



Manual - June 2011



Welcome to Sailonline

In this guide we will try to explain all the elements you need to start sailing.

We will give a step by step walk through of the registration and introduce you to many of the tools you are going to use when racing.

Introduction

Sailonline (SOL) is a strategy simulator for ocean sailing which challenges both the novice and the expert. It lets you sail your boat over the world's navigable waters easier than you can imagine. But as in real life, in order to sail fast and ultimately win races full dedication, extensive practice, knowledge and working skills are required.

The simulator runs in real time which means that a race can be ongoing for days or even weeks. Luckily, there are autopilots installed in all boats so that you do not need to steer manually all the time, nor are sail changes required during the various transitions between up and downwind sailing. Small adjustments of your autopilot setting a couple of times per day is often sufficient.

To offer the most authentic virtual sailing experience possible, Sailonline.org *only* uses authentic data:

- Real weather forecasts, usually sourced from the GFS and published 4 times daily by NOAA¹
- Real high resolution charts from the GSHHS database²
- Real boat performance profiles, often sourced directly from the design specifications

Sailonline lets you race the boats you otherwise only see from a distance.

1 [National Oceanic and Atmospheric Administration's Global Forecast System](#) – More information is provided later, and NOAA is not the only source of weather forecasts used by Sailonline.

2 [Global Self-consistent, Hierarchical, High-resolution Shoreline](#) database

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1 Setting Up

1.1 Create your User Account

To create a user account and to register in race go to www.sailonline.org

Create a user account. Your user account will be used in all races you choose to participate in. Press the create account in the menu bar, and you are asked to provide an email address to continue. After filling in an email address you will receive a verification email to continue registration.

Check your mailbox and look up the verification mail and follow the link given. You will be taken to the next screen to finish setting up your user account. The username you choose will be that of your login and your boat, and the name that will appear in the chatrooms.

Note: You are only allowed to have one user account and one boat

Congratulations you are now all set to start sailing!

You will be logged in on the left side of the screen and you can setup up additional profile information.

1.2 Register in a Race

Next step is to register in a race. On the right hand side of the homepage (www.sailonline.org) you can find the races that are currently available.

Look for races that have Registration Open!

Race starts: Jun 08th 20:00

Registration Open!

GO TO RACE

A short description of the race called a NOR (Notice of Race) together with the start time is provided here. You can register only one boat in each race but you can have boats in 2 or more different races at the same time.

Other race states can be:

- **Registration will open soon** - for new races
- **Registration Closed** - for races that are still running but closed to new boats.

SOL tries to keep races open as long as possible to enable as many boats as possible to finish but not everyone will finish every time.

Press the Go To Race button of the race you want to enter and select the boat class offered. Most races have only one boat available but we run multi class races too.

If this is your first race on SOL you will also be required to select your country.

Select your boat³ and click the 'Register in race' button. This will open the Sailonline Client⁴, taking you directly to the race area where you can start to sail.

³ Often there is no choice of boat class in Sailonline races, but races that do offer choice are regularly run

⁴ The Sailonline Client requires Adobe Flash™ Player to be installed for your browser – if it is not you will be prompted to do so – it is also a good idea to ensure your Flash Player is up to date

After this initial registration in a race the same 'Go To Race' button takes you directly to your active boat. Use this to check up on your boat or make a bookmark of the race page to resume control. If needed you will be prompted for your login information.

All commands for sailing the boats are handled on the SOL servers, nothing except the client is downloaded on to your computer⁵ and this means your boat continues sailing when you are not logged in.

The client, which is embedded in a web page, is just a 'window' allowing you to:

- Monitor your boat (and the competition!)
- Check out the weather forecast
- Perform some basic plotting, view boat performance and work out your strategy
- Send commands to control your boat

The client also gives you access to all the SOL users who are active at that time in the chat.

