MeteoGroup

SPOS® ONBOARD

MASTER THE WEATHER

User manual

Content

Introduction

MeteoGroup is Europe's largest private sector weather business with a worldwide customer base and operations in Europe, Singapore and the USA. The Group employs around 100 meteorologists, providing services in nine European languages.

Our expert meteorologists provide forecasts, support, monitoring and consultancy services 24 hours a day, 365 days a year. In addition, our dedicated research and development team continuously develop MeteoGroup's in-house systems and forecasting techniques.
Our maritime department is based in the Netherlands. This branch is NEN-EN-ISO 9001:2008 and NEN-EN-ISO 14001:2004 accredited and applies a quality assurance system for optimal service and quality to our clients.

One of our key products is Ship Performance Optimisation System (SPOS). This has proven to be the most accurate and reliable weather routing system in the world. SPOS is designed to enable master and crew to adjust the route calculations according to the weather information provided and the ship's specific characteristics. The master can then chart the optimum route (both in terms of safety and efficiency) for his ship in prevailing conditions.

SPOS onboard ensures vessels navigate the globe safely and efficiently, reducing fuel consumption and contributing to a clean environment

MeteoGroup
Marine Department
P.O. Box 617
6700 AP WAGENINGEN
The Netherlands
E. spos@meteogroup.com
W. www.meteogroup.com
T. +31 (0)317 399800
F. +31 (0)317 423164

Shipping Products

Bespoke products for the shipping industry

MeteoGroup's specialist maritime forecasters are dedicated solely to the provision of maritime weather services on a 24/7 basis. Our services are used by professionals in all areas of the maritime industry including ship-owners, managers, captains, charterers and traders.

SPOS

Ship Performance Optimisation System (SPOS) Onboard is the world's leading onboard weather routing system. With SPOS Onboard the ship's route can be optimised, taking into account sea conditions such as waves, current and swell, and wind and other weather elements.

SPOS Fleet Management is an office application providing the information required for effective fleet management. SPOS Fleet Management is fully integrated with SPOS Onboard and uses daily SPOS reports to provide the office with detailed information about your fleet.

Integrating SPOS with ECDIS

MeteoGroup, together with major ECDIS suppliers, have combined two key products to provide the ideal integrated solution for route optimisation; weather routing with SPOS combined with navigational routing in an ECDIS.

RouteGuard

RouteGuard is a ship routing and performance analysis service. Based on the most accurate weather information available, combined with expertise from skilled meteorologists and master mariners, RouteGuard provides ships with optimum routing information for any voyage.

Selecting the optimum route and achieving the maximum performance from a ship requires accurate and detailed weather information. RouteGuard enables you to save time and fuel, reduce CO2 emissions and optimise planning based on accurate ETA's whilst keeping crew, ship and cargo safe.

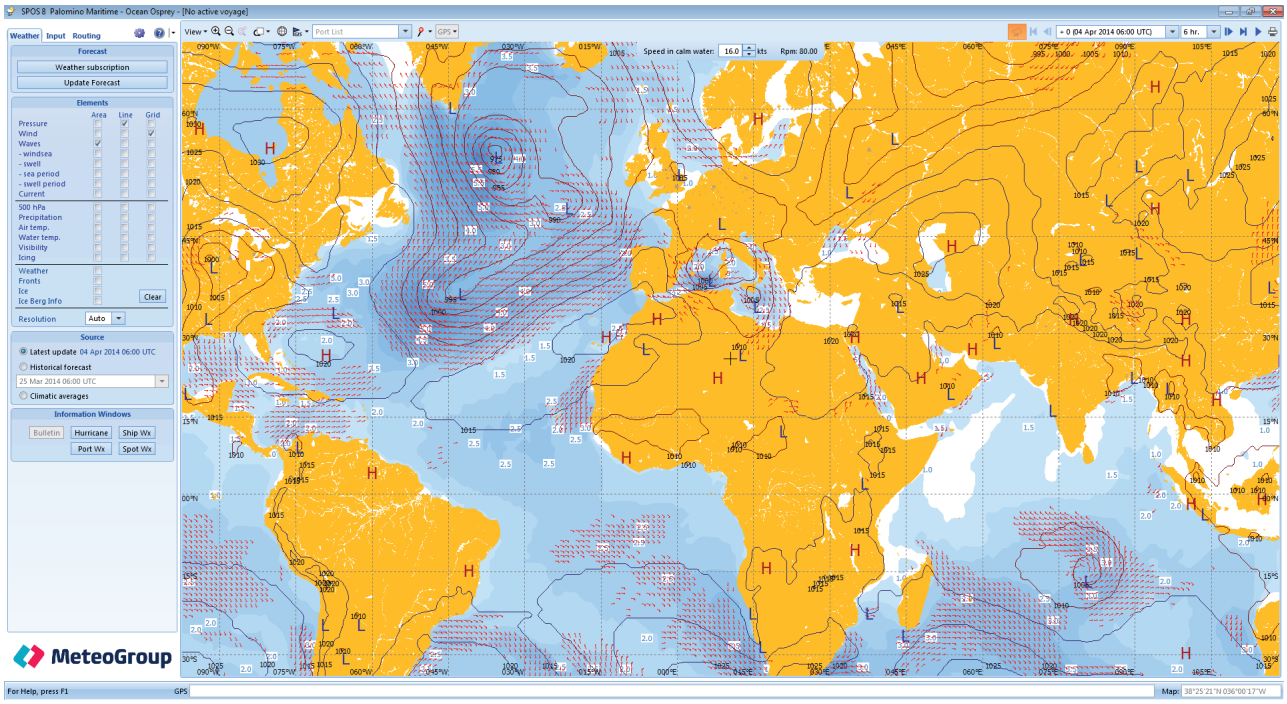
Performance analysis reports provide you with the information you need to detect underperformance and act accordingly.

Traders, charterers, owners and managers worldwide have already experienced the benefits of RouteGuard.

1.1 SPOS summary

With the introduction of SPOS, a new way of weather routing was created: on board routing. The SPOS software is a tool which assists the master and staff onboard in taking the right decisions with regard to voyage planning in relation to weather conditions.

As a meteorological office MeteoGroup prepares a complete set of accurate weather information for ocean regions and coastal waters. This information includes for example wind and wave forecasts but also data on tropical storm forecasts and ice limits. Via e-mail, the weather information is sent to many vessels. The crew can then display the forecasts in a presentation format of their choice.



The information is not only available for display, it can also be used to calculate the effect of the weather on a particular vessel. In SPOS, the master can enter information on how the vessel responds to wind and waves. With this information and details on the voyage such as departure and arrival position, SPOS calculates various route options taking weather and vessel response into account. Routes include standard tracks (great circle, rhumb line) but also optimised routes. The user may also set out his own route.

In order to evaluate the results of different routes, analysis tools are present in SPOS such as comparison tables, graphs and charts. When the user has made a choice for a route to follow, it can be saved as the voyage plan.
With new weather forecasts coming in automatically each day, the voyage plan may be updated and the effects on ETA due to changing weather conditions are monitored easily. At the end of the voyage, SPOS provides a complete voyage log.

Advantages of onboard routing:
- master is directly involved in passage planning / weather routing
- the best knowledge on operational restrictions for vessel and cargo is with the crew on board (safety, damage)
- reduced costs for meteorologists on shore
- reduced administration on board and in the office

Accurate, timely and complete weather information remains important for both safety and economic performance on board. With SPOS a simple and affordable tool is given to the staff to assist in optimizing the ship's performance.

