	4:00

Picture above: *The* `Flight Plan` *dock window.*

Mouse Clicks

A double click on an entry in the table view shows either an airport diagram or zooms to the navaid. Additionally, details are shown in the `Information` dock window. Single click selects an object and highlights it on the map using a black/green circle.

Flight Plan Table View Context Menu

 Show Information

Same as the Map Context Menu.

 Show on Map

Shows either the airport diagram or zooms to the navaid on the map. The zoom distance can be changed in the dialog `Options` on the tab `Map` .

 Move Selected Legs up/down

Moves all selected flight plan legs up or down in the list. This works also if multiple legs are selected.

Airway names will be removed when waypoints in the flight plan are moved or deleted because the new flight plan legs will not follow any airway but rather use direct connections.

 Delete Selected Legs

Deletes all selected flight plan legs. Use `Undo` if you deleted legs accidentally.

 Edit Name of User Waypoint

Allows to change the name of a user defined waypoint. The length of the name is limited to 10 characters.

 Show Range Rings

Same as the Map Context Menu.

 Show Navaid range

Will show the range rings for all selected radio navaids in the flight plan. You will get a range circle for each radio navaid on the flight plan if you simply select all legs of the flight plan and use this function.

Otherwise, the same as the Map Context Menu.

 Remove all Range Rings and Distance measurements

Same as the Map Context Menu.

Copy

Copies the selected entries in CSV format into the clipboard. The CSV will include a header. This will consider changes to the table view like column order.

Select All

Selects all flight plan legs.

Reset View

Resets the column order and column widths back to the default view.

Set Center for Distance Search

Same as the Map Context Menu.

Flight Plan Elevation Profile Dock Window

This dock window shows the ground elevation and flight plan cruise altitude together will all flight plan waypoints. It is only available when a flight plan is loaded. The user aircraft will be shown too if *Little Navmap* is connected to the simulator.

Elevation processing is done in the background since data has to be downloaded and computation is CPU intense. Therefore, the udpdate of the elevation display can take from a few seconds up to half a minute. This background update is started after creating or changing the flight plan or when new elevation data was downloaded. The display will be updated accordingly whenever new data is available.

Close the `Flight Plan Elevation Profile` window if you think this causes performance problems or stutters. All updates will stop once the window is closed.

The calculation of elevation is limited to flight plan segments not longer than 2000 nautial miles to avoid overloading. Add more waypoints or calculate a flight plan to avoid this limitation.

Be aware that the elevation display covers only the flight plan and will not change the depiction if you get off flight plan with your simulator aircraft. Also, aircraft climb is not shown (no aircraft profiles yet).
The flight plan is only shown at cruise level and the descent segment, although you will see your user aircraft and trail climbing and descending.

Note that the elevation data does not cover all countries and currently ends at 60 degrees north.

Additional information is shown in a label on top of the window if the mouse is hovered over the diagram.
The corresponding position within the flight plan is highlighted on the map too.

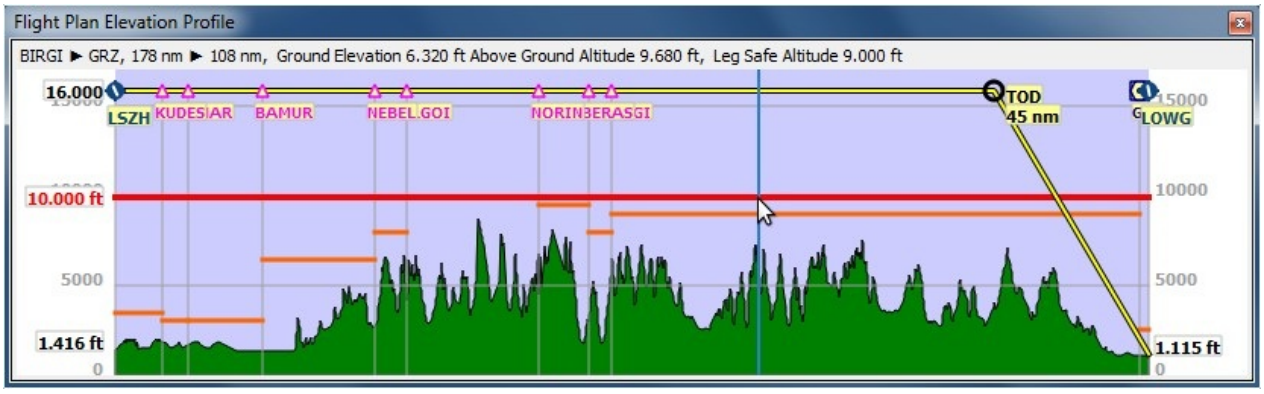
Following information is shown in the top label if connected to flight simulator with an active session:

- Distance from user aircraft to flight plan destination
- Distance to the top of descent

In addition, the information below is shown in the top label when hovering the mouse over the diagram:

- From and to waypoint
- Distance from departure and to destination
- Ground elevation
- Flight plan cruise altitude above ground
- Safe altitude for the current flight plan leg at the hovering position

For more information see the `Navmap` tab in the `Legend` dock window or the Nav Map Legend for details.



Picture above: *Flight plan elevation profile with line indicating the mouse hovering position.Orange lines show minimum safe altitude to flight plan segments. Top of descent point is shown on the top right.*

 Information Dock Window

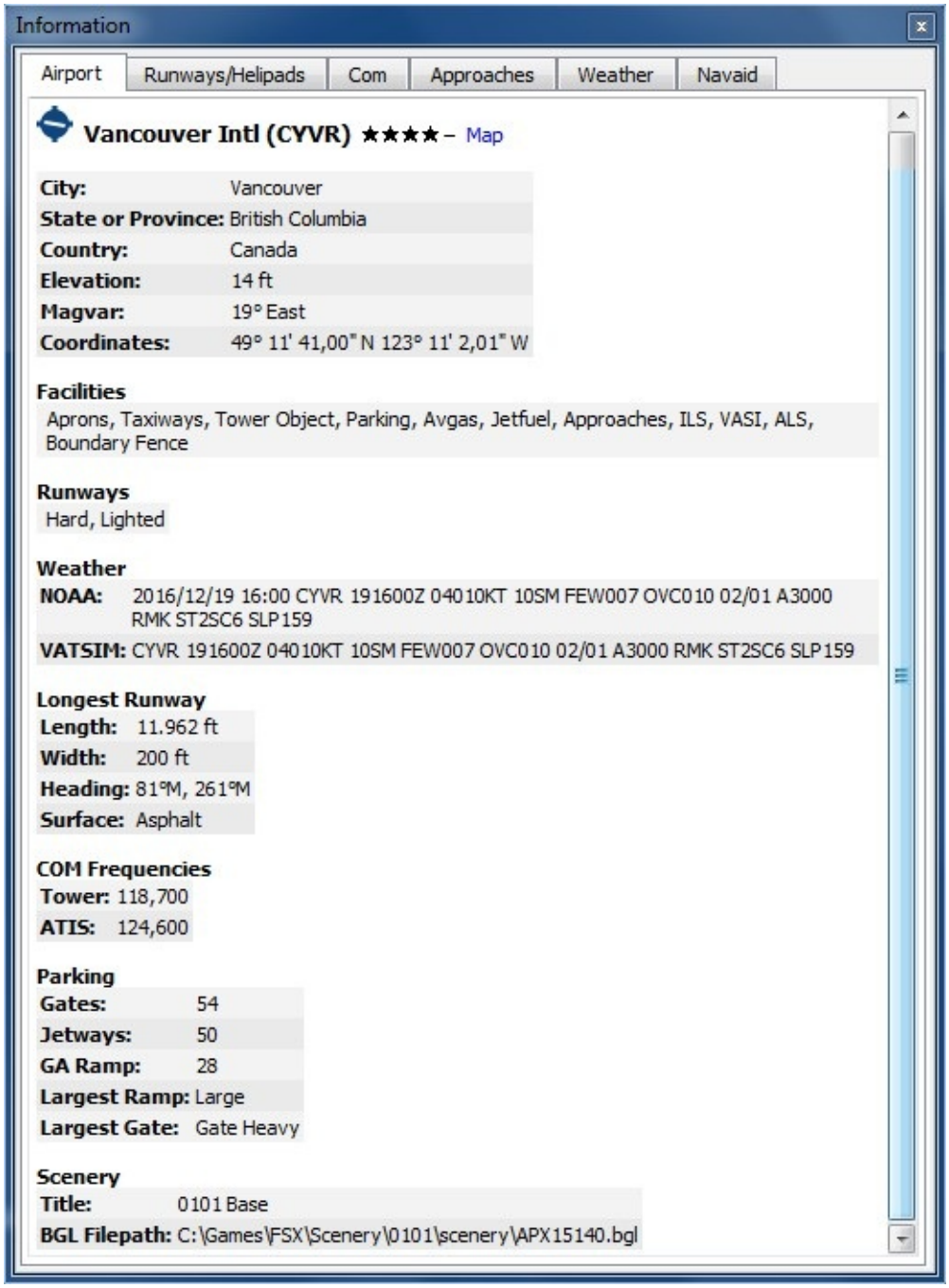
This dock window contains text information about airports in several tabs as well as information for one or more navaids or airways in another tab. A tab `Weather` also includes decoded weather information for the selected airport.