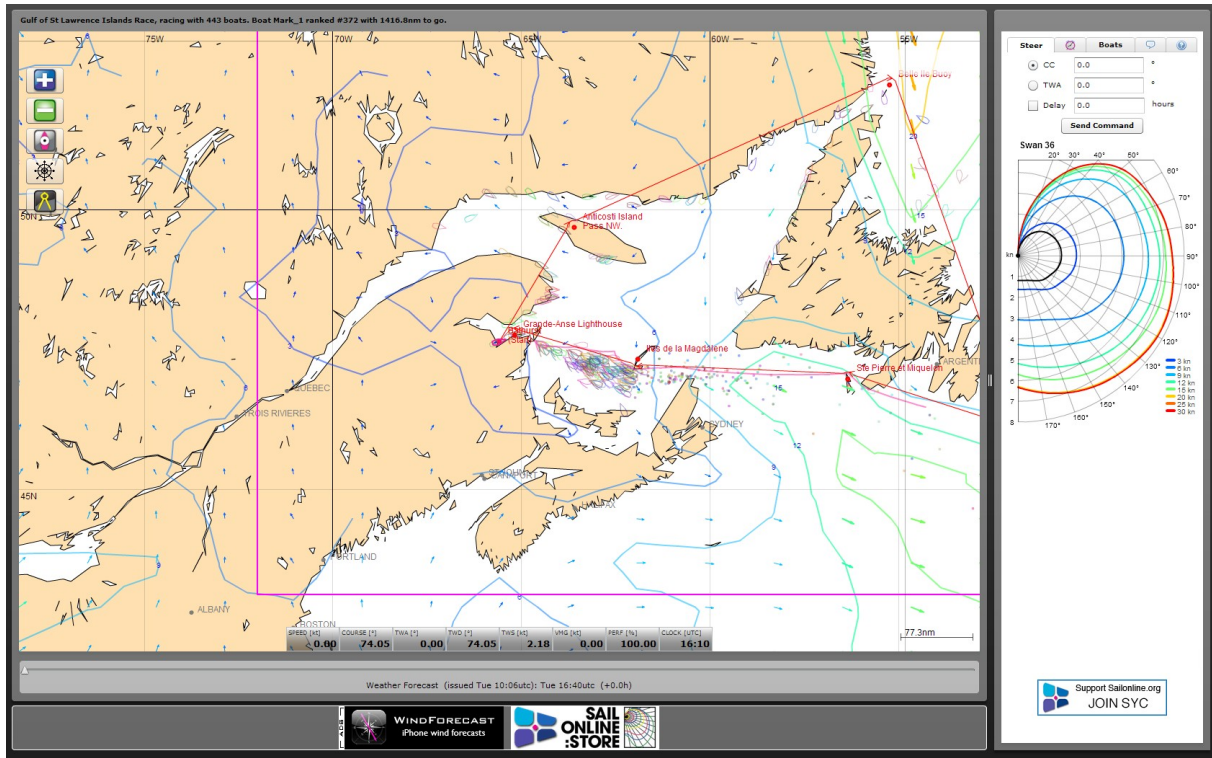
All commands and the actual model of the simulation is entirely processed on the SOL servers.

The technical aspects of the game later will be explained in more depth later.

⁵ The client is only downloaded for the duration of your login session, although most browsers will cache the data to spare you downloading it again next time you login – NO data is stored on your computer by the SOL client.

2 The Client Interface

Most of the graphical user interface in the client software is intuitive even for novice sailors. Here is a brief introduction to the basic parts of the interface you need to use. You can run it on any system with a web browser and a version of flash installed. Notice the interface is made up of two 'panels' – the Map and various controls in the Tab Bar. Between them is a 'splitter' that you can use to resize the tabs, or even hide them completely.



2.1 The Map

On the map, the brown areas represent land and the white represents water you can sail on.

During twilight hours and at night-time, the colour of the water changes to accurately reflect the local time at the location of the race. During the night the fleet is also represented by a set of navigation light, i.e. a red and green dot for each boat.

Across the map is a grid showing latitude and longitude – move your mouse over the map and you will see that the coordinates of your mouse position are shown. At the top right hand corner is displayed information for the current mouse location relative to your boat (range and bearing), and when the mouse is over a section of map covered by the current weather data you will also see forecast information for the location.

You can pan the map by simply dragging it with your mouse, and zoom as outlined below.