1.1.2 Installation & specifications

SPOS is a Windows program, installed from a CD-rom. The system minimum requirements are:
* Windows XP SP2
* Pentium-processor of 1 gigahertz (GHz) or faster
* Minimum memory of 512 Megabyte (MB) (recommended is 1 GB)
* Minimum disk space of 1,5 GB is required.
* CD-rom or DVD-rom station
* Keyboard and mouse
* Video adapter and monitor with a minimum resolution of 1024 by 786 pixels (px)

During installation additional components will be installed if not already present;
- Adobe Reader X
- Microsoft Installer 4.5
- Microsoft .NET Framework 4 (x86 and x64)

These components are required for operating the SPOS Onboard weather routing software. If you do not install one of these components SPOS 8 installation will not be completed.

To install SPOS, the following input items are required and will be provided with the installation disk:
- Registration key (xxx-xxxxxxxxxxxxxx-xxx)
- Name of the licensed vessel
- Name of shipping company

The installation is self-explanatory and only takes a few minutes. When the installation is completed, SPOS can be started via the  icon on the desktop or via the start menu.

Important notes:
When installing SPOS software, you must have administrator rights. When the installation is completed, all users can run SPOS.
Make sure nobody else gets this registration key since it is linked to your weather subscription (others may change your settings)!

1.1.3 Getting started

A quick overview of SPOS is given in chapter 1.2 Overview of the manual. Detailed information on all the screens and buttons is available from chapter 5 onwards. You can always press F1 for help from any location in the program.
A routing session in SPOS consists of 3 consecutive steps. The different screens are selected via the tabs above the control unit:

1. first update and display the **Weather** forecast;
2. enter voyage/ship details via the **Input** screen;
3. in the **Routing** screen, various tracks may be calculated and the performance can be compared; then the best route can be selected and the voyage plan can be created and updated.

On each of the 3 screens, a control unit is shown on the left hand side of the screen and the chart on the right. In the control unit, buttons, selectors and edit fields are available for operating the system; most are self-explanatory. Simply click on the desired option and the result is displayed or the required action is carried out.
It is advisable to start using the weather screen first and then to start using the other screens once you get acquainted with the system.

1.1.4 Support

MeteoGroup provides support to SPOS users with a valid license during office hours.

Questions about how to operate SPOS:
If you have a question on how to operate the system, please check the HELP function (press F1) or the user manual first. If this does not answer your question, you may of course contact MeteoGroup by sending a mail to spos@meteogroup.com.

Technical problems with SPOS:
SPOS has been tested extensively to avoid technical problems. Should you encounter problems please follow these steps;

- The first thing you can do yourself if you encounter technical problems is to **Restore SPOS:**
  Click on Windows START button and select (all)PROGRAMS - SPOS - SPOS Restore. SPOS will then restart with the last known working configuration.
- If this does not solve your problem, please contact us, if possible via menu option Help - Report a problem. Enter your question or remark using the space provided. Please note that we recommend to always include the 'options.db' in the report. This will enable us to provide fast and accurate support. This way we also have immediate background information on your SPOS system and its environment. This will enable us to provide fast and accurate support. Submit this information to **spos@meteogroup.com.**
- MeteoGroup will respond a.s.a.p. with a suggestion or solution. If the problem is not clear, further questions will be asked to pinpoint the problem.

1.1.5 Disclaimer

SPOS (Ship Performance Optimisation System) is operated on a personal computer and will serve as a meteorological management support tool for onboard applications. Its functions include global marine weather forecast display, weather routing, interactive voyage planning and ship performance prediction.

SPOS is a meteorological information system.

Meteorological forecast data is used within SPOS. MeteoGroup makes every effort to provide you with an optimal forecast. Since it is a forecast only, actual weather con-ditions encountered may vary from the forecasts as presented by SPOS.

SPOS is a global presentation and calculation system.

The information presented is intended to give a global overview of weather systems and route alternatives. The charts used by SPOS are prepared for this purpose and should never be used for navigational purposes. Also the routes calculated by SPOS should be carefully checked for navigational hazards and modified if necessary.

SPOS is a management support tool.

The system itself does not optimize ship performance, but it supports the ship's staff in their efforts to do this optimization by clearly presenting information (on weather and ship performance) and giving route optimization tools. The interpretation of the information and a critical judgment of optimization results by the ship's staff remains necessary at all times.

1.2 SPOS OVERVIEW (quick guide)

This chapter gives you a quick overview on how to operate SPOS.
A complete guide with all options is outlined from chapter 5 onwards of the user manual.
By pressing F1 you will receive help from any location in the program.

When you start SPOS, you will see a chart where weather and route data can be displayed. On the left, an operating interface is placed with buttons and selectors. With 3 tabs shown on the top left hand side of the display you can to select the different screens: Weather (default at start up), Input and Routing.

For the day-to-day operation of SPOS, these on-screen buttons and selectors are sufficient. Some system settings of SPOS can be defined by selecting the icon 'System' shown in the top left-hand corner of the screen. For the initial operation of SPOS, these system settings are predefined but may require adjustment. See chapter 3.
The chart is the key presentation unit of SPOS. Above the chart, a toolbar is given with options to zoom in, zoom out, switch the projection between Mercator and Globe.
Moving the chart is simply done by 'dragging' the chart with the mouse. The wheel of your mouse is used to zoom in and out.

The following three paragraphs summarize the three main aspects of SPOS:
- e-mail communication
- weather information
- voyage planning

1.2.1 Communication

SPOS is not equipped with its own communication system, instead it makes use of the e-mail system or internet connection already available on board. This makes it easier for the staff on board since they are already familiar with this system and the regular e-mail is supported and maintained by the office.
Secondly it saves money and time as the forecast is sent automatically to your mailbox with your other messages simply in your mailbox.
In most cases, SPOS can directly retrieve forecasts from your mailbox and place messages in your outbox via a so called MAPI connection. But this can also be done manually by saving files on the local hard disk (e.g. My Documents folder). If you have an internet connection you may use HTTP - update.

With SPOS there are several types of communication: subscribing to a weather forecast, receiving daily weather forecasts and optionally sending reports (e.g. SPOS Fleet Management) to shore.

Subscribing to a weather forecast and receiving weather updates is essential for SPOS. Therefore these topics are described in more detail in the following pages.

1.2.2 Weather information

The SPOS system has two sources of weather information, which are needed for on board routing:

- a forecast database updated via e-mails from MeteoGroup
- a climatological database

For route calculations, the forecasted data is used as long as the simulated voyage is within the forecast range. Otherwise, climatological data at the end of the forecast period is used.
The dedicated climatological database (similar to pilot charts) contains average values per month for surface pressure, wind, wind waves, swell and ocean currents. The area covered by the climatological database is 75°N –60°S and 180°W –180°E with a resolution of 2.5 degrees.
Forecast data is available four times a day and world-wide from 90°N to 90°S. The forecasts are split in ocean regions, such as North Atlantic and South Pacific for oceans (in 2.5 degree resolution) and smaller areas such as South China Sea and Mediterranean for coastal waters (in a higher 1.0 degree resolution).
Ocean forecasts are available for 5 and 9 days ahead, coastal areas for 5 days ahead.
One can choose between a standard forecast with wind/waves/ocean currents or an extended forecast which also includes weather, precipitation, temperatures, visibility, 500mb charts and risk of icing. Furthermore, you can select high resolution current to receive 0.5 and1.0 degree resolution current for coastal and ocean regions respectively.

SPOS can use multiple forecast areas simultaneously, but only when they were issued at the same time. If a forecast for a certain area is 'older' than one for another area, SPOS will not use this older forecast. Information on how to subscribe and update a forecast is outlined in the next sections.

1.2.2.1: Subscribe to a weather forecast

Subscribing to a forecast is done in SPOS itself. Select the WEATHER SUBSCRIPTION button in the weather screen. The first time you use this feature, the system will ask you to set up your preferred communication method.
A popup appears where you can select a region from the drop list (the chartlet will show selected region) and the specific area from the box below the drop list.
Optionally select a forecast range (5 or 9 days), the forecast type (standard or extended) and current resolution (high or low).
Then press ADD TO SUBSCRIPTION and the forecast area is listed in your subscription box below. You may add/remove areas and then select the update frequency (once/twice/four times daily).
Finally press the SAVE or SUBMIT button (depending on your communication setup) to create the subscription for MeteoGroup. Once the subscription message is created, it can be sent to: **spossubscription@meteogroup.com**
MeteoGroup will send you a confirmation e-mail with your new subscription setting and starts sending your forecasts each day.

