SimSail 5.4

User Manual

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SimSail

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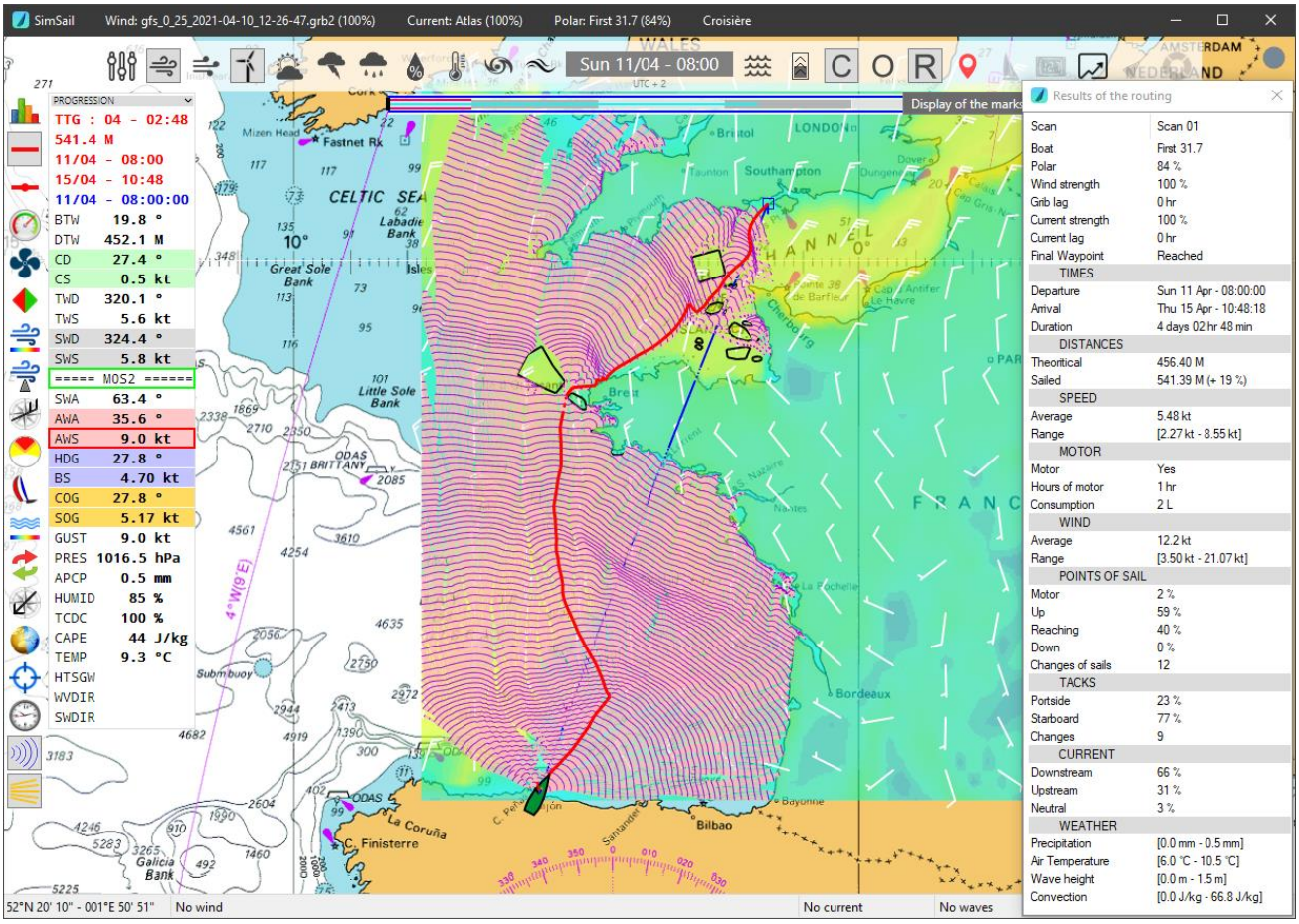
http://www.simsail.net



OVERVIEW

SimSail is a free software for planning sailing routes. It allows to find the best route by visualizing the conditions encountered in navigation.

The strength of SimSail is to access a very large number of parameters. If current data exists, the wind received by the boat for the calculation of the routing will be the wind-surface resulting from the combination of the current and the wind, which corresponds to the reality.

The routing can be multi gribs of wind and current, multi road segments and multi-boats including compensated times from ratings.

SimSail can be connected to a navigation data system in order to analyse the performance of the boat and compare the actual navigation data with the routing.

SimSail is a simulation tool because it artificially reproduces the operation of a sailboat in its environment, using a computer program for purposes of study, demonstration or explanation.

Like any simulation tool, SimSail requires some time to exploit it. The interface tries to reduce the complexity of the software by grouping the functions and allowing a quick access to the most used functions.

SimSail is not to replace any skill of a skipper. At sea, a skipper has the ultimate responsibility of the crew and the boat: "Skipper Word is Law" ... not SimSail.

FEATURES

Navigation

- Maps raster SnMap (sold by ScanNav®)
- Maps BSB and OpenStreetMap (and OpenSeaMap)
- World coastlines (resolution up to 100 m) with coastal cities and capitals
- Mercator projection and Great circle with full scrolling in longitude (infinite map)
- Connection to instruments (serial or wifi) with display of all the navigation data
- Repeaters with graphs
- AIS (Automatic Identification System)
- Complete tool of measure of distance

Weather

- Grib file of wind (edition 1 and 2) with display of wind, gusts, isobars, precipitation, humidity, total cloud cover, temperature and convection
- Grib files of currents and waves (edition 1 and 2)
- All gribs of wind and current can be modified in intensity and lag
- Atlas of currents from Belgium to La Coruña (Spain)
- Reading of SHOM tidal streams (must be purchased from the SHOM website)
- Direct request of gribs from Great Circle® (subscription required at Great Circle®)
- Email requests for Saildocs® and Great Circle®
- Weather graph and Tide graph

Routing

- Automatic routing or control of all parameters
- Routing sailing, dual with sailing and motoring with fuel consumption and, motoring only
- Routing by Isochrones or by Course made good
- Routing on multiple legs of route
- Routing from the boat and/or to the active waypoint
- Routing with multi gribs of wind and current
- Integration of the current into all routing calculations (wind and boat)
- Avoidance of coasts and barriers defined by the user
- Avoidance of thunderstorms, weak or strong wind and high waves
- Multiple routings by scan of variables (polar, wind – strength & lag, current – strength & lag, time of departure and several boats)
- Numerous tools of visualization of the routing (display of all conditions met on a route step by step and global statistics)
- More than 500 polars provided with possibility to modify them[1]
- Analysis of the corrected times between different boats
- Progress table
- Routing time step from 1 min to 6 hours
- Selector of configurations of boat (4 configurations) for rapid access

[1] some come from www.sailgrib.com

- Loss of speed integrated during tack

Functionalities

- Auto save of the session of work
- Record and analysis of trace (NMEA)
- Trace converter to CSV format
- Tests of performance at sea between intervals of time
- Simulation in order to configure repeaters
- Languages: French, English, Dutch, Spanish
- Routes, marks, barriers and TSS in GPX format
- High DPI Screen compatible

LICENSE

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Messages of satisfaction, reports of bugs and ideas of development can be sent to edouard.halbert@gmail.com. But, before you send me an email, I highly recommend reading this manual.

SimSail is provided **as is**. This means that nothing is guaranteed, not even your satisfaction. If you are not satisfied, needless to say, uninstall it, that's all.

INSTALL

SimSail is in two folders:

- The program and non-modifiable files are normally under Program Files, depending on the choice of the user during the setup;
- Data, which includes the grib files, are under User / Documents / SimSail.

HIGH DPI SCREEN

SimSail supports high DPI screens. If problems occur, in Windows 10, go to Parameters > System > Display and move the cursor to the left.

SHORTCUTS

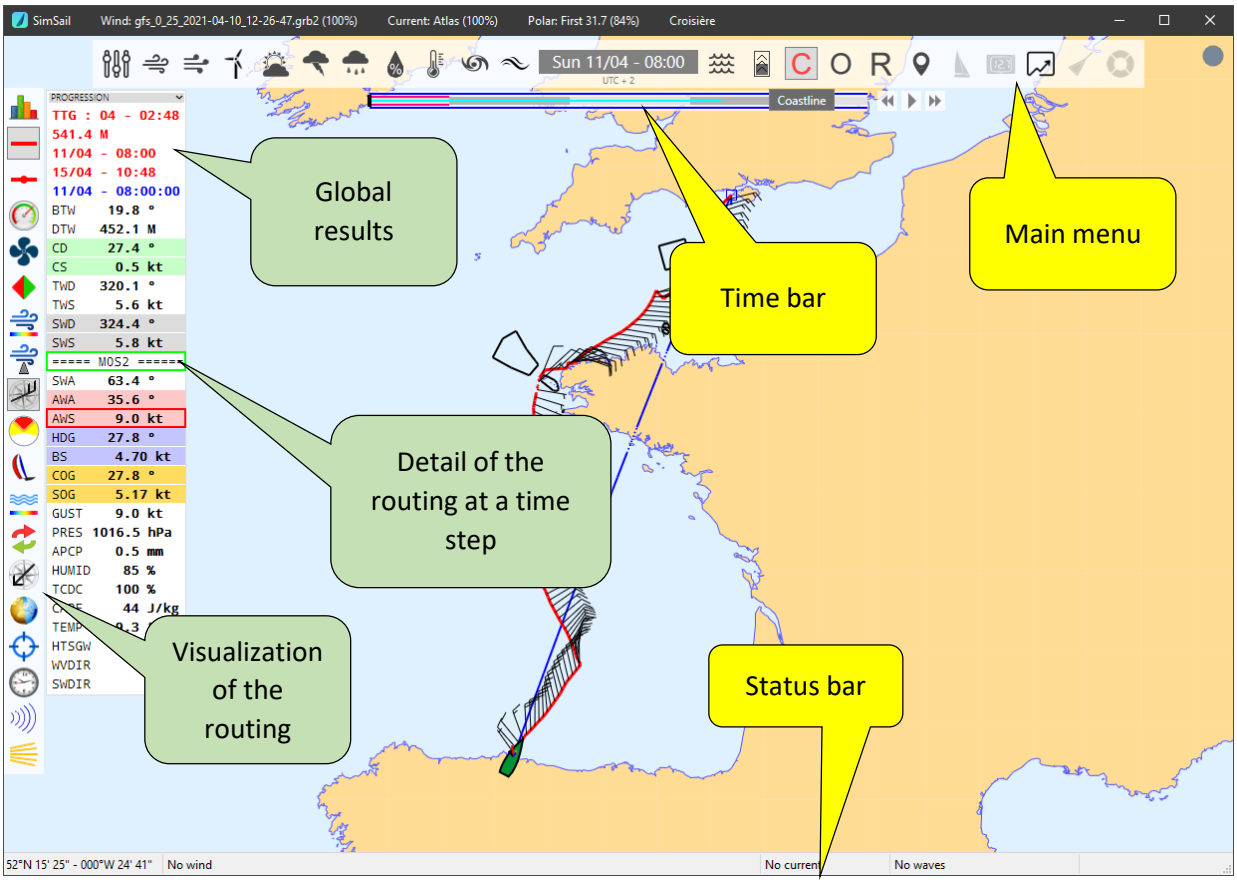
The key **[F1]** displays all the shortcuts.

Two shortcut keys are important to know:

[TAB] key opens the dialog box where all parameters are;
[SPACE] bar launches a routing**.**

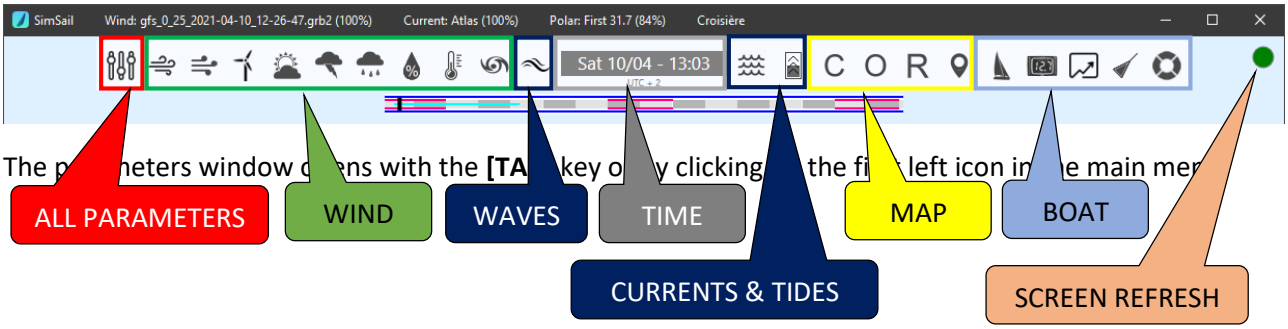
INTERFACE

SimSail has a user-friendly interface with direct accesses. The panels (on the left in the following screen capture) are displayed only when a routing is displayed.



The status bar at the bottom of the main window displays the information at the mouse position: wind, gust of wind, pressure, cloud cover, precipitation and current.

Main bar

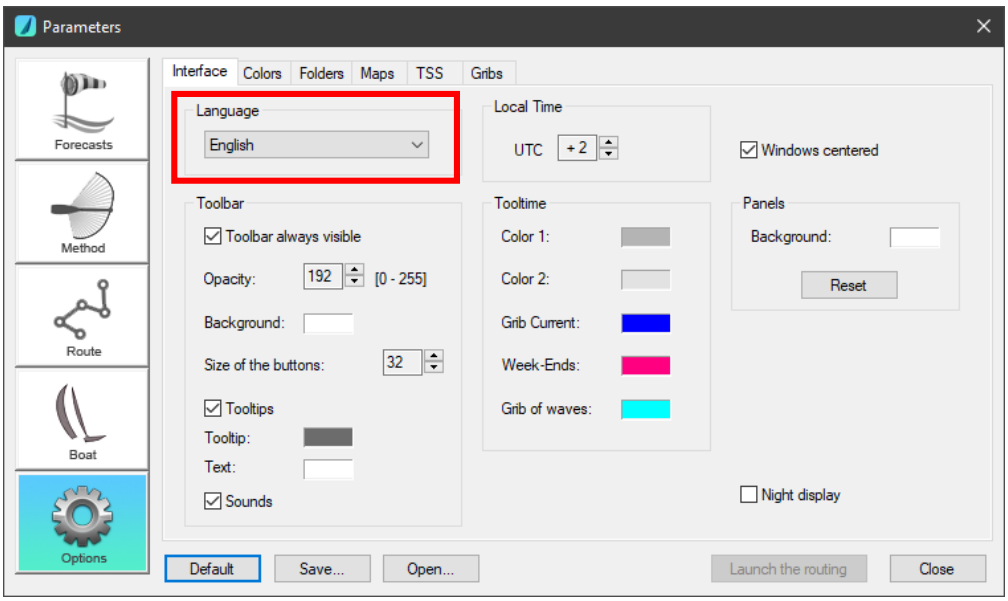


Most buttons on the main bar have two functions. We select with a left click and change the function of a button with a right click.

	LEFT CLICK		RIGHT CLICK
	Access to all control settings		
	Show the arrows of the wind		Arrows on the grid of definition of the grib
	Show wind gusts		
	Display the wind gradient in 10 colours		Display the wind gradient in 26 colours
	Show the cloud cover with numbers		Show the cloud cover without numbers
	Show the convection with numbers		Show the convection without numbers
	Show the precipitation with numbers		Show the precipitation without numbers
	Show the humidity with numbers		Show the humidity without numbers
	Show the temperature with numbers		Show the temperature without numbers
	Show the isobars		Show the pressure gradient
	Show the waves		Waves on the grid of definition of the grib
Date	Set the date at the moment		
	Display the currents in colour		Display the currents in black
	Display the tides		
	Display the coastlines		Coastlines with map grid
	Display OpenStreetMap from internet		Display OpenStreetMap from the cache
	Display raster maps (BSB or SnMap)		Raster maps with map grid
	Display the waypoints		Waypoints in small, medium and big format
	Centre the boat on the screen		Open the configuration of the boat
	Display the repeaters		Open the configuration of the repeaters
	Open the analysis of performance		
	Display the AIS targets		
	Switch to MOB mode		

Language

The choice of language is in Parameters > Options > Interface.

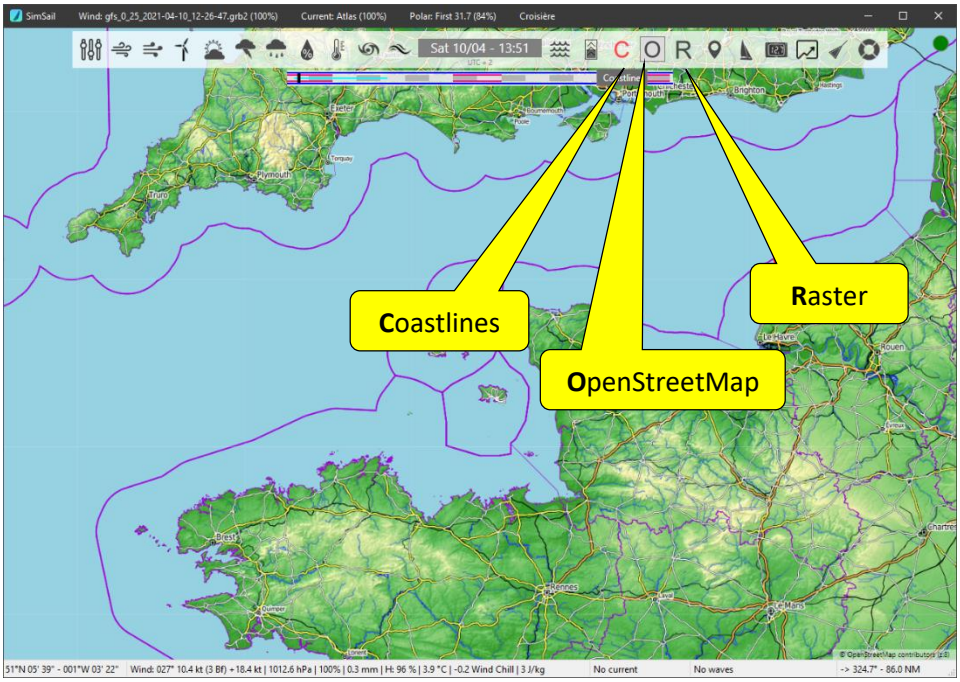


CHARTING

All displays of SimSail meet the great circle (great circle on the surface of the earth that guarantees the shortest route). A route does not cut the meridians at a constant angle. This can be verified by creating a route about 100 miles in SimSail. The starting bearing is viewable by putting the mouse cursor on the beginning of the road. It is different from the arrival bearing (cursor on the route near the end waypoint).

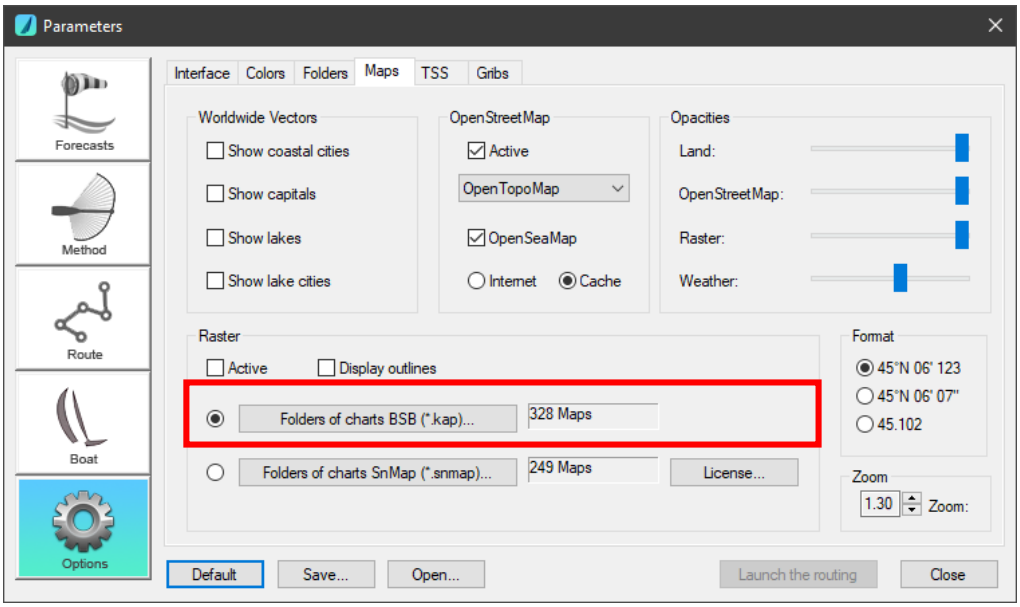
The projection of the map is Lambert and coordinates are WGS 84 format.

The world shorelines are available with 5 levels of detail as well as raster maps BSB and SnMaps and free maps available on internet like OpenStreetMap. The accuracy of the charts is greater than the accuracy of the coastline.

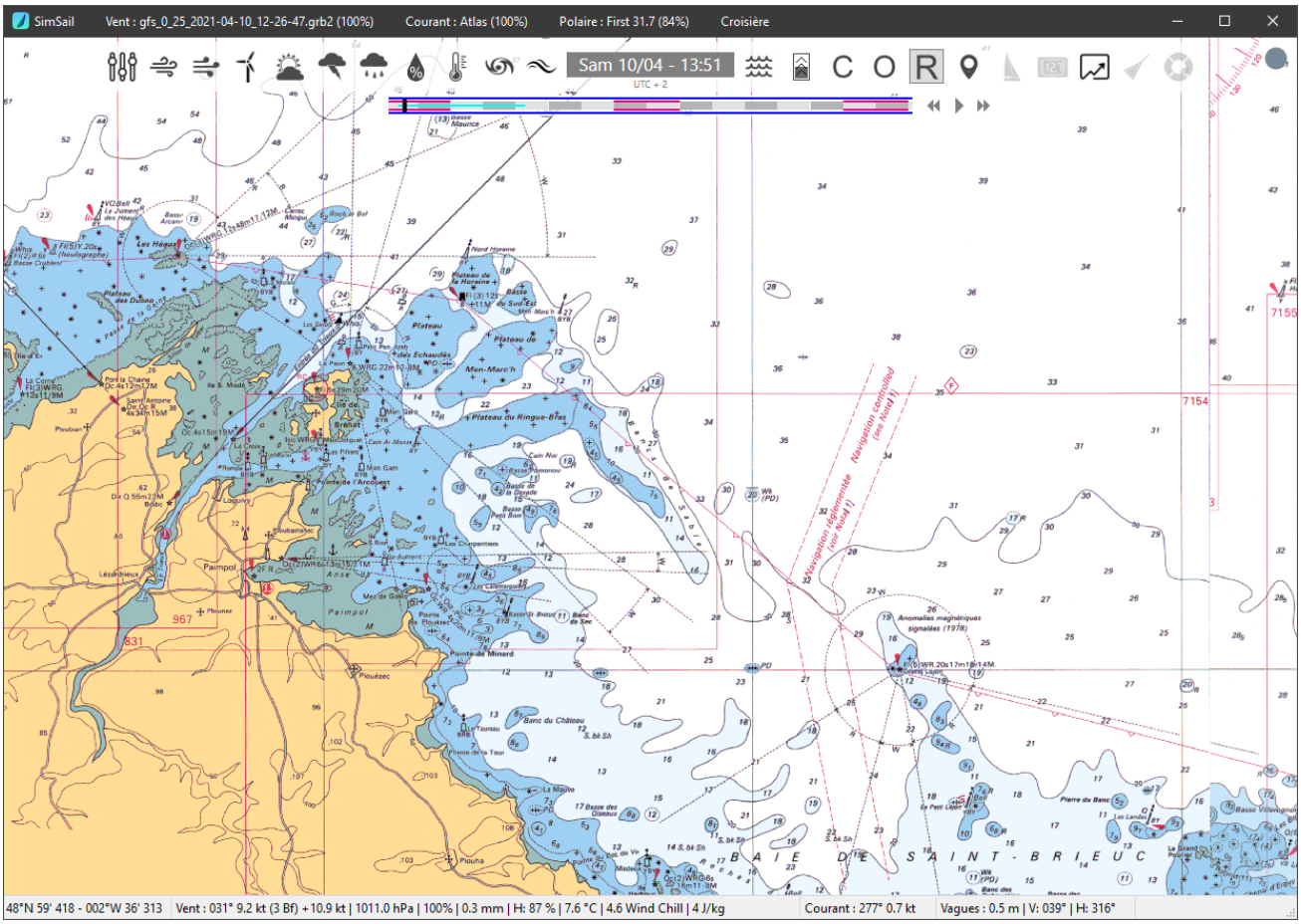


Charts Raster

SimSail can display raster maps like BSB (extension “kap”). To do this, it is mandatory to specify the folder where are the maps. Several folders are possible. For information, SimSail doesn’t modify the content of the folders.



Example of BSB chart.



Charts SnMap from ScanNav

These raster charts offer must be purchased on ScanNav website at https://www.scannav.com

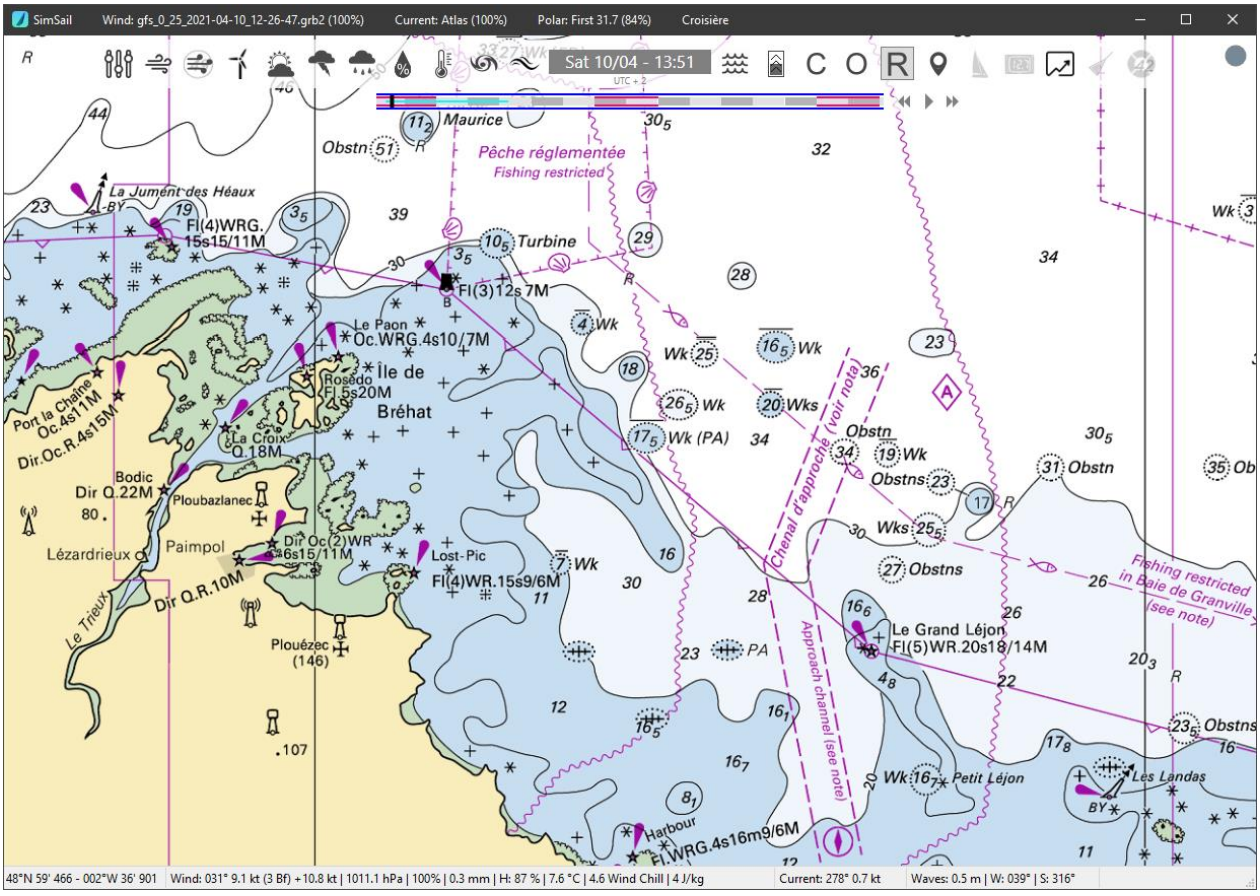
This raster charts offer is derived from data provided by the SHOM, UKHO, BSH and IIM/Navimap. Charts are updated twice a year. Although the look is similar, they are not scanned from paper charts, but issued from the printing films, which eliminates manipulation errors, and facilitates regular updates.