2.2 Toolbar Icons

On the map are five icons forming a toolbar, in order from top to bottom they are:



Zoom IN



Zoom OUT



Centre the map on your boat



Steer Tool



Ruler Tool

Both zoom in and out can be done by repeatedly clicking the appropriate button, or by holding it down. Together with the centring your boat in the map, and dragging the map with the mouse, they provide all possible control of the map itself. There is also a scale indicator in the bottom right of the map, calibrated to the latitude at the centre of the map.

The Steer Tool allows you to visually set a course for your boat. Click once to activate the steer tool (or if you wish to see your boat's current navigation data at the mouse position on-screen, double-click - this extra information can also be toggled while the steer tool is active). Please note that when using the steer tool to set a CC course, the **exact** value set (and shown to THREE decimal places when sufficiently zoomed) is sent as the command and NOT just the rounded two decimal places shown in the input text field. TWA courses are rounded as in the text field. If you wish to drag the map while using the Steer Tool you may do so and the Steer Tool will not fix the course in place until you click again. See 'Setting a Course on the Map' below for more details.

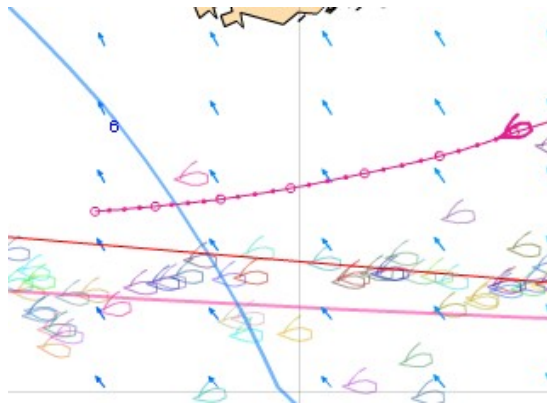
The Ruler Tool allows you to perform basic plotting by setting points on the map and it will show you the distance and direction between them. Click once to set the start of the point from which you wish to measure, move the mouse and click a second time to fix a second point. You may set as many points as you like (only the first 20 segments will be labelled with Dir/Dist.) and if you want to know the total distance of several points, hold down the Shift Key – the total of your path will also update as you go. Release the Shift key and the total distance disappears. If you want to revise a series of points while making them, just hold down the Alt Key (Cmd or Option on an Apple Mac) and click anywhere and the last point created will disappear – you can even continue doing this until you have erased all points.

To complete a ruler path, double click for the final point. If the Shift key is also held the total path length will remain visible. The path will now stay fixed on the map if it is dragged or zoomed.

You can also still pan the map by dragging it while using either the Steer or Ruler tools, which is often useful for accurate measurements while zoomed in that span more than the visible map.

Tip: Distance and angle values change precision depending on zoom level, up to a maximum of 3 decimal places, and will change even on a ruler path already set if you change the zoom level.

2.3 Boat and Predictor Line



Your boat icon and track is always drawn in pink. Stretching out in front of it is a "predictor" showing where your boat will be in 6 hours according to the current forecast. This path takes into account any changes in future weather conditions. Each open circle represents one hour, each dot a 15 minute interval.

If you are steering a CC Course (see below) the line will be straight.

If you are steering a TWA Course (see below) the line will bend in the direction of currently forecast wind changes.

2.4 Other Boats

All participants in a race are shown on the map. The boats closest to your position get a boat icon and boats further away from you current position are shown as dots. If you place the cursor on another boat the name of that boat appears in the bottom left corner of the map and you will also see the track of the boat. You cannot see other boats data (Speed, TWA, etc).

2.5 Measured Values



This bar⁶ gives you the required information about the current conditions of your boat:

SPEED – is the speed your boat is doing in knots

COURSE - is the heading your boat is sailing

TWA – True Wind Angle is the angle between your boat's heading and the direction from which the wind is blowing ?? (this can be + or -)

TWD – True Wind Direction is the direction from which the wind is blowing as measured on a compass

TWS – True Wind Speed is the strength of the wind in knots

VMG – Velocity Made Good is the velocity of your boat as against the wind (explained later)

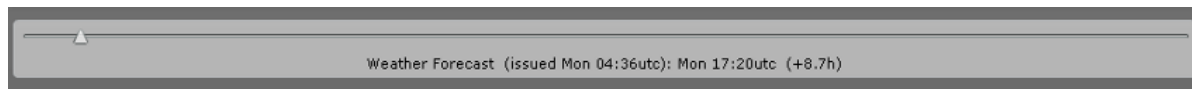
PERF – Performance of your boat, expressed as a percentage. Your boat takes a performance hit each time you change its course, this “hit” is dependent on the boat, its speed and the direction of change. It is best to change course only when PERF is at 100%.