1.2.2.2: Update a weather forecast

Each day at 00 / 06 / 12 / 18 UTC new forecasts will be available. Depending on your weather subscription, MeteoGroup will send the requested weather forecasts at the selected update times to your mailbox. The e-mails will have a subject starting with 'spos_' and contain an attachment with a forecast file, e.g. 'spos_11.sps'. This e-mail should remain unopened in the mailbox and will be read by the SPOS program automatically during the weather update process.
Note that if you have selected the HTTP option for communication, MeteoGroup does not send you e-mails. Updating is done according to additional settings and/or your own actions.
Updating the forecast is done in SPOS via the UPDATE FORECAST button. When new forecasts are found or available, these will be imported automatically.
For more detailed information on requesting and receiving forecasts, read chapter 5.1. Forecast.

1.2.2.3: Display a weather forecast

The available weather elements are shown in the Elements group box in the weather screen. Depending on your subscription the standard and extended information will be available for display.

There are 3 display types: area, line and grid.

Tick the square boxes to display an element, e.g. pressure lines, wind grid (arrows) and wave areas can be combined into a single presentation.
The forecast issued time is shown in the Source group box. The 'valid for' drop list is available in the tool bar above the chart. With the animation buttons on the left and right, you can scroll through the forecast times.
If you have 2 overlapping forecast areas with different resolutions, e.g. North Atlantic/2.5° and Caribbean/1°, the highest resolution available for each region will be shown. With the RESOLUTION drop list, you can choose to display only one resolution. Please note that the resolution of ocean currents may be higher than the resolution displayed.
Ice information is displayed in ice concentration levels. These can also be set as restriction in the Input screen. Additionally you can display ice berg information. In the North Atlantic the outer limit is displayed, in the southern hemisphere there is detailed information on the largest icebergs available. Hurricane data is available in the chart but also via the HURRICANE button.
NOTE: It is advisable to check tropical storm bulletins via other sources (e.g. radio or facsimile) as well.

1.2.2.4: Print a weather chart

Weather maps may be printed via the printer icon  in the tool bar. A pdf document will be prepared from the present view which can be printed and/or saved.

1.2.3 Voyage planning

The advantage of onboard weather data is that it can be used directly for voyage planning. SPOS has 2 screens to do this: INPUT of ship and waypoint data and ROUTING for calculation and evaluation, and saving & updating your voyage plan.

1.2.3.1: Input of ship and voyage data

In the INPUT Screen, you can create a new route or select one from the route library and define the routing options.

Press NEW in the Route Template group box to create a new route. Then simply click the waypoints in the chart and use double click for the last / destination waypoint. Note that a waypoint list will appear below the chart. From this list the waypoints can be easily edited. Next set the Routing Options. Enter a value for time between (calculated) waypoints e.g. 6 or 12 hours. Then enter your daily fuel consumption.

SPOS will calculate a speed reduction due to wind and waves via a so called speed curve based on the speed in calm seas which you have previously defined.
Initially you may use the default profile as provided by MeteoGroup, but you can improve results by defining a profile that matches your vessel performance.

1.2.3.2: Route calculation

When the input is completed, proceed to the ROUTING screen to calculate one or more route options. You can select the routing alternative. You can choose between a shortest time or a fixed ETA routing.

Press GREATCIRCLE or RHUMBLINE to calculate the standard routes.
You can also press the OPTIMUM button and let SPOS calculate the best route for you, whether you choose the fastest route or want to arrive just in time (fixed ETA). Optimum routing is especially useful for ocean crossings.

1.2.3.3: Performance evaluation

When you have calculated one or more routes, you can compare calculation results in the information panels below the chart.
Here you can view a summary of all calculated routes for a quick evaluation of speed, distance, ETA and weather. The GRAPHS button will provide you with a graphical display of elements along the route such as speed, wave height and current.
You can scroll the routes through time with the media player above the chart. Using the SHIPS WX button in the Weather screen you can view the weather impact on your vessel. The effect of parameters such as wind, waves and current are shown in a polar diagram.

Important note:
The routes calculated with SPOS give a general indication of tracks to sail. They have NOT been checked for navigational hazards. It remains the responsibility of the operator and staff on board to check (and when necessary modify) routes in approved charts before sailing.

1.2.3.4: Save & update your voyage plan

When the calculated route options have been analyzed with the performance tools, a track can be selected as the voyage plan to sail. This is also done in the Routing screen. When no voyage is active, the Start Voyage on Selected Route option is available. Click on this button and follow the wizard instructions to create your voyage plan. It will be plotted in the chart in red.

The voyage plan is initialized once and may be updated each day with new weather information and actual position information. This is simply done by entering the (noon) position via a position update and recalculating/updating the current voyage.

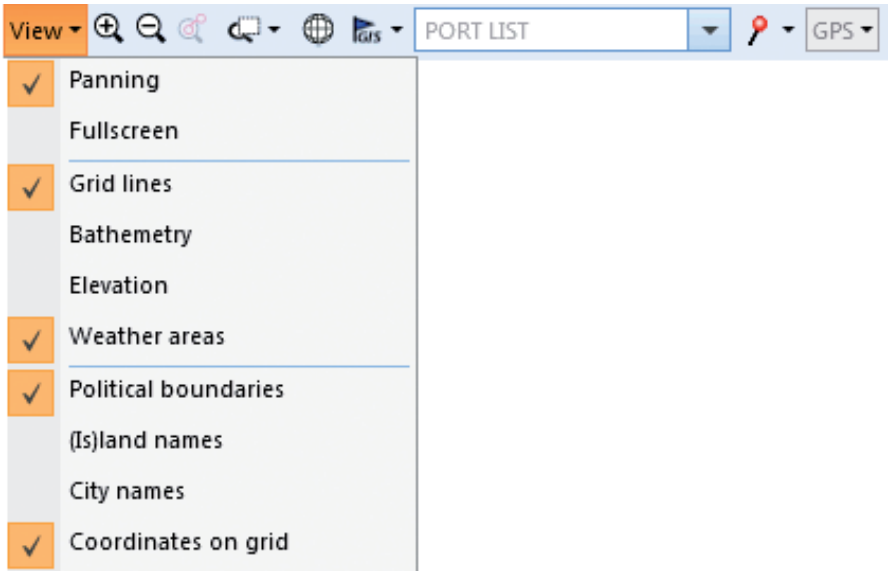
2. Chart

Apart from the main screens, the following items are also available:

- Chart controls
- Port list
- Time selector

2.1 Chart Controls

The main presentation tool of SPOS is the chart. This may be modified using the set of buttons and functions at the top of the chart:



Functionality

Button	***Function***	***Keyboard shortcut***
	Chart will zoom in.	Z-key
	Chart will zoom out.	A-key
	Note: zoom level can also be changed by using the scroll wheel of your mouse; click on the map first to get focus, then scroll the wheel.	
	Press this button and the chart will zoom to the active route template.	
	Click on the drop-down arrow next to the button and select a standard chart area or a user-defined area. You may define your own chart areas: click with the right mouse button on the chart.	