- Channel: from the Belgian border to Pointe St Mathieu, Channel Islands included (SHOM)
- Atlantic: from Pointe St Mathieu to the Spanish border (SHOM)
- Mediterranean: from the Spanish border to the Italian border, including Corsica (SHOM)
- United Kingdom + Ireland (UKHO)
- Spain + Portugal (UKHO
- Azores, Madeira, Canary Islands, Cape Verde (UKHO)
- Lesser Antilles: From Grenada to Puerto Rico (UKHO + SHOM + NOAA)
- Italy (NaviMap-IIM)
- Croatia (UKHO)
- Netherlands + Belgium (UKHO)
- Germany (BSH)

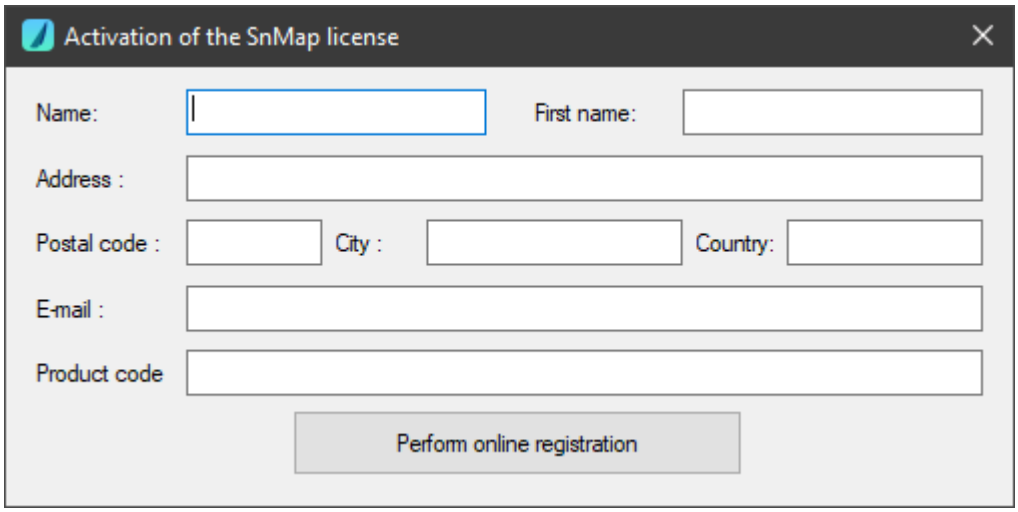
SimSail strongly encourages the use of these charts.

When purchasing, in the comments of the order form, you should mention that the charts are for SimSail. With the link provided in response to the purchase, choose the zip file.

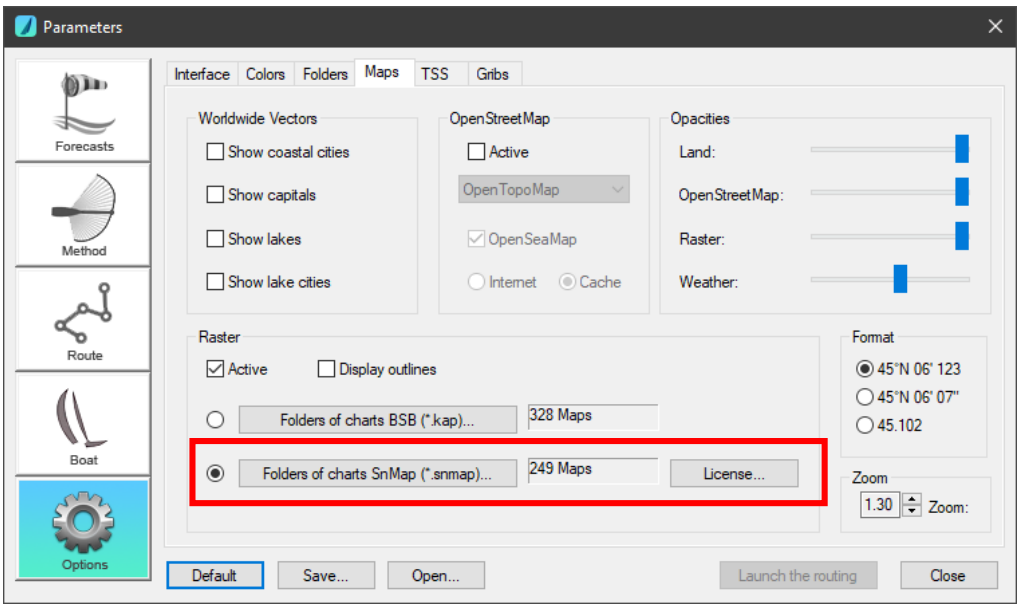
Example of SnMap chart.



In order to install the SnMap maps, open the dialog box “License…” being connected to Internet. Fill in the form and perform the registration online.



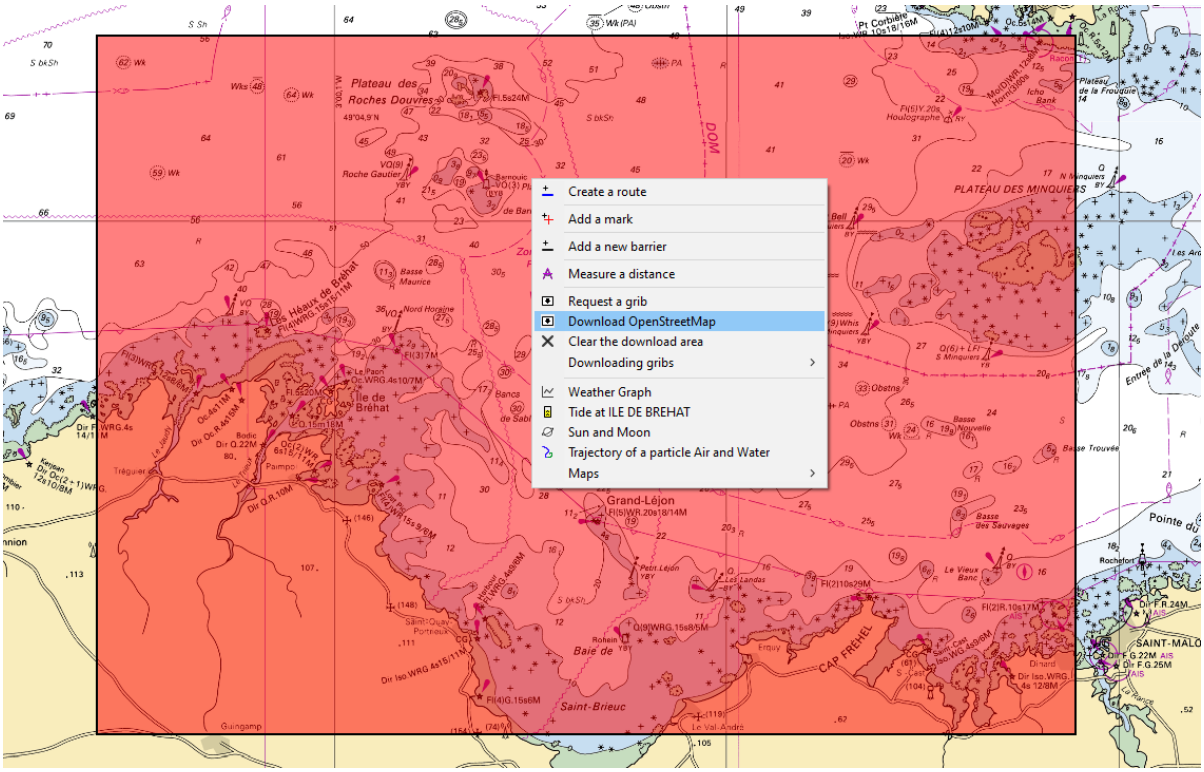
Decompress the zip and place the charts into one or several folders and inform SimSail where they are and specify to SimSail where they are located. Now, the charts are now visible.



This procedure should be repeated for each new pack of charts.

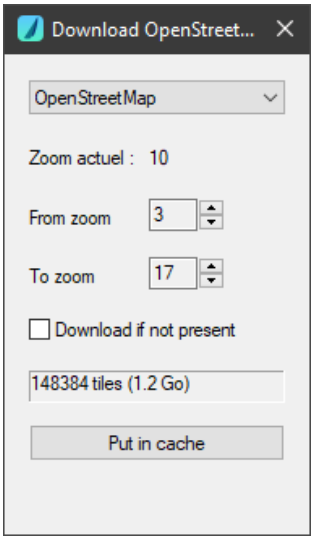
Charts OpenStreetMap

Areas can be pre-loaded for rendering on a computer which is not connected to internet, or at sea. For this, select a zone. Right click on the map and click "Select a zone". Then draw a rectangle with the left button of the mouse. You can move and change the area later with the mouse. When the area seems OK, right click and select "Download OpenStreetMap."



This opens a window that allows you to cache all the tiles from the area at the desired zoom levels.

Please note that the download time and the amount of data can quickly be important.



LOAD GRIBS

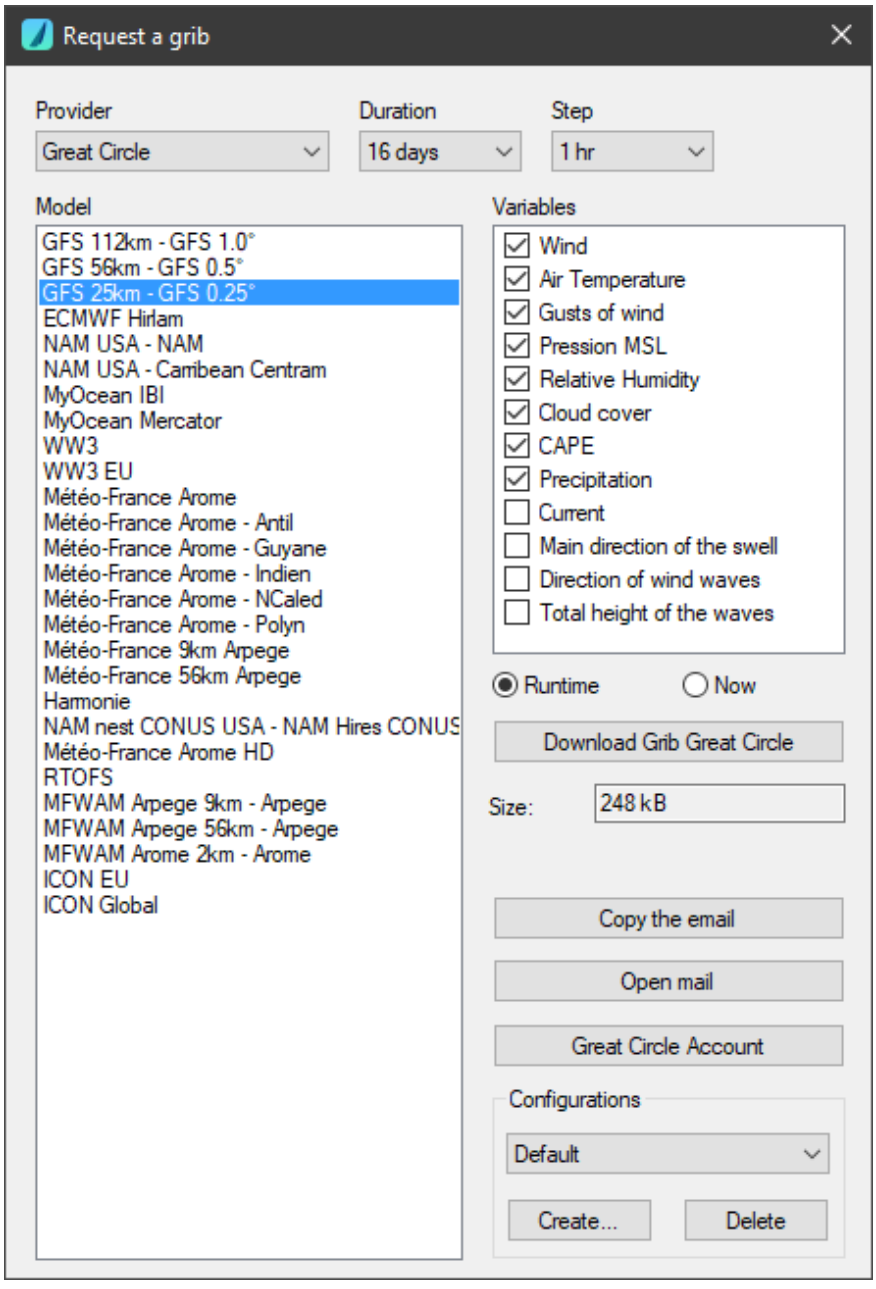
Gribs can contain a large number of parameters for a given area and duration. In SimSail, we are only interested in the data related to air (including wind), currents and waves.

A grib file can be obtained in several ways.

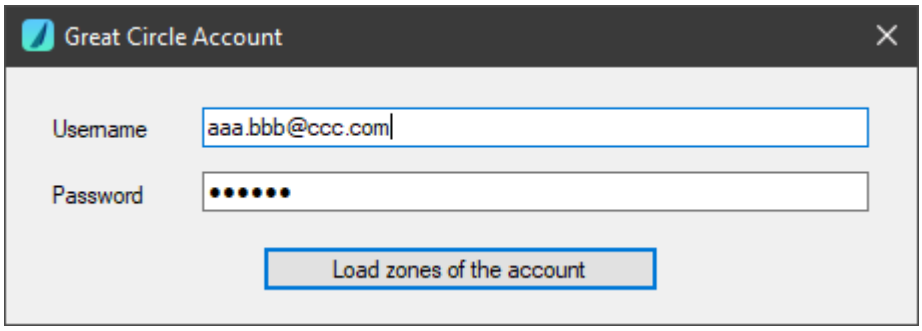
If you get a grib file from another software, copy or move the grib file to the folder “Documents / SimSail / Gribs”. As such, SimSail recognizes the grib and open it when it starts.

With SimSail, right-click on the map and click "Select Area". With the mouse, draw a zone by keeping the left button pressed. The area is then editable with the mouse in position and size by placing the mouse on the edges of the area or in the area to move it entirely.

When the zone is correct, right click and select "Ask a grib". A window appears that allows you to make a request by email or to download directly the gribs if the user has a Great Circle account https://www.squid-sailing.com/en



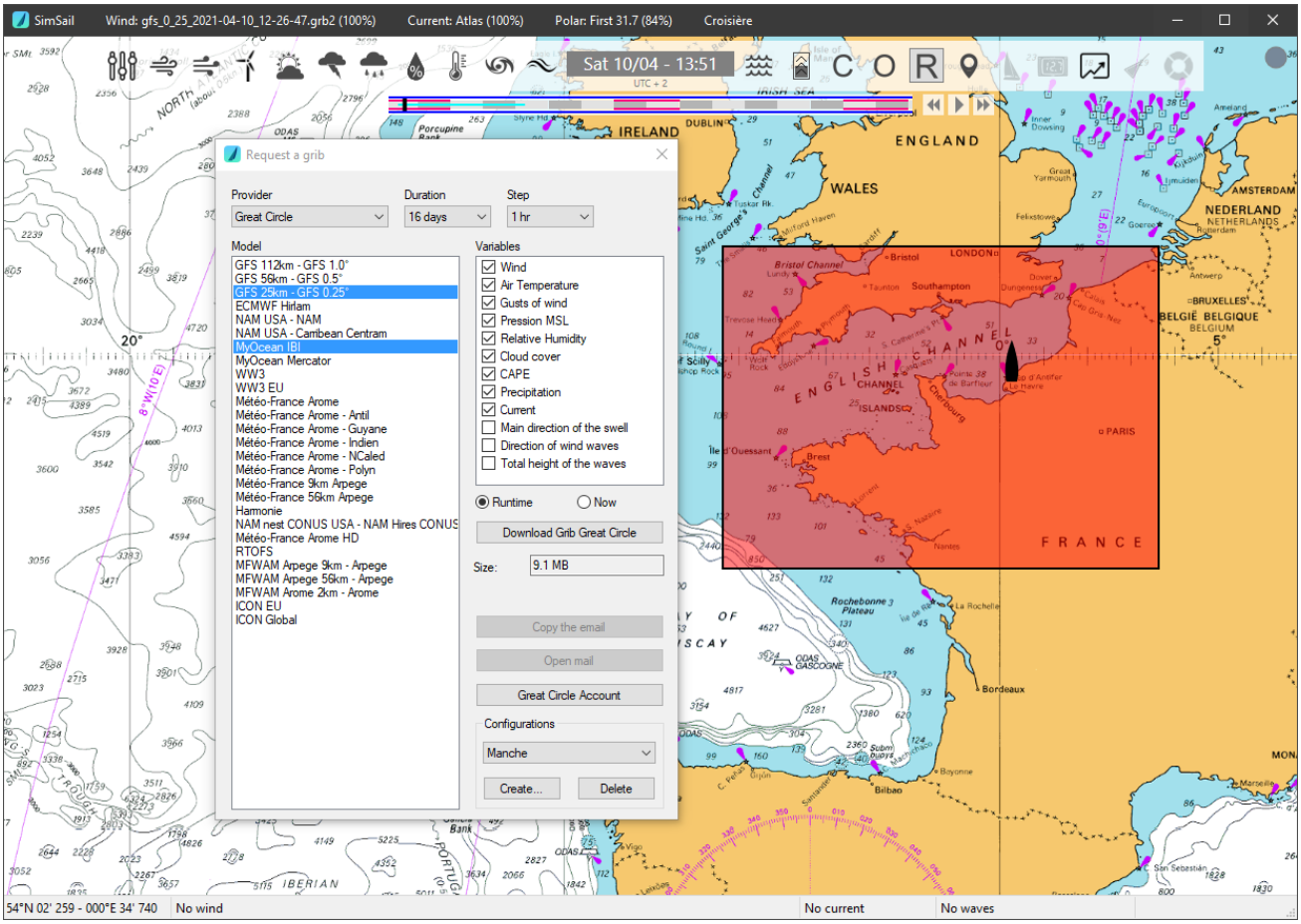
The Great Circle service is only available when an account is valid. Click on the "Great Circle Account" button. Fill in your login and password and download the areas corresponding to the subscription.



The Great Circle service is by far the best for an affordable price.

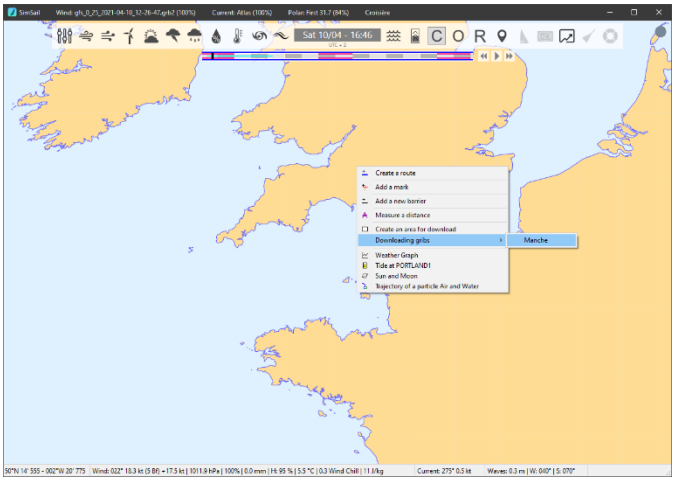
https://www.squid-sailing.com/fr/content/91-tableau-abonnements-squid

The right part at the bottom of the "Ask a grib" window allows you to save grib configurations as below:



Select the Great Circle service, select the models, variables, duration and area and click on "Create ...". Give a name to the configuration as in the example above, "Manche".

The creation of a download configuration makes it easy to download the gribs concerned. Right-click on the map anywhere and select "Grib Download" and select the configuration. The download of all the gribs in the area starts.



When all downloads are complete, the wind grib is displayed on the screen.

START A ROUTING

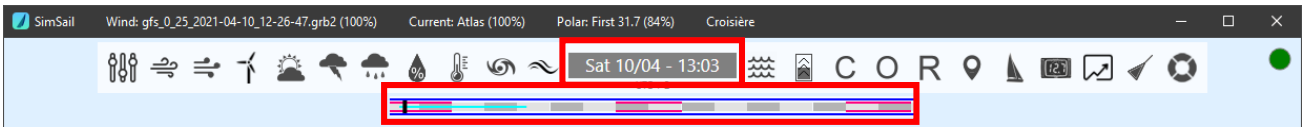
At start up, SimSail restores the working environment of the previous session. These parameters are in a file named “Config.ini” normally located in "Documents > SimSail > Config”. This file can be edited using a text editor (at your own risk).

1) LOAD A WIND GRIB in SimSail. **[Tab]** key or first left icon in the main menu (top of screen), then "Forecast" and "Wind Grib" then "Add" button.

A grib file can be obtained in several ways.

- With **SimSail**, with the previous method
- With **zyGrib** (http://www.zygrib.org) you can download a grib. Its interface is very intuitive but the current version 8.0 does not take into account the "high definition" files. Like the previous method, you must transfer the grib file to the folder named "Gribs" located in the working directory SimSail.
- With XyGrib software (https://opengribs.org) which is similar to zyGrib.
- With **Squid®** (http://www.squid-direct.squid-sailing.com), a subscription (one is free), the choice is vast and some gribs have a very high definition (AROME HD model of Météo France, for instance). A tip is to configure the download folder of Squid® as the Grib folder of SimSail. As such, no transfer to do.

When a grib is loaded, the winds are displayed on the map. The main toolbar at the top of the window is updated with the time range of the file. You can navigate from the first layer to the last with the arrows of the keyboard (+ CTRL for 10 min or SHIFT for 1 min). With the icon "clock", you can set the date and the time to the current date time.



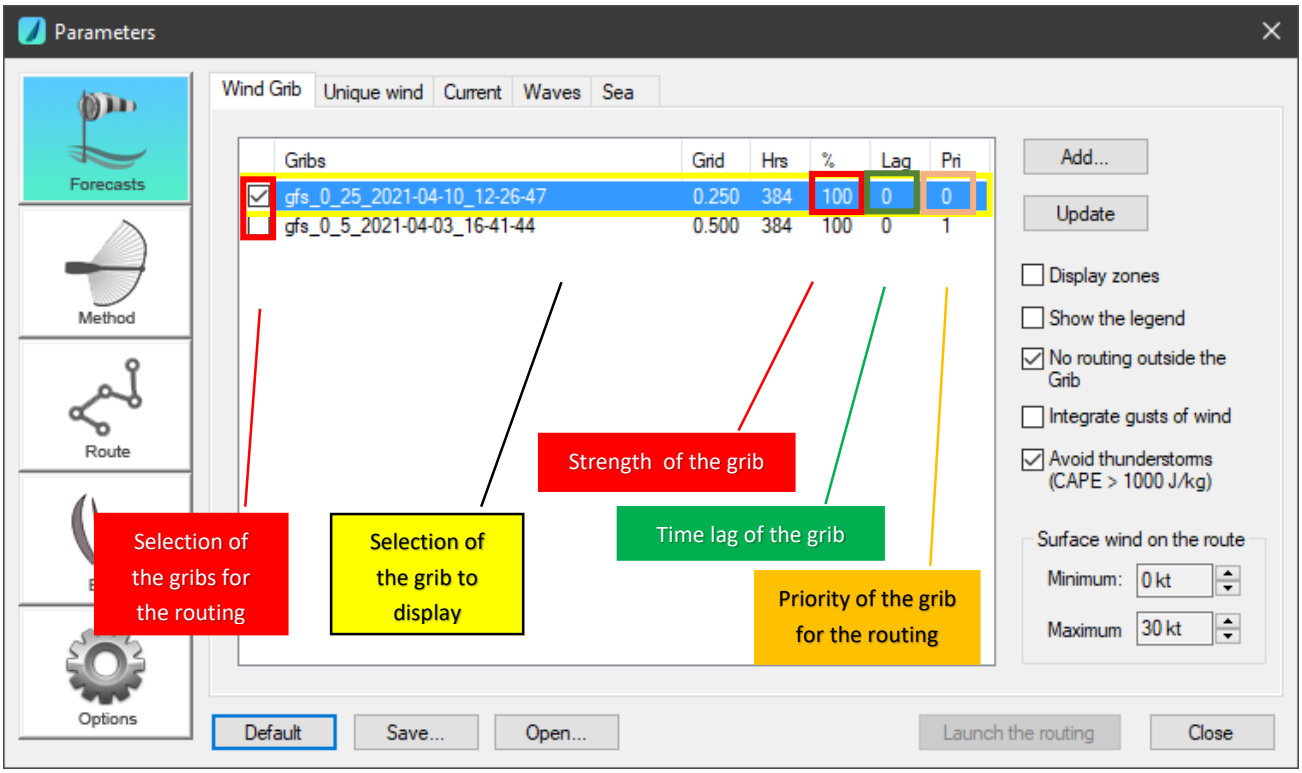
Each light grey/dark grey rectangle represents a day. The grey lines above and below represent the weekends, Saturday and Sunday. The small vertical black line represents the current date and the vertical black line

represents the selected date. The blue rectangle represents the current. The green line represents the waves grib.

You can navigate in the wind file by clicking on the bar or using the arrow keys: **[Left]** or **[Right]** to move backward or forward one hour (round time) and **[Up]** or **[Down]** for 3 hours, **[Control]** + **[Left]** or **[Right]** for 10 minutes, **[Shift]** + **[Left]** or **[Right]** for 1 minute.

In practice, roughly position the date and time desired then refine with the arrows.