CLOCK – displays the current time in 24hr format and in UTC – the time source is your computer.

⁶ This is also commonly referred to as 'The Dashboard' or your 'Instruments'

2.6 Weather

Looking at the weather forecasts is done by sliding the forecast-slider (triangle shape) in the lower part of the screen.



You can drag it with the mouse or use the arrow keys after you have selected it. Try the slider and notice how the weather changes. When new forecasts are available the new weather automatically appears in the window.

The text below the slider gives you information on the date of the forecast and the position the weather slider is in. The example above tells us: the forecast is issued Monday 04:36 UTC. The slider is currently at the +8.7h position and the displayed winds are for Monday 17:20 UTC. The slider automatically stays at the position you set it. You can set it 2h ahead of your time and it will remain 2h in advance. Leaving it on +0.0h will give you the current weather situation. The time will auto update when you leave the client running. Be sure to check the slider position when planning and setting up Delay Commands (see below).

Arrows show wind direction and the length and colour show wind speed. The coloured iso-lines connect the area's with equal wind speed on the map. The colour used for the wind speed in the main screen corresponds with the colours of the speed curves on the boat performance diagram known as the Polar on the right of the screen. More on this later.

The times of weather updates are shown on the Notice of Race on the SOL Homepage. The updates can have a big effect on the race, and while there is a slight transition period between the two, the new weather is in full effect within 1h. So be sure to check your plans after an update or leave some extra margin.

When the new weather arrives in the client an Alert will appear on-screen, accompanied by a wind sound, thereby alerting you to the arrival of a weather update.

3 Boat Control

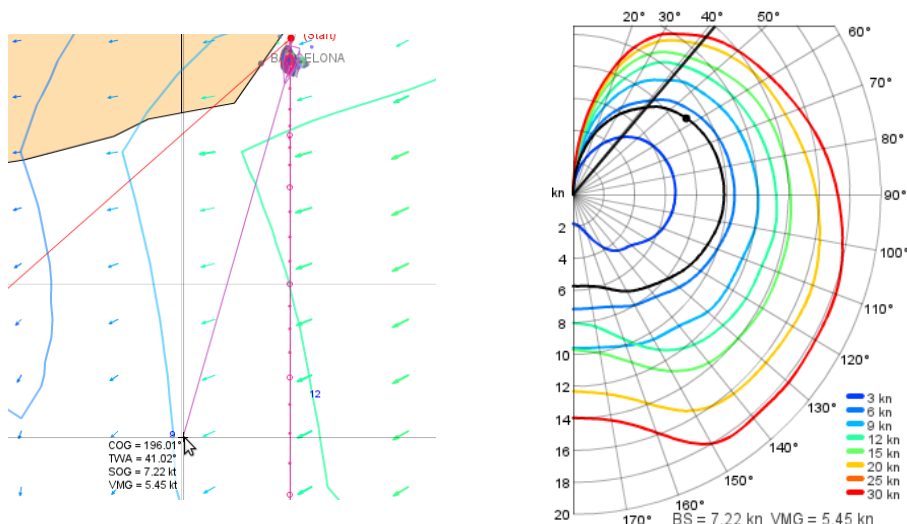
3.1 Steer Tab

There are two ways of steering (1) Compass Course (CC) which once set means that the boat will follow a straight course or (2) True Wind Angle (TWA) which means the boat will maintain a constant angle to the wind, however it changes direction. You can set any TWA in the range from 0 to 180 degrees where TWA=0 means that the wind comes from straight ahead, TWA=180 means that the wind comes from behind and TWA=90 means the wind in from starboard side. Negative TWA means wind in from port side (port=left).