	With this button you can toggle the chart projection from globe to Mercator and back. The globe is convenient since it shows a great circle (shortest distance) as a straight line, this makes it easy for route comparison. The Mercator projection is often used for passage planning.	P-key
	Toggle to show your actual weather subscription forecast areas on the chart.	
	Display or hide Geographical Information System (GIS) data.	
	The show weather button enables you to turn on and off the weather layers in the Input and Routing screens	
Panning	Enables or disables movement of the chart. When active, move the chart with arrow keys or click the left mouse button on chart and move chart while keeping button pressed.	
Fullscreen	Click this button to change the presentation of the chart to full screen mode. The same button is also in the top right-hand corner to return to normal screen.	F-key
Gridlines	Add or remove the gridlines on meridians and parallels. The plot interval is depending on the scale of the chart.	G-key
Bathymetry	Toggle to plot bathymetry on the chart.	D-key
Elevation	Toggle to plot orography on the chart.	E-key
Weather Areas	Shows Weather areas on the chart.	
Political boundaries	Shows Political Boundaries on the chart.	
(Is)land names	Shows Island names on the chart. Names appear only when zoomed in.	
City names	Shows city names on the chart. Names appear only when zoomed in.	
Coordinates on grid	Add or remove grid coordinates.	

Geographical Information System (GIS)

In SPOS you can use some default GIS elements. This GIS layer contains informational data.

Default layers in SPOS are:

- Loadline zones
- Time zones
- Sulpher Emission Controlled Areas (North Sea & Baltic and North America)
- International Navigational Limits (INC/INL zones)

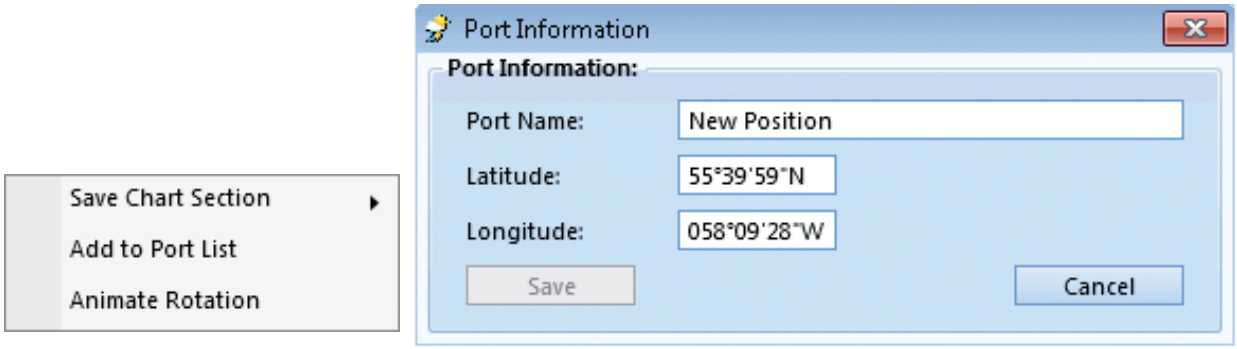
The labeling of the information layer can be switched on and off.
The Ruler can be found under the GIS icon as well. The ruler can be used to quickly measure distances in the chart. The distance and course will be given in Great circle and Rumbline, the difference is displayed in the column Reduction. The exact location of the two ruler points can be edited by double clicking them in the chart.

2.2 Port List

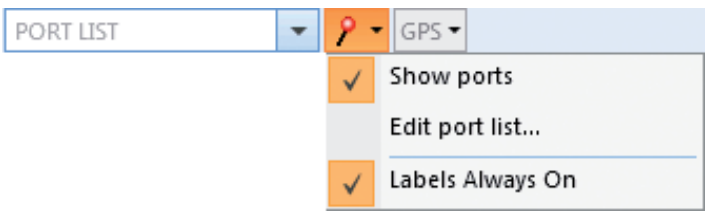
The port list is a convenient tool which stores and recalls frequently used positions. These can be ports, but also anchor points or other locations.

The port list can be accessed in three ways.

1. You can use the **mouse right click** function whilst positioned in the chart and choose "Add to port list" to open the Port list dialogue. Here you can enter the Port Name and Latitude and Longitude of the required Port.

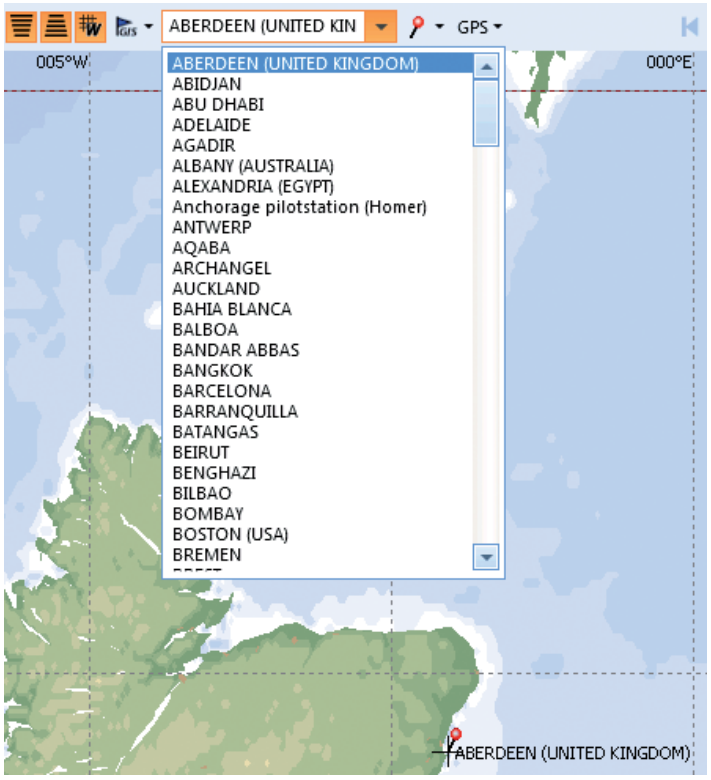


2. Via the **chart control bar** at the top , middle of the screen using the drop down and then select a port.
   A default port list with major ports and important positions is provided with SPOS. This list may be modified to your needs. In this way, a list of often used positions and ports is saved.

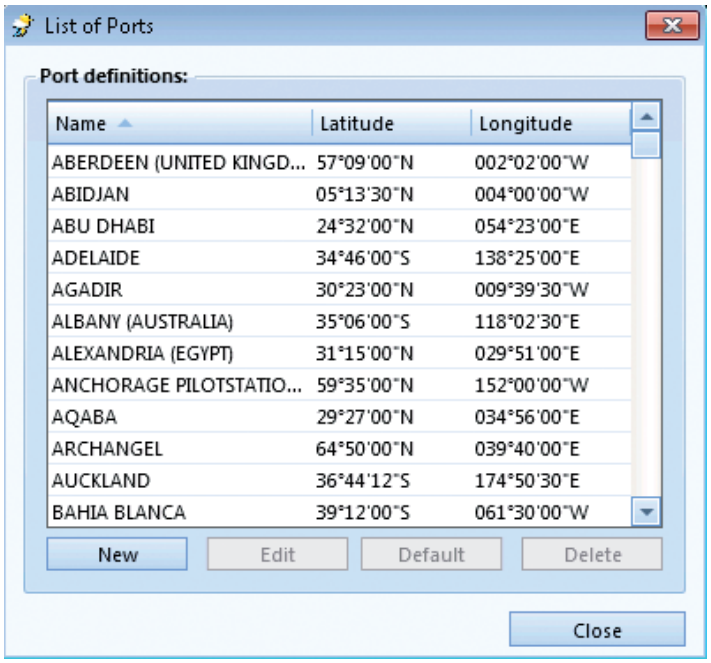


   You can delete your own modifications to the port list with **'Delete'** or you can restore the modifications to the default list (name and position).

All positions from the port list are displayed on the map via the red pin button 📍 on the map toolbar.