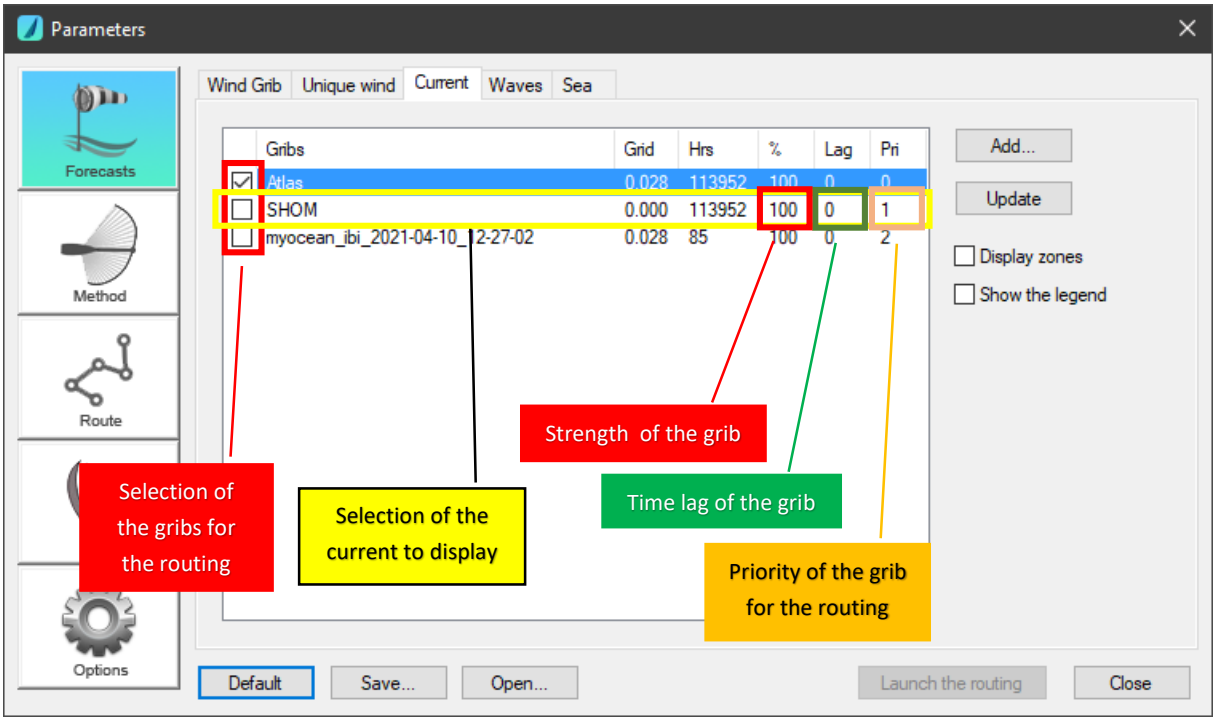
All the gribs can be modified:



- Only one grib is displayed (highlighted in blue) in SimSail but several gribs can be selected for a routing;
- The checkboxes identify the gribs selected for the routing and not the ones displayed in SimSail;
- A panel of information appears when the mouse is over a checkbox;
- Click on a line (column: Gribs, Grid, Hrs) selects the grib to display. Only one grib can be displayed. A double click on a line selects only a grib and deselects all the others;
- %: a **left** click on this column allows to modify the strength of the grib;
- Lag: a **left** click on this column allows to move forward or backward the grib (Time lag);
- Pri (priority): a **left** click on this column allows to change the priority of the grib.

2) The **CURRENTS** of the Channel and Iroise Sea are present in SimSail by default. You cannot change them but you can add the currents of the SHOM (French Oceanographic Agency, see installation) or Gribs of currents.

Below, 3 currents are available: the atlas by default, the SHOM and one grib of current (myocean_ibi_...). The latest are obtained with a software like Squid®.



3) **CREATE A ROUTE**. Right click on the map and select “Create a route”. Left click to add waypoints. The number of waypoints is not limited. When you have finished, hit the **[ESC]** key or right click. You can save the route or load an existing one. You can move, add or delete all the waypoints. You can also prolong the route, reverse it or replace it by a new one.

4) Set the **TIME OF DEPARTURE** using the arrows of the keyboard (**[Left]** or **[Right]** for 1 hour, **[Up]** or **[Down]** for 3 hours, **[Control]** + **[Left]** or **[Right]** for 10 minutes, **[Shift]** + **[Left]** or **[Right]** for 1 minute).

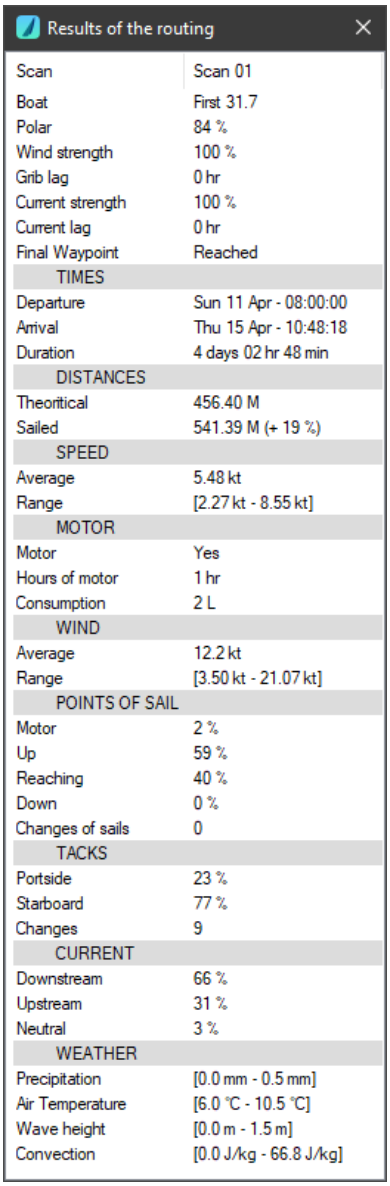
5) **LAUNCH THE ROUTING**

Button "Start routing" at the bottom of the parameters control window or, if the window is not open, press the **[SPACE]** bar. The time bar is replaced by a progress bar. Routing can be interrupted at any time by pressing **[ESC]**.

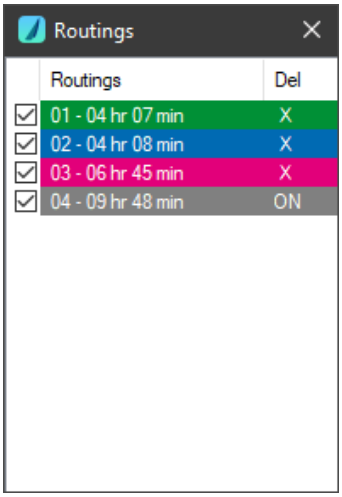
You can navigate on the simulated route using the tool time below the main tool bar or with the **[Left]** or **[Right]** Arrow.

6) **ANALYSE THE RESULTS**

Hit the key **[²]** to access to the global results (key above the tab key).



The key **[R]** gives access to the previous routings. The routings are listed. They can be displayed or not (checkbox at the left of the names). They can be deleted (checkbox at the ight of the names). Only one can be selected (marked as “ON”).



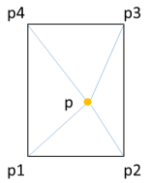
ALGORITHM OF ROUTING

SimSail reads the gribs (editions 1 and 2) of wind and current. SimSail reads the data of the SHOM (to purchase on the SHOM website). SimSail can route with a unique wind (constant on the earth) that may vary in intensity and direction.

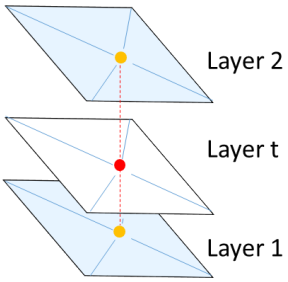
The routing can use several gribs of wind and current. SimSail computes the wind and the current depending on the priority of the selected gribs (Parameters > Forecasts > Wind Grib and Parameters > Forecasts > Current).

The gribs of wind and current can be modified in intensity and in time (lag). In general, 115% is a good value for a grib of wind. In the Channel, the real current is often stronger than the files (gribs or SHOM).

The grib of wind and the grib of current are linearly interpolated in space and time. It means that, for any position, SimSail interpolates four grid points that surround the position to calculate. If one point is missing, SimSail takes the closest point of the grid, p1, p2, p3 or p4.



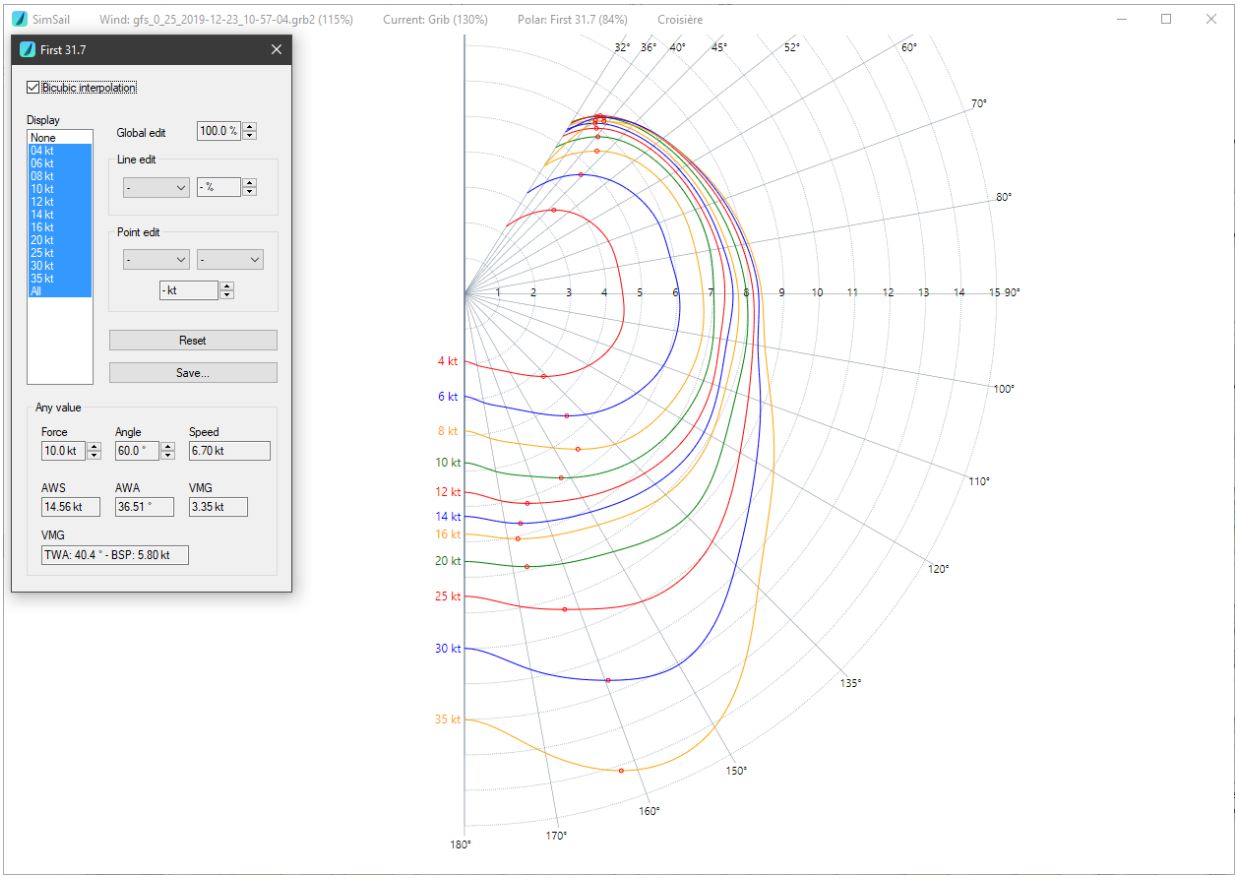
This interpolation is performed for the previous layer of the grib and for the next layer. The result interpolates the two layers as a function of time. Example, the wind grib provides the data for 8:00 and 9:00. The calculation seeks a value for 8:00 (between the four grid points that surround the wanted point) and 9:00. Then, the final result is that for the time searched between 8:00 and 9:00.



Because the SHOM's current, as well as the default one provided by SimSail for the Channel, is based on an irregular grid, the interpolation of the current is questionable in some cases (especially the front of tide between different density zones of power points). The method that would be the most fair (kriging) requires several passes and necessitates some time. The interpolation on regular grid gribs will therefore be preferable to interpolate an irregular grid.

The polar of the boat is interpolated using two methods: a linear interpolation between points and with a bicubic-spline on the full range of the data. Linear interpolation brings small errors between points. Spline interpolation implies that the polar should have all data defined for all its lines or its rows. Wind values higher than the polar file are not extrapolated. If the polar stops at 20 knots of wind, then a speed boat for a wind of 24 knots will be that of the wind 20 kt. This is the limit to be considered in strong winds because the sea conditions can significantly reduce the performance of the boat. Generally, polar issued from velocity prediction programs are optimistic in low wind and high wind. The edition tool of the polar authorizes the user to correct individually each line of the polar.

It is wise to check if the polar can be interpolated with the bicubic spline method. If not, uncheck the option "Bicubic interpolation". The polar below is correct because it shows no irregularity.



The polar can be changed in intensity. For cruising, for example, (winder, hood, boat load, hull unprepared, etc.), it will be wise to put a coefficient much less than 100%. The intensity of the polar may be different during the night. This is the case of a cruise being underpowered or leaving the driving to the pilot. In SimSail, night matches nautical twilight that is the period when the centre of the sun is 12° below the horizon.

The VMG upwind angle can be degraded. If the effectiveness of the polar can be modified, it doesn't reflect the fact that, outside certain specific conditions of regatta, a sailing boat cannot respect the VMG upwind angle of the polar. This parameter is useful in case of autopilot.

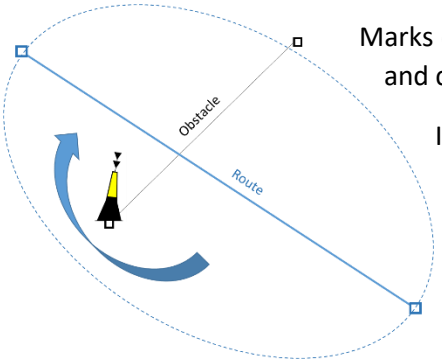
SimSail can route on multiple route segments. There is no limit to the number of segments. Right-click on the map is used to display a menu that offers to create a route. You can move, add and delete all waypoints. You may be asked to check if a waypoint is on ground (Parameters > Route > Route). Note that the routing cannot start if the first waypoint is ashore. A waypoint on ground appears differently. No route segment may be less than 0.5 nautical mile.

SimSail performs all calculations in great circle. It guarantees the shortest route on the surface of the earth. The route does not cut the meridians with a constant angle. This can be verified by creating a route about 100 miles in SimSail. The starting bearing is viewable by putting the mouse cursor on the beginning of the route. It is different from the arrival bearing (cursor on the route near the end waypoint). All displays of SimSail meet the great circle. The projection of the map is that of Lambert and coordinates are WGS 84. The world coast line is available as well as free charts provided on internet. The precision of the charts is greater than the precision of the word coast line.

SimSail avoids the coasts constituted by the world coastline. The quality of the coast is configurable (Parameters > Route > Obstacles). Higher it is and more accurate is the calculation but the computing time is longer. The quality of the coast considered in the routing calculations (Parameters > Route > Obstacles) is

different from the quality of the map displayed on the screen that depends on the zoom of the chart displayed in the screen.

SimSail avoids obstacles created by the user. There are several ways to create obstacles in creating a route and converting it in a barrier (Parameters > Route > Route), or creating a barrier manually (right click on the map and “New barrier”). All points are modifiable (deletion/addition/removal). All obstacles can be saved and recalled later.



Marks can be passed on a specific side. Create a route that passes over a mark and create a barrier of two points (one of them is the mark).

In this case, the mark is let to starboard.

Traffic separation schemes (TSS) are not obstacles for routing. By creating a route that takes the form of a TSS, it can be converted to the format of a TSS or an obstacle (Parameters > Route > Route). One can also create a route in a navigation software, import it into SimSail and convert it to TSS or obstacle. In fact, any route in GPX format is either a route or a TSS or an obstacle to SimSail. It depends on the storage location of the file. If a GPX file is in the "Routes" folder, it will be considered as a route. The same file in the "Barriers" file will be considered as an obstacle. And the same file in the "Tss" folder will be considered as a TSS.

SimSail can avoid areas of weak or strong wind (Parameters > Forecasts > Wind).

SimSail can route with the engine on when the boat speed becomes low under sail (Parameters > Boat). Consumption of fuel is calculated on the route.

SimSail offers two routing methods, a method called "best course" and the method of isochrones (Parameters > Method > Method).

The method called "best course" is very basic. At each time step, SimSail seeks to reach the next waypoint along the most approximate heading. When approaching the edge is on the other tack or jibe SimSail turns. When the route is completely upwind SimSail turns constantly at each time step. When it meets the coast or an obstacle, the routing stops. This method is very limited but allow to see what would make a boat that would have only instant weather information. This method does not calculate an optimum route, in contrast to the isochrones method.

The isochrones method is more computationally expensive but gives optimal results. At each time, the boat tries many directions and continues the same process from each. A line connecting all routing points that allow the boat to arrive at a specific time is called an isochrone (literally "the same time"). Isochrones are calculated successively until an isochrone line exceeds the ending waypoint of a route segment. In this case, each point of routing of the penultimate isochrone seeks to reach directly or indirectly (with tack or jibe possibly) the end waypoint segment. The optimal route is calculated from the routing point that reaches the fastest to the last waypoint and back to the starting waypoint. The result shows that very often the direct route is rarely the fastest.

Whatever is the method, SimSail estimates the time step for each segment of the route. For each, SimSail pre determines a time step by taking the polar and by performing a ratio between different speeds (near, reaching

and bearing). On average, for a quality routing "normal" (Parameters > Method > Method -> Quality) SimSail seeks to calculate about twenty isochrones. The time step is proportional to the length of each segment. This ensures optimal results.

The time step should be commensurate with the precision of wind gribs and current and that of the polar. In practice, it is best to avoid extremes. A routing time step of 15 minutes on a 16-day wind grib is extreme. It is the same for a time step of 6 hours when the wind file has a very high definition (AROME model of Météo France for example). Everything is a matter of judgment. In both cases, the result is not wrong. It is even just scientifically but as the data are not consistent, the interpretation is questionable.

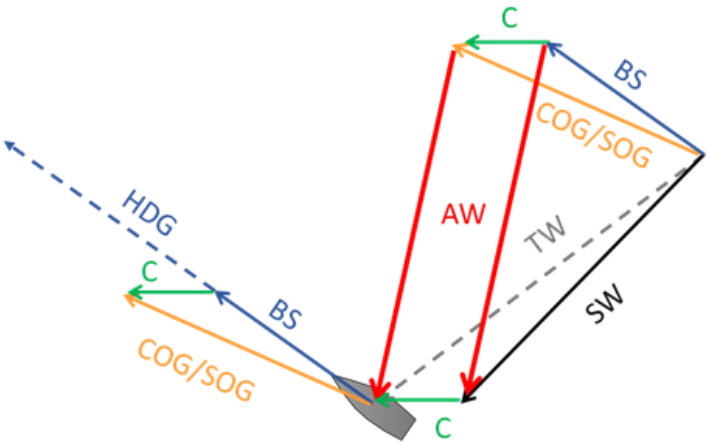
In the isochrones method, in manual mode, the aperture angles and their number can be changed as well as the time step. In this case, the time step is the same for all segments.

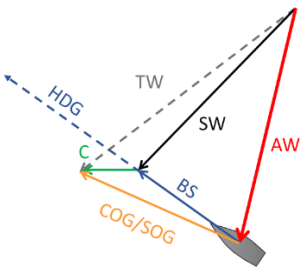
Overall, it is best to use for the isochrones method the automatic mode and adjust the quality of the routing between from "Ultra Low" to "Ultra High". The choice of quality "Normal" gives good results (speed of calculation versus accuracy of routing).

Each routing point is calculated as follows.

The wind (TWD and TWS: True Wind Direction and True Wind Speed) and current (CD and CS: Current Direction and Current Speed) are interpolated to the precise position of the point and specific time point. SimSail tests all selected gribs files starting with the one that has the highest priority and continues until a grib is valid in space and in time for the point.

The current is then combined with the wind to achieve a surface wind (SWD and SWS: Surface Wind Direction and Surface Wind Speed). This gives a wind angle in the polar which is interpolated to get the boat speed (BS: Boat Speed). If the tested angle is too close to the upwind or downwind, the optimum angle of upwind or downwind is retained (VMG angle). The speed and the boat heading are combined with the current to obtain a speed and a course (SOG and COG). The apparent wind values are calculated (AWA, AWS: Apparent Wind Angle and Apparent Wind Speed).





Here is another representation of the wind vectors, current and boat.

The tack time is taken into account using Parameters > Boat > Boat -> Tacking. Two parameters are needed: the loss of speed when tacking and the time taken to regain speed before tacking. The loss in tack is interesting only for short upwind routes.

If the boat speed (on water - BSP) is below a set value, SimSail drives motor if this option is selected (Parameters > Boat > Boat). SimSail routes with the engine when the wind data are not available and if the "No routing outside the grib" is not selected.

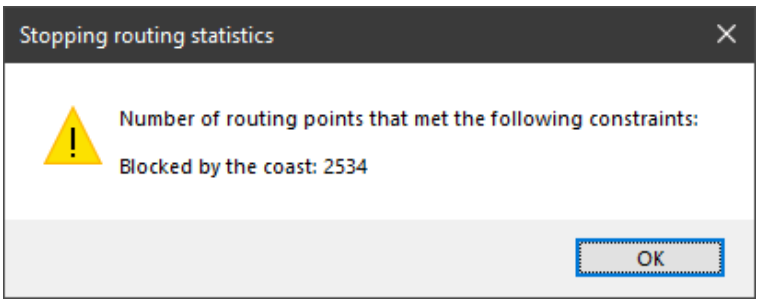
The sea state can be taken into account due to a percentage rate defined in Parameter > Forecasts > Sea state. The upwind can slow the boat and downwind may accelerate it. The crosswind is neutral in all cases (no effect of this parameter).

At the start of a route segment and according to the selected options, SimSail sweeps many angles. SimSail eliminates some of which are abnormal, e.g. those between the upwind (0°) and the optimal angle of upwind to this wind force (VMG) and those between the downwind (180°) and the optimal angle of descent this wind force (VMG). The optimal angles upwind and downwind are calculated precisely for all wind strengths. For example, if the polar contains the values for 10 kt and 12 kt, and the wind from the surface of gribs is 10.37 kt and tested angle is 20° (very close to the wind) during scanning, the point of routing will take into account the optimal angle for the wind strength (10.37 kt), for instance 42.18°.

Routing points that arrive behind the preceding isochrone are removed from the calculation. It is the same for the points that cross behind the isochrone being calculated. This is necessary to avoid the exponential inflation of routing points. Indeed, the first isochrone may be based on the calculation of 70 points (70 different directions from the first waypoint). But if the routing adds each time 70 new points to the previous point, the calculation time can exceed the life expectancy of the user (the fourth isochrones has already more than 24 million of routing points). The calculation algorithm so cleans routing points to maintain reasonable number. Nevertheless, a route of one segment (two waypoints, a start and a finish) calculates around 30000 routing points in a few seconds and give the optimal route with 20 isochrones.

Another way to reduce the computing time is to isolate the routing in an ellipse that passes through the departure and arrival waypoints (Parameters > Method > Method -> Ellipse). The "ellipse" option is available in the isochrones method. The width of the ellipse is configurable. The number of routing points is proportional to the aperture of the ellipse. When this option is not selected, routing points are more numerous.

The routing stops when SimSail finds an optimal route. However SimSail can also stop when there is no solution for the route: this is the case when routing cannot avoid the coast or an obstacle, or when it cannot avoid a minimum or maximum wind zone, or it happens when outside a wind grib (in space or time). A window will appear to specify the reasons that blocked the route.



The example above shows two reasons.

1) No road can bypass the ground to reach the end waypoint. You either expand the ellipse or uncheck this constraint or change the route by adding a waypoint that skirts the coast, or increase the quality of the routing (which decreases the time step).

2) The minimum wind constraint cannot be met. In this case, a minimum of 10 kt wind was requested.

It is up to the user to discern which parameter to change. Statistics help.

SimSail can simulate the passage of a front using the unique wind (Parameters > Forecasts > Unique wind). When selecting multiple dates, the wind can change in force and direction. The change is gradual and extends over the entire length of a period (between two dates). The unique method is interesting in the case of a record.

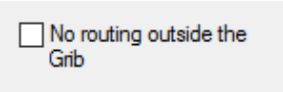
SimSail can scan routing parameters such as polar, wind and current force and time lag and the start time (Parameters > Method > Scans).

SimSail can route several boats at the same time on a course and give the result of corrected time (Parameters > Method > Scans). This is useful for regatta organizers in search of balanced course and well prior gribs are released.

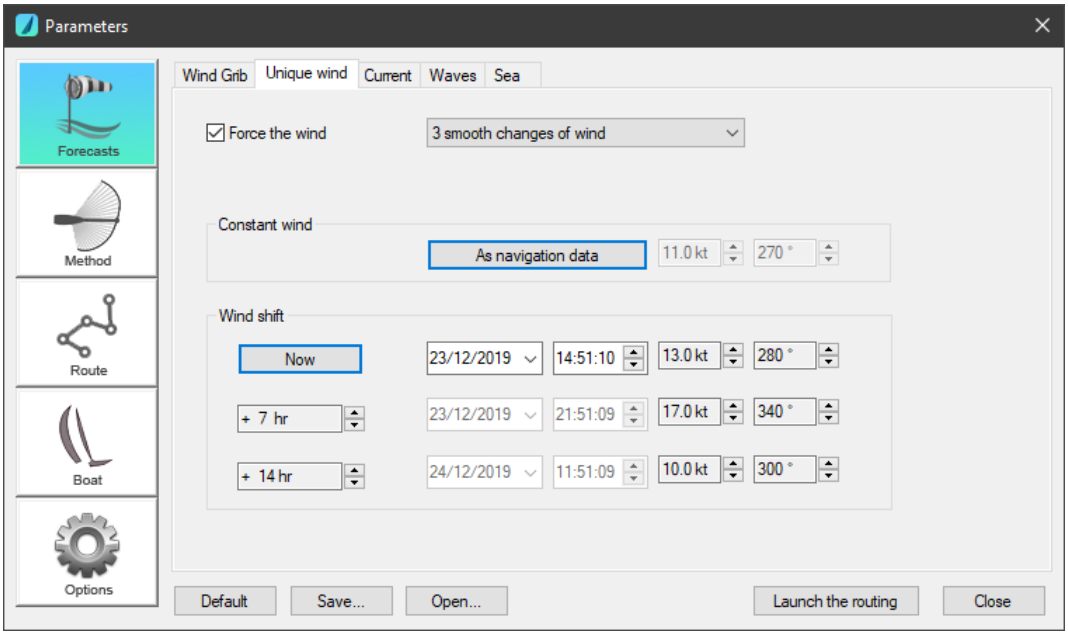
MOTOR ROUTING

SimSail can easily perform a motor routing entirely. Three actions are required to perform a routing engine whose interest is that routing takes into account current.

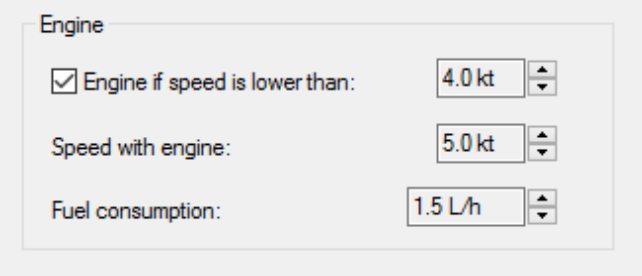
1) Parameters > Forecasts > Wind Grib, uncheck the "No routing outside the grib".



2) Select a constant wind at 0 kt (Parameters > Forecasts > Unique wind):

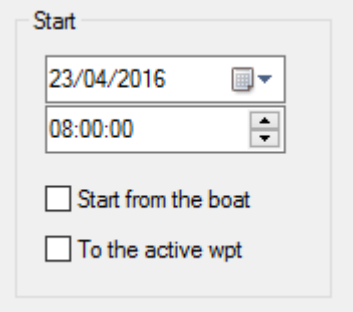


3) Give a speed motor (Parameters > Boat > Boat):



ROUTING FROM THE BOAT

SimSail can route from the boat (if its position is received) to the second waypoint in the route or to a waypoint.



From the boat

Go to Parameters > Method > Method -> check "Start from the boat." In this case, the first waypoint in the route is replaced by the current position of the boat and the route continues with the second waypoint, the third, etc.