All information can be copied into the clipboard as formatted text. Use the context menu of the text fields or use `Ctrl-A` to select all and `Ctrl-C` to copy the content to the clipboard.

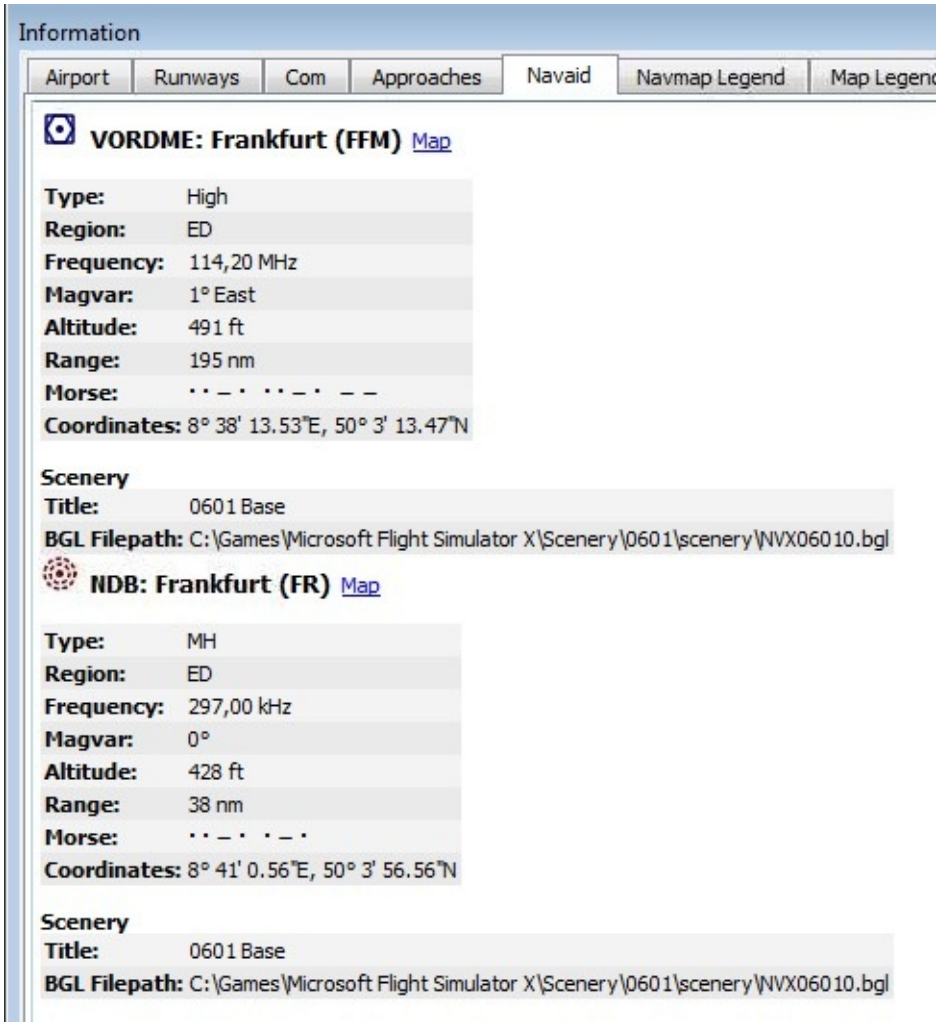
Information is shown when selecting one of the `Show Information for ...` context menu items in the map, flight plan dock window or the seach result table. One airport and all navaids are loaded into the information display if multiple objects are nearby a mouse click

A blue link `Map` allows jumping to the shown airport or navaid on the map. Additional links for helipads are available in the tab `Runways/Helipads`.

An airway is always displayed with all its waypoints that are also linked to their respective map postitions.



Picture above: *Airport information overview. Additional tabs show information for runways, COM frequencies, approaches and weather.*



Picture above: *Navaid information. Two navaids were close to the cursor when clicked.*

Simulator Aircraft Dock Window

This dock window shows information about the user aircraft and about AI or multiplayer aircraft in several tabs. *Little Navmap* has to be connected to the simulator to enable this functionality. See Connecting to a Flight Simulator for more information on this topic.

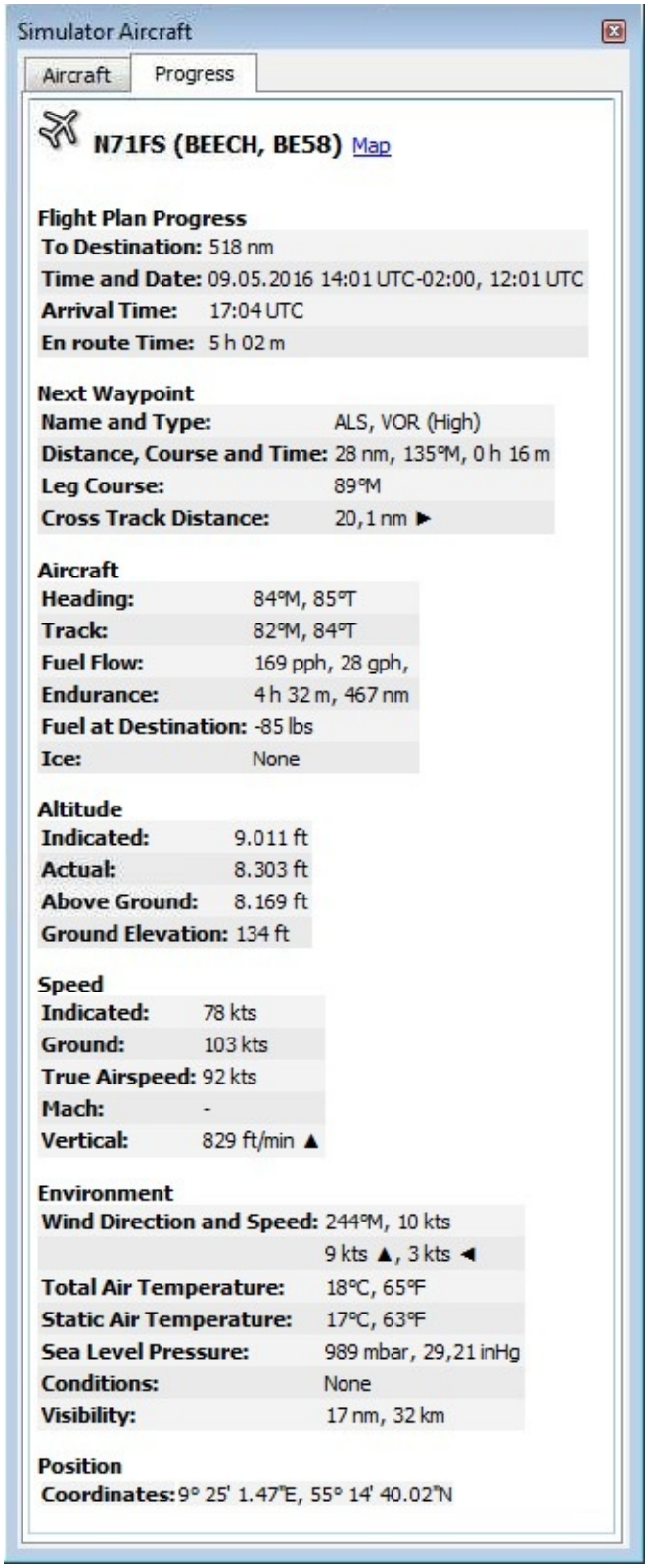
Tab Aircraft

Gives an overview about the user aircraft and shows type, weight and fuel information.