3. You can also **edit the port** list and change your preferences.

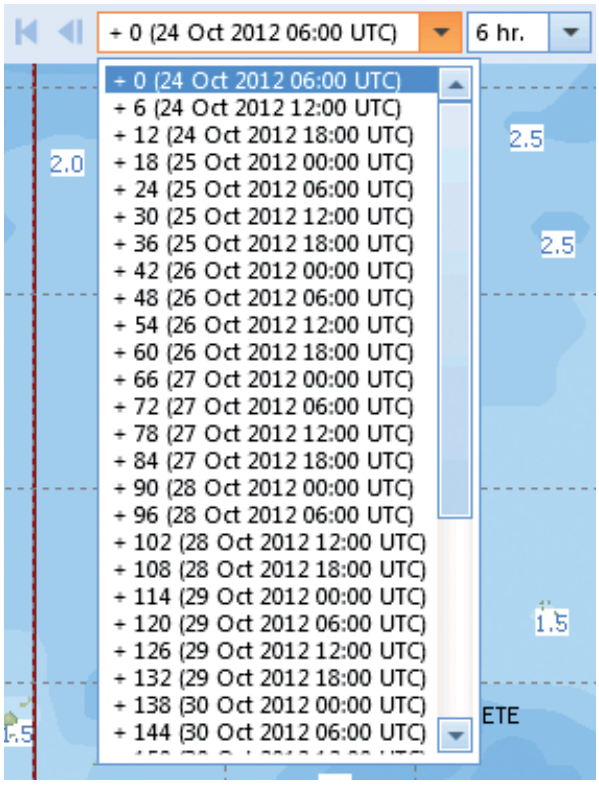


2.3 Time selector

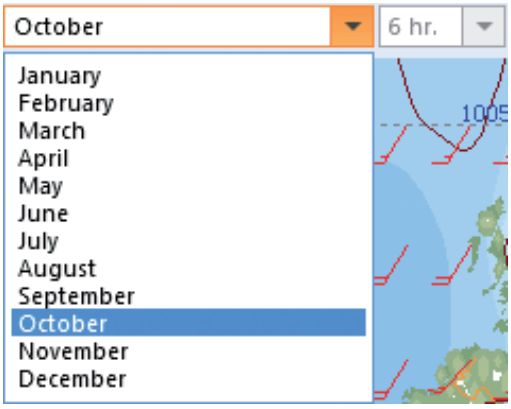
By making a selection within the Source group box (see Chapter 5.3) you can select Latest update, Historical forecast or Climate averages. Depending on the choice you make different data will be shown in the Time selector.

The forecast is originally delivered in 12-hourly time steps for oceans and 6-hourly for coastal waters. By using the drop list as shown in the screen shot below, the intervals can be changed to display for example weather at 2 hourly intervals. Here you can also select the month when Climate averages are selected.

Time selector for (Historical) forecast.



Time selector for Climate averages



2.4 Print

The print button on the top right hand corner of the screen, will generate a PDF of the screen so that it can be printed.

2.5 Status bar

Below the chart you will find the status bar where extra chart information is shown.

If there is a 'GPS' connection the actual position, speed and heading is shown here. The section 'Map' will show the position of the mouse cursor in the chart.

3. System Settings

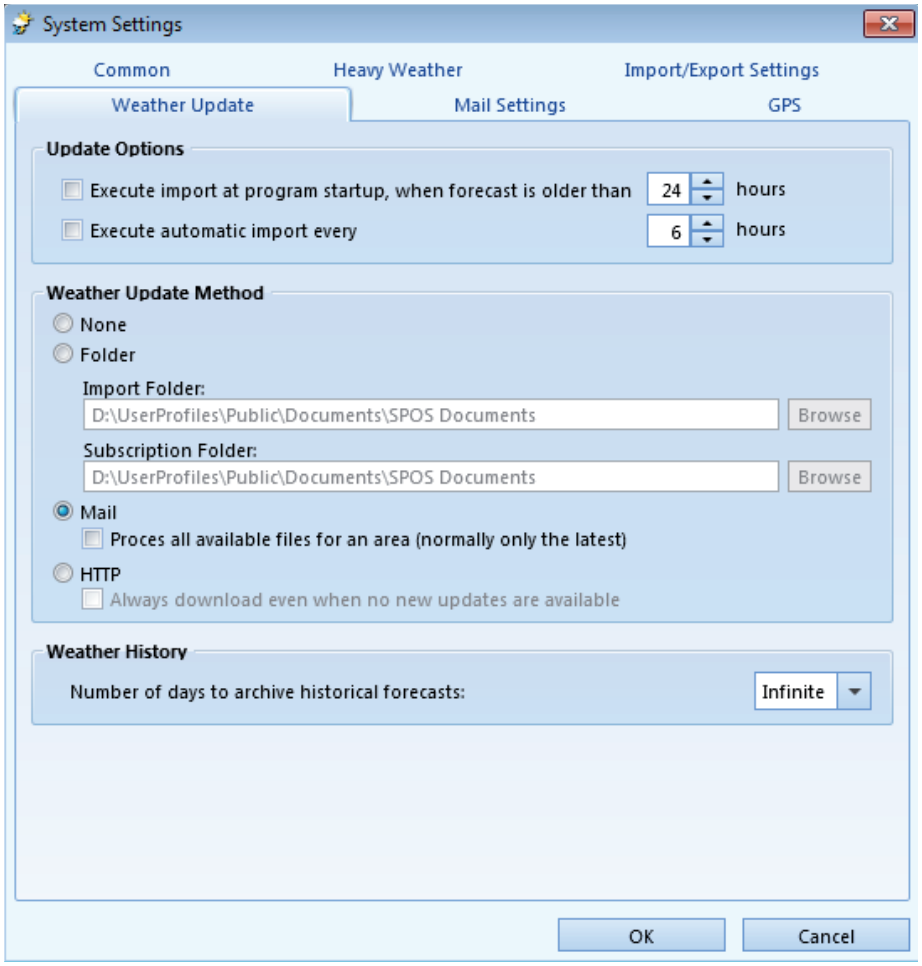
The System Settings can be accessed via this icon. Here you set the parameters to use and adapt SPOS to your personal preferences can be set.

3.1 Weather Update

In this tab you can set up the way in which weather files are imported. The browse tab allows you to easily select and define the folders you have allocated for this functionality.

Update Options

SPOS can be set up to automatically check for updates at the start of the program after a specified time. The time range varies between 1 and 100 hours. Additionally you can set SPOS to automatically update the forecast. You may set time steps from 1 to 48 hours. Note that SPOS must be running in order to use this feature. MS Outlook could require the use of Extended MAPI (tab Mail settings).
There are 3 methods of updating SPOS weather forecast. (folder, mail and http)



- **Folder**
  This option should be selected when your computer does not have an internet connection or your computer is configured to automatically save the weather updates into the designated update folder. The SPOS weather update attachments will be saved in the folder specified under **Import Folder**.

- **E-mail**
  This option will connect SPOS to your default e-mail client through the Microsoft MAPI protocol. Your e-mail client needs to support this protocol to be able to make this connection. SPOS can then access the main inbox of your e-mail client and collect the weather updates from it.
  Additional settings for this option can be set in the Mail Settings tab.
  If you are using different e-mail profiles you can select a fixed profile for collection of the weather updates. See 3.2 Mail Settings for further explanations.

- **HTTP**
  SPOS has the option to collect the weather updates you have selected in the Weather Subscription dialogue, automatically from MeteoGroup servers. The files are downloaded when you press 'Update Weather Forecast', or at the program start up (see Update Options).

Weather History
Each time you update SPOS the files that are replaced are stored as historical data. You will build your own historical weather database in this way. To limit the disk space used you can set the number of days to archive the weather files. Default value is 30 days.

3.2 Mail Settings

MAPI is a convenient way of communication between SPOS and your vessel however it depends on whether your e-mail program supports this protocol. The forecast mails will be sent to your designated e-mail box.

Apply fixed mail profile for SPOS. When multiple profiles are present it may be con-venient to enter a default mail profile for SPOS. Simply enter the name of the mail profile in the space provided.