To an active waypoint

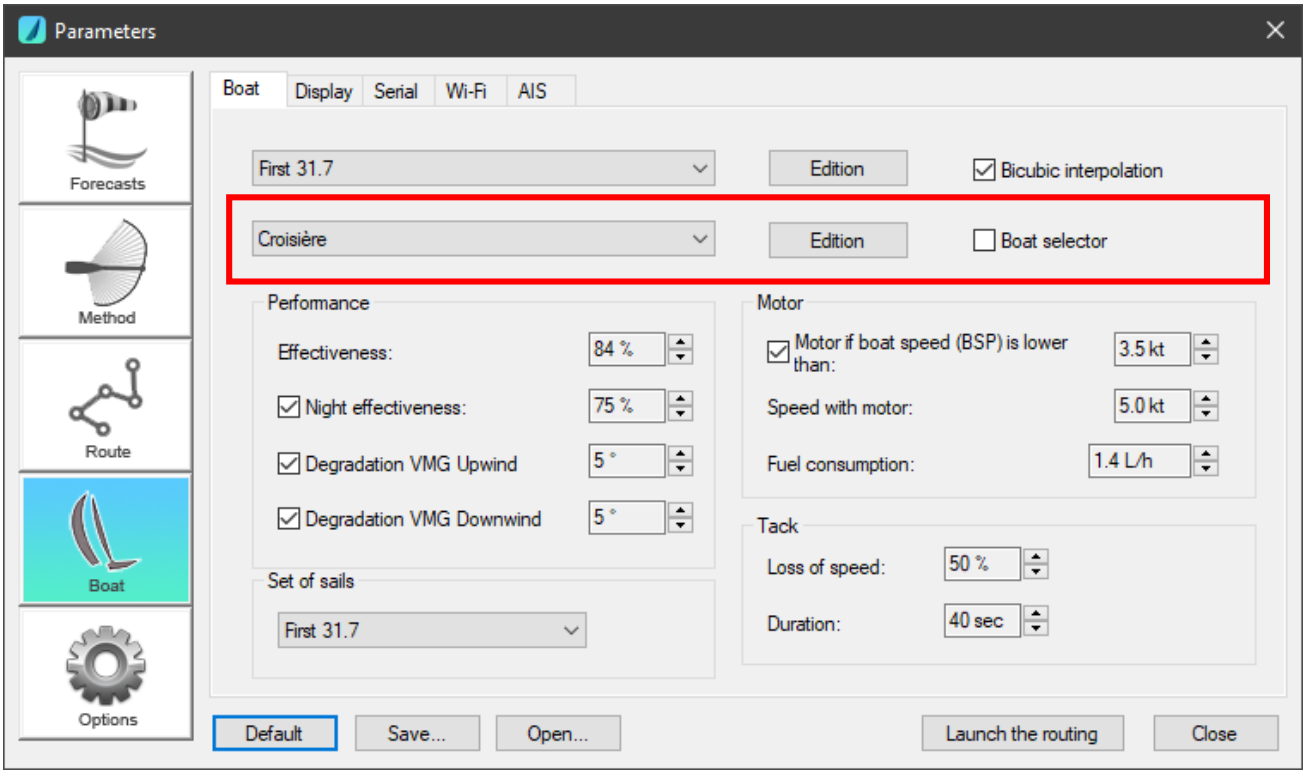
Go to Parameters > Method > Method -> check "To the active wpt".

An active waypoint is a waypoint received by SimSail through the NMEA sentences 0183. This means that a device, often the GPS has entered a waypoint.

When checked, the route is coloured in red as well as the active waypoint. The routing will be carried out from the boat to the active waypoint.

BOAT CONFIGURATION

The main characteristic of the boat is based on its polar. The polar file must be located in User / Documents / SimSail / Polars. You can adjust its strength for the day and the night. The angle of upwind and downwind can be degraded when using an autopilot or medium quality helmsman. You can choose to run the engine below a certain speed. The routing takes into account the tacking speed.



Set of sails

You can choose to assign a particular set of sails. To do this, you must create a file quite similar to the polar file. The best way to do this is as follows, using the First 31.7 polar as an example. The two necessary software are a text editor like Notepad (https://notepad-plus-plus.org) and a spreadsheet (Excel® from Microsoft or Calc from Libre Office https://fr.libreoffice.org/discover/calc).

Here is the polar of the First 31.7 copied from the First 31.7.pol file to a spreadsheet.

TWA	4	6	8	10	12	14	16	20	25	30	35
32	2.23	3.34	4.24	4.86	5.23	5.46	5.58	5.7	5.65	5.37	4.29
36	2.61	3.86	4.78	5.36	5.72	5.92	6.03	6.16	6.18	6.07	5.78
40	2.95	4.3	5.21	5.77	6.07	6.23	6.33	6.45	6.5	6.46	6.33
45	3.32	4.74	5.66	6.13	6.36	6.49	6.59	6.71	6.78	6.78	6.71
52	3.74	5.2	6.09	6.45	6.64	6.76	6.85	6.98	7.07	7.1	7.08
60	4.07	5.56	6.38	6.7	6.87	6.99	7.09	7.23	7.34	7.4	7.42
70	4.32	5.82	6.57	6.92	7.09	7.22	7.33	7.5	7.66	7.75	7.81
80	4.39	5.89	6.63	7.03	7.27	7.41	7.54	7.75	7.93	8.06	8.13
90	4.46	6.05	6.72	7.03	7.34	7.57	7.72	7.95	8.14	8.29	8.38
100	4.54	6.09	6.8	7.12	7.32	7.52	7.77	8.07	8.26	8.4	8.6
110	4.4	5.96	6.73	7.17	7.44	7.64	7.83	8.16	8.52	8.88	9.21
120	4.05	5.61	6.54	7.07	7.47	7.8	8.03	8.44	8.97	9.5	10.06
135	3.3	4.82	6	6.69	7.17	7.6	8.02	8.88	9.88	10.82	11.71
150	2.56	3.87	5.02	5.99	6.64	7.11	7.53	8.4	10.02	12.08	14.11
160	2.25	3.41	4.5	5.48	6.28	6.83	7.26	8.1	9.47	11.6	14.28
170	2.05	3.12	4.14	5.09	5.93	6.55	7.01	7.8	8.95	10.76	13.15
180	1.91	2.9	3.87	4.77	5.6	6.28	6.78	7.55	8.53	10	12.01

Then, for each wind force and for each angle, the boxes must be filled in with text that represents the sail configuration. No space is allowed. You can colour the boxes on the spreadsheet for clarity.

TWA	4	6	8	10	12	14	16	20	25	30	35
32	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
36	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
40	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
45	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
52	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
60	M0S2	M0J2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
70	M0S2	M0S2	M0J2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
80	M0S2	M0S2	M0S2	M0J2	M0J2	M0J2	M0J2	M1J3	M2J4	M2J4	M-J4
90	M0S2	M0S2	M0S2	M0S2	M0J2	M0J2	M0J2	M0J3	M1J3	M2J4	M-J4
100	M0S2	M0S2	M0S2	M0S2	M0S2	M0J2	M0J2	M0J3	M1J3	M2J4	M-J4
110	M0S2	M0S2	M0S2	M0S2	M0S2	M0J2	M0J2	M0J3	M1J3	M2J4	M-J4
120	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0J2	M0J3	M1J3	M2J4	M-J4
135	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S4	M1J3	M2J4	M-J4
150	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S4	M1S4	M1S4	M-J3
160	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S4	M0S4	M1S4	M-J3
170	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S4	M0S4	M1S4	M-J3
180	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S2	M0S4	M0S4	M1S4	M-J3

The text is free but without space. This is the one that will be displayed on the screen when the "set of sails" tool is selected when displaying a route.

In the example shown, the choice of texts is as follows: M for Main Sail, J for Jib (genoa), S for Symmetrical Spinnaker.

- M0J2 : Main sail without reef (« 0 ») and J2 (Solent jib)

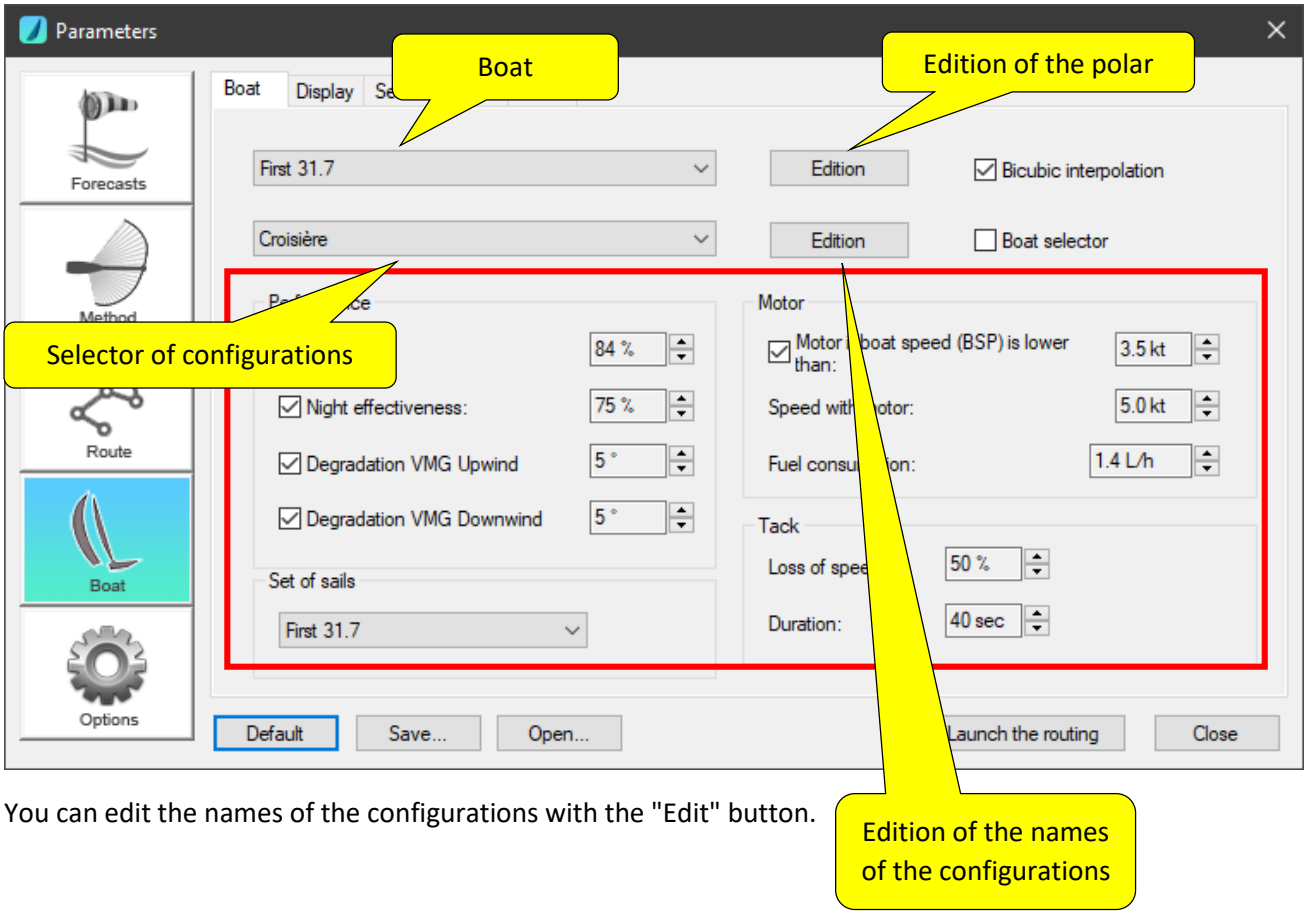
- M0J3 : Main sail without reef and J3 (ORC)
- M1J3 : Main sail with 1 reef and J3
- M2J4 : Main sail with 2 reefs and J4 (ORC with reef)
- M-J4 : Main sail down (“-“) and J4
- M0S2 : Main sail without reef and S2 (Medium spinnaker)
- M0S4 : Main sail without reef and S4 (Heavy spinnaker)
- M1S4 : Main sail with 1 reef and S4

When the table is completed, copy all the boxes to a file called “First 31.7.sail” located in User / Documents / SimSail / Sails.

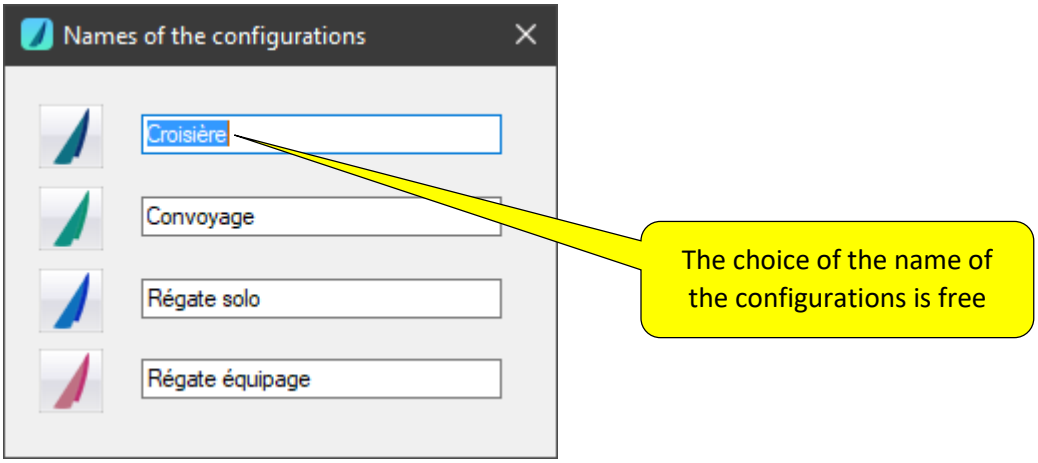
4 possible configurations for a same boat

SimSail users often have one boat and thus use a single polar. But this does not mean that the boat always sail under the same conditions. For example, in racing, we will not turn on the engine when in cruise it will be the case. The average speed of the boat will be higher with a full crew than in solo. Etc.

Therefore, SimSail offers the possibility of having up to 4 configurations of boat. One can quickly select a configuration with keys **[1]** to **[4]** or by displaying the boat selector. A configuration only concerns the parameters contained in the boat tab (below).



You can edit the names of the configurations with the "Edit" button.

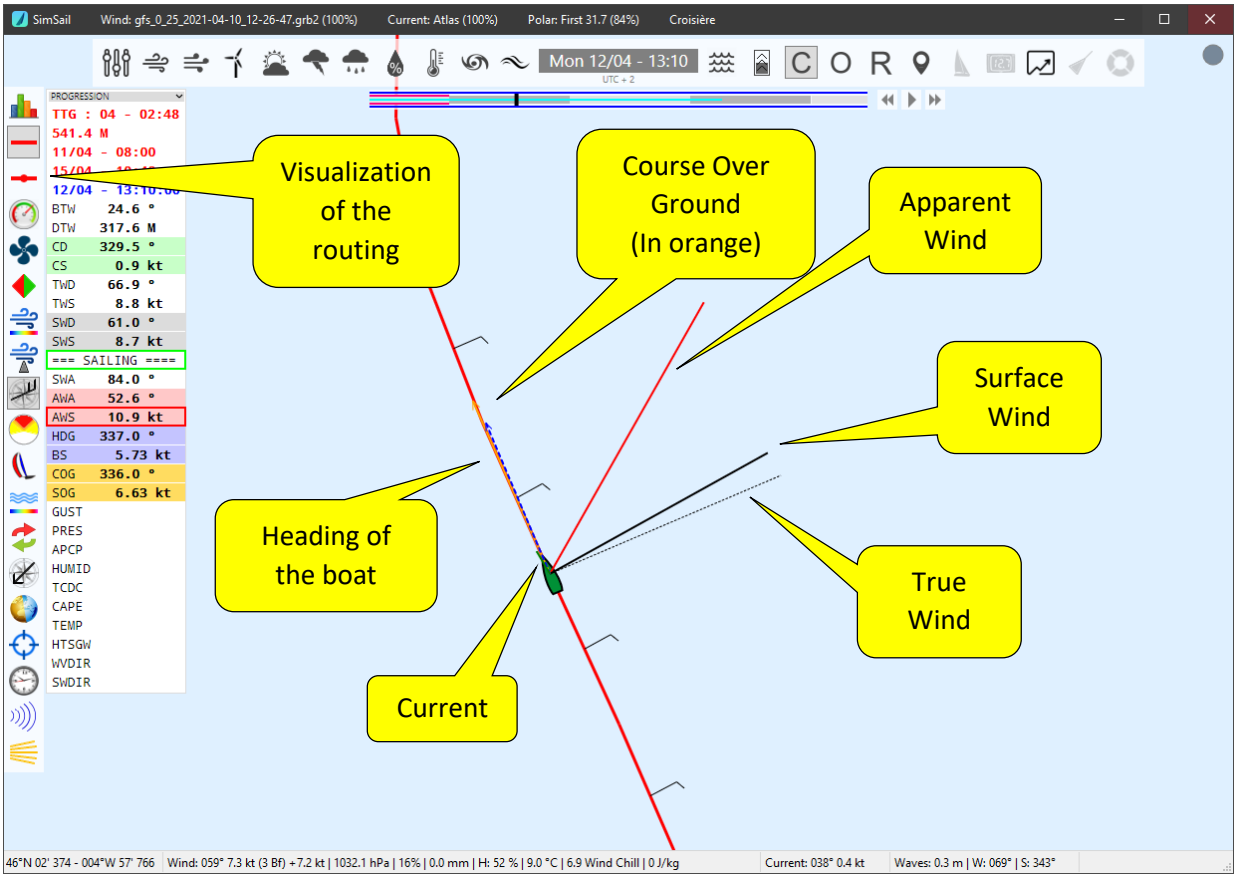


As soon as a parameter on this page is changed, it is automatically saved in the current configuration.

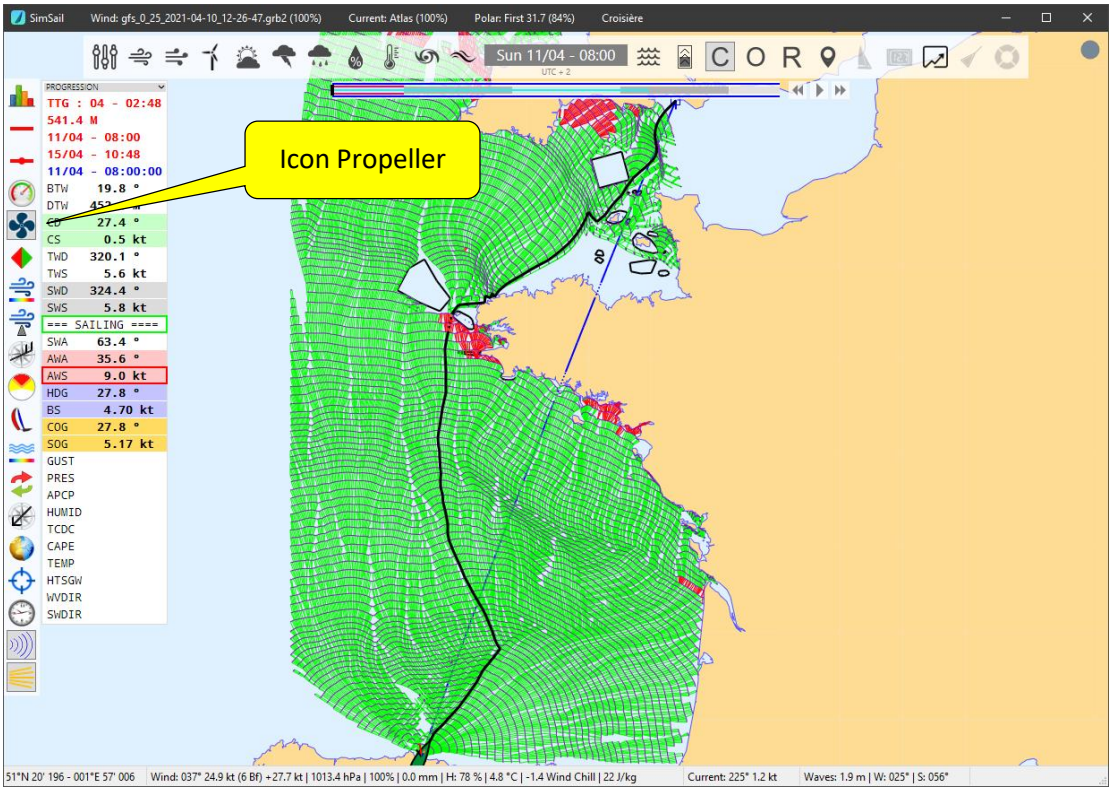
ANALYSIS OF THE RESULTS

The results of a routing can be analyzed in several ways.

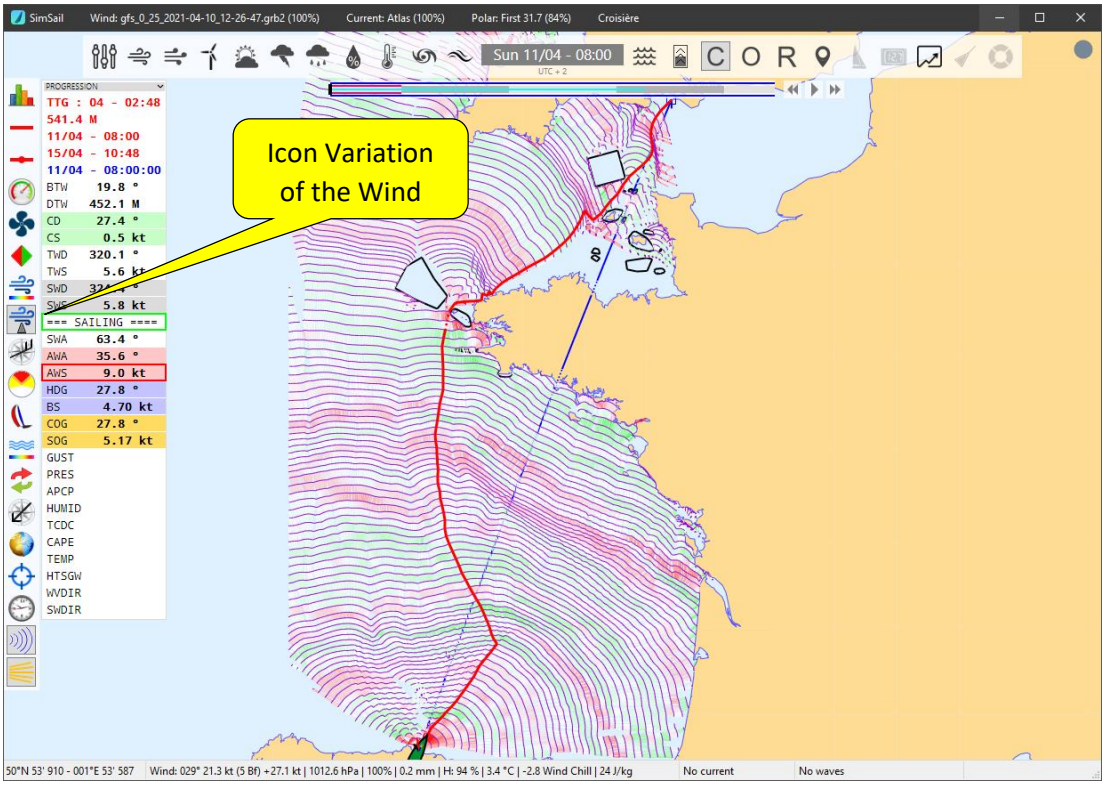
First with the routing visualization toolbar. The boat can move forward on the route using the keys arrows (**[Left]** and **[Right]**) and view the conditions at a particular point of routing as in the example below.



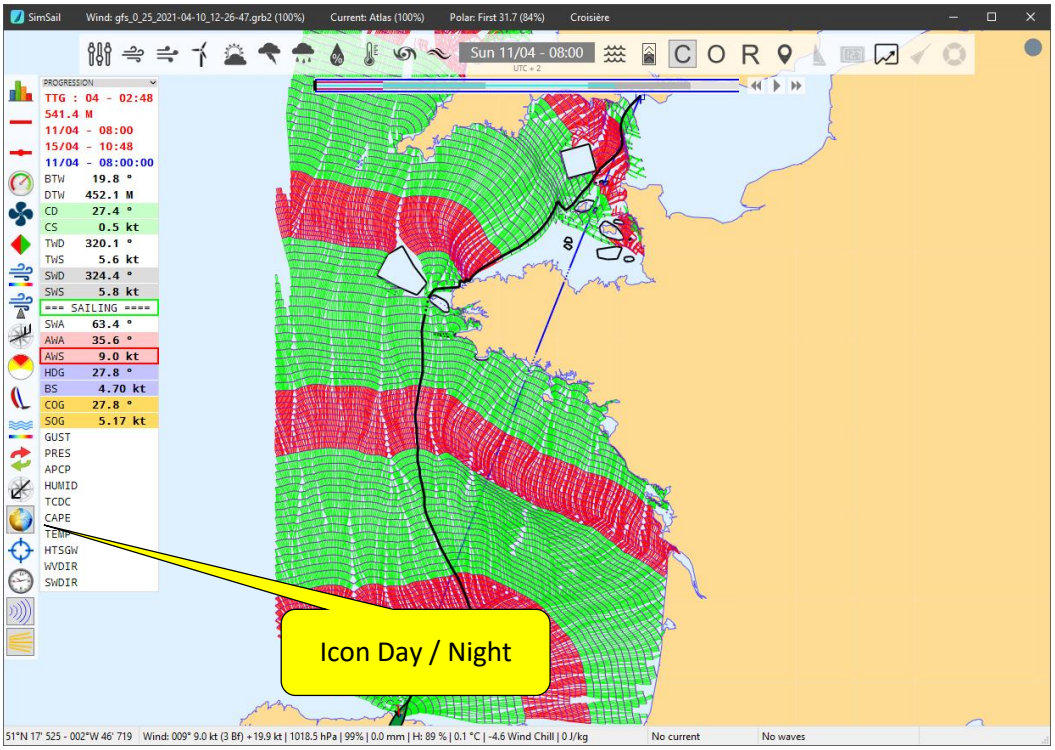
Icon Propeller selected: No engine most of the time (green colour).



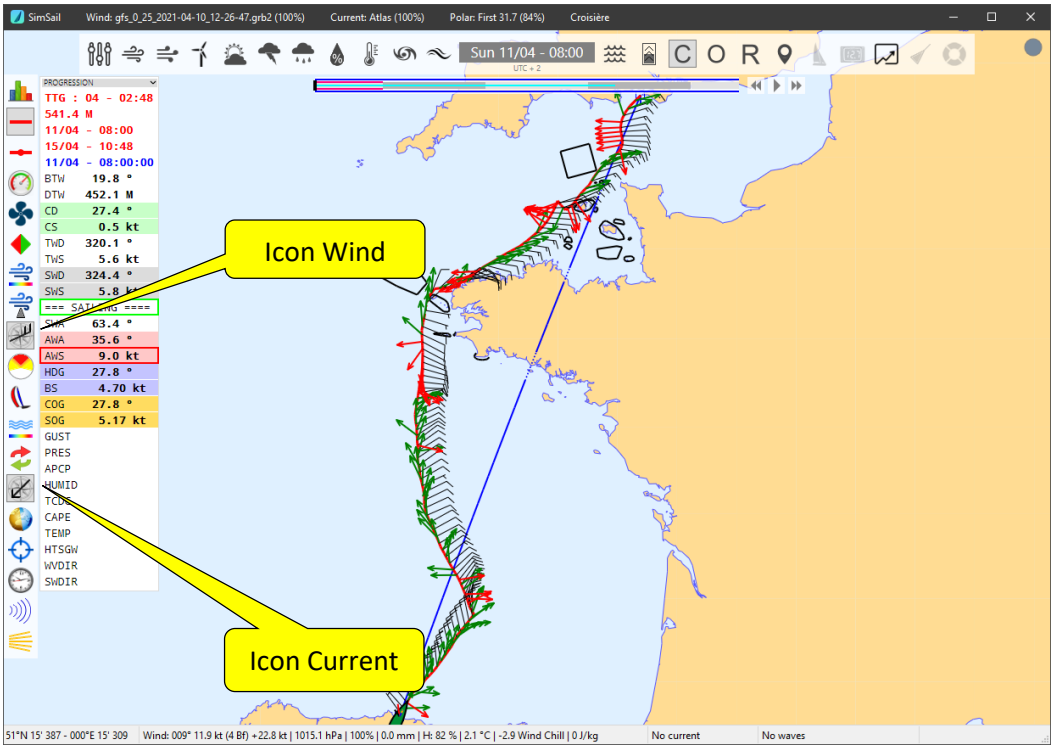
Icon Variation of the Wind selected. The wind will be weaker at the north of Cherbourg (green isochrones).