Steer	Boats		
<input checked="" type="radio"/> CC	<input type="text" value="203.88"/>	°	
<input type="radio"/> TWA	<input type="text" value="32.19"/>	°	
<input type="checkbox"/> Delay	<input type="text" value="0.0"/>	hours	
<input type="button" value="Send Command"/>			

Setting a course manually: Select either CC or TWA. Set your desired heading or angle in the corresponding text box and click on the Send Command button to issue the command. Notice that the game fills in the other text box as you change the value. Your command will take effect once it has reached the SOL server.

Setting a course on the map: Click on the steer tool. Place the cursor on the map, as you move the cursor around you see that “Compass Course” and “True Wind Angle” in the steer window changes. When desired “CC” or “TWA” are displayed left click to lock the values. A line in the polar diagram (see picture on the right below) shows the angle the boat will be sailing on the new course. Predicted boat speed and Velocity Made Good (a value for up and downwind sailing) is shown.



To begin with you can either single click to activate the steer tool or double-click to see additional navigation data at the mouse pointer on-screen. Click the map to set the chosen course and the course will be kept in the steer tab. To issue this command to the boat click on “Send Command”.

Tip: Using the steer tool is a good way to avoid confusion on using plus or minus signs or different tacks. You get a visual indication of the new heading you are about to set. Remember to click to fix the heading.

3.2 Delayed Commands

If you want a course correction command to be delayed for some time just enter the desired delay-time (in hours) and check the box to the left of the text "Delay" before pressing "Send Command". Delayed commands is a neat feature that lets you attend business meetings and wedding dinners while helming a 60-foot single handed catamaran in a full gale!

This is an offset from the moment you send the command, ie do not specify an actual time but rather an amount of time to wait after issuing the command.

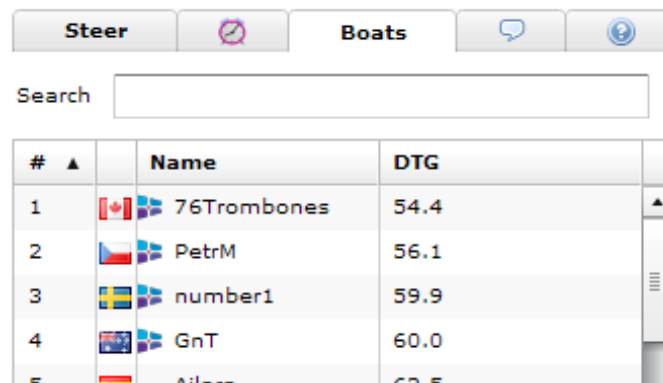
Calculating Delays: Use the forecast slider to see wind speed and angle in the coming hours. Use the polar diagram to estimate your average speed. Use the ruler to measure distance to the position where you want to turn. Divide distance with calculated average speed. Tick the "Delay" box and enter the calculated delay time. Note: the time delay MUST be set in decimal hours and minutes, e.g. 1.5 for 1hr 30mins (you can use the times shown by the Weather Slider as a simple reference for this, although they will display in real-time).

Delayed Command Tab: Any delayed commands you have set will be displayed here. You can use this to double check the commands you give and make sure a delay is set correctly. You will have to press the reload button to see the commands currently available, but the client will also refresh this list every 30 minutes for you. You can also use this tab to remove commands that you no longer want to use. Select the command you want to remove and press the red button.

Tip: The times shown for the command to activate are in UTC, it is a good idea to verify the decimal delay you have set resulted in the correct time.

3.3 Boats Tab

For each boat in the fleet, this tab displays rank, country flag, boat name and Distance to Goal



The screenshot shows a software interface with a 'Boats' tab selected. Below the tab is a search bar and a table with the following data:

#	Name	DTG
1	76Trombones	54.4
2	PetrM	56.1
3	number1	59.9
4	GnT	60.0
5	Ail-ss	62.5

You can look up and track your friends and fellow sailors. With nothing in the search field it will display the current leader board of current race. You can sort the different columns by clicking the labels, to show same country or names alphabetically for example (note that names beginning lowercase will list below those using uppercase).