The **Test MAPI** button allows you to check whether your e-mail client supports MAPI. When pressing this button SPOS will create an e-mail message addressed to **spossubscription@meteogroup.com** with the subject 'MAPI Test' and the message 'If you can read this, the MAPI link works fine'. If you send this message to our servers you will receive a confirmation when the message is processed.
If the Test MAPI fails, you can select one of the other options.

Receive options

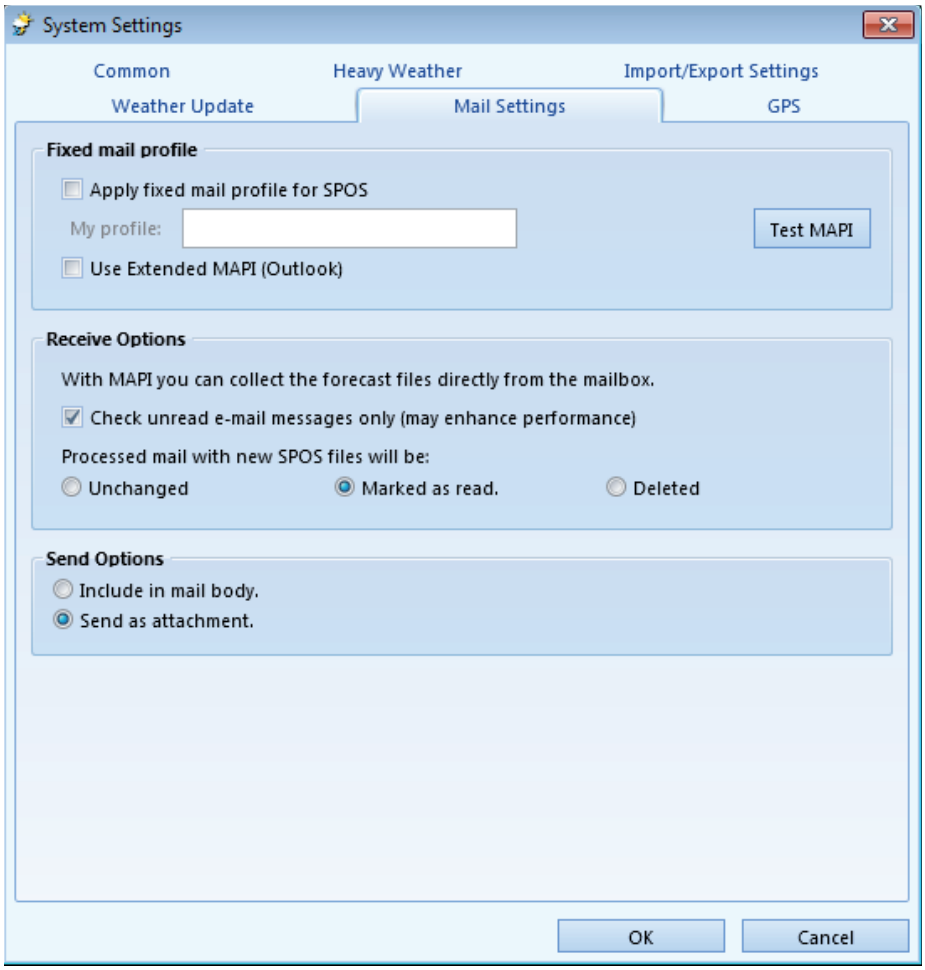
Check unread e-mail messages only – this will disregard all e-mail items marked read and enhances the performance as it will limit the number of e-mails that need to be scanned for updates. Note that the latest received update(s) should be marked unread.

Optionally you can define how SPOS / MAPI will handle the **'Processed mail with new SPOS files'**:

- Unchanged
- Marked as read
- Deleted

Send Options

With this option you can choose whether SPOS needs to automatically put generated information (e.g. weather subscription information) in the mail itself, or whether this information is to be attached to a mail.



3.3 GPS

SPOS can be connected to GPS in order to display and process actual position information. There are three ways of connecting SPOS to your SPOS computer:

- via serial cable a COM port
- via TCP/IP network protocol
- via UDP network protocol

GPS connection through serial cable

When a serial cable is connected, ensure that the GPS is sending NMEA output. Select the serial option in SPOS, select the COM port to where the cable is connected and press TEST SIGNAL to see if a valid signal is available.

GPS connection through TCP/IP network protocol

SPOS can also receive the GPS signal which is transmitted through TCP/IP protocol over the network. You will need to know the host name and the port number. Please contact your IT department to obtain this information.

GPS connection through UDP network protocol

If the GPS signal is available on the network through UDP, you need to know the port number which SPOS should contact. Please contact your IT department to obtain this information.

Test Signal

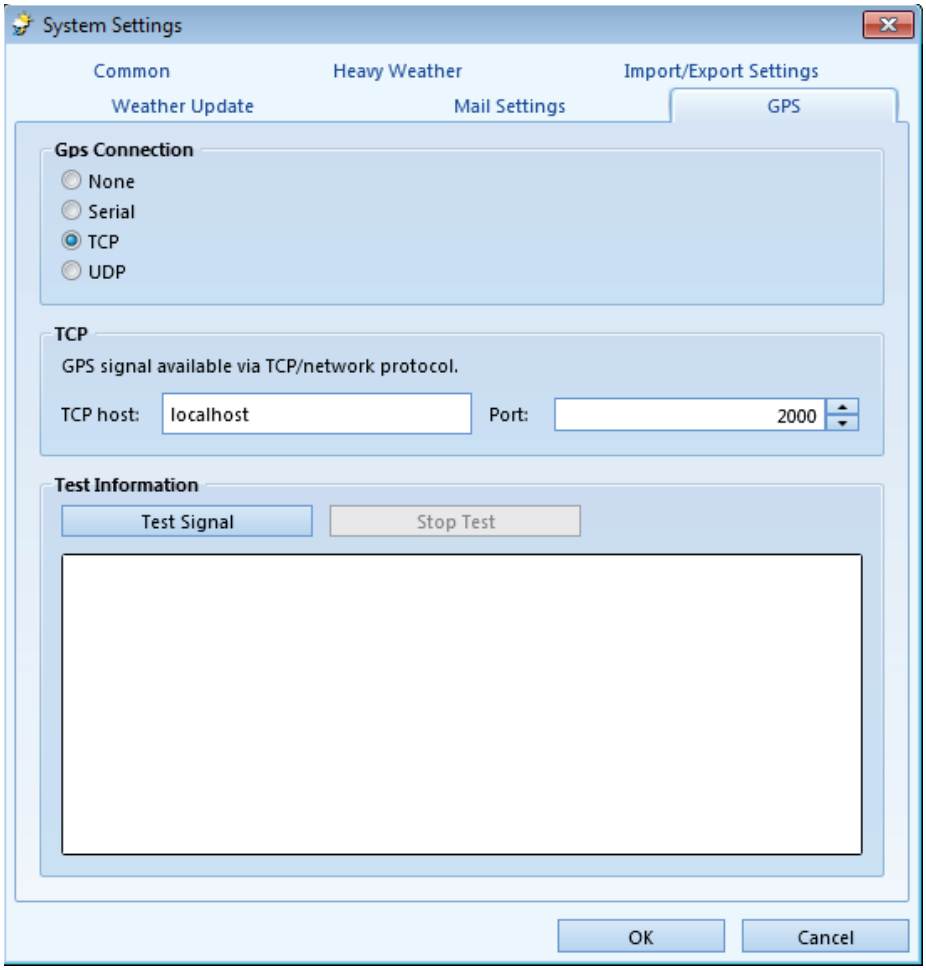
To test the incoming GPS signal in SPOS, press the TEST SIGNAL button. The program will now display the information received (if any). SPOS will use the NMEA RMC data to display.