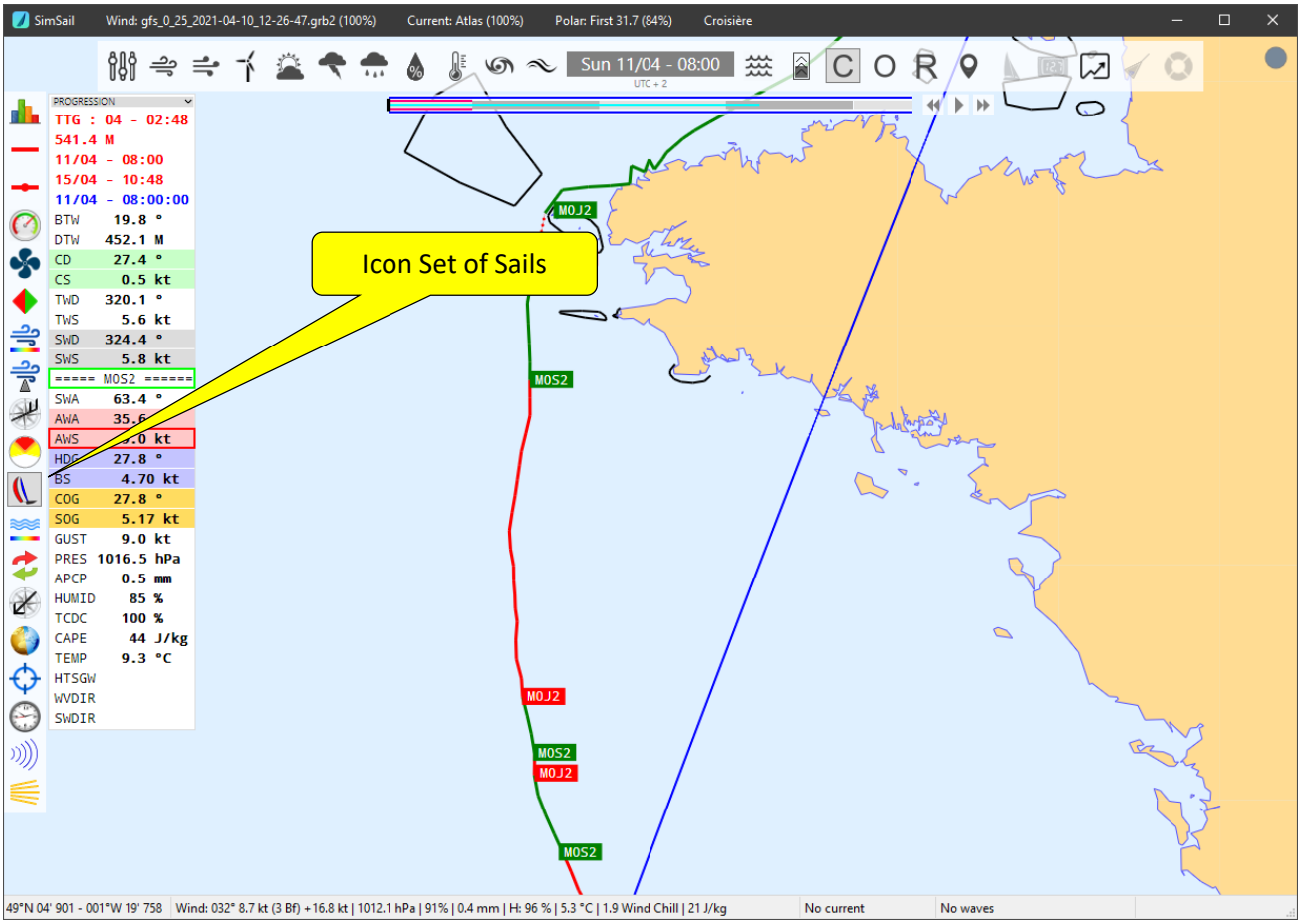
Icon Day/Night selected. Day is in green and night is in red.



Icons Wind and Current selected.



Icon Set of Sails selected

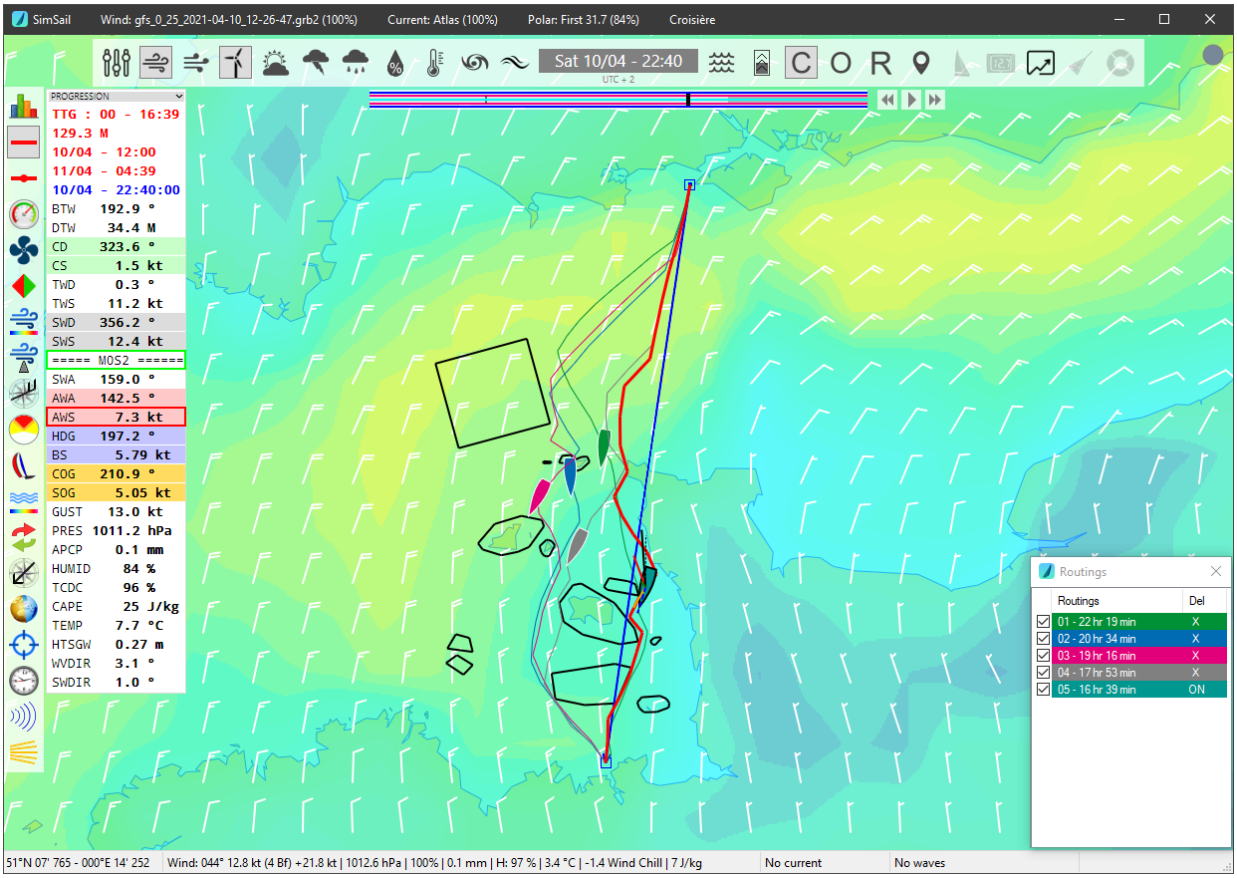


In general, performing “a” routing consists of making a large number of simulation by varying the parameters. It is the interest of the simulation.

Simulation and visualization for analyzing and understanding the sequence of weather events combined with the performance of the boat. This allows to control its route and intelligently follow the navigation conditions.

The variation of parameters to the margin may bring a different routing. If routing takes a polar at 100% but in reality it is 95%, in the end instead of going west would have had perhaps go east. Scan settings (Parameters > Method > Scanning 1) is to test the robustness of its routing.

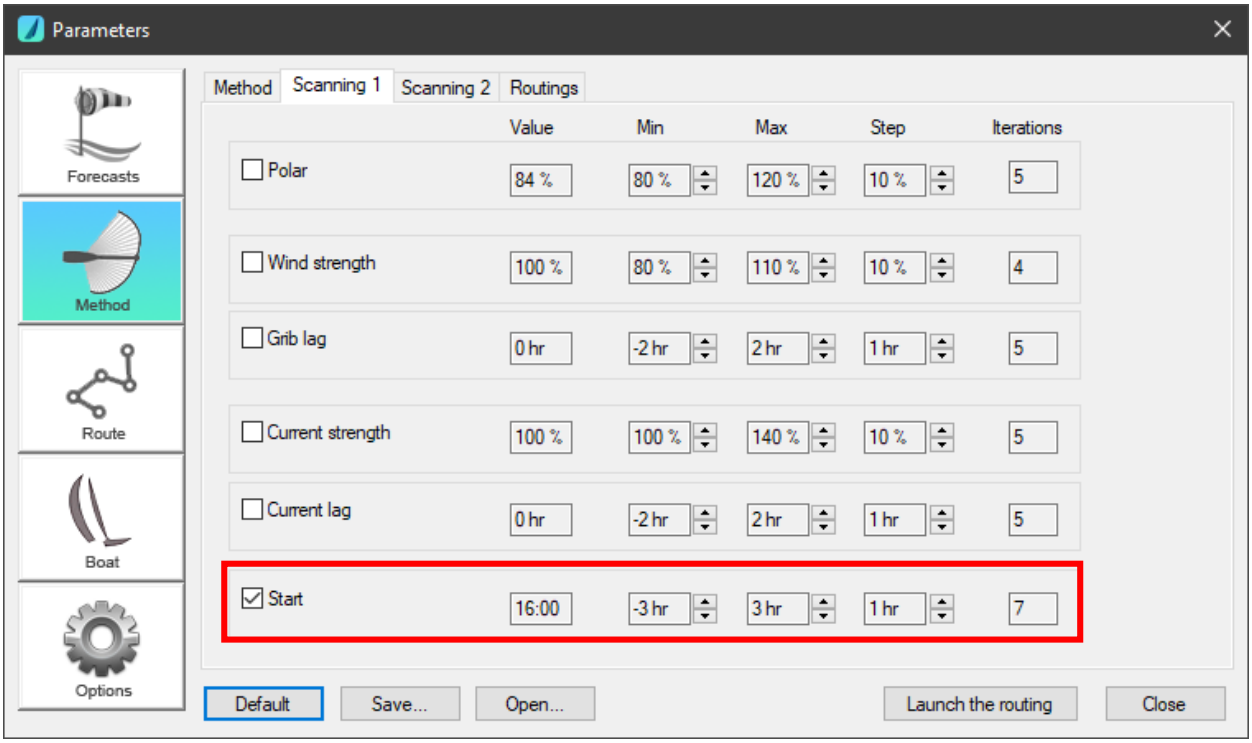
By varying the polar (Parameters > Method > Scanning 1 -> Polar), we see that if we go slowly or quickly, the routing takes us to different places.

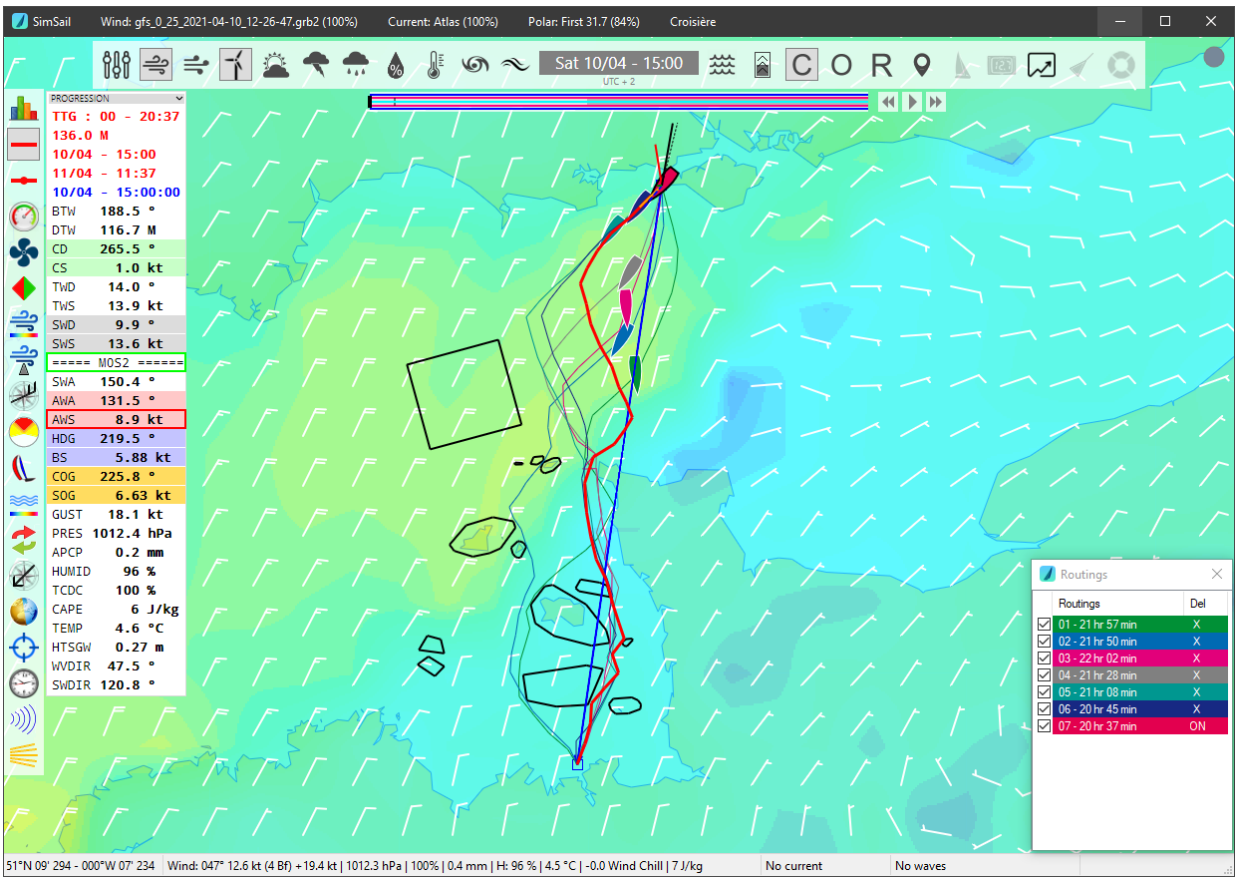


The best is to extensively use the scan parameters:

- The boat can go faster or slower ;
- The wind can be stronger or lower than expected;
- Wind can be advanced or delayed relative to the forecast;
- The current can be stronger or lower than expected;
- The current can be advanced or delayed (up to two hours in the Channel);
- The departure time may be different from the time of simulation.

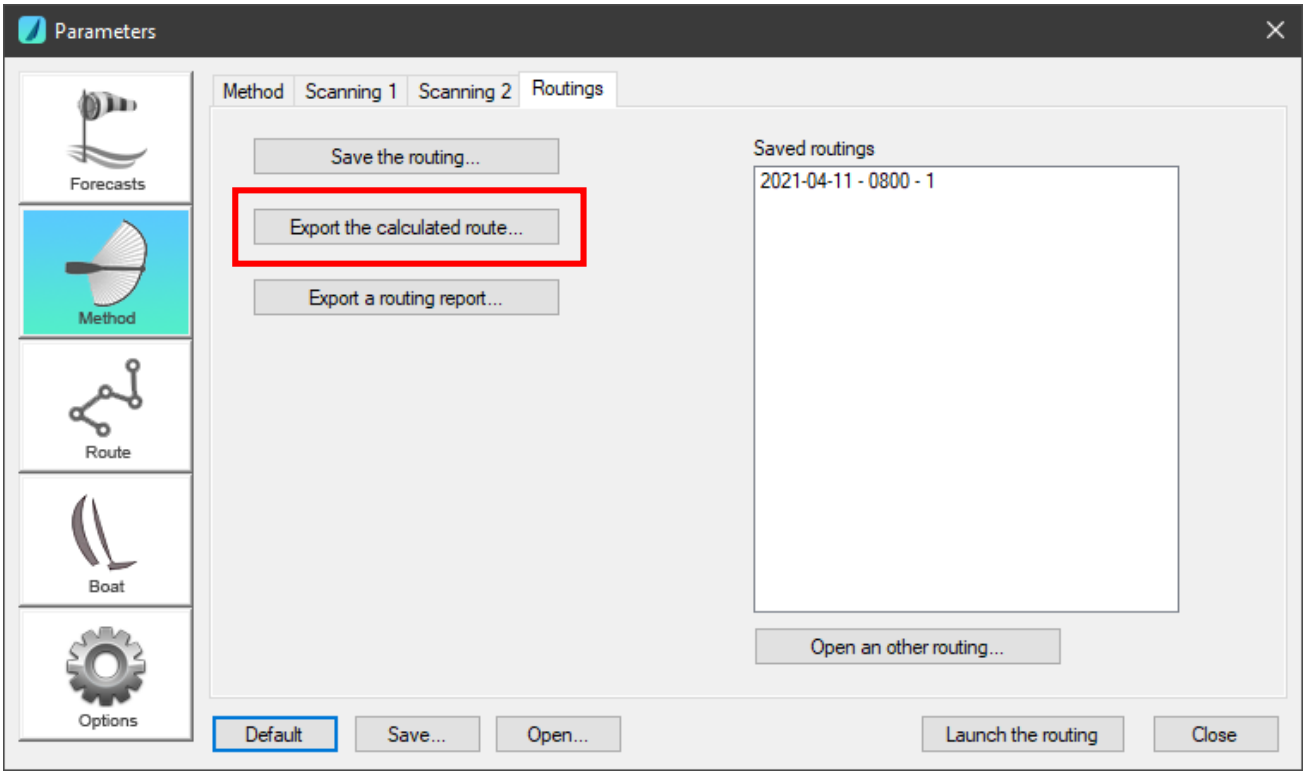
Below, starting between 13:00 and 19:00 gives different routes.



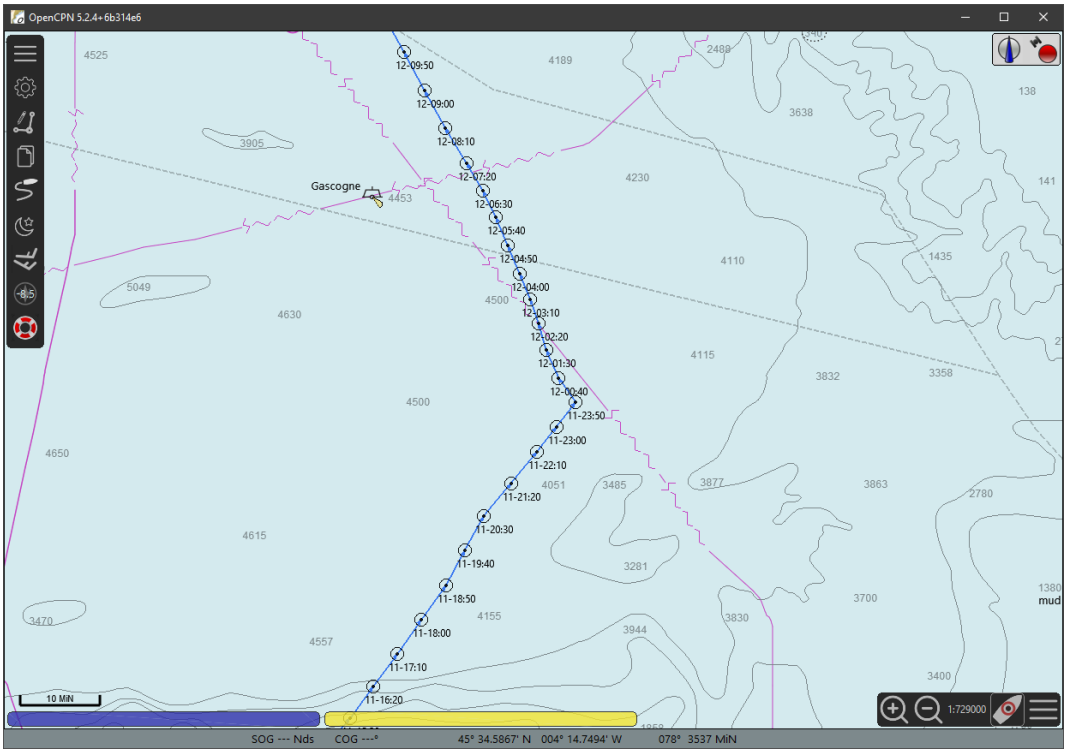


EXPORT OF ROUTING DATA

The optimal route can be exported in GPX format. Go to Parameters > Method > Routings -> Export the calculated route.



The following route was imported into OpenCPN and each isochrone point is marked with the date and time to which the boat is supposed to reach.

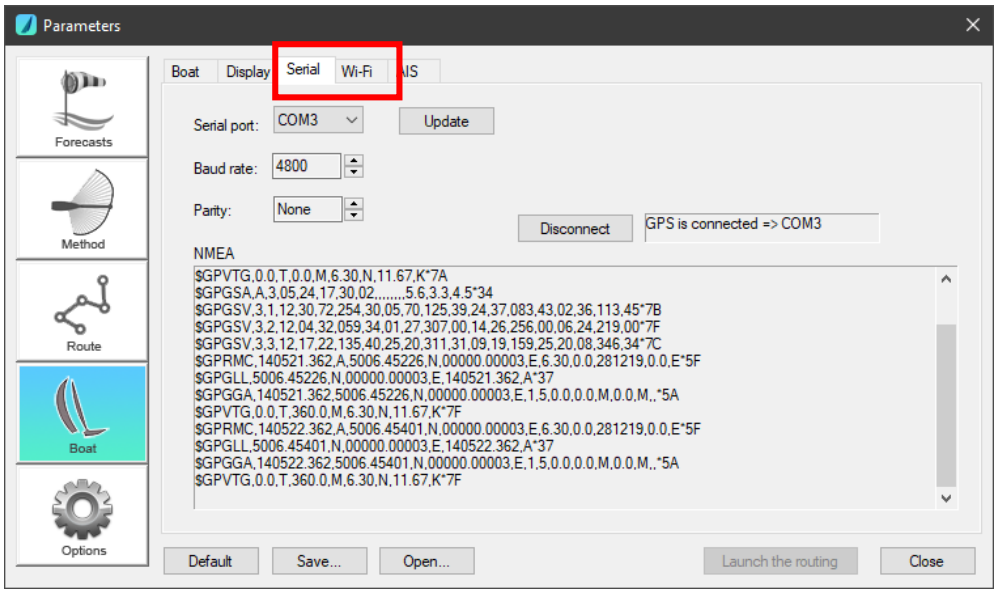


One can also export a table of all data along the route (extension "csv").