Picture above: *Aircraft information when connected to a Flight Simulator.*

Tab Progress

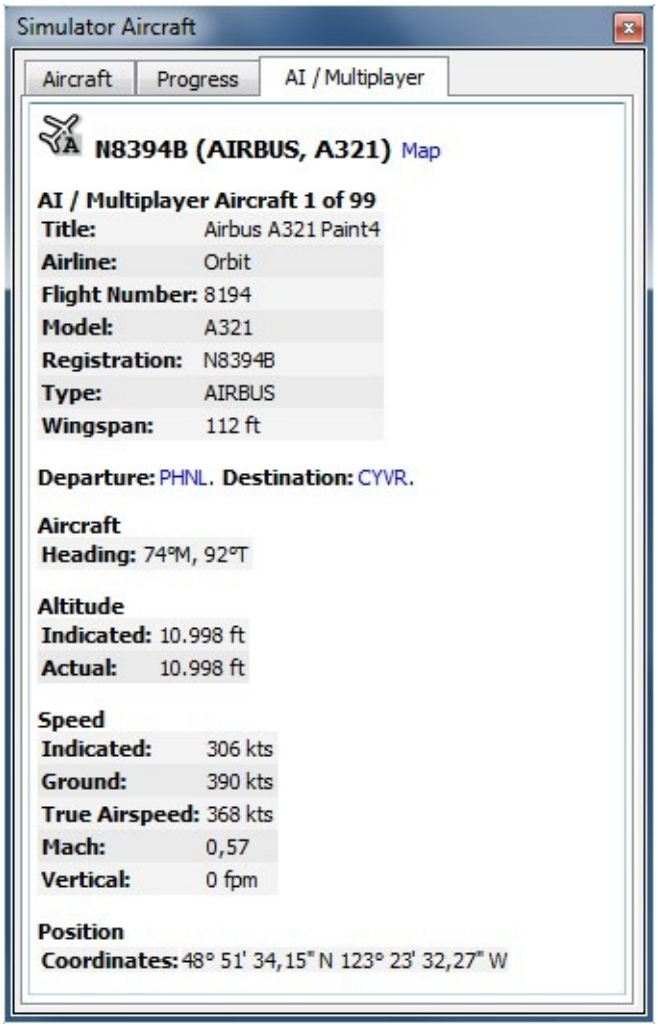
Shows information similar to a flight management computer about the user aircraft. This covers flight plan progress, altitude, speed, ambient and environment parameters.



Picture above: *Progress and ambient information of the current flight situation. Some fields or tables like* `Next Waypoint` *are only available when a flight plan is loaded.*

Tab AI / Multiplayer

Information about a AI or multiplayer aircraft is displayed in this tab if an aircraft is clicked on the map. This also includes departure and destination airports that can be shown on the map by clicking on the blue links.



Picture above: *Information about an AI aircraft.*

Legend Dock Window

Contains two tabs: One tab `Navmap` explaining the various airport and navaid symbols and a tab `Map` which shows the general legend for the base map like the *OpenStreetMap* for example.

Note that the general map legend is not available to all map themes.

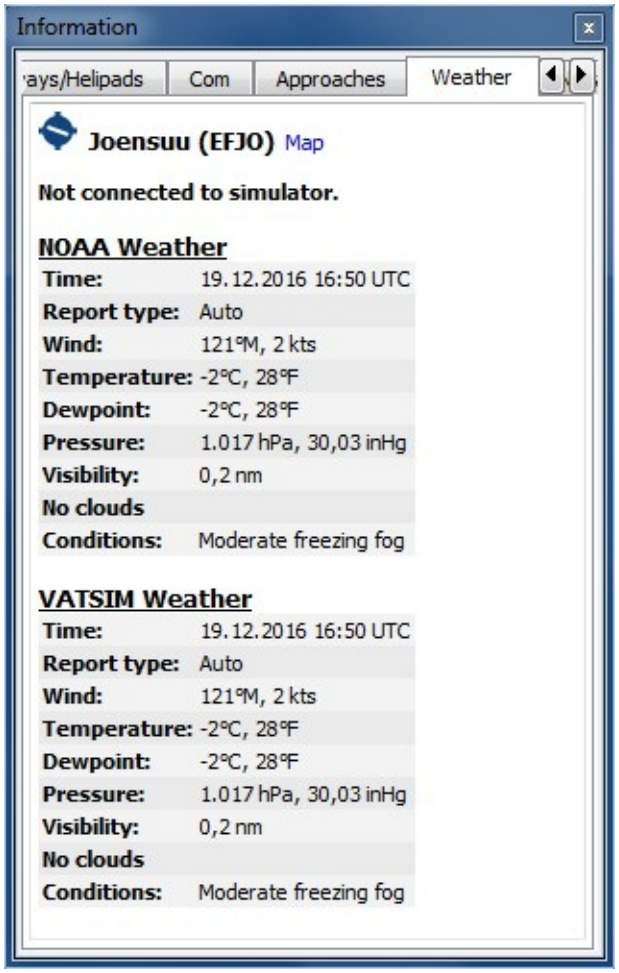
Weather

Little Navmap can display METARs from five sources:

- Flight Simulator if connected. This also applies to network setups.
- NOAA online weather service
- VATSIM network online weather service
- HiFi Simulation Technologies *Active Sky Next*
- HiFi Simulation Technologies *AS16*

You can define in the `Options` dialog on the `Weather` tab which sources are used to display the METAR information in tooltips or the tab `Weather` in `Information` dock window.

METARs are shown in the airport tooltips and on the `Airport` overview tab. Decoded weather information for all sources is available in the tab `Weather` .



Picture above: *Decoded weather information from two online sources. Flight simulator is not connected.*

Flight Simulator

Weather information from a flight simulator can be displayed in three flavours in METARs and decoded weather which depends on
the selected airport

- `Station` : The airport has a weather station. This is the most precise weather indication.
- `Nearest` : The clicked airport has no weather station and the nearest weather is fetched. The ident of the nearest station is shown in the METAR and the decoded weather. Note that the nearest weather station is not neccessarliy an

airport.
- `Interpolated`: The weather is interpolated by the flight simulator using the three nearest stations. This is usually the only option available on airports that are far away from the user aircraft.

`Nearest` and `Interpolated` are always shown together if `Station` is not available.

The flight simulator weather is updated every 15 seconds to catch changes in the weather theme.

Online - NOAA and VATSIM

Online weather from both sources is updated every 10 minutes.

Active Sky

Both *Active Sky* programs are recognized automatically on startup for each simulator.
The `current_wx_snapshot.txt` and `activeflightplanwx.txt` files are loaded and monitored for changes. Weather will be reloaded and upated in the
information display if neccessary.

You can also select the `current_wx_snapshot.txt` file manually. In that case the
METARs from this file are displayed for all installed flight simulators. The `activeflightplanwx.txt` will be loaded from the same directory.

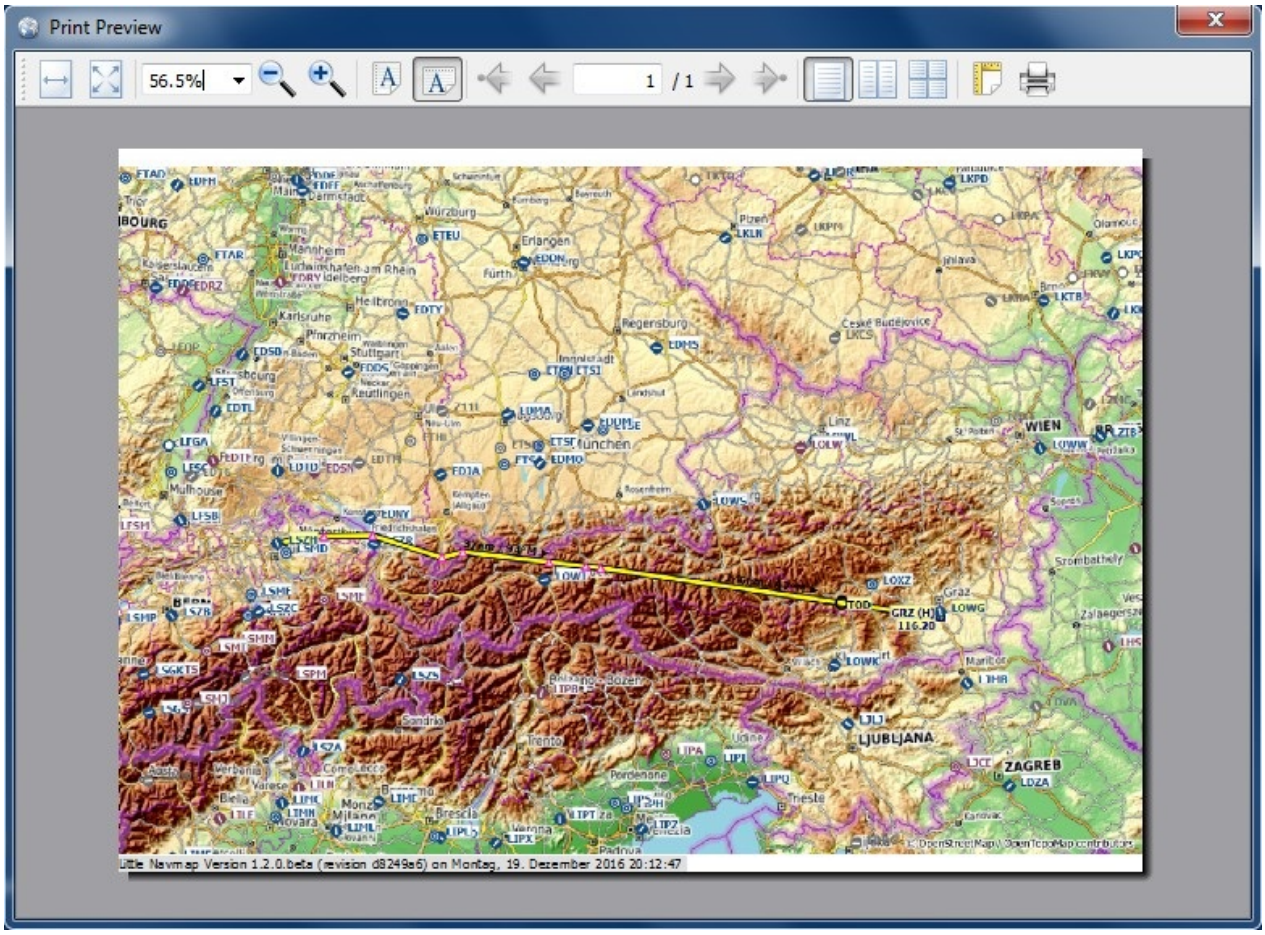
Departure and destination weather will be displayed if a flight plan is loaded into one of the
Active Sky programs. A suffix `Destination` or `Departure` will indicate the usage of Active Sky flight plan weather on the tab `Weather`. This gives *Active Sky* users the most precise weather indication for departure and destination.