RMC - The Recommended Minimum C is NMEA own version of essential GPS pvt (position, velocity, time) data, which will look similar to:
$GPRMC,123519,A,4807.038,N,01131.000,E,022.4,084.4,230312,003.1,W*6A

Where:

RMC	Recommended Minimum sentence C
123519	Fix taken at 12:35:19 UTC
A	Status A=active or V=Void.
4807.038,N	Latitude 48 deg . 07.038' N
01131.000,E	Longitude 11 deg. 31.000' E
022.4	Speed over the ground in knots
084.4	Track angle in degrees True
230312	Date - 23rd of March 2012
003.1,W	Magnetic Variation
*6A	The checksum data, always starting with *

If a good signal is received, SPOS will decode the $GPRMC string for position, speed and heading information. The actual GPS position will be plotted at the bottom of the screen in SPOS. In the chart, the vessel position will be indicated.
The GPS data is now also available for GPS tracking and position updates in SPOS.



Beside the $GPRMC string SPOS will also check and read the $GPGGA and $GPGLL strings.

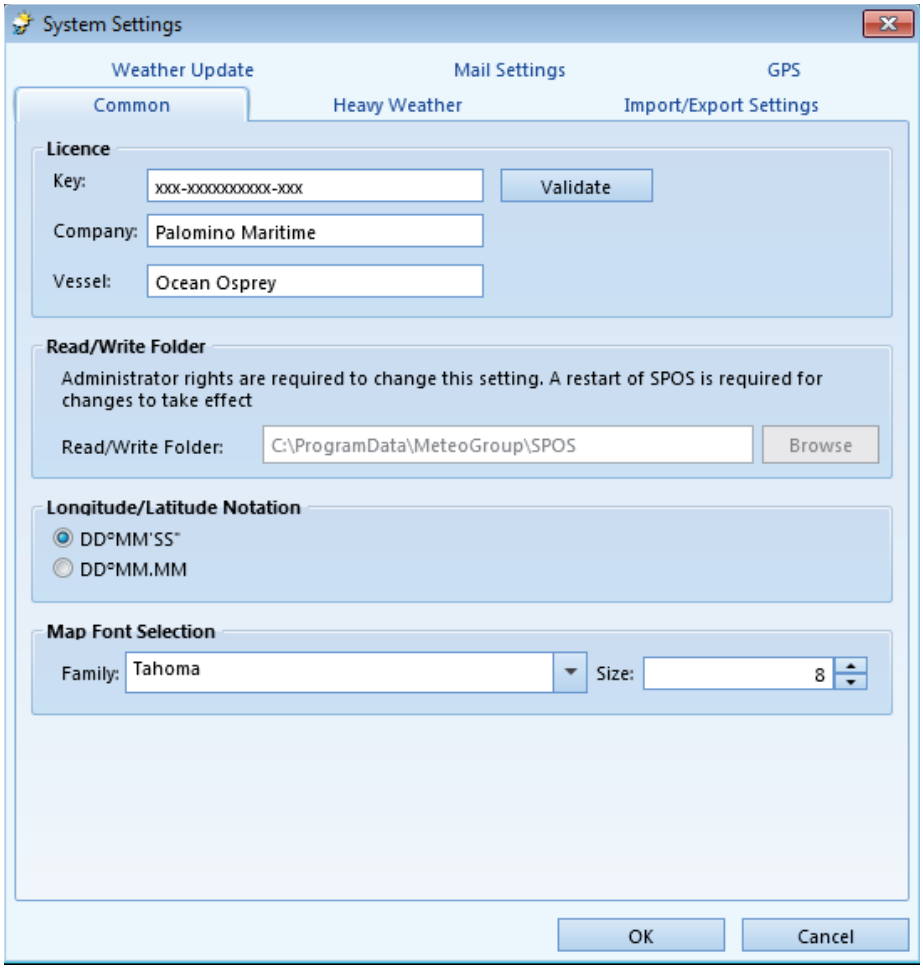
If you do not have a GPS connected to the SPOS PC then select the NONE option as this will avoid unnecessary processor time of the computer.

3.4 Common

Common settings can be set in this tab.

Licence

Here you can (re)enter your registration key, company details and vessel name.



Read / Write Folder – if you have administrative permissions you can alter the location of the SPOS 'read/write' folder. The 'read/write' folder is used to store all essential data-base files and should not be used for other purposes.

Display Options

The 'Display Options' allows you to define your preference for:

- **Longitude Latitude Notation**
  - DDºMM'SS" (degrees, minutes, seconds)
  - DDºMM.MM' (degrees, minutes, seconds and hunderds of seconds)

- **Map Font Selection**
  This setting will apply for all texts displayed in the chart, e.g. lat/long, islands/city names, etc.

Spot Weather Request Server – To facilitate third party software it is possible to send weather request to the SPOS program. The program will respond with the available weather on the requested position and time over TCP network. The TCP port can be configured here.

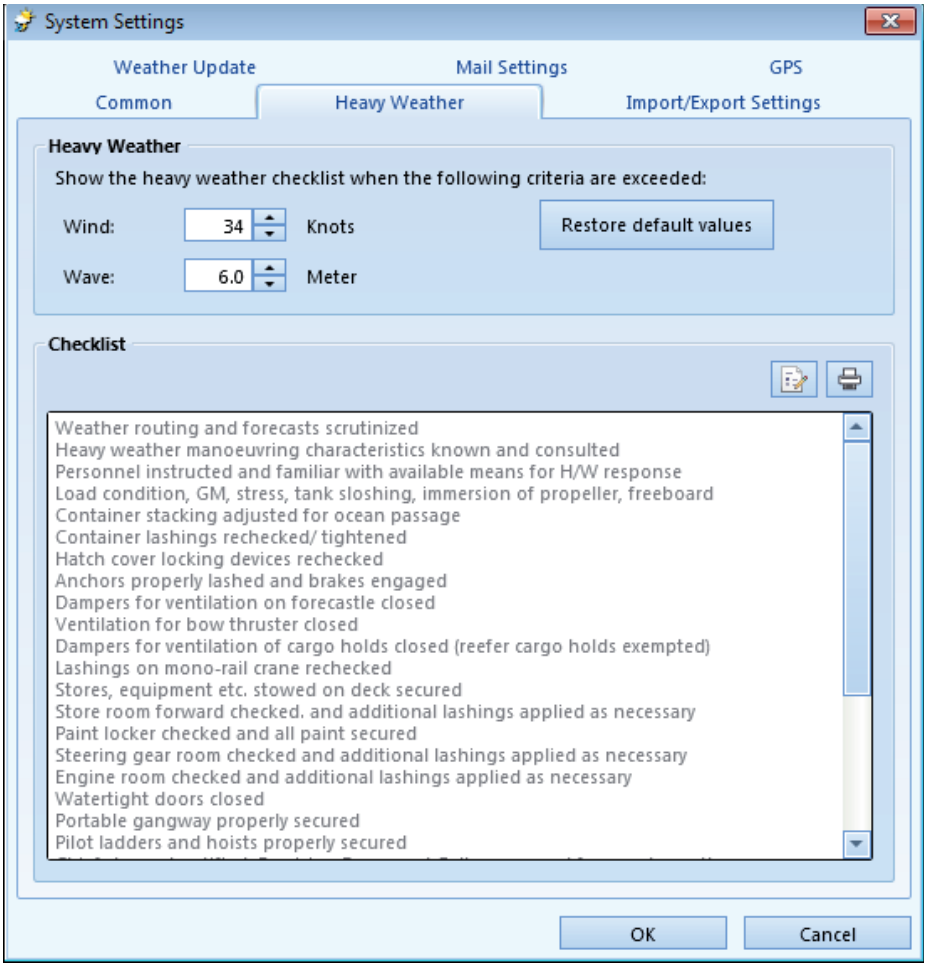
Note: this feature will be available through an extra subscription.