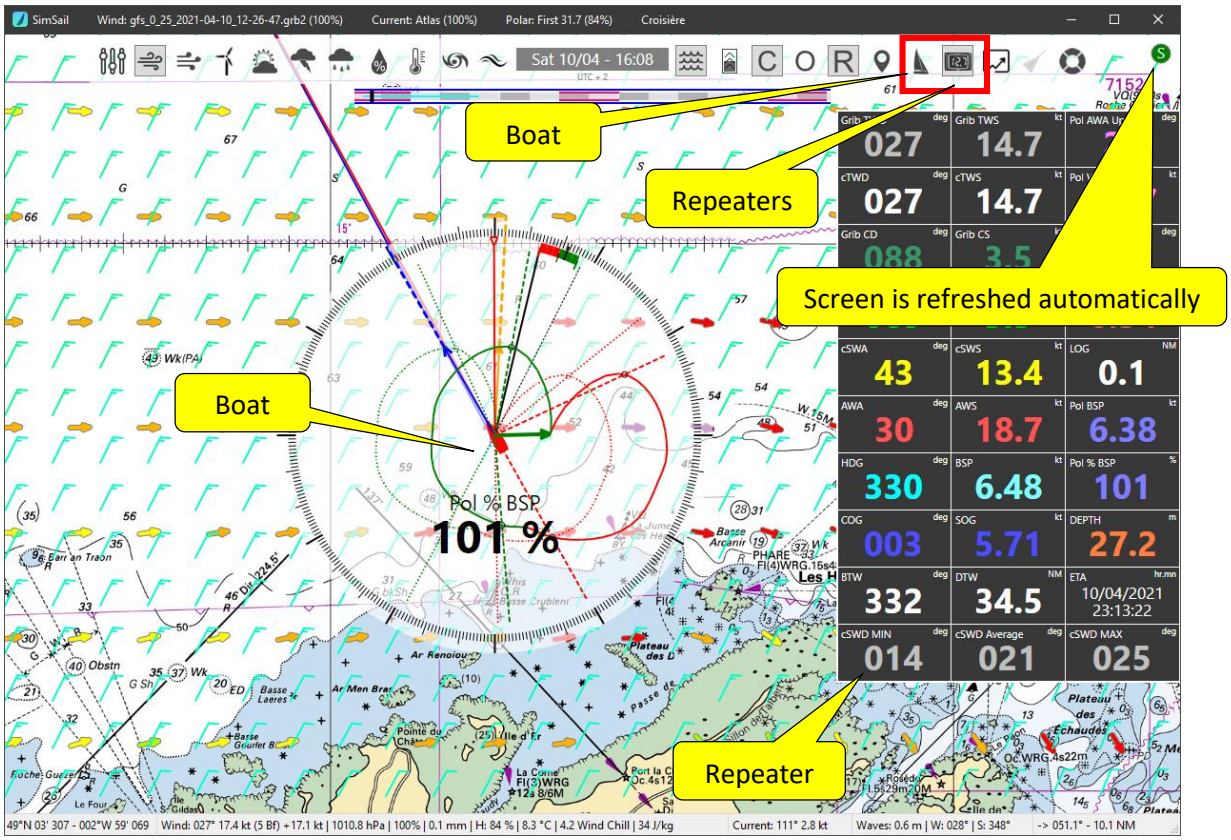
Time	LAT	LON	BTW	DTW	CD	CS	TWD	TWS	SWD	SWS	S/E	TWA	AWA	AWS	HDG	BSP	COG	SOG	Set of Sails
11/04 - 08:00:00	43°N 34' 920	005°W 39' 640	19.8 °	452.1 M	27.4 °	0.5 kt	320.1 °	5.6 kt	324.4 °	5.8 kt	Voile	63.4 °	35.6 °	9.0 kt	27.8 °	4.70 kt	27.8 °	5.17 kt	M0S2
11/04 - 08:50:00	43°N 38' 715	005°W 36' 880	19.8 °	447.4 M	87.9 °	0.5 kt	315.8 °	8.4 kt	318.3 °	8.1 kt	Voile	65.4 °	39.7 °	11.5 kt	23.8 °	5.48 kt	28.2 °	5.70 kt	M0J2
11/04 - 09:40:00	43°N 42' 900	005°W 33' 783	19.7 °	442.8 M	124.4 °	0.6 kt	320.0 °	12.2 kt	320.9 °	11.6 kt	Voile	63.0 °	43.0 °	15.1 kt	23.8 °	5.80 kt	30.2 °	5.72 kt	M0J2
11/04 - 10:30:00	43°N 47' 015	005°W 30' 472	19.6 °	438.1 M	67.2 °	0.2 kt	339.3 °	16.4 kt	340.1 °	16.4 kt	Voile	44.1 °	33.4 °	20.7 kt	24.2 °	5.52 kt	25.6 °	5.67 kt	M1J3
11/04 - 11:20:00	43°N 51' 268	005°W 27' 653	19.6 °	433.7 M	95.0 °	0.4 kt	355.8 °	18.7 kt	356.9 °	18.6 kt	Voile	46.8 °	36.4 °	22.9 kt	43.7 °	5.67 kt	46.4 °	5.90 kt	M1J3
11/04 - 12:10:00	43°N 54' 653	005°W 22' 712	19.4 °	429.2 M	32.7 °	0.2 kt	357.2 °	18.8 kt	357.5 °	19.0 kt	Voile	48.0 °	37.4 °	23.2 kt	45.5 °	5.72 kt	45.1 °	5.91 kt	M1J3
11/04 - 13:00:00	43°N 58' 126	005°W 17' 872	19.1 °	424.8 M	22.7 °	0.2 kt	359.9 °	20.9 kt	0.1 °	21.1 kt	Voile	41.9 °	33.6 °	25.4 kt	42.1 °	5.53 kt	41.4 °	5.72 kt	M2J4
11/04 - 13:50:00	44°N 01' 695	005°W 13' 500	19.0 °	420.3 M	349.2 °	0.4 kt	359.6 °	18.2 kt	359.3 °	18.6 kt	Voile	47.7 °	37.0 °	22.8 kt	47.0 °	5.70 kt	43.7 °	5.93 kt	M1J3
11/04 - 14:40:00	44°N 05' 261	005°W 08' 762	18.7 °	415.6 M	351.3 °	0.7 kt	358.3 °	16.9 kt	358.0 °	17.6 kt	Voile	49.4 °	37.9 °	21.8 kt	47.4 °	5.73 kt	42.1 °	6.14 kt	M1J3
11/04 - 15:30:00	44°N 09' 050	005°W 03' 991	18.5 °	410.9 M	15.0 °	0.5 kt	353.9 °	16.2 kt	354.6 °	16.7 kt	Voile	43.0 °	32.8 °	21.1 kt	37.6 °	5.48 kt	35.7 °	5.98 kt	M1J3
11/04 - 16:20:00	44°N 13' 093	004°W 59' 945	18.3 °	406.1 M	26.9 °	0.4 kt	347.6 °	16.3 kt	348.5 °	16.6 kt	Voile	49.0 °	37.1 °	20.8 kt	37.5 °	5.69 kt	36.8 °	6.09 kt	M1J3
11/04 - 17:10:00	44°N 17' 153	004°W 55' 708	18.2 °	401.0 M	10.5 °	0.6 kt	344.8 °	16.7 kt	345.7 °	17.3 kt	Voile	51.7 °	39.4 °	21.3 kt	37.4 °	5.78 kt	34.9 °	6.34 kt	M1J3
11/04 - 18:00:00	44°N 21' 481	004°W 51' 494	18.0 °	396.0 M	20.0 °	0.6 kt	345.6 °	17.2 kt	346.7 °	17.7 kt	Voile	50.5 °	38.7 °	21.8 kt	37.2 °	5.76 kt	35.6 °	6.33 kt	M1J3
11/04 - 18:50:00	44°N 25' 762	004°W 47' 202	17.8 °	391.1 M	38.0 °	0.5 kt	342.5 °	17.5 kt	343.7 °	17.8 kt	Voile	43.3 °	33.5 °	22.1 kt	27.0 °	5.52 kt	27.9 °	5.99 kt	M1J3
11/04 - 19:40:00	44°N 30' 166	004°W 43' 934	17.7 °	386.2 M	55.5 °	0.5 kt	343.3 °	18.0 kt	344.7 °	18.1 kt	Voile	41.9 °	32.6 °	22.5 kt	26.7 °	5.47 kt	29.0 °	5.90 kt	M1J3
11/04 - 20:30:00	44°N 34' 465	004°W 40' 598	17.6 °	381.3 M	69.3 °	0.7 kt	344.6 °	18.6 kt	346.7 °	18.7 kt	Voile	49.7 °	38.6 °	22.9 kt	36.4 °	5.77 kt	39.8 °	6.36 kt	M1J3
11/04 - 21:20:00	44°N 38' 532	004°W 35' 843	17.4 °	376.6 M	82.0 °	0.5 kt	345.4 °	19.3 kt	346.8 °	19.3 kt	Voile	49.6 °	38.8 °	23.4 kt	36.4 °	5.78 kt	39.5 °	6.11 kt	M1J3
11/04 - 22:10:00	44°N 42' 455	004°W 31' 293	17.2 °	372.9 M	51.4 °	0.5 kt	346.8 °	19.3 kt	348.0 °	19.5 kt	Voile	48.3 °	40.2 °	22.6 kt	36.4 °	4.31 kt	37.8 °	4.75 kt	M1J3
11/04 - 23:00:00	44°N 45' 577	004°W 27' 886	17.0 °	369.3 M	58.2 °	0.5 kt	348.7 °	19.4 kt	350.0 °	19.6 kt	Voile	46.3 °	38.5 °	22.7 kt	36.3 °	4.26 kt	38.5 °	4.71 kt	M1J3
11/04 - 23:50:00	44°N 48' 643	004°W 24' 447	16.8 °	367.0 M	19.8 °	0.7 kt	358.3 °	19.3 kt	359.0 °	20.0 kt	Voile	41.8 °	35.0 °	23.2 kt	317.2 °	4.13 kt	324.8 °	4.48 kt	M1J3
12/04 - 00:40:00	44°N 51' 677	004°W 27' 463	17.2 °	364.2 M	32.6 °	0.8 kt	6.5 °	18.1 kt	7.6 °	18.8 kt	Voile	41.8 °	34.7 °	22.1 kt	325.8 °	4.11 kt	335.6 °	4.51 kt	M1J3
12/04 - 01:30:00	44°N 55' 092	004°W 29' 652	17.6 °	361.3 M	63.2 °	0.9 kt	10.9 °	16.8 kt	13.3 °	17.3 kt	Voile	42.0 °	34.3 °	20.6 kt	331.4 °	4.09 kt	344.2 °	4.16 kt	M1J3
12/04 - 02:20:00	44°N 58' 426	004°W 30' 985	17.9 °	358.8 M	92.1 °	0.6 kt	13.1 °	16.4 kt	15.1 °	16.6 kt	Voile	42.1 °	34.1 °	19.8 kt	333.1 °	4.08 kt	341.0 °	3.82 kt	M1J3
12/04 - 03:10:00	45°N 01' 432	004°W 32' 447	18.2 °	356.2 M	88.5 °	0.3 kt	20.8 °	16.4 kt	21.8 °	16.5 kt	Voile	48.4 °	39.0 °	19.6 kt	333.4 °	4.25 kt	337.3 °	4.13 kt	M1J3
12/04 - 04:00:00	45°N 04' 601	004°W 34' 324	18.5 °	353.4 M	52.2 °	0.3 kt	30.4 °	15.5 kt	30.8 °	15.9 kt	Voile	58.0 °	46.4 °	18.6 kt	332.8 °	4.43 kt	337.1 °	4.50 kt	M0J2
12/04 - 04:50:00	45°N 08' 052	004°W 36' 392	18.9 °	350.5 M	51.6 °	0.4 kt	33.9 °	15.5 kt	34.4 °	15.9 kt	Voile	62.2 °	49.7 °	18.4 kt	332.2 °	4.50 kt	337.3 °	4.59 kt	M0J2
12/04 - 05:40:00	45°N 11' 576	004°W 38' 487	19.3 °	347.9 M	80.6 °	0.2 kt	37.9 °	14.6 kt	38.4 °	14.7 kt	Voile	66.7 °	52.6 °	17.0 kt	331.6 °	4.53 kt	333.9 °	4.47 kt	M0J2
12/04 - 06:30:00	45°N 14' 918	004°W 40' 812	19.7 °	345.5 M	269.4 °	0.2 kt	42.7 °	12.8 kt	42.2 °	12.6 kt	Voile	71.1 °	54.3 °	14.7 kt	331.1 °	4.51 kt	329.2 °	4.59 kt	M0J2
12/04 - 07:20:00	45°N 18' 199	004°W 43' 589	20.1 °	342.3 M	273.8 °	0.2 kt	48.3 °	11.4 kt	47.6 °	11.3 kt	Voile	77.1 °	52.2 °	13.9 kt	330.5 °	6.02 kt	329.1 °	6.12 kt	M0J2
12/04 - 08:10:00	45°N 22' 567	004°W 47' 307	20.7 °	338.9 M	354.3 °	0.3 kt	51.4 °	11.4 kt	50.3 °	11.6 kt	Voile	80.5 °	55.0 °	13.9 kt	329.8 °	6.08 kt	330.8 °	6.34 kt	M0J2
12/04 - 09:00:00	45°N 27' 172	004°W 50' 966	21.4 °	335.4 M	15.2 °	0.5 kt	52.6 °	12.3 kt	51.4 °	12.6 kt	Voile	82.2 °	57.8 °	14.8 kt	329.1 °	6.18 kt	332.0 °	6.51 kt	M0J2
12/04 - 09:50:00	45°N 31' 953	004°W 54' 586	22.0 °	332.1 M	33.3 °	0.3 kt	55.3 °	12.0 kt	54.8 °	12.3 kt	Voile	86.2 °	60.3 °	14.2 kt	328.6 °	6.19 kt	331.0 °	6.33 kt	M0J2
12/04 - 10:40:00	45°N 36' 561	004°W 58' 228	22.7 °	328.4 M	342.3 °	0.2 kt	60.2 °	11.3 kt	59.1 °	11.3 kt	Voile	81.1 °	55.0 °	13.6 kt	338.0 °	6.06 kt	338.2 °	6.27 kt	M0J2
12/04 - 11:30:00	45°N 41' 403	005°W 01' 000	23.3 °	324.8 M	315.5 °	0.3 kt	63.9 °	10.5 kt	62.1 °	10.4 kt	Voile	84.5 °	56.1 °	12.5 kt	337.7 °	5.96 kt	336.5 °	6.28 kt	M0J2
12/04 - 12:20:00	45°N 46' 193	005°W 03' 985	23.9 °	321.2 M	320.4 °	0.8 kt	65.9 °	9.8 kt	61.3 °	9.6 kt	Voile	83.9 °	54.2 °	11.7 kt	337.3 °	5.85 kt	335.3 °	6.63 kt	M0S2
12/04 - 13:10:00	45°N 51' 207	005°W 07' 297	24.6 °	317.6 M	329.5 °	0.9 kt	66.9 °	8.8 kt	61.0 °	8.7 kt	Voile	84.0 °	52.6 °	10.9 kt	337.0 °	5.73 kt	336.0 °	6.63 kt	M0S2
12/04 - 14:00:00	45°N 56' 246	005°W 10' 524	25.3 °	314.0 M	355.0 °	0.7 kt	71.1 °	8.1 kt	66.5 °	8.3 kt	Voile	89.7 °	55.3 °	10.1 kt	336.7 °	5.69 kt	338.7 °	6.35 kt	M0S2
12/04 - 14:50:00	46°N 01' 168	005°W 13' 286	26.0 °	309.7 M	8.8 °	0.9 kt	70.7 °	7.4 kt	65.1 °	7.9 kt	Voile	78.5 °	47.4 °	10.5 kt	346.6 °	5.54 kt	349.6 °	6.36 kt	M0S2
12/04 - 15:40:00	46°N 06' 368	005°W 14' 668	26.6 °	304.8 M	21.3 °	1.2 kt	70.5 °	7.2 kt	64.0 °	8.1 kt	Voile	67.5 °	40.9 °	11.4 kt	356.5 °	5.50 kt	0.9 °	6.62 kt	M0J2
12/04 - 16:30:00	46°N 11' 873	005°W 14' 540	27.0 °	300.6 M	15.4 °	0.8 kt	68.4 °	7.3 kt	63.5 °	7.8 kt	Voile	76.9 °	46.3 °	10.6 kt	346.7 °	5.52 kt	350.4 °	6.27 kt	M0S2
12/04 - 17:20:00	46°N 17' 014	005°W 15' 802	27.6 °	297.0 M	1.6 °	0.2 kt	66.1 °	7.4 kt	64.4 °	7.5 kt	Voile	77.7 °	46.1 °	10.1 kt	346.7 °	5.43 kt	347.3 °	5.66 kt	M0S2
12/04 - 18:10:00	46°N 21' 608	005°W 17' 298	28.2 °	293.4 M	335.0 °	0.4 kt	63.4 °	7.6 kt	60.5 °	7.6 kt	Voile	73.8 °	44.0 °	10.5 kt	346.7 °	5.45 kt	346.0 °	5.83 kt	M0S2
12/04 - 19:00:00	46°N 26' 310	005°W 19' 003	28.8 °	289.4 M	350.9 °	0.3 kt	60.7 °	8.1 kt	58.6 °	8.2 kt	Voile	61.9 °	37.8 °	11.8 kt	356.8 °	5.44 kt	356.4 °	5.74 kt	M0J2
12/04 - 19:50:00	46°N 31' 081	005°W 19' 432	29.3 °	285.7 M	329.9 °	0.5 kt	58.5 °	8.4 kt	54.8 °	8.5 kt	Voile	67.9 °	41.8 °	11.8 kt	346.9 °	5.59 kt	345.4 °	6.11 kt	M0J2
12/04 - 20:40:00	46°N 36' 004	005°W 21' 298	30.0 °	281.6 M	13.5 °	0.4 kt	58.3 °	8.3 kt	56.2 °	8.7 kt	Voile	59.2 °	37.0 °	12.4 kt	357.0 °	5.47 kt	358.2 °	5.90 kt	M0J2
12/04 - 21:30:00	46°N 40' 909	005°W 21' 521	30.5 °	277.3 M	81.8 °	0.7 kt	55.8 °	8.3 kt	57.8 °	8.9 kt	Voile	60.6 °	38.1 °	12.6 kt	357.2 °	5.53 kt	4.3 °	5.64 kt	M0J2
12/04 - 22:20:00	46°N 45' 590	005°W 21' 007	30.9 °	274.7 M	103.5 °	0.3 kt	52.4 °	8.3 kt	54.3 °	8.5 kt	Voile	66.9 °	46.1 °	10.8 kt	347.4 °	4.19 kt	351.8 °	4.04 kt	M0J2
12/04 - 23:10:00	46°N 48' 920	005°W 21' 706	31.4 °	271.8 M	19.2 °	0.1 kt	53.5 °	8.7 kt	53.0 °	8.8 kt	Voile	55.5 °	38.8 °	11.6 kt	357.5 °	4.05 kt	358.1 °	4.17 kt	M0J2
13/04 - 00:00:00	46°N 52' 384	005°W 21' 871	31.8 °	269.0 M	306.7 °	0.2 kt	57.6 °	9.3 kt	56.3 °	9.2 kt	Voile	58.7 °	41.4 °	11.9 kt	357.6 °	4.15 kt	355.5 °	4.28 kt	M0J2
13/04 - 00:50:00	46°N 55' 935	005°W 22' 285	32.2 °	265.8 M	20.9 °	0.3 kt	63.1 °	9.7 kt	62.0 °	9.9 kt	Voile	64.2 °	46.1 °	12.4 kt	357.8 °	4.28 kt	359.2 °	4.54 kt	M0J2
13/04 - 01:40:00	46°N 59' 709	005°W 22' 367	32.6 °	262.6 M	359.8 °	0.8 kt	66.8 °	10.6 kt	63.1 °	10.9 kt	Voile	75.1 °	55.4 °	12.8 kt	348.0 °	4.47 kt	349.7 °	5.23 kt	M0J2
13/04 - 02:30:00	47°N 03' 988	005°W 23' 508	33.3 °	258.9 M	29.3 °	1.2 kt	68.8 °	11.4 kt	65.2 °	12.4 kt	Voile	77.0 °	58.7 °	14.1 kt	348.1 °	4.57 kt	356.5 °	5.55 kt	M0J2
13/04 - 03:20:00	47°N 08' 598	005°W 23' 922	33.9 °	254.8 M	44.2 °	1.4 kt	69.1 °	12.4 kt	66.7 °	13.6 kt	Voile	68.3 °	53.0 °	15.8 kt	358.4 °	4.51 kt	8.6 °	5.55 kt	M0J2
13/04 - 04:10:00	47°N 13' 166	005°W 22' 909	34.3 °	250.8 M	60.1 °	1.2 kt	68.9 °	13.3 kt	68.2 °	14.5 kt	Voile	69.5 °	54.6 °	16.6 kt	358.7 °	4.56 kt	10.0 °	5.22 kt	M0J2
13/04 - 05:00:00	47°N 17' 444	005°W 21' 799	34.8 °	247.3 M	79.7 °	0.8 kt	70.5 °	13.6 kt	71.0 °	14.4 kt	Voile	72.0 °	56.6 °	16.4 kt	358.9 °	4.59 kt	8.3 °	4.78 kt	M0J2
13/04 - 05:50:00	47°N 21' 378	005°W 20' 955	35.2 °	243.9 M	106.7 °	0.7 kt	78.6 °	12.4 kt	80.1 °	13.1 kt	Voile	80.9 °	62.5 °	14.5 kt	359.2 °	4.64 kt	8.2 °	4.48 kt	M0J2

CONNEXION TO A NAVIGATION SYSTEM

SimSail can receive data from a GPS or a navigation system or other instrument emitting NMEA 0183 sentences. Done via serial port (Serial tab) or Wi-Fi (Network tab).



Boat data can be displayed and configured.



A click on the circle at the top right of the screen automatically refreshes the screen.

• Green: connected to GPS and auto refresh. A “S” appears in the green indicator if the Simulation mode is on.

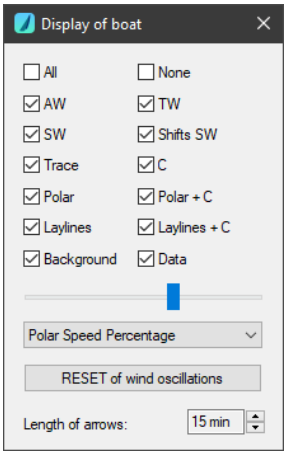
• Red: connected and screen not refreshed automatically.

• Gray: not connected to GPS and screen not refreshed automatically.

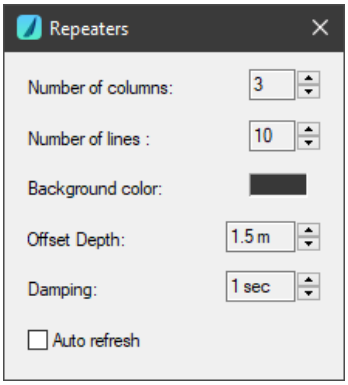
In navigation mode, click on the icon to refresh the screen. If SimSail receives NMEA data, the icon turns green. During the calculation of a routing, the screen is automatically refreshed (icon becomes red).

A left click on the Boat icon centres the boat in the window.

A right click on the Boat icon opens the configuration of the boat display.

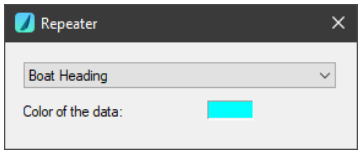


A left click on the Repeaters icon displays or hides all the repeaters.



A right click on the Repeaters icon displays a window that authorizes the configuration of the vectors of the boat and the repeaters.

A right click on a repeater



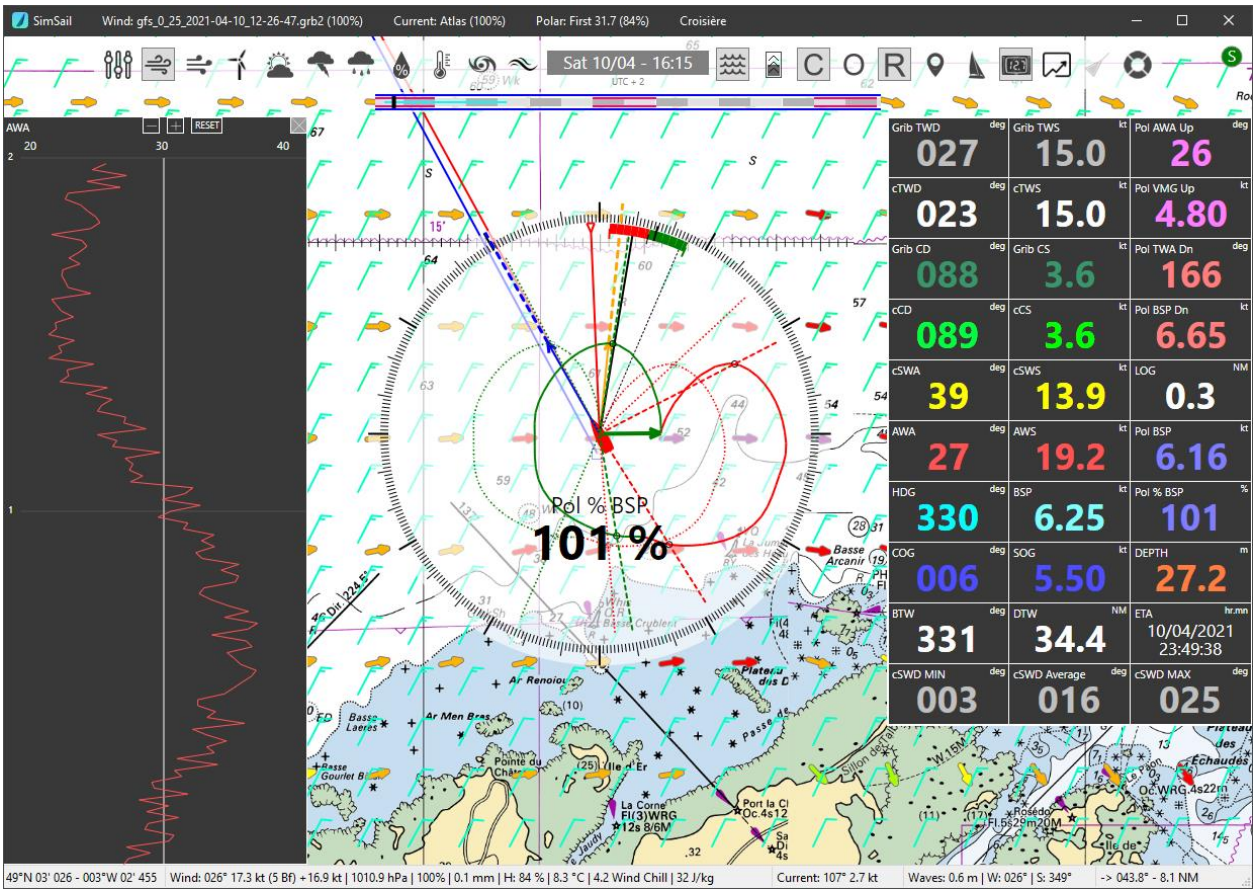
displays the following window:

The following data can be selected in a repeater:

Date & Time, Boat Position, Boat Heading, Boat Speed, Boat Course Over Ground, Boat Speed Over Ground, Boat Velocity Made Good, Apparent Wind Angle, Apparent Wind Speed, Depth, Water Temperature, Reset Log, Bearing To Waypoint, Distance To Waypoint, Time To Go, Estimated Time of Arrival, Waypoint Closure Velocity, Grib True Wind Direction, Grib True Wind Speed, Grib Current Direction, Grib Current Speed, Grib Pressure, Grib Wind Gust, Grib Total Cloud Cover, Grib Accumulated Precipitation, Grib Convection, Grib Air Temperature, Grib Relative Humidity, Grib Wave Height, Grib Wave Wind Direction, Grib Swell Direction, Calculated True Wind Direction, Calculated True Wind Speed, Calculated Current Direction, Calculated Current Speed, Calculated Surface Wind Angle, Calculated Surface Wind Direction, Calculated Min Surface Wind Direction, Calculated Average Surface Wind Direction, Calculated Max Surface Wind Direction, Calculated Surface Wind Speed, Calculated Min Surface Wind Speed, Calculated Max Surface Wind Speed, Polar Speed, Polar Speed Percentage, Polar Speed Upwind, Polar Speed Downwind, Polar VMG Upwind, Polar VMG Downwind, Polar True Wind Angle Upwind, Polar True Wind Angle Downwind, Polar Apparent Wind Angle Upwind, Polar Apparent Wind Angle Downwind

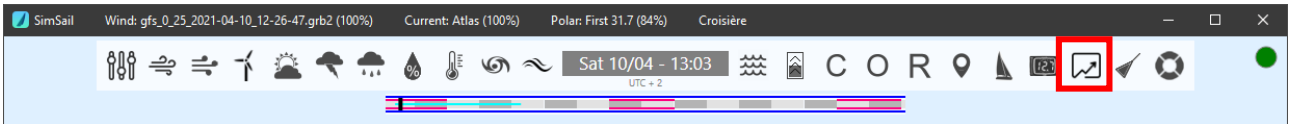
REPEATER GRAPH

A left click on certain repeaters opens a graph on the left side of the main window. Not all repeaters have this possibility.



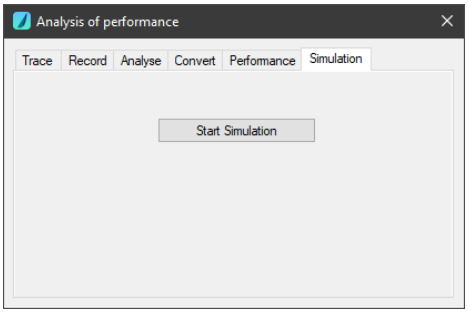
ANALYSIS OF PERFORMANCE

In order to configure easily ashore the repeaters, a tool is dedicated:

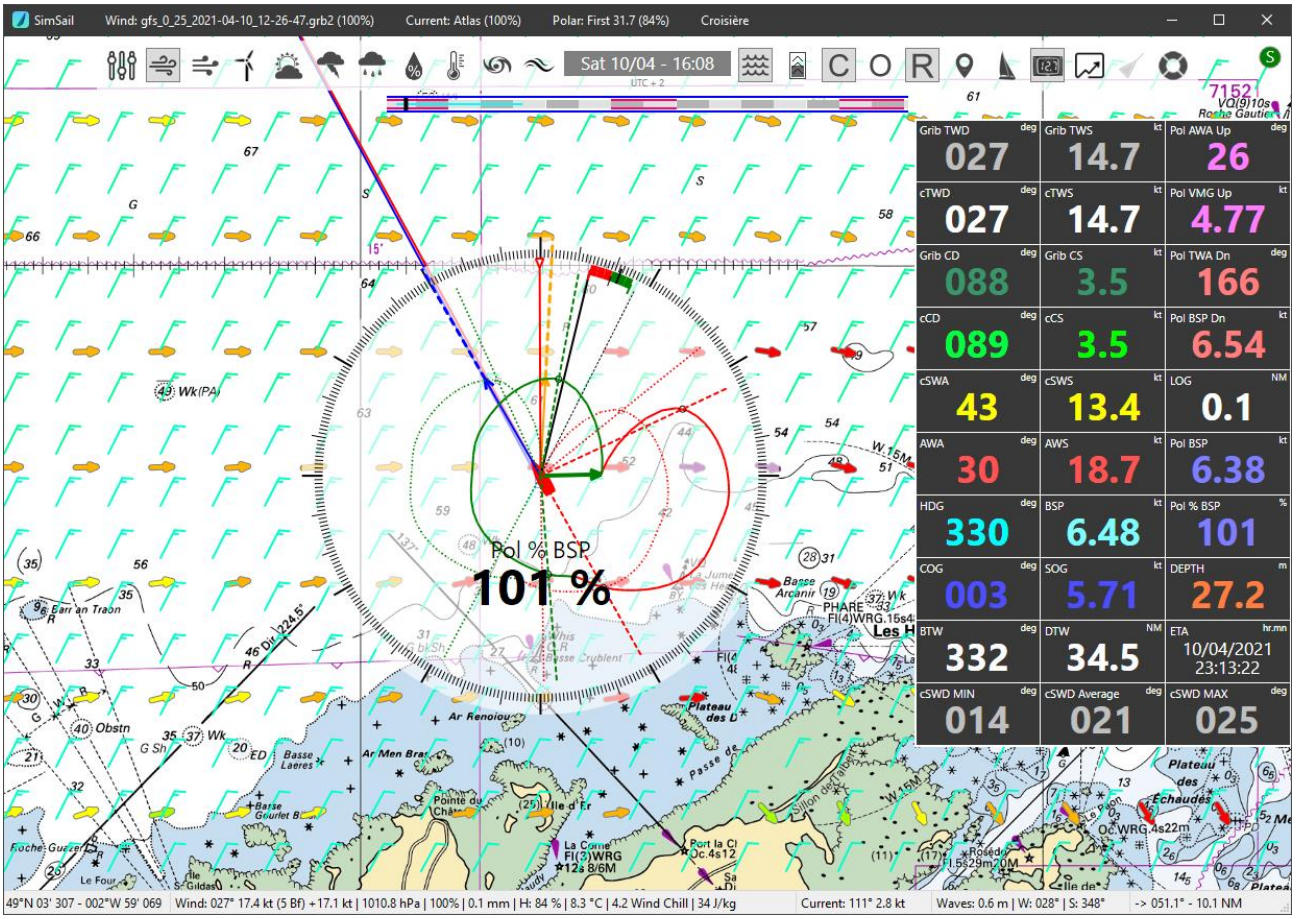


Simulation

After clicking on the "Analysis of Performance" icon, select the "Simulation" tab then click on "Start simulation".