Printing

Print Map

Opens the print preview dialog that allows the current map view to be printed.

Printing is currently limited to the screen resolution of the current map view. To get a less blurry printout enlarge the map window as much as possible. You can close all dock windows to achieve this.

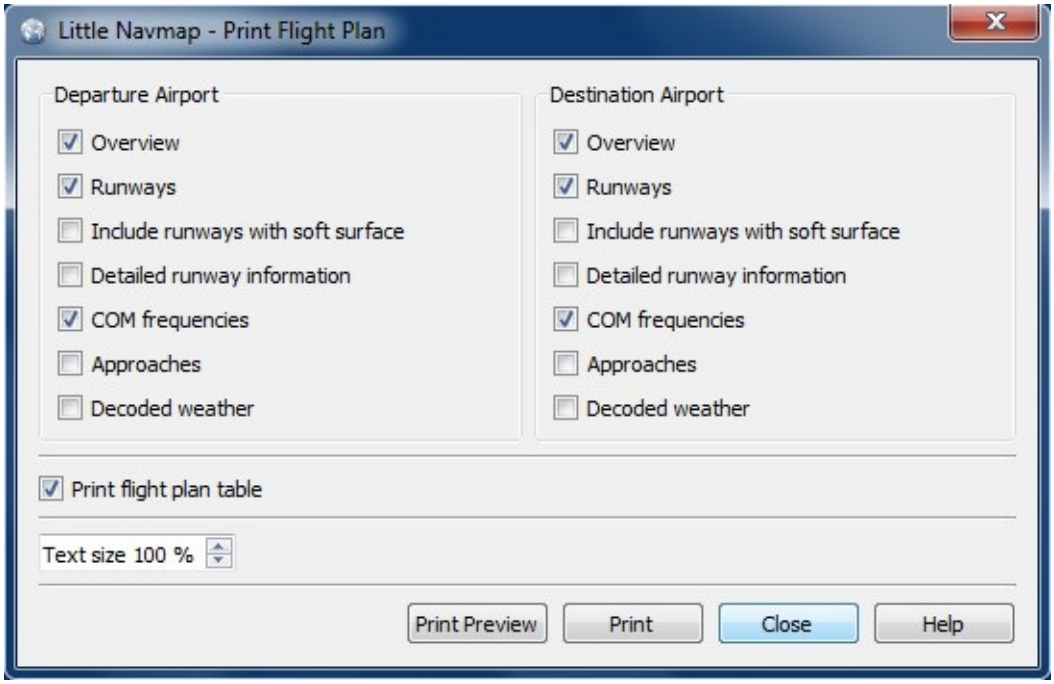


Picture above: *Print preview dialog for the current map.*

Print Flight Plan

Allows the current flight plan to be printed.

TODO



Picture above: *Print flight plan options dialog.*

Flight Plan Route Description

This dialog allows you to create a flight plan from a route description as they are generated or provided by various online services.

When opened it will show the route description for the current flight plan which also contains information about speed and cruise altitude.

The upper part of the dialog shows the route description input field and the lower part shows any messages, warnings or errors that occur during reading.

The description parser will try to use as much of the route as possible even if parts of the flight plan like waypoints or airways cannot be found. You will see warnings in the lower output field if that is the case.

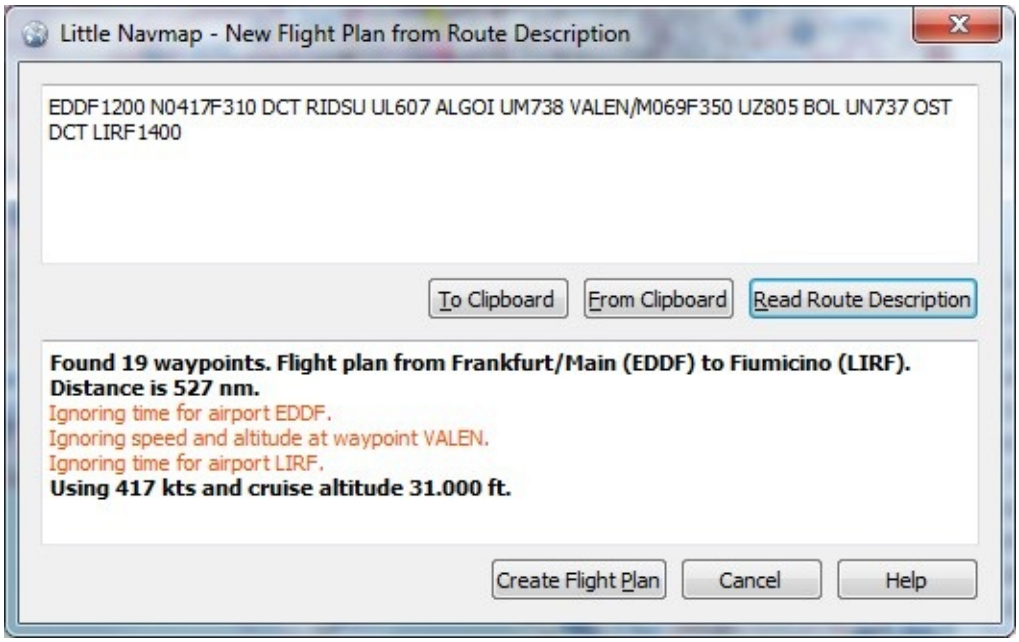
For long flight plans it can happen that far aways waypoints are added if names are not unique. Remove these manually if needed.

Many waypoints and airways will not be found if route descriptions from the latest AIRAC sources are used together with flght simulator stock data from 2005. It is recommended to use a navigation data update for the stock scenery when reading route descriptions from online sources like RouteFinder, Online Flight Planner or SimBrief.

I recommend to use an AIRAC cycle that is closest to the flight simulator navigation age (end of 2005) if a navigation data update is not an option .

Note that even flight plans calculated in *Little Navmap* cannot be converted back exactly in some cases. This happens due to ambiguitues in the route network like NDB and VOR stations having the same names or errors in the source data.

The cruise speed and altitude are used to create the flight plan if given.



Picture above: *A route description that was read successfully with a few warnings about ignored elements.Speed and altitude were recognized.*

Buttons

- `To Clipboard` : Copies the current description as plain text to the clipboard.
- `From Clipboard` : Inserts text from clipboard to the input field. The inserted text is converted to upper case and all invalid characters are removed from the text.

- `Read Route Description` : Reads the route description and prints any messages, warnings and errors in the lower output field. The current flight plan is not affected by this action.
- `Create Flight Plan` : Creates a new flight plan for the parsed route decription.
  You have to click `Read Route Description` before.

Format

The route description has to follow the format rules below:

`FROM[ETD] [SPEEDALT] [SID] [ENROUTE] [STAR] TO[ETA] [ALTERNATES]`

All elements in square brackets are optional.

`FROM` and `TO` : These are the required 3 or 4 letter idents for departure and destination airports.

Examples: `KEAT` , `CYPU` , `S16` .

`ALTERNATES` : Alternate airports are optional and are simply appended to the flight plan.

`SPEEDALT` : Contains the cruise speed and altitude. See below for a details.