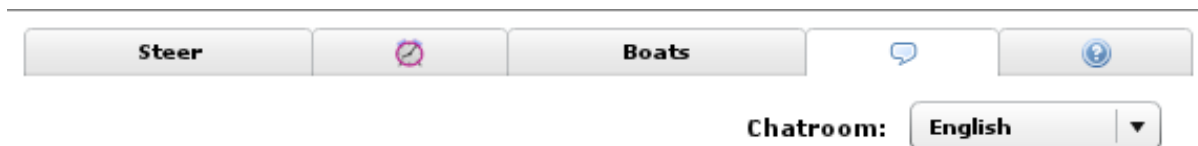
When you start to type in the search field you get a list of boats matching the search.

Once you click on a boat in the list it will refocus on the boat and show its track.

Tip: A great way to learn is to study how those who usually finish high on the ranking have sailed a certain part of the race course, or through a certain wind pattern.

3.4 Chat tab:

In here you can contact your fellow sailors and discuss tactics, ask for help or general chit chat.



Keep the chat clean and take in to account the large age differences. You can choose different chat rooms for the appropriate language and we have a special Saitalk room for more in depth or technical discussions. This is also the place where practice racing (informal, fun and social races on the fly) can be found during pre-race practice.

Tip: If there has not been much chat activity (which sometimes happens in the longer races) and you say or ask something and get no response, make sure to check back soon as someone could quite well have answered you!

4 Racing

4.1 Starting procedure

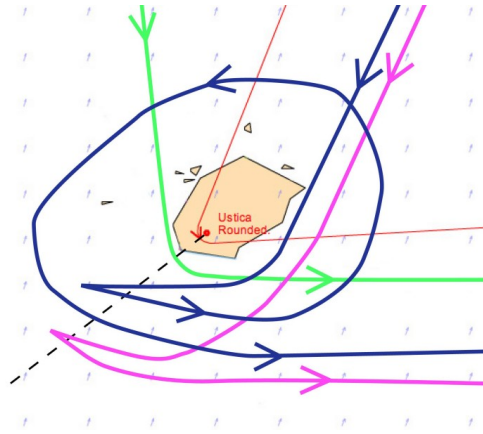
All boats are towed back to the starting line 1 hour before race start. From 1 hour before the start, until the start, the boats are held at the starting line. Active courses of the boats are reset. A new command executed during this period should be used to start “at the gun” as soon as the server allows the boats to start. This can be a manual as well as a delayed command.

Example: Race starts 18:00 UTC. If a player sends a command, TWA 55 degrees at 17:32 UTC, the boat will sail TWA 55 degrees at 18:00 UTC when the boats are released.

Please note that you can also use a delayed command to be executed during the pre-start phase - it has the same effect. You can for example set it the day before if you are offline during the start.

4.2 The course, rounding buoys and the finish

The course is defined by a starting point, a number of rounding marks (buoys) and a finish line. All boats start at the starting point. Then, simply sail around the buoys in the correct order and cross the red finish-line as soon as possible. Rounding of the buoys is registered automatically by the server and is reflected in your ranking (a failure to round means your boat will drop down the ranking and your distance to goal will increase). The diagram below shows how to properly round a mark, or to correctly re-round if you happen to miss it the first time.



The Green path shows a normal, legal mark rounding, the pink line show an illegal rounding. Should you miss a mark and be required to re-round it, the blue path is an example of how to do so.

You can be sure you have correctly passed a waypoint as it will show “rounded” on the race screen. To finish, just cross the finish line from any direction you like.

When you do that your boat will be "glued" to the position where you crossed the line. Your finish time will also be announced in the leader board.

4.3 The chart and the race bounds

Each race area is shown on a chart which, when zoomed out, shows a sizable area of the globe. The chart is, however, endless and you can drag the chart to view other areas. The race bounds are delineated by a pink line. If your boat reaches this line it will stop until you set a course to steer it away. At different levels of zoom, however, different features will become visible.

If you do collide with land you can restart simply by setting a course that will safely navigate your boat away from land use max zoom to make sure this will happen.

Tip: At close zoom many islands will be visible that cannot be seen when from further out. It is important to zoom in on your proposed course to avoid collisions with small islands.

4.4 Race types

There are basically two kinds of races, fleet-races and timed-races.

Fleet race: In a fleet race you typically register a boat during the registration phase in which practice sailing is allowed. The starting procedure for these races is described above. Whatever is the last course you set during the pre-start phase is the one that will be activated automatically.