Repeaters appear with refreshed data every second. These data are extrapolated from the wind, current and wave gribs. The boat follows the route if there is one, from the first to the second point of the route. If no route exists, a default is created. Center the boat to highlight it.

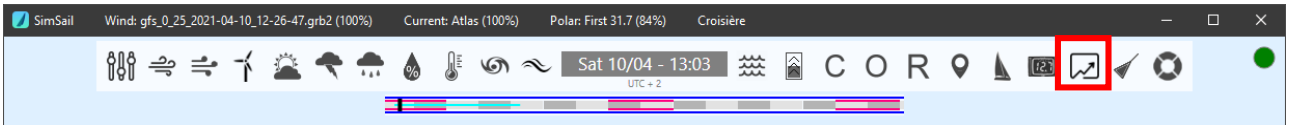


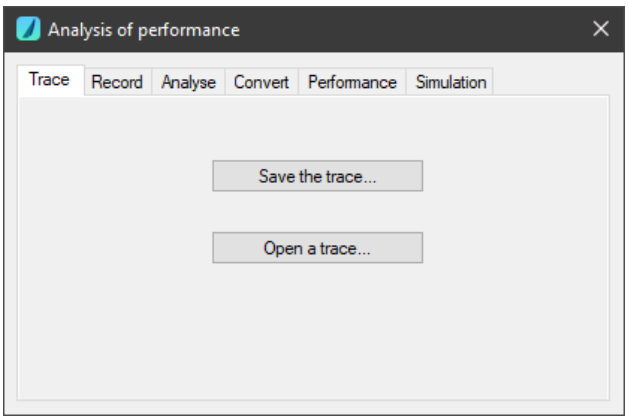
Note that the "S" in the green connecting circle at the top right means that Simulation mode is active.

To close it, select "Analysis of Performance" then the "Simulation" tab and click on "Stop Simulation".

Trace

SimSail can record the trace of the boat and display it later as it would have been a routing.

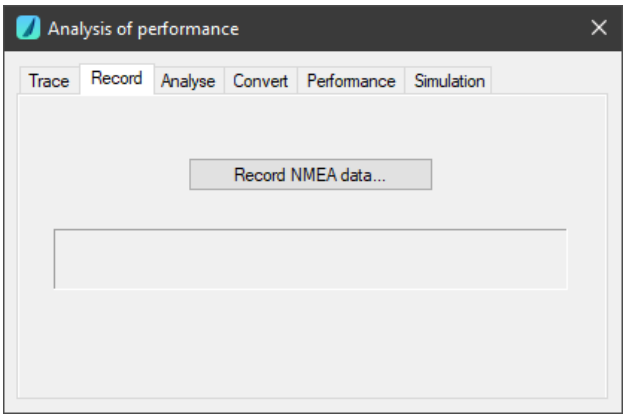


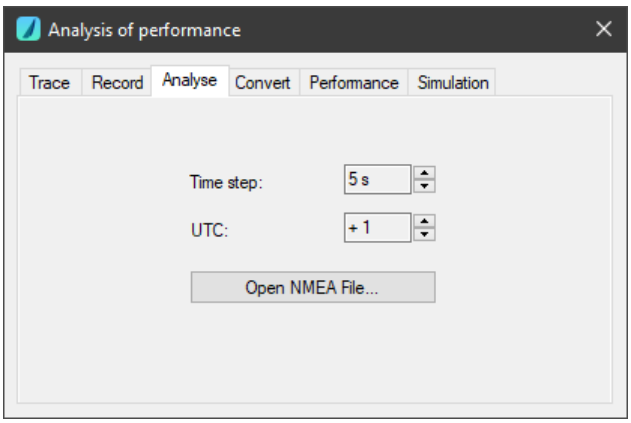


SimSail can record the trace of the boat. The trace is a simple sequence of navigation points with no other data than successive positions.

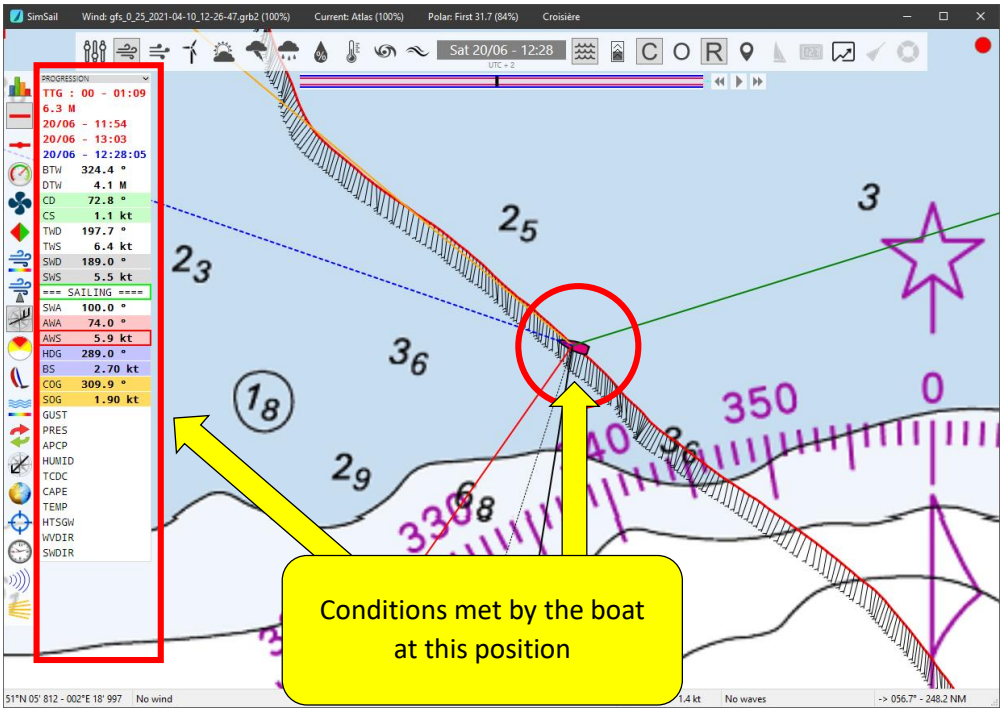
NMEA Data

SimSail can save all NMEA data ("Record" tab) and open them to view a navigation ("Analyze" tab).



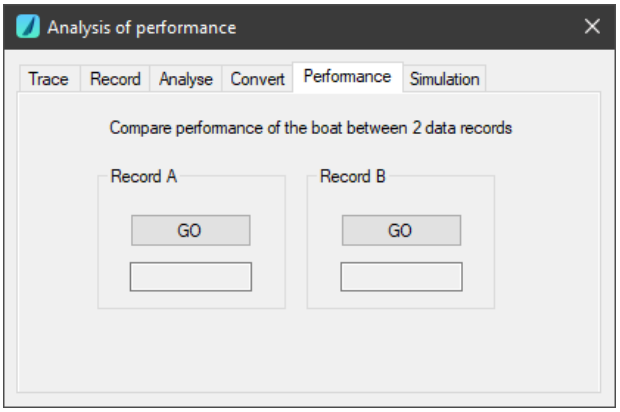


The display of the NMEA data appears like a routing without isochrones. At each time step, the parameters are displayed for analysis.

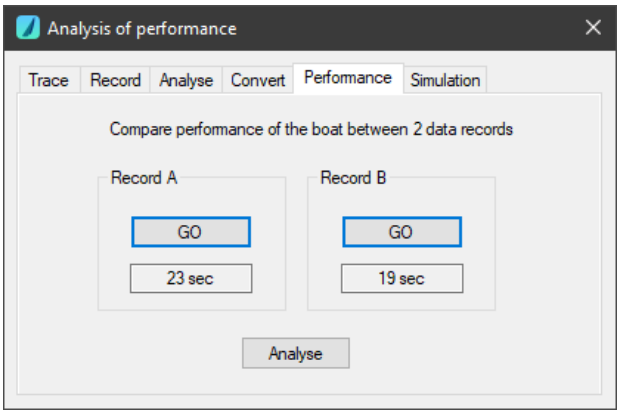


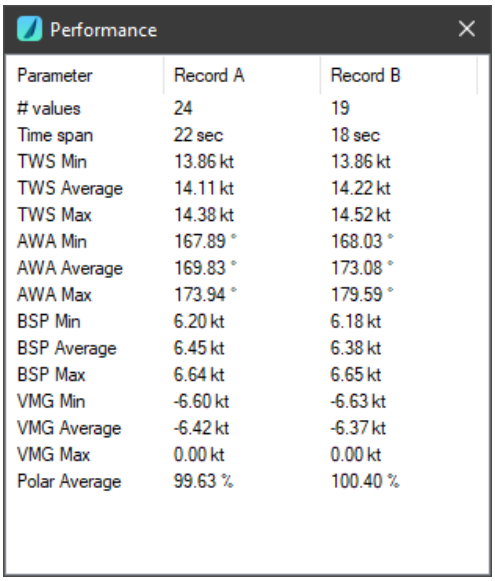
Comparison of records

SimSail can make two records of different length in order to compare them. Click on “GO” for record A, then button “STOP” appears. The same for record B.



When SimSail has two records, a button appears with “Analyse”.



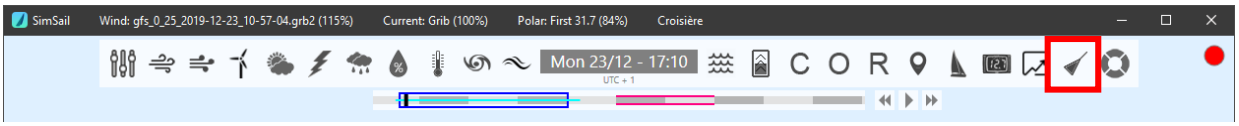


Performance

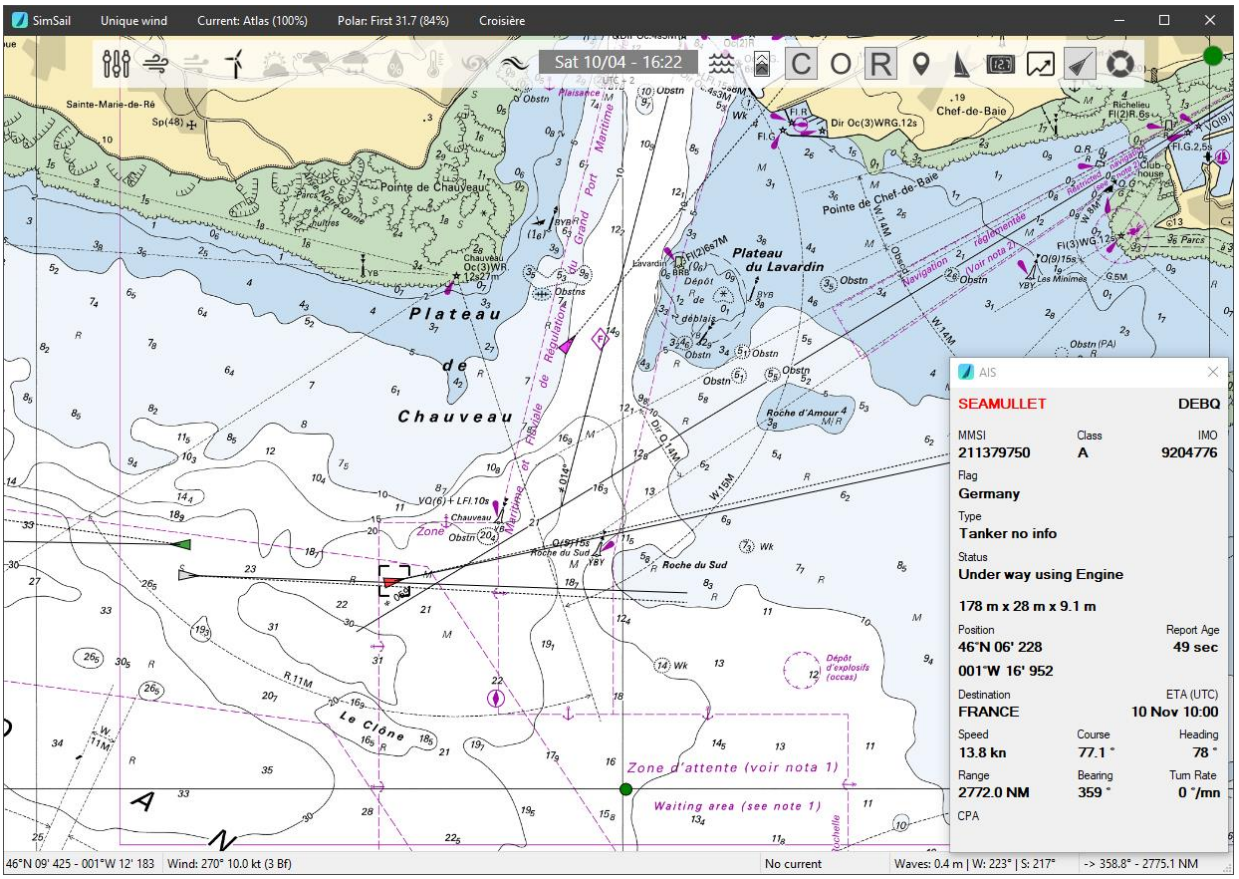
Parameter	Record A	Record B
# values	24	19
Time span	22 sec	18 sec
TWS Min	13.86 kt	13.86 kt
TWS Average	14.11 kt	14.22 kt
TWS Max	14.38 kt	14.52 kt
AWA Min	167.89 °	168.03 °
AWA Average	169.83 °	173.08 °
AWA Max	173.94 °	179.59 °
BSP Min	6.20 kt	6.18 kt
BSP Average	6.45 kt	6.38 kt
BSP Max	6.64 kt	6.65 kt
VMG Min	-6.60 kt	-6.63 kt
VMG Average	-6.42 kt	-6.37 kt
VMG Max	0.00 kt	0.00 kt
Polar Average	99.63 %	100.40 %

AIS

The AIS targets can be displayed.

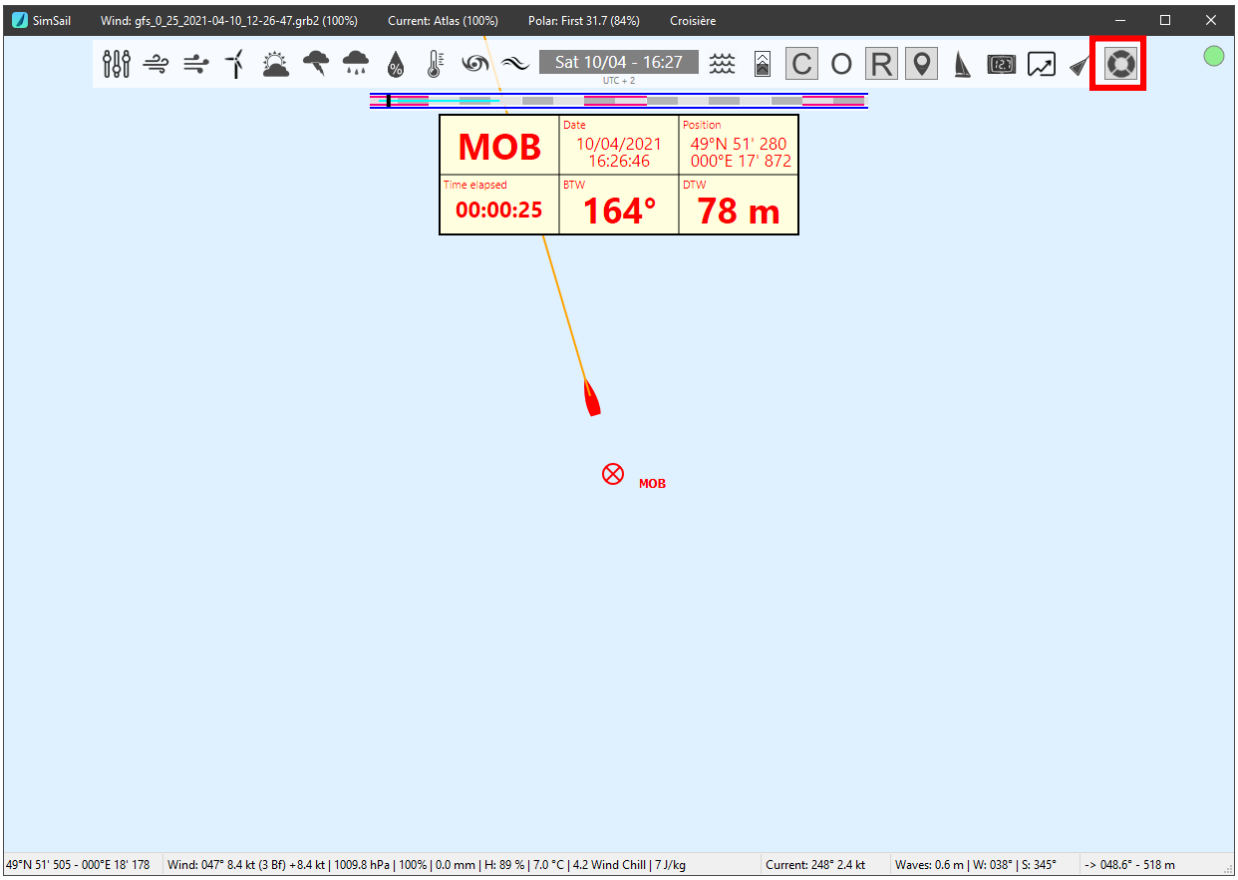


By clicking on a target, a window appears.



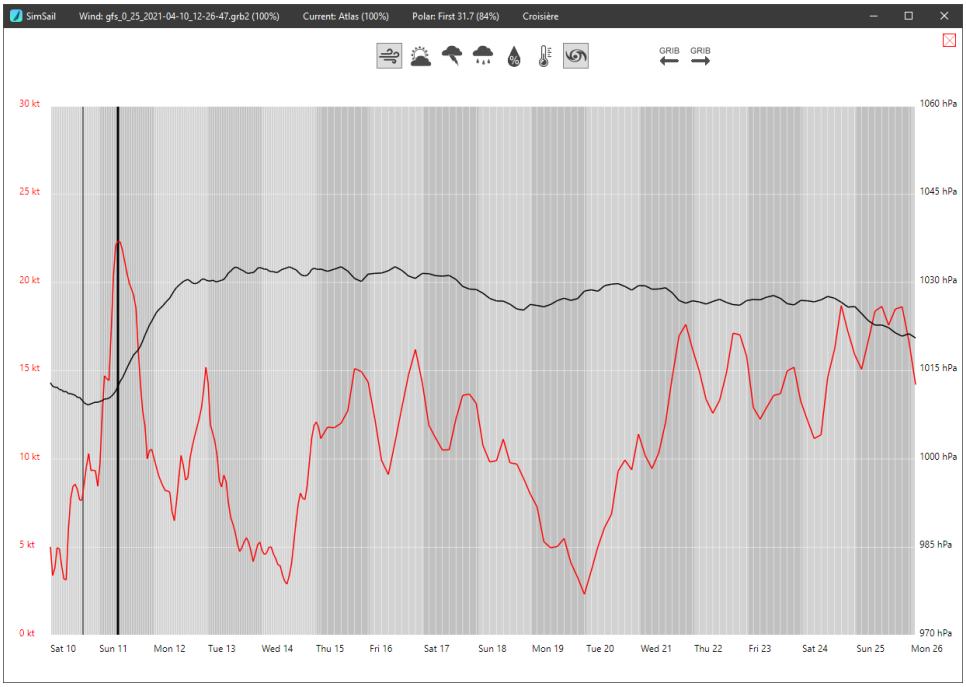
MOB (MAN OVER BOARD)

Click on the icon MOB changes the display. The waypoint MOB is centered on the screen with a zoom max. 6 repeaters appear that give the bearing and distance to MOB.



WEATHER GRAPH

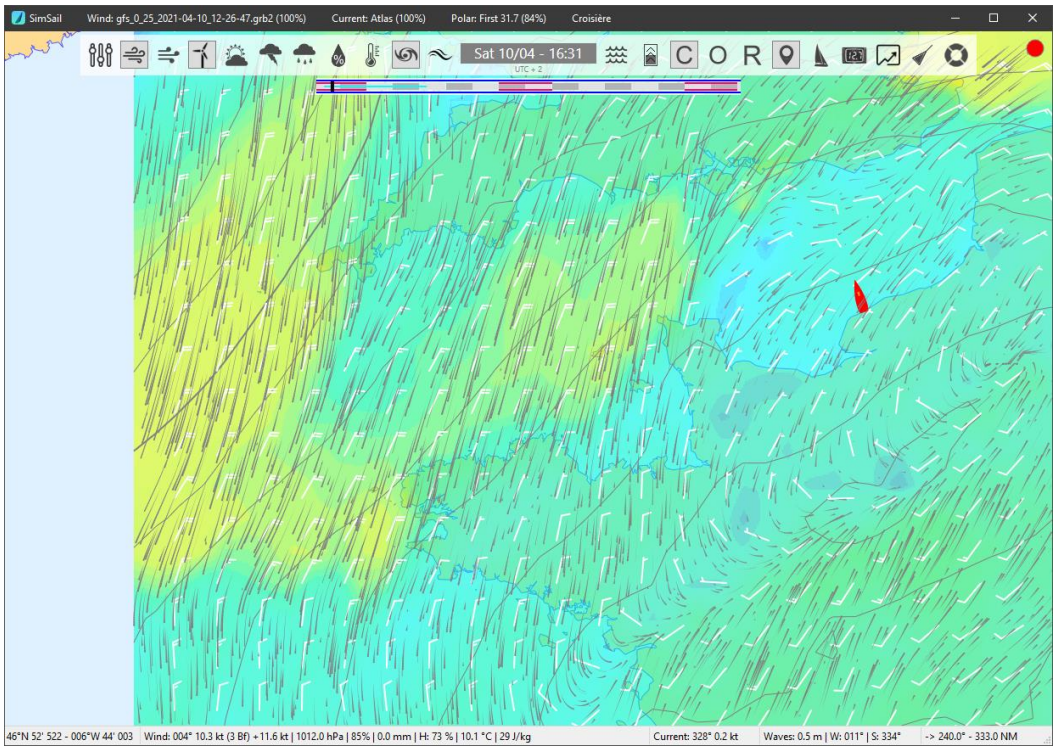
Left click on the map over a wind grib and select “Weather graph”. Two parameters can be selected.



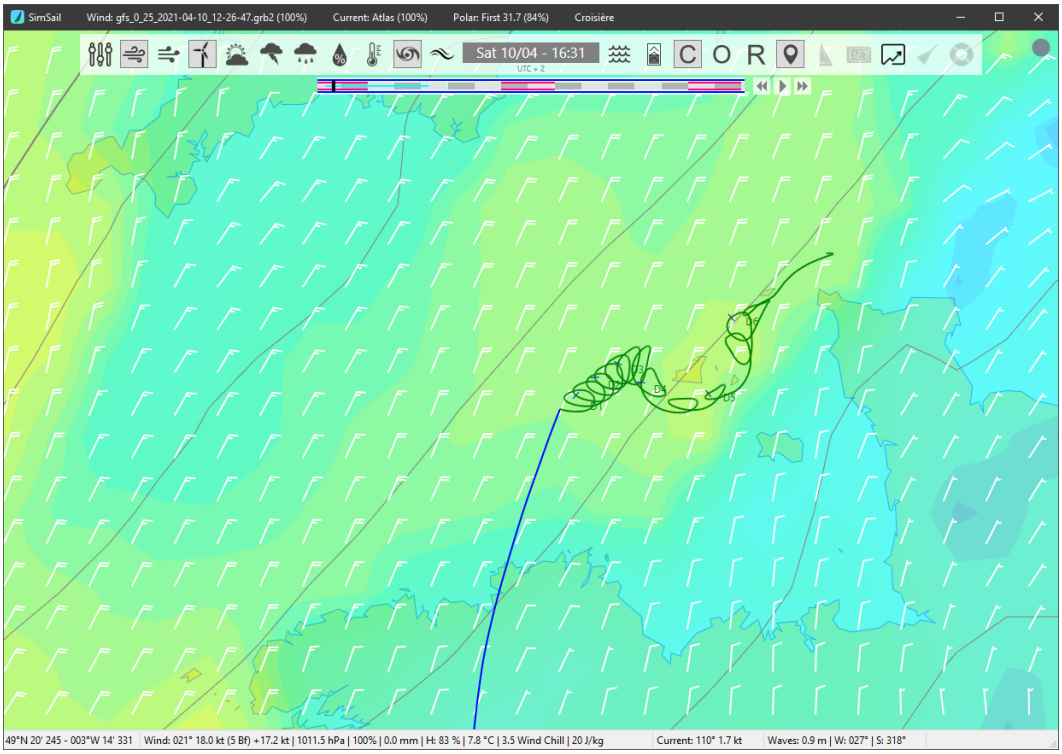
TRAJECTORIES OF PARTICLES

There are two ways to visualize the trajectory of particles.

Like EarthWindMap (https://earth.nullschool.net), by pressing the **[U]** key. Please note, this visualization is very attractive but does not correspond in any way to reality. One has the impression of correctly tracking the air particles when this is not the case.