`ENROUTE` : This is a list of either `WAYPOINT` or a `AIRWAYWAYPOINT` forming the actual flight plan. The first enty has to be an airport, waypoint, VOR or NDB.

`WAYPOINT` : A waypoint, VOR, NDB, airport or user defined coordinates. See below for a details about coordinates. A waypoint
can be prefixed with `DCT` to indicate a direct connection not using an airway.

Examples: `TAU` , `BOMBI` , `AST` , `CL` , `EDDF` .

`AIRWAYWAYPOINT` : Airway and end waypoint on the airway separated by a space.

Examples: `V495 CONDI` , `V338 YVR` , `V330 TRENA` .

Ignored Entries:

`ETD` and `ETA` : Four digit departure and arrival time.

`SID` and `STAR` : Currently ignored and replaced by `DCT` .

Speed and Altitude

Crusing speed and cruising level not separated by a space.

Speed is prefixed with:

`K` : Kilometers per hour followed by a four digit value.

`N` : Knots followed by a four digit value.

`M` : Mach followed by a three digit value.

Altitude is prefixed with:

`F` :Flight level in three digits.

`S` : Metric flight level in three digits of tens of meters.

`A` : Altitude in hundrets of feet in three digits.

`M` : Altitude in tens of meter in four digits.

Examples:

`N0410F310` 410 knots at flight level 310.

`M071F320` Mach 0.71 at flight level 320.

`K0790M0710` 790 kilomters per hour at 7100 meters.

Coordinates

Coordinates can be supplied in different formats:
Degrees only (7 characters): Two digits and north/south indicator plus three digits and east/west indicator.
Example: `51N010E`.

- Degrees and minutes (11 characters) Two digits degrees, two digits for minutes, north/south indicator. Then three digits for degrees, two digits for minutes and east/west indicator. Example: `4010N03822W`.
- North atlantic track points (NAT), Example: `5010N`.
- Coordinate waypoint pairs with degrees and minutes prefixed with north/south and east/west indicator. Examples: `N4200 W02000` or `N4200/W02000`.
- Garmin GFP format (13 characters) north/south indicator, two digits degrees, thee digits for minutes. Then east/west indicator, three digits degrees, three digits minutes. Example: `N48194W123096`

Flight Plan Description Examples

Frankfurt Main (EDDF) to Fiumicino (LIRF):

- Direct connection: `EDDF LIRF` or `EDDF DCT LIRF`.
- VOR to VOR: `EDDF FRD KPT BOA CMP LIRF`.
- Same as above with departure time (`ETD`) and arrival time (`ETA`) which both will be ignored: `EDDF1200 FRD KPT BOA CMP LIRF1300`.
- Same as above on flight level 310 at 410 knots: `EDDF N0410F310 DCT FRD DCT KPT DCT BOA DCT CMP DCT LIRF`
- Using Jet airways: `EDDF ASKIK T844 KOVAN UL608 TEDGO UL607 UTABA UM738 NATAG Y740 LORLO M738 AMTEL M727 TAQ LIRF`
- Same as above on flight level 310 at mach 0.71 with an additional speed and altitude at `NATAG` which will be ignored: `EDDF M071F310 SID ASKIK T844 KOVAN UL608 TEDGO UL607 UTABA UM738 NATAG/M069F350 Y740 LORLO M738 AMTEL M727 TAQ STAR LIRF`
- User defined waypoints with degree/minute notation and an alternate `LIRE`: `EDDF N0174F255 4732N00950E 4627N01019E 4450N01103E LIRF LIRE`

Load Scenery Library Dialog

This dialog allows loading of the scenery library data from all four supported flight simulators into the *Little Navmap* internal database. The scenery library to load can be selected in the `Simulator:` drop down box.

The dialog shows information about the currently selected database including the number of loaded airports, database version and more.

The base path and the `scenery.cfg` path will be shown in two text edit fields for the currently selected simulator. These fields are populated automatically, but can be changed to any other valid location. All values are saved for each flight simulator type.

Loading a scenery library can take three to six minutes depending on your setup and amount of scenery add-ons. You can speed this up by excluding directories containing neither airport nor navigation data in the `Options` dialog on the `Scenery Library Database` tab.

The previous scenery library database will be restored if you cancel the loading process or if the loading process fails.

All airports that are not located in the default `Scenery` directory are considered add-on airports and will be highlighted appropriately. Directories can be excluded from this behavior in the `Options` dialog on the `Scenery Library Database` tab. This can be useful if add-ons only correct airport elevation and these airports should not be hightlighted on the map using underline and italic text.

The menu `Scenery Library` -> `Flight Simulators` is synchronized with the simulator selection in the dialog. Once a database is successfully loaded, the display, flight plan and search will switch over to the newly loaded simulator data.

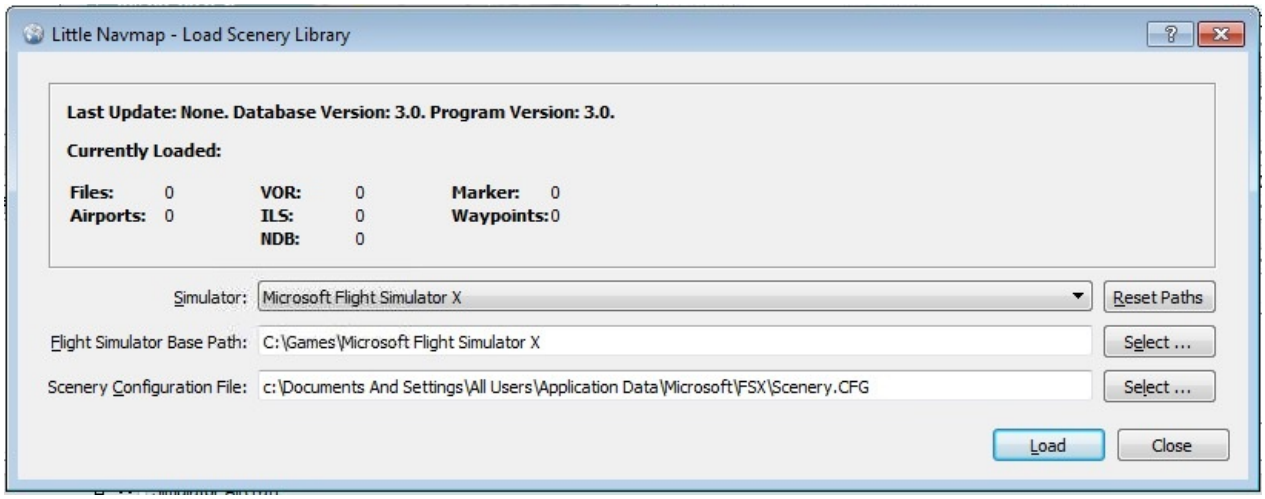
Note that the number of airports, navaids and other objects shown in the `Load Scenery Library` will differ to the numbers shown in the progress dialog.

The progress dialog shows all objects that were found during loading. The the dialog `Load Scenery Library` shows the number of objects in the database after deduplication and deleting stock airports that were replaced by add-ons.

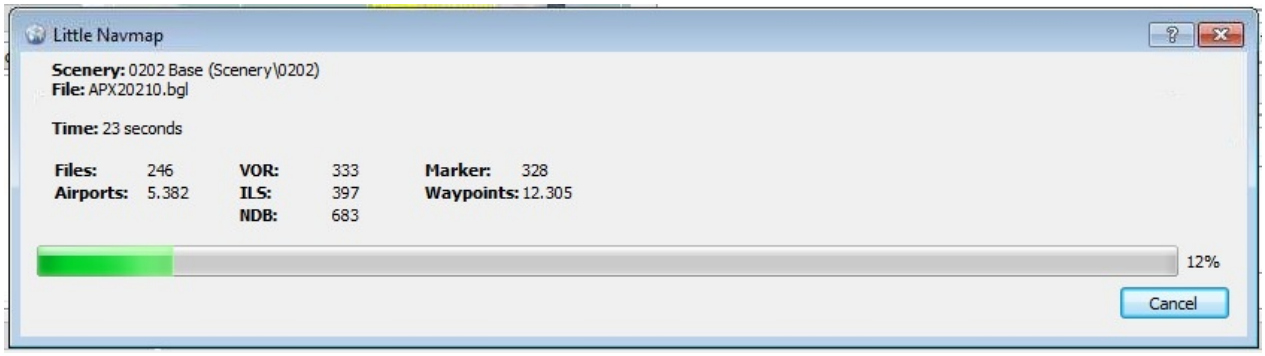
The program tries to find the base paths and `Scenery.cfg` files automatically. The typical locations of the `Scenery.cfg` for Windows 7/8/10 are:

- Flight Simulator X: `C:\ProgramData\Microsoft\FSX\Scenery.cfg`
- Flight Simulator - Steam Edition: `C:\ProgramData\Microsoft\FSX-SE\Scenery.cfg`
- Prepar3D v2: `C:\Users\YOUR_ACCOUNT_NAME\AppData\Roaming\Lockheed Martin\Prepar3D v2\Scenery.cfg`
- Prepar3D v3: `C:\ProgramData\Lockheed Martin\Prepar3D v3\Scenery.cfg`

An error dialog is shown after loading if any BGL files could not be read. In this case you should check if the airports of the affected sceneries display correctly and show the correct information.