All boats that have courses set to fire either at the start-time or during the pre-start phase will be started automatically. The first boat to cross the finish line is the winner of the race.

Timed race: A timed race is ready to be run as soon as you arrive on course. You may, therefore, start whenever you like (within limits). The time of your first command is your start time. A start using a Delay Command is possible. Complete the course and your total sailed time will be compared with others in the leader board. Once you have finished the course you may register a new boat and go for another try. The winner is the boat that completes the course in the fastest time. Looking at the weather forecast and judging when to start a run should therefore form part of your strategy.

4.5 Boat performance

Of equal importance as the weather, is understanding the boat's performance, which is displayed graphically in a polar diagram. This shows you how you boat will perform under different conditions you will sail in. The coloured curves display the boat speed as a function of wind speed and angle.

Take time and study the diagram to learn how to sail the boat efficiently.

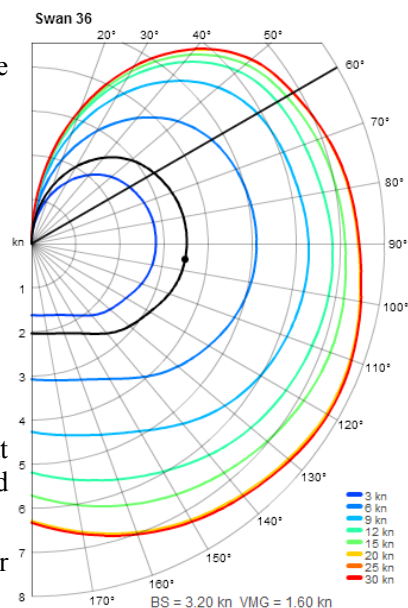
Different wind speeds are shown with different coloured curves. For a certain wind speed follow the corresponding coloured curve for all various angles you can sail your boat. Notice how the polar diagram shows different values for each of those angles at a given wind speed.

Important points of sailing (speed shown is for the 6 knot TWS curve in the polar diagram to the right):

- In Irons (into the wind) — 0° 0 knots
- Close Hauled — 35-50° ~ 4 knots
- Beam Reach — 80-100° ~ 5 knots
- Broad Reach — ~135° ~ 4.5 knots
- Running — 180° ~ 3.1 knots

For a certain TWS and TWA you can read the corresponding boat speed as represented by the distance from the origin to the coloured curve.

The diagram does not differ negative from positive TWAs since our boats are symmetric.



A dot is drawn at your current true wind angle your boat is sailing on. (Example above is 96 deg) When using the steering tool to pick a course on the map, you will see a black line showing the angle your new heading will be. Additional information is displayed in the lower right showing the predicted boat speed and the velocity made good (against the wind). This information is also available by hovering the mouse over the polar graphic.

To read a polar diagram, take a look at the two scales. On the left hand side from the centre of the curve are boat speeds, around the edge of the polar curve are degrees from 0 to 180 representing the angle of the boat in relation to the true wind direction. As you move the mouse over the graphic you can read off the boat speed applicable to that wind angle.. For a certain wind speed follow the corresponding coloured curve for all various wind angles around the boat. The black line on the polar graphic represents the current wind speed where your boat is. (Note. The plot does not differ negative from positive TWAs as our boats are symmetrical). Your boat will generally perform at the polar curve boat speed (=100% performance in the polar window) but there are two ways of losing performance (1) If you hit land you lose quite a lot of performance, and (2) After changing course you also lose some percent of performance (see PERF above).

4.6 Weather

State of the art forecasts are used in the sailing environment. The resolution in both time and space varies depending on the race. The forecasts are true in the sense that we are in the simulator sailing in authentic weather that is valid for the forecast period. All boats sail in the wind as forecast at the 10 meter level. The forecasts are typically updated 4 times in a 24 hour period but you should check each race NOR as there are three sources of wind data in the USA, the Baltic and the rest of the world. The transition between updates is smoothed out in the first hour to make the change gradual.

4.7 The Actual Sailing

The boats actual sailing is done in the central server at Sailport and NOT in a user's computer. The client is only used for viewing and manipulation of your boat, hence, you can disconnect and shut down your computer and your boat will continue to sail according to the commands set for it. The boats are moved forward (integrated) stepwise. The length in time between the steps varies dependent on the server workload etc but is usually kept under 30 seconds.