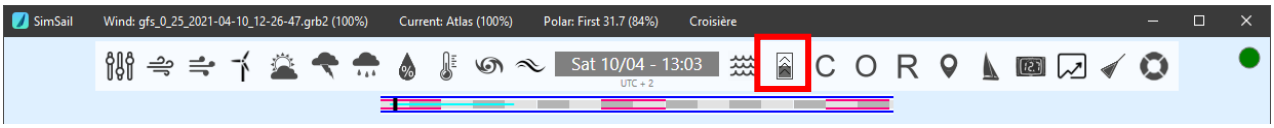


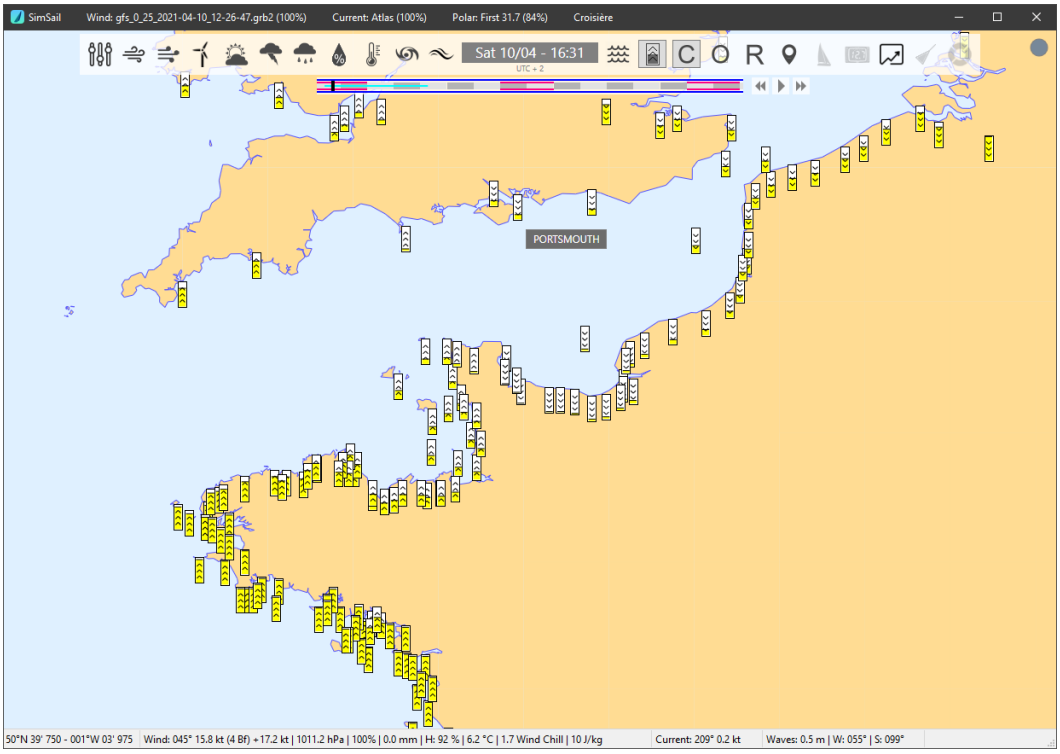
We can convince ourselves of this by pressing the **[Y]** key which displays the real paths of a particle of air (wind) and water (tidal current).



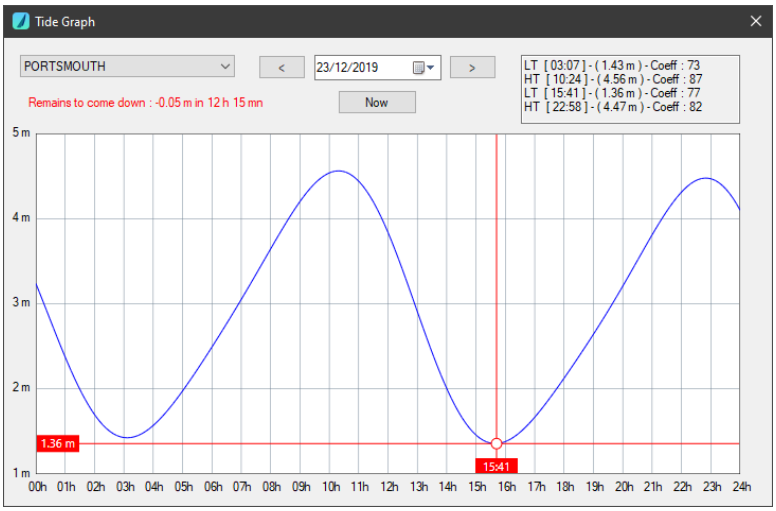
TIDE GRAPH

Select in the main menu, sub menu “Current”, the icon “Tides”.

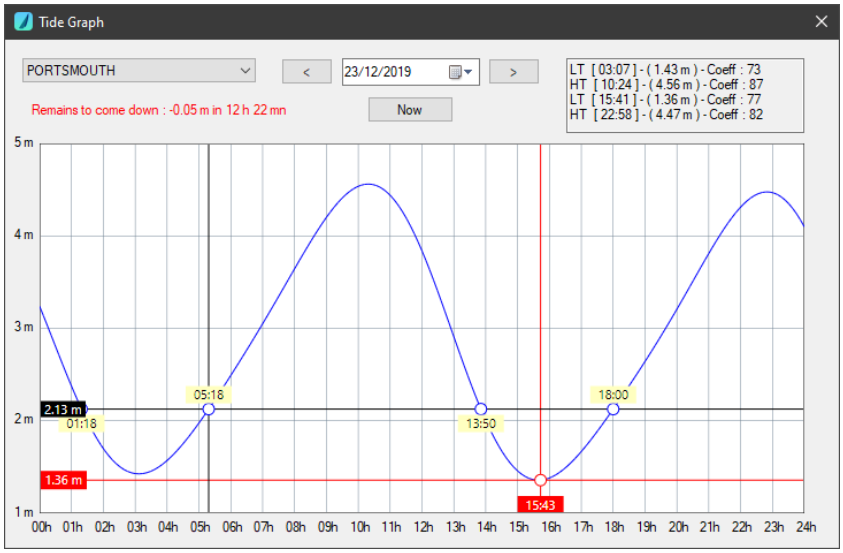




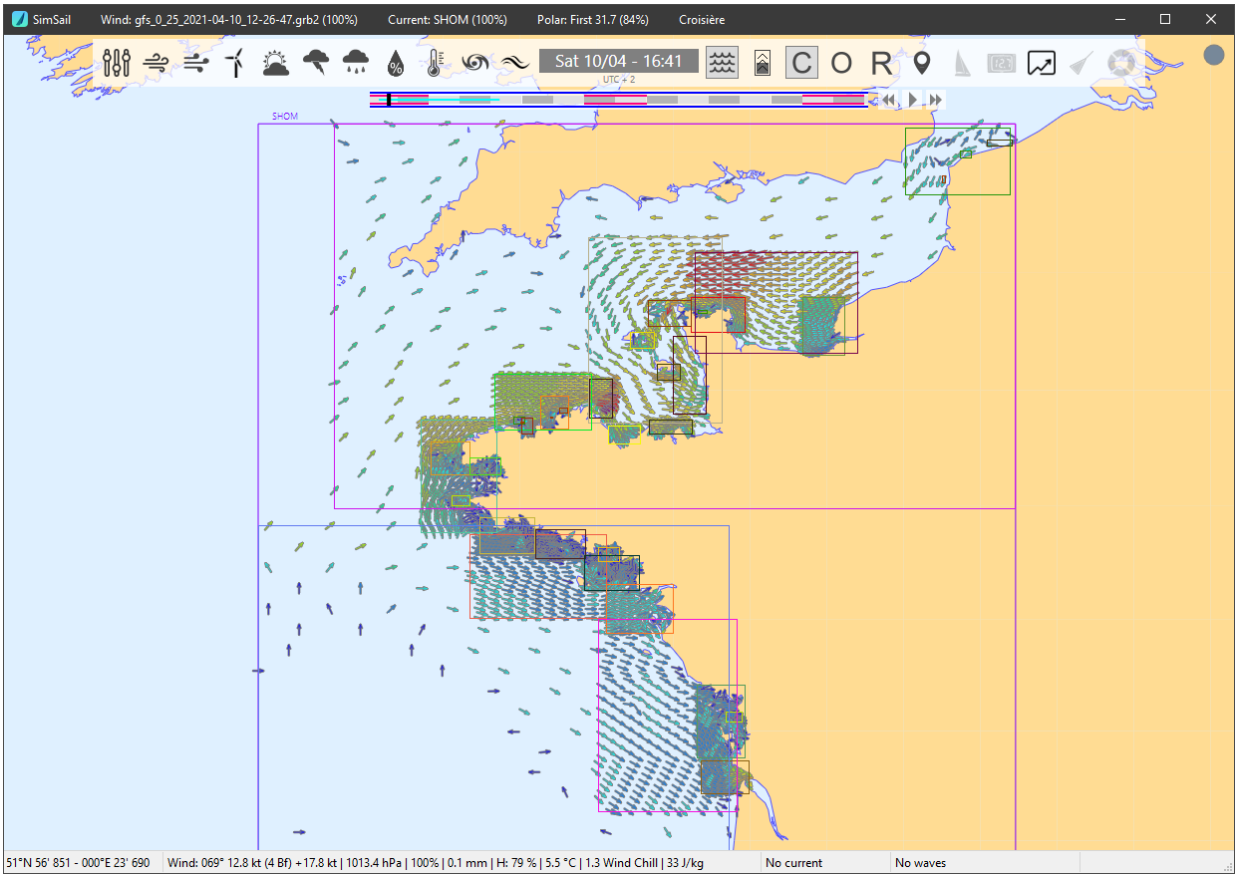
By clicking on a rectangle of tide, the tide graph appears.



By clicking on the graph, one can display more information.



HOW TO INSTALL THE SHOM TIDAL STREAMS



The SHOM tidal streams are not provided with SimSail but SimSail can read them.

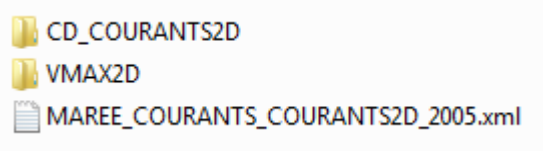
Purchase the streams on the SHOM website:

http://diffusion.shom.fr/produits/courants-maree/courants-2d.html

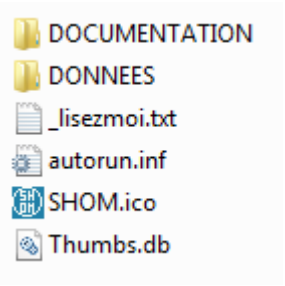
For the creation of an account, see https://diffusion.shom.fr/customer/account/create/

Once you get the file named “C2D.7z”, you need to decompress it with the program 7z (freeware) downloadable at http://www.7-zip.org/

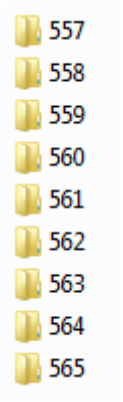
You obtain a folder named “C2D” where you have the following folders and files:



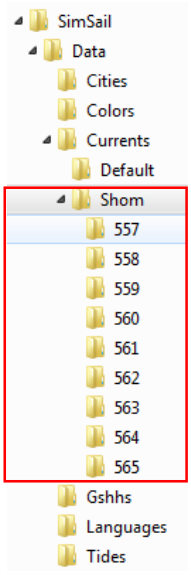
Open the first folder “CD_COURANTS2D” and you should have:



Open the folder named “DONNEES” (Means data in English) and you should have 9 folders:



Into the folder “Data/Currents” of SimSail (normally under Program Files), create a new folder named “Shom” and copy all the folders above with their contents under the new folder Shom of SimSail. You should have something like that:



To run properly, SimSail needs the 9 folders from 557 to 565.

When the installation is correct, close and open SimSail. Under Parameters > Forecasts > Currents, you can select now in the list view the SHOM. In case of difficulty, contact the author.

THE AUTHOR HAS NO LINK WITH THE SHOM.

THE FILES OF THE SHOM ARE NOT INCLUDED WITH THE SIMSAIL PACKAGE.

THE USE OF THE SHOM DATA IS THE SOLE RESPONSIBILITY OF THE USER.

TRACK CHANGES

CHANGES 5.4

- New algorithm of routing
- Barometric pressure gradient added (right click on Pressure icon)
- Initial aperture of scanning has been augmented
- Steps of scanning have been extended
- Function for the route 'Go around the land' added
- In popup menu, some menus added
- In routing panel, a small 'v' for VMG has been added in AWA cell
- In routing, gusts of wind slows the boat speed (when ticked)
- ETA and WCV added to the repeaters
- Angles of 000° replaced by 360°
- New design of several icons
- New design of the tooltips
- Fixed AIS for pleasure boats
- Fixed distance from position displayed under wifi connection
- Fixed zoom under dpi+ screen
- Fixed isobars in special situations
- Fixed moon phase
- Fixed several bugs
- Stability increased
- Minor design improved

CHANGES 5.3

- Night display
- Several bugs fixed

CHANGES 5.2

- Atlas of currents
- Water heights of French ports (SHOM 2019)
- Bugs fixed

CHANGES 5.1

- New SnMap (updated raster maps sold by ScanNav)
- New Set of Sails
- New Wi-Fi connexion
- New trajectory of air and water particles from one point (Y key)
- New animation of wind like Earth Wind Map (U key)
- Meteogram: direct access to wind gribs
- NMEA: DBT added
- Map grid reviewed
- Numerous small improvements
- Fixed bugs

Version 5.0

- Runtime or Now added for Great Circle grib request
- Graph of repeater data fixed
- Sun and moon data
- Numerous bugs fixed
- Spanish language (from Antonio Ñape)

Version 4.9

- Graph of data (by one click on a repeater)
- Better font for routing panel
- Size of gribs is displayed before downloading
- Raster charts can be in several folders
- New repeaters added
- Fixed: centre gribs if on date line
- Fixed: length of the arrows in routing display
- Fixed: cTWS in CSV file converted from NMEA file
- Fixed: colour of repeater is better selected
- Fixed: last grib of current is displayed after downloading
- Fixed: NMEA Sentence GLL correctly read
- Several bugs fixed

Version 4.8

- Can load gribs directly from Great Circle (with a valid account)
- Can read the gribs from XyGrib (new grib library)
- New repeaters
- Several bugs fixed
- More stable version

Version 4.7

- On main toolbar, most of icons have two functions (click L or R)
- Some icons on main tool bar have been redesigned
- Access to the nearest tide from any location on the map (click R)
- Convective available potential energy added (CAPE)
- Relative Humidity added
- Routing can avoid thunderstorms (CAPE > 1000 J/kg)
- Routing can avoid too high waves
- Display of the boat configuration in the title of the window
- Better display of BSB Charts that have the same scales
- New weather graph
- Coloured currents much more visible
- Several bugs fixed
- Save trace: a name based on current date is proposed by default
- Offset depth for sounder repeater

Version 4.6

- Gribs of waves (total height, wind waves and swell waves direction)
- Fix negative temperature in weather graph
- Trace can be saved
- New repeaters (best VMG speed and angles, grib waves)

- Simulation in order to configure repeaters

Version 4.5

- Fixed: size of the main bar rectangle when size of button is less than 32
- Fixed: certain maps could not be displayed
- Grid of map improved
- Frame per seconds of BSB charts improved
- Auto Refresh is stopped when dialog box of parameters is opened
- New context menu about raster charts
- Fixed several minor bugs
- Fixed Accumulated Precipitation
- Fixed layer of wind other than 10 m above sea level
- Weather Graph improved
- Fixed display of negative temperature
- Fixed repeater TTG

Version 4.4

- Fixed: Date of routing was not according to the time bar
- Fixed: Bug in Repeaters icon
- Key to get access to Analysis of the performance is 'A'
- Repeaters are better positioned on the right (they do not overlap the main bar)
- On repeaters, the angles have 3 digits
- Depth is no more at 0 when not received
- F4 key centres correctly the gribs of wind
- At the beginning of a trace, the first waypoint is correct
- Names of marks can be displayed bigger (more readable)
- Tooltip of keys of movies are above the repeaters
- Keys movies tooltip, the time step is displayed
- In weather graph, the data are better displayed
- A click on the weather graph updates the main window
- New icon on upper right that gives access to the refreshment of the screen
- Fixed: Position of 'repeaters configuration' window on HPI screens
- Automatic name for the saving of routings
- Automatic name for the saving of conversion
- Automatic name for the saving of NMEA data
- Route saving accessible by popup menu
- Fixed: Percentage of polar in repeater when upwind or under engine
- New repeater added (Time To Go)
- Fixed: MOB Display on HPI screens
- BSB Maps of same scale can be displayed simultaneously
- Weather graph can be selected only if the mouse is on a grib
- Measure of distance completely reviewed (multi segments now)
- Legends of weather reviewed

Version 4.3

- Animation of gribs and routings with movie controls
- Faster display of wind parameters
- Minor bugs fixed

Version 4.2

- Fixed waypoint got from navigation system
- Fixed time bar invisible when unique wind
- Performance test added
- Tooltips of the bars are no more hidden by the repeaters
- C and L are inverted in the main bar
- Display of previous routings fixed
- AIS targets have labels
- Temperature can be selected in a grib request
- Time bar do not disappear after interruption of routing
- On polar drawing, angles and speeds figures have been added for better reading
- MOB function added in the main bar
- OpenStreetMap correctly displayed when dateline is visible
- PRESS parameter fixed in Saildocs email
- Design of dialog boxes Weather and Tide improved
- New polars added

Version 4.1

- New toolbars with new icons
- Surface temperature added
- Management of marks
- New display of navigation data repeaters (configurable)
- Several minor bugs fixed

Version 4.0

- AIS implemented
- Several bugs fixed
- Improvements in routing procedure
- Time zone difference in analysis of trace
- Length of arrows of the boat can be adjusted
- Trace of the boat added
- Convert NMEA File to CSV File for spreadsheet Version 3.9
- Numerous bugs fixed

Version 3.9.1

- Numerous bugs fixed

Version 3.9

- Tide graph
- Improvements on NMEA phrases

Version 3.8.1

- Reading of grib1 from BSH (Bundesamt für Seeschifffahrt und Hydrographie)

Version 3.8

- Meteogram available (wind and pressure)
- Visualisation of wind stability in a routing

- Number of BSB charts is no more limited
- Position of the boat is saved at the end of the session
- Improvements on High Definition Screen (High DPI)
- When SimSail is minimized, processor is no more used
- Better visibility of tooltips
- Degradation of VMG Downwind
- Crash report
- Better management of routings
- Numerous bugs fixed

Version 3.7

- BSB maps
- Key F5 displays the current time
- Key M displays the BSB maps
- Improvement in display of navigation data

Version 3.6

- Display default streams when outside grib of currents
- Fix tides
- Fix opening of bz2 files

Version 3.5

- Display of several routings simultaneously
- Compatible high dpi screen
- Fixed : delete old gribs
- MapQuest no more available
- Improved : calculation of VMGs
- Fixed : suppress stored routings
- Fixed : management of panels
- New tool Measure of distance
- Fixed several minor bugs
- Popup menu (right click) cannot be selected on a panel
- Big gribs are better managed with less use of memory
- Fix Dialog box Routings
- Progress bar improved

Version 3.4

- Kml format improved
- Fixed: suppress an empty list of routings

Version 3.3

- Memory leaks fixed
- Daylight time zone fixed

Version 3.2

- Recording and analysis of the trace (NMEA flow)
- Configuration of boats has been simplified

- Information of the boat has been updated
- Fixed several regressions

Version 3.1

- Faster rendering with multi-processing (using all logic units of the microprocessor)
- Faster calculation of routing with multi-processing
- Select a zone and send an email to download a grib from SailDocs and Squid
- Select a zone and create a cache to use OpenStreetMap offline
- Added OpenSeaMap
- Faster interpolation of polar and more precised
- Improved time step for automatic time step
- New polars (Elan 45, Furia 332, Gibsea 106, Ovni 365, Sun Odyssey 45, Sunshine 38)
- Patches without the need to reset all the parameters
- Added the visualisation of the direction of the current in the routing
- Calculated TWD in Info Boat dialog box corrected
- Window of Info Boat is not always the topmost (just above the main window of SimSail)
- Fixed button 'Start Routing' enabled when 'From boat to waypoint' selected
- Dialog box Routings (Key R) is no more modal (remains open)
- New barrier can be added even if barriers are locked
- All windows remain within the screen
- High DPI screens
- Shift and left or right keys to tune 1 minute on the time tool
- Default or SHOM current can have a lower priority
- Degradation of VMG Upwind added
- Extrapolation of current when close but outside a square of current
- Fixed several bugs

Version 3.0

- OpenStreetMap
- Polar edit
- Kml format for the routes
- Selector of boats
- Reasons why routing stopped
- Unique wind has been reprogrammed
- Direction and distance from the boat to the cursor
- Added shortcuts (F1 pour see all)
- Number of points of current function of zoom
- Updates on Routing Panel
- Accelerated rendering during moves of the map
- Improvements of time bar
- Improvements of main toolbar with new icons
- Panels are mobile
- Numpad keys moves and zoom the map
- Multiple gribs of wind with new selection managers
- Added display of gusts of wind, total cloud cover and accumulated precipitation
- Multiple gribs of current with new selection managers
- Improved stability
- Fix several bugs

Version 2.9

- Scan of wind lag added
- Unique wind can vary
- Barometric pressure added
- Routing possible on lake
- Frame of the route adjusted (Key F3)
- Improvements on calculations
- Improvements on visualisation
- Barriers can be locked
- Fix minor bugs

Version 2.8

- Local time
- Major update of the interface
- New toolbar for visualisation of the routing
- New status bar with the percentage of polar reached (GPS)
- Save and open routings
- Enhancements on serial communications
- Full NMEA parsing
- NMEA phrases are displayed in the Com tab of the Options dialog box
- Names of the waypoints can be permanently displayed
- Routing Parameters can be saved and loaded
- Colours are not limited to several values
- Scan of polars are coloured
- Colours of currents updated
- Gpx files have been standardized
- Fix minor bugs

Version 2.7

- Integration of gribs of currents
- Week-ends and gribs of currents are displayed on the time bar
- Progress bar during the routing calculations
- Fix change of folders
- Fix name of the grib displayed in the routing parameters dialog box
- Fix overlap of text displayed under the mouse
- Fix routing export (GPX format)

Version 2.6

- Can read the tidal streams from the SHOM (France)
- Ctrl key over the tool time to have steps of 10 min
- Basic logger
- VMG optimised
- Can define precisely the points of the route
- Routing scan with 3 polars and theirs ratings
- Dutch translation by Erik Bollen

Version 2.5

- Internationalization
- Full great circle (route, ellipses and routing)
- Infinite map in longitude including normal work around the dateline
- Multiple routing by scanning different parameters (polar, wind or time)
- At the end of a routing, display a summary in a window
- Display the reason why the routing did not reached the final waypoint
- Waypoints should be at sea to do a routing and incorrect waypoints are marked
- Routing can be done out of the ellipse
- Actual currents are displayed when routing progresses
- Time lag added for the grib
- grib is correctly aligned on the Mercator map, especially on high latitudes
- Option added for the grib colours (one colour per knot of wind)
- Option added to not route outside the grib
- Main folder of SimSail may be moved
- At the opening, load all the previous waypoints
- Option added for the factor of zoom of the map
- Pending local language of the operating system, GPX files read numbers that have a ‘,’ or a ‘.’
- Windows of Routing parameters and Options keep their locations on the screen
- Tool time improved
- Popup menus for the route and the barriers have been uniformed and improved
- Option added to display or not the lakes
- Management of the barriers and the route refined
- Menu 'Add waypoints' is now combined with the menu 'Open waypoints'
- Framing of the grib and the route improved
- GPS stability improved
- Routing from the boat
- Routing can be stopped better with Escape key
- Auto routing improved
- Management of the Traffic Separation Schemes improved

Version 2.3

- The isochrones routing is 10% faster.
- The start date and time cannot be selected out of the range of the grib.
- The non-homogenous gribs can be loaded. It concerned Saildocs which can provide a grib that covers two weeks, with a grid for the first week different from the second week.
- Several icons of the right panel have been changed.
- For the dual routing, sailing and engine, the engine is now on when the boat speed is below a threshold.
- Stability improvements.

Version 2.2

- The isochrones routing is much faster (3 times faster than the version 2.1). Abandon of the previous method of interpolation of the polar which was a bi-cubic spline interpolation.
- Stability improvements.
- Icon Routes changed for clarity.
- Best finish at the waypoints.
- GPS and Languages functions are still in development.

Version 2.1

- Barriers added.
- Correction of bugs after intensive use of the software during the summer cruise.
- GPS function added.
- Language added.

Version 2.0

- For a better and faster rendering and to avoid developing for two graphics engine, GDI+ is no more implemented. Thus XP is no more supported. SimSail is only available for Windows 7 that utilizes Direct2D.
- Isochrones and Intermediate waypoints methods have been implemented. Available for multi segments.
- Routing avoids the coasts. Quality of the coasts can be changed for the precision of the calculations.
- Many additional routing parameters.
- Several additional options of SimSail.
- Enhanced calculation of the routing.
- Cities are visible.
- Map grid of 1° x 1°.
- Stability improvements.

Version 1.0

- Direct2D implemented and choice between Direct2D and GDI+ can be made in dialog box Options.
- Additional options in the dialog box Options with new tabs.
- Management of the shorelines GSHHS has been totally rebuilt. The full world is available.
- SimSail can read the original data that can be downloaded at http://gmt.soest.hawaii.edu/files/download (See the file gshhg-gmt-nc4-[version].tar.gz)
- Automatic quality of the shorelines has been implemented and is visible in the status bar.
- Routing improved with Counter currents fixed.
- Display of the winds has been improved. There are more arrows and the coloured surface is more readable.
- Several improvements on the toolbar to limit at maximum the refreshment of the window.
- A bar below the toolbar has been added to better navigate in the grib or in the routing.
- Display of tides has been added for the main reference ports.
- F1 key displays the help. Several shortcuts have been added.
- Speed of rendering has been increased.
- Stability improved.

Version 0.9

- New dialog box with tabs for the options of SimSail.
- Toolbar can be hidden when the mouse is not over. This option is saved.
- Tooltips have been added for the buttons of the toolbar. They can be shown or hidden and this option is saved.
- The name of the waypoints is displayed close to them, under the mouse position.
- Several colours can be changed in the options dialog box and saved.
- Folders of gribs, waypoints, routes and polars can be changed and saved. The first time SimSail opens, the folders are the default ones. When they are changed with the Options dialog box, they are saved and restored.
- New dialog box with tabs for the routing parameters.

- The polar can be displayed. Access by the Routing dialog box, Polar Tab. Escape key comes back to the normal display.
- The details of each point of the routing are displayed on the left. Keys, Page Up and Page down, in conjunction with Control (10 time steps) or Shift (60 time steps) key allows navigating along the routing.
- The route is displayed with arrows to see the departure and the arrival.
- The speed of the boat is calculated in interpolating the polar with a bi-cubic spline.
- The boat cannot have a course inferior the VMG upwind or superior to the VMG downwind.
- A unique wind available for the world can be set.
- Gribs from Zygrib, Ugrib and Meteo Consult can be read.
- The display of the winds in gradient colours has been improved.
- The time to calculate a routing has been divided by two.
- SimSail doesn't need any more msvcr100D.dll.
- SimSail is now under the license GPL3.
- When the routing is not in the time or spatial range of the grib, SimSail utilizes the engine.
- The routing can be exported as a route and can be open in navigation software like OpenCPN or MaxSea.
- Several optimisations in the rendering.
- Routing can be done without the currents.
- Legend of the routing has been added and display of the routing can be selected from the legend on the upper right.
- Memory leaks almost solved.

Version 0.8

First release candidate to have been tested by another tester at sea.

- New toolbar with vertical menu of buttons.
- Polar can be changed.
- New routing procedure, in particular when a waypoint of the route is reached.

Version 0.7

- Compressed gribs with bz2 extension can be read.

Version 0.6

- Enhancement of routing.
- Lambert projection.

Version 0.5

First release candidate tested at sea during summer 2013.

- Basic routing.

Version 0.4

- Waypoints.
- Route.

Version 0.3

- Currents.

Version 0.2

- Shorelines.
- Grib files.

Version 0.1

- Map moving on Win32 C++.