Picture above: *Load Scenery Dialog. Nothing is loaded yet for FSX.*



Picture above: *Progress dialog shown while loading the scenery library into Little Navmap's internal database.*

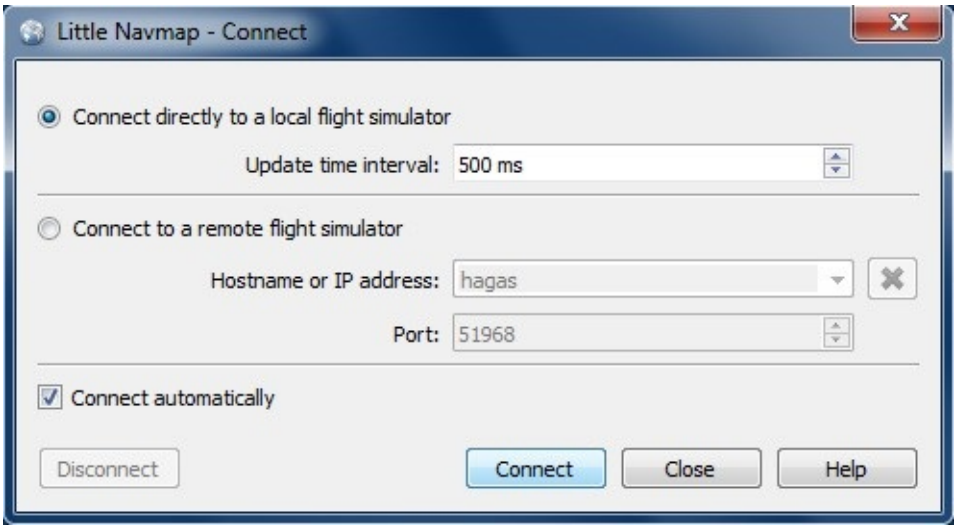
Connecting to a Flight Simulator

The setup procedure is different remote connections and local connections.

Little Navmap can connect to the flight simulator directly if all programs are run on the same computer. The *Little Navconnect* agent is needed if *Little Navmap* is run on a remote computer.

Local Connection

1. Open the connection dialog in *Little Navmap* by selecting `Main Menu` -> `Tools` -> `Flight Simulator Connection`.



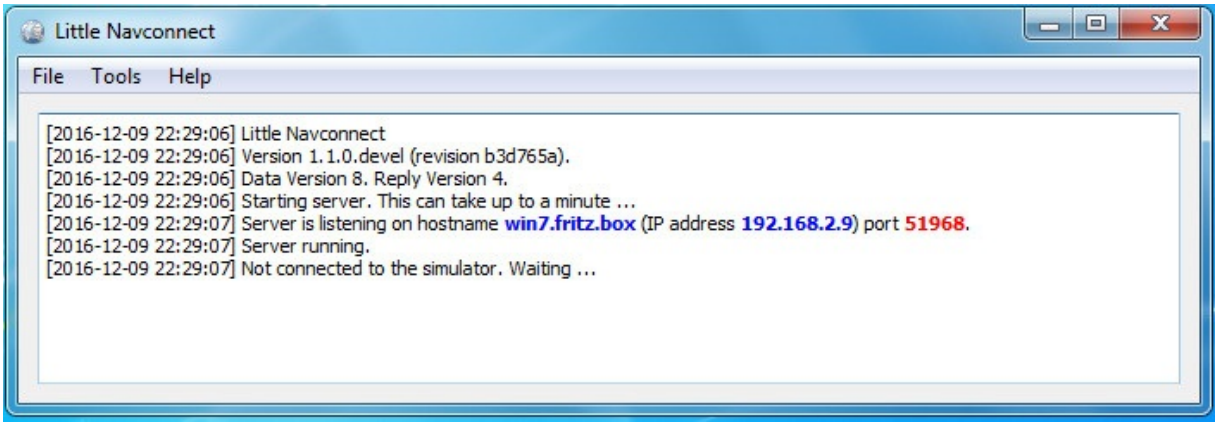
***Picture above:** Little Navmap connect dialog set up for a local connection that will automatically reconnect on startup or lost link.*

2. Select `Connect directly to local Flight Simulator`.
3. Click connect. The dialog will close and *Little Navmap* will try to establish a connection in the background.

Remote Connection

User aircraft information is transfered to *Little Navmap* by using the *Little Navconnect* agent on the flying computer which saves the error prone and tedious setup of a remote SimConnect connection.

1. Download and install *Little Navconnect* on the computer that is running the flight simulator. Start it and take note of the message that is printed on the logging window. You only need the colored values. You can use the IP address or the hostname. *Little Navconnect* can print multiple IP addresses or hostnames depending on your network configuration. This can happen if you have ethernet plugged in and are connected using wireless LAN too, for example. You have to try if you are unsure which one to use.

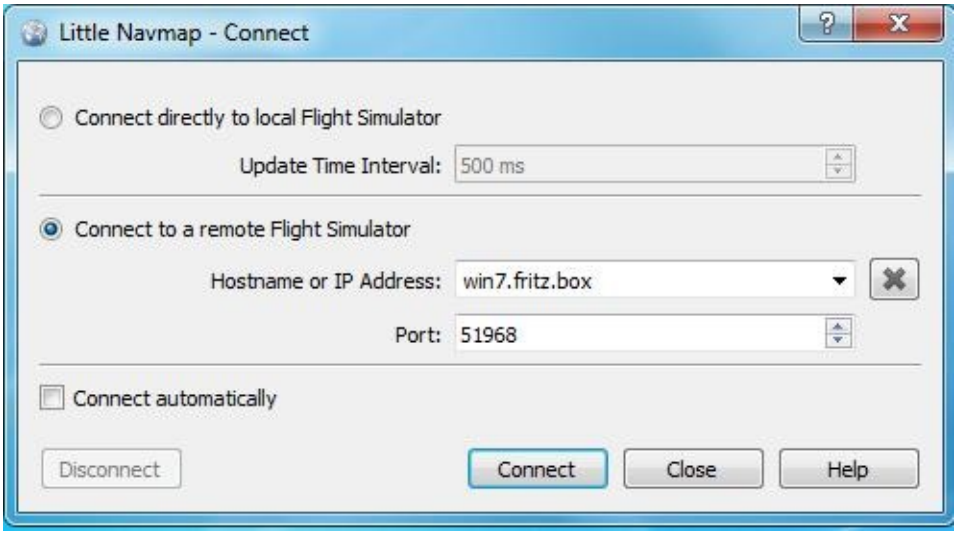


Picture above: *Little Navconnect is running and waiting for a Flight Simulator.*

Change the port in *Little Navconnect*'s `Options` dialog if you see an error message like shown below:

```
[2016-07-27 16:45:35] Unable to start the server: The bound address is already in use.
```

1. Start *Little Navmap* on the client computer.
2. Open the connection dialog in *Little Navmap* by selecting `Main Menu` -> `Tools` -> `Flight Simulator Connection`.



Picture above: *Connect dialog with correct values to access the Little Navconnect shown above.*

3. Select `Connect to a remote Flight Simulator`.
4. Add the value for hostname. This can be either the hostname or the IP address printed by *Little Navconnect*.
5. Check the value for the port. `51968` is the default value and does not need to be changed usually.
6. Click connect. The dialog will close and *Little Navmap* will try to establish a connection in the background which can take some time, depending on your network. Your aircraft will show up on the map and on the `Simulator Aircraft` dock window once a flight is set up and loaded on the simulator. You will see the message `Connected. Waiting for update.` in the `Simulator Aircraft` dock window if no flight is loaded yet (i.e. the simulator still shows the opening screen). Note that it sometimes can take a while until an error is shown if you used the wrong values for hostname or port.

Connect Dialog Options

- `Disconnect` : Disconnects the current session and stops automatic reconnect.
- `Connect` : Tries to connect. An error dialog will be shown if no connection can be established. *Little Navmap* will constantly try again if `Connect automatically` is enabled.
- `Close` : Closes the dialog without any changes to the current connection status.
- `Connect automatically` : *Little Navmap* will try to connect constantly if this is enabled.
  - All connection attempts will stop immediately if you uncheck this button.