4.8 Routing

Races are often won or lost before the start. The tools you need for some basic manual routing are provided to you:

- (1) There is a weather forecast slider in the bottom of the "Steer" window.
- (2) The arrows and the wind overlay in the map
- (3) The polar diagram
- (4) The dashboard.
- (5) The ruler tool.

Tip: Use the forecast slider to see how the weather will develop in the coming hours. Relate wind changes (speed and direction) to the polar diagram to see how your course will develop.

4.9 Disqualification / Banning

A boat can be disqualified from a specific race and/or a user can be banned from SOL if improper use is detected or if inappropriate and offensive comments are made in the chat.

Nautical Dictionary

Bow: The nose of the boat.

BS: Boat Speed is measured in knots. One knot equals one nautical mile per hour.

Course: The direction of the boat velocity (0 to 360 degrees) which in this game is equal to the boat heading since no water currents are present.

Distance: as this is a nautical simulation, distance is measured in nautical miles (One nautical mile equals 1852 m or approximately 6,076 feet).

Great circle: A great circle constitute the shortest route between two locations on the globe. In the map projection we use a great circle may appear to have a curvature, however on the globe the path is straight. See Wikipedia, Great circle. In Sailonline you can choose to navigate using great circles.

Performance: The percentage of boat speed you have in relation to the performance polar. You will have 100% if you haven't hit land or just made a course change, your performance will go down for some time if you have hit land.

Port: Left side of the boat.

Rhumblines is a route between two locations on the globe with the feature of having constant true compass course. In SOL this word is often used for the line between the start and finish of a race.

Starboard: Right side of the boat.

Stern: The aft most part of the boat.

TWA: True Wind Angle (ranging from -180 to 180 degrees), i.e. the angle between a boat's course and the true wind direction. TWA=0 means that the wind comes in straight from over the boat bow. Negative TWA's indicates wind from the port side.

TWD: True Wind Direction (ranging from 0 to 360 degrees) is the angle *from* where the wind blows. TWD=0 means wind from the north, TWA=90 means wind from the east etc.

TWS: True Wind Speed in either of the units meters/second (m/s) or knots (kn).

VMG: Velocity Made Good is the velocity component parallel to the TWD. By convention, positive value indicates that you are sailing towards the wind.

FAQs

Q: Can me and a friend "share" a boat although we do not share the same computer, or even live in the same country?

A: Yes, no problem. Just share your login details and you are all set to share the boat. Only question is -do you trust your friend?

Q: Why is it not allowed to have more than one boat?

A: We like to give all players a fair chance, multiple boats is considered cheating and therefore not allowed. More than one boat per user is also an inappropriate use of server capacity.

Q: Can my boat collide with other boats or the buoys?

A: No, the only thing you can collide with is land.

Q: Is "my wind" affected by the presence of nearby boats?

A: No, such effects are not included in the simulator.

Q: If I lose my internet connection while playing, can I still steer my boat and wait for the connection to reconnect?

A: No you cannot manipulate your boat while you are offline, you're boat will keep sailing in your current direction.

Q: Is leeway (sideways drift) included in the game?

A: This is a tricky and somewhat philosophical question actually. As a user, you do not see any leeway and you do thus not have to account for it. Leeway is here defined as the angle between the ship longitudinal axis and the velocity vector. This, however does not imply a hydrodynamic simplification since our boats are equipped with fins/keel blades which produce the necessary side force by their non-symmetric cross sections and/or mounting angles (non-parallel to the ship longitudinal axis).

Q: Are currents and tidal effects included?

A: No, we have tried that but have chosen to leave currents out.

Q: Are effects from ocean waves on boat performance included?

A: No, mainly since reliable methods for calculating this effect are not available.

Q: Do I have to pay to play?

A: No. SOL is completely free to play and no performance advantage can be bought.

Q: What is the Sailonline Yacht Club?

A: The SYC is a way in which SOLers who sail more than a few times can choose to make a contribution towards the running costs of SOL. In exchange for this, SYC Members have their race statistics recorded and also have access to a Mobile client.