3.5 Heavy Weather

If during a voyage creation or voyage update the weather in the next 36 hours exceeds criteria as defined here, SPOS will prompt you to print the heavy weather checklist.

You can define wind speed and wave height; default values are 34 knots (8Bft) and 6m waves.

The checklist can be edited to meet your specific requirements.



3.6 Import/Export Settings

SPOS Onboard offers 2 types of noon reporting.
• Participation in SPOS Fleet Management
• Noon report through text file and optional waypoint list

Participate in SPOS Fleet Management

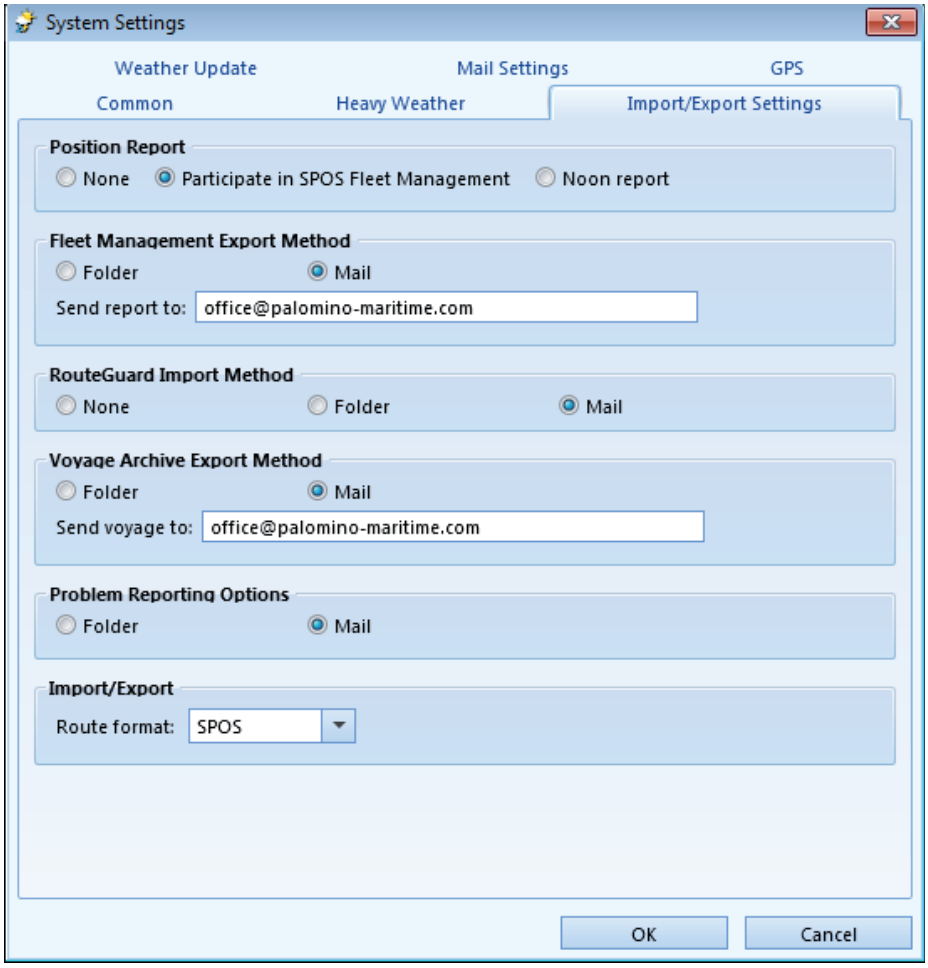
SPOS Fleet Management is a SPOS brand, and works in conjunction with SPOS Onboard your vessel. Vessels can semi-automatically generate data-reports which are sent to your office directly, without a third party interfering with monitoring. The main reason for having this system is to ensure safety and decrease the work load of the captain and his crew, as well as in the office by producing simple and factual reports of the voyage.

The system also helps a Captain and the office to have a better idea of the ships performance and safety while at sea and helps determine a more accurate arrival time.

Depending on your communication setup, you can choose to save the report (SposFleetManagement.sfm) to a folder and send the report manually or to use a MAPI

Noon report

The SPOS Noon report offers a more traditional report to the office by generating a simple text file with the voyage update details. Optionally you can add a Waypoint list in CSV file format (comma separated values).



Depending on your communication set up, you can choose to save the report (SposNoon.txt and SposVoy.txt) to a folder and send the report manually or to use a MAPI link to your e-mail client to send the report directly to a designated office address.

Voyage Reports

In SPOS you are able to import the route advice that you have received from our shore-based routing service RouteGuard (see 7.7 RouteGuard) and to export your completed voyages (see 7.6 Voyage Archive). You can define the settings for import / export functionalities here.

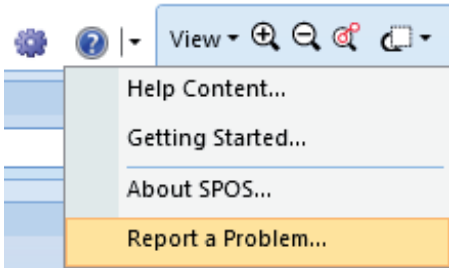
RouteGuard Import Method

When you are receiving daily routing updates from RouteGuard you can import the advice for viewing in the chart and information panels. If you have no MAPI compatible e-mail client you can save the advice manually to the folder specified here. If your e-mail client supports MAPI you may select the option Mail. SPOS will connect to your e-mail client for automatic retrieval and update of the advice every time you press the Import button in RouteGuard box in the Routing Tab.

Voyage Archive Export Method

When you complete a voyage in SPOS, this will be archived and accessible for future use. You can additionally save this voyage as back-up in xml format on your disk. Optionally you can share the voyage details with e.g. your office. The export method can be selected here; Folder or Mail.

Report a Problem



Whenever you encounter a problem with SPOS is it helpful for our support department to receive a report with background information of the SPOS system and its environment. The method of communication can be set here. Please note that we recommend to always include the 'options.db' in the report. This can be selected when using this function whilst the report is generated. This ensures the provision of fast and accurate support.

Import/Export route templates

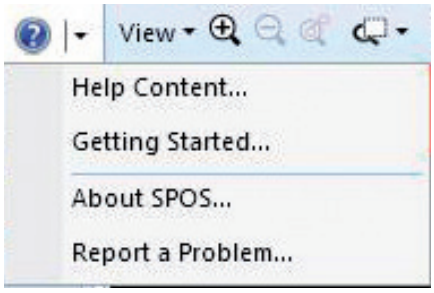
SPOS can import and/or export route templates and voyage templates in different formats. The SPOS option will import / export in xml format. The RT3 option will generate / import route templates from the Transas ECDIS xml format. Note that this is a preference only. Other formats are also possible. Please see chapter 6.1.1. Routes for more information.

3.7 Seakeeping

The additional module Seakeeping can be configured in the System settings tab Seakeeping. Initially only a few parameters are required. Further settings are explained in chapter 8. Seakeeping

4. Help Function

Under the help function in SPOS you will find a droplist with the following items. This chapter explains the four items listed.



4.1 Help Content

Throughout the program you can press function key F1 to get context related help. When you select Help Content the digital manual will open as pdf (portable document format). The pdf file has a bookmark index which you can use to navigate through the different chapters. When you have installed Acrobat Reader to view pdf files you can also use the search function to search for certain words in the document. Search can be activated in Acrobat Reader by pressing CTRL-F or through the menu bar Edit.

4.2 Getting Started

A quick overview of SPOS is given in chapter 1.2 Overview of the manual. Detailed information on all the screens and buttons is available from chapter 5 onwards. You can always press F1 for help from any location in the program.
A routing session in SPOS consists of 3 consecutive steps. The different screens are selected via the tabs above the control unit:

1. first update and display the WEATHER forecast;
2. enter voyage/ship details via the INPUT screen;
3. via the ROUTING screen, various tracks may be calculated and the performance can be compared; then the best route can be selected and the