    - You have to click `Connect` to start the automatic connection attempts after checking this button.
- `Update Time Interval`: Allowed range is 50 milliseconds up to 1 second. *Little Navmap* fetches data from Flight Simulator using this time interval. Increase this value if you experience stutters or lag in the simulator. A lower value will result in more fluid map updates in *Little Navmap*.

 Options Dialog

Most options are self explaining and tooltips contain more detailed explanations if applicable.

Tip: You can immediately check the effect of your changes on the map display by moving the dialog `Options` to the side and pressing `Apply` .

The button `Restore Defaults` only restores the options of this dialog back to default. Other settings like map display, table views or dock window positions are not affected. To reset all saved settings completely see Troubleshoot.

Startup

Allows to customize what should be loaded and shown on starup of *Little Navmap*.

User Interface

Has options for text sizes in information windows and flight plan as well as the search result table.

You can also change the overall style for the graphical user interface. The user interface styles contain a `Night` mode that can be used for night flights in dark rooms. You can also dim the map and elevation profile display.

Note that a restart is not needed but recommended after changing a style.

Map

Has map related customization options. Allows to set the click sensitvity, zoom distances and more.

Map Display

This tab contains options for symbol and text sizes, flight plan and aircraft trail colors and more.

The right side of the tab contains a tree that allows to select the text labels that should be shown at airports, user aircraft and AI/multiplayer aircraft.

Units

You can change all units that are used by *Little Navmap* on this tab between nautical, imperial and metric. Mixed settings like meter for altitude and nautical miles for distance are possible.

Note that any numbers used in the program are not converted when changing units. That means that you will have a minimum altitude buffer of 1000 meter after changing the setting `Altitude and Elevation' from feet to meter. This also applies to flight plan altitude. Therefore, do not forget to adapt these numbers after changing units.

Simulator Aircraft

Allows to change various aspects around the display of the user aircraft. All settings resulting in a more fluid aircraft display will use more CPU and can potentially induce stutters in the simulator.

Cache

Here you can change the cache size in RAM and on disk. These caches are used to store the downloaded images tiles from the online maps like the *OpenStreetMap*, *OpenMapSurfer* or *OpenTopoMap*.

All image tiles expire after two weeks.

Note that a reduction of size or erasing the disk cache is done in background and can take a while.

Flight Plan

Here you can set preferences for flight plan calculation or adjust the rule of thumb for the top of descent display.

Weather

You can select the various weather sources that should be shown in the `Information` dock window or in the map tooltips.

Active Sky can only be selected if *Active Sky Next* or *AS16* is installed.

The URLs of the NOAA and VATSIM weather can be modified if you like to use another source or the services change the URLs.

Scenery Library Database

Allows to configure the loading of the scenery library database.

You have to reload the scenery database in order for the changes to take effect.

`Select Paths to exclude from loading`

All directories that are added to this list are excluded from loading. You can use this to speed up the loading process by adding directories that contain only elevation data for example.

`Select Paths to exclude add-on recognition`

All scenery data that is found outside of the base flight simulator `Scenery` directory is considered an add-on and will be highlighted on the map and considered during search for add-on.

Some add-ons, like *Orbx FTX Vector* or *fsAerodata* add scenery files that correct certain aspects of airports like elevation, magnetic variance or others. All these airports will be recognized as add-on airports since all their files are not stored in the base flight simulator `Scenery` directory.

To avoid unwanted highlighting of these airports as add-ons on the map add the corrponding directory to this list.

Running without Flight Simulator Installation

The `littlenavmap.exe` requires an installation of SimConnect. Therefore an additional executable `littlenavmap-nosimconnect.exe` not reqiring SimConnect or a flight simulator installation was added to the archive that can be used for networked setups.

You can follow these steps if you want to install *Little Navmap* on a computer not containing any flight simulator installation. No functionality is affected except scenery database loading and direct connect capability which are not needed in this case.

The same procedure applies if you want to install *Little Navmap* on a Linux or macOS system.

This is typically used when connecting to the flight simulator to watch the progress of a flight. Flight plans can be created, loaded and saved on the client computer. You only have to make sure that these are transfered to the flight simulator computer using Windows shares or by other means.

1. Install *Little Navmap* on both your flying computer and the client computer without simulator.
2. Start it on the flying computer and generate the scenery library databases. See Load Scenery Library Dialog above for more information.
3. Select `Main Menu` -> `Scenery Library` -> `Show Database Files` on the flying computer. This will open the directory containing the database files in a file manager. You will find one or more database file like `little_navmap_fsx.sqlite` or `little_navmap_p3dv3.sqlite`.
4. Exit *Little Navmap* on the flying computer.
5. Start *Little Navmap* on the client computer and select `Scenery Library` -> `Show Database Files`.
6. Exit *Little Navmap* on the client computer.
7. Copy the database files to your client computer using network shares, USB sticks or whatever you like. Use the file manager windows opened by the procedures above.
8. Start *Little Navmap* on the client computer. The menu `Scenery Library` should contain an entry for each copied database file or no entry at all if only one file was copied. Airport icons should be visible on the map in either case.

See the Connecting to a Flight Simulator for information about networked setups.

Tutorials

TODO

Changes from Release 1.0.5 to 1.2

The program is not compatible with Windows XP anymore.

***Little Navconnect* is only needed for remote connections now.**

Enhancements

General

- **Printing for map, flight plan, airport and weather information added.**
- **Added night user interface style and others including a dimmable map for night display.**
- **Units can now be changed to metric, imperial and nautical separately for distance, altitude, speed, weight and volume.**
- **Database updates by fsAerodata are supported.**
- Coordinate format can now be changed from degree/minutes/seconds to decimal degree format.
- Freqencies for VOR, NDB and ILS added to approach information tab.
- Added display of helipad details to information window.
- When changing departure, destination or flight plan type, the save function will optionally show the "save as" dialog. This helps to avoid overwriting flight plans with the wrong content.
- `Save Map as image function added.`
- All help is now available either offline as an included PDF or online from Gitbook.

Flight Plan

- **Flight plans can now be exported to the GFP format used by the Flight1 GTN 650/750.**
- The names of user defined waypoints can now be changed.
- **Flight plan route description parsing added which allows to convert flight plans from and to ATS route descriptions. This even uses speed and cruise altitude data given in the route description.**
- The active flight plan leg is now hightlighted on the map and in the flight plan table.
- Added toolbar button to adjust flight plan altitude according to simpified hemispherical and IFR/VFR rules.
- Added navaid range column in flight plan table.

Weather

- **Weather data can now be directly fetched from the simulator and is updated every 15 seconds. This also applies to remote connections.**
- **Weather is now shown in decoded format in the information window for all weather sources like simulator, *ASN*, *AS16*, NOAA and VATSIM.**
- The *Active Sky* flight plan weather file is now used to show METARs and decoded weather for destination and departure. This gives a precise weather indication for *ASN* or *AS16* users.
- Wind pointer on top center of the map for wind around user aircraft added.

Map Display

- **AI and multiplayer aircraft are now shown on the map. Information about these is available in the aircraft progress window and tooltips.**
- **Added configurable top of descent display on map and elevation profile display based on simple number of nautical miles per 1000 ft rule.**
- The floating map overlays can now be hidden.
- Added a mode that scrolls the map continously while displaying and following the user aircraft.
- Movement and updates of the user aircraft are now more fluid.

- User aircraft icon can now show an optional line indicating the track.
- Aircraft types (jet, piston/turboprop, helicopter) are now indicated by the user and AI/multiplayer aircraft icons.
- Added drawing of minimum safe altitude for each flight plan segment in profile window.
- Runway length is now shown in precise units using meter or feet depending on settings.
- **Text labels on map can now be customized for airport, user and AI/multiplayer aicraft.**
- **Symbol and text sizes for airports, navaids, user and AI/multiplayer aircraft can be changed separately.**
- Flight plan and user aircraft trail line width and color can be changed.
- Range ring and distance measurement line width can be changed.
- Zoom distance for double click and `Show on map menu items can now be changed separately.`
- Added option to center map on last flight plan on startup.

Flight Simulator Connection

- ***Little Navmap* can now connect to a flight simulator directly. *Little Navconnect* is now only needed for remote connections.**
- ***Little Navmap* can now optionally reconnect to a local flight simulator or a remote *Little Navconnect* instance. Start order of programs does not matter now.**
- Hostnames can now be deleted in the connect dialog list.

Problems Solved

General

- **The OpenTopoMap is back in all its glory. In general all online maps using HTTPS connections should work properly now.**
- **Course to or from user defined waypoints was wrong in some cases due to missing magnetic variance.**
- **Fixed crashes in flight plan calculation when using the FSX/P3D Navaids update.**
- Solved small problem where flight plan calculation jumped often between equal overlaying airways.
- Line endings for saved PLN files are now always Windows style which allows to load the flight plan into PF3 ATC.
- Route type was empty when saving a flight plan in some cases. Flight simulator could not load these.
- Magnetic variation was wrong in some cases in information window and tooltips.
- Solved old problem with tooltips reappearing randomly.

Scenery Library Loader

- Duplicate navaids and airways are now removed.
- Added workaround that omits long invalid airway segments while loading the scenery database.
- Fixed problem when reading too small BGL files into the scenery database.
- Fixed map zoom problem with some add-on airports that contain a far away dummy runway.
- Solved old problem that caused airways split into fragments during loading.
- Fixed problem that recognized too many add-on runway surfaces as `invalid.`

Creating or adding Map Themes

To add an arbitrary online of an offline map to *Little Navmap* simply add the map directory from a downloaded or self created map theme to the `data\maps\earth` directory.

The full path to the DGML file (see links below for more details about DGML) describing the map must be `c:\Own Programs\Little Navmap\data\maps\earth\opencyclemap\opencyclemap.dgml` if you like to add the OpenCycleMap for example. The DGML file can refer to an online map service or included offline map data. Usually a map theme contains many more files than only the DGML.

The menu `Main Menu` -> `Map` -> `Theme` and the toolbar drop down box will receive an entry for each additional map theme.

The options `Show Country and City Names` and `Show Hillshading` are enabled for all additional map themes but might not work depending on properties defined in the map's DGML file.

More maps and information about map configuration and DGML files can be found here on the Marble/KDE pages:

- Download more maps for the Marble widget (only Earth maps are supported in `Little Navmap`): Additional Maps
- A tutorial that shows how to create a map theme based on tiled images: Marble/CustomMaps
- A tutorial showing how to create a map theme based on OSM Slippy Maps: How to create map themes based on OSM slippy maps
- How to create a historical map for Marble: Historical Maps for Marble

Troubleshoot

- Delete the settings and the database files if the program crashes during start up. In Windows 7, 8 or 10 these can be found in `c:\Users\YOURUSERNAME\Appdata\Roaming\ABarthel`. Delete the files `little_navmap.ini`, `little_navmap.track`, `little_navmap.history` and the directory `little_navmap_db`.
- Hiding the map screen overlays cannot be undone in the GUI. Restart *Little Navmap* to get the overlays back.
- Zoom can be too fast when using a touchpad with *OpenStreetMap*, *OpenTopoMap* or one of the other online map themes. Use the `Plain`, `Simple` or `Atlas` map themes or use the overlay zoom buttons or the keyboard (`+` and `-`).
- Online maps like *OpenStreetMap* or *OpenTopoMap* maps can end up blurred when using functionality like `Center Flight Plan` or `Go to Home`. Zoom once in and out using the mouse wheel, overlay zoom buttons or keyboard to fix this.
- *OpenStreetMap* shows a dark gray background on some places without hill shading coverage (for example New Zealand). Use another map theme or switch off hill shading for the *OpenStreetMap*.
- You can exclude scenery directories in the `Options` dialog on the `Scenery Library Database` tab if loading of an add-on BGL causes the program to crash. Do not restart the program after the crash and instead load the log file `C:\Users\YOURUSERNAME\AppData\Local\Temp\abarthel-little_navmap.log`. The path may vary depending on your Windows installation. Search for the last line in the log-file that looks like:

  `[2016-10-14 22:58:21.903 default INFO ] unknown: ==== "404 of 521 (77 %)" "APX41080.bgl"`

  Search for `APX41080.bgl` and exclude its directory from loading in the `Options` dialog.

Known Problems

- Some airport add-ons do not modify the stock airports but only add new scenery and buildings. These add-ons will not be recognized as such and are therefore not highlighted on the map (italic and underlined text).
- Add-on developers have to use all kind of workarounds to avoid FSX limitations which means the display and information given for add-on airports is not always correct. Typical examples are: Airports without runways, airports with runway dimensions 0 by 0 ft or 0 ft runway width, taxiways with 0 ft width, seemingly closed taxiways, duplicate

airports and more.
- Navdata updates like FSX/P3D Navaids update or fsAerodata can cause problems like duplicate waypoints or duplicate airways in the tooltips or information windows.
- Route description parsing can skip waypoints even for previously calculated flight plans.
- Some KML/KMZ files do not show up on the map. Adding a centerpoint pushpin to the KML/KMZ file can fix this.
- World coverage for elevation and *OpenStreetMap* hill shading data is limited and currently ends at 60 degree north. Use the *OpenTopoMap*, *OpenMapSurfer* or *Stamen Terrain* map themes which have world wide coverage for hill shading.
- There are errors in the elevation source data (like in northern Italy, Po Valley) which will show up in the flight plan elevation profile.
- The Mercator projection shows occasional display problems depending on zoom distance like horizontal lines near the anti meridian or missing flight plan segments.
- The Marble floating map overlays on the map can be configured but do not save all settings except their visibility.
- Flight plan and airways are drawn using great circle lines instead of rhumb lines. Distance and course are not affected by this.
- Magnetic variance is partially not set (for example VORDME Cambridge Bay YCB). This is an error in the source data and can be fixed with a workaround in the future.
- Airports are misplaced compared to the background maps. This is an error in the source data and cannot be fixed.
- Map printouts can be fuzzy since they depend on screen resolution. As a workaround increase the size of the visible map window.
- macOS: Start position on the map is not restored properly. Use home as start position instead.
- macOS: Loading of KML files does no work. The menu items are disabled.
- macOS: The map floating overlays do not work.The menu items are disabled.

How to report a Bug

If something goes wrong send me any involved files like KML, PLN or BGL (if copyright permits), *Little Navmap*'s log file and configuration file which both can be located in the about dialog. My e-mail address is shown in the about dialog of *Little Navmap* as well.

Please add all steps that are neccessary to reproduce the error.

When an error occurs during loading of the scenery library send me the offending BGL file if possible. The full name and path of the file is shown on top of the error dialog if a specific BGL is the cause.

If you're concerned about privacy when sending log files: The log files will contain all system paths (like your `Documents` directory) which will also include your username as a part of the path. They might also contain your computer's name IP address in your network.

In no case are file names from anything else than flight simulator paths/files or configuration files are included. No names or content of personal files is included in the log files.

I would suggest to remove this information if you're concerned about it.

I strongly recommend sending the log files by PM or by email and not attach them to forum posts where they are publicly visible.

Files

Log files of *Little Navmap* for Windows 7/8/10 are typically stored in the directory:

`C:\Users\YOURUSERNAME\AppData\Local\Temp`

The program keeps three log files and rotates these on each startup. So you may find up to three logs:

`abarthel-little_navmap.log` , `abarthel-little_navmap.log.1` and `abarthel-little_navmap.log.2` .

All configuration files for my programs for Windows 7/8/10 are typically stored in the directory:

`C:\Users\YOURUSERNAME\AppData\Roaming\ABarthel`

There are three configuration files for this program:

- `little_navmap.ini` : INI style configuration file. Text file.
- `little_navmap.history` : The map position history. Binary file.
- `little_navmap.track` : The user aircraft track. Binary file.

The disk cache that is used to store all the downloaded online map tile images can be found here:

`C:\Users\YOURUSERNAME\AppData\Local\.marble\data`

The scenery library databases are stored in the directory:

`C:\Users\YOURUSERNAME\AppData\Roaming\ABarthel\little_navmap_db`

There can be up to five files depending which simulators you have installed and which scenery libraries you've loaded.

All these databases are SQLite files than can be viewed with e.g. DB Browser for SQLite if you're interested in relational databases.

The files are:

- `little_navmap_.sqlite` :An empty dummy database.
- `little_navmap_fsx.sqlite` :Flight Simulator X
- `little_navmap_fsxse.sqlite` :Flight Simulator - Steam Edition
- `little_navmap_p3dv2.sqlite` :Prepar3D v2
- `little_navmap_p3dv3.sqlite` :Prepar3D v3

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This project and my library atools would not exist without the fabulous documentation of the BGL files in the FSDeveloper Wiki. So, here a huge thank-you to all the contributors.

Also a thank you to Ed Williams for his Aviation Formulary.

Without the open source Marble widget that allows me to access and display all the maps I would still be busy doing that myself for years.

No Qt application framework and I could not even draw a simple button.

Let's not forget about all the services that provide us all the online maps for free:

Stamen Design, MapTiles and OpenTopoMap.

A thank-you to the GIScience / Geoinformatics Research Group of Heidelberg University for kindly giving me permission to use their map OpenMapSurfer.

And last but not least: If there were no OpenStreetMap and its thousands of contributors none of us would have any maps at all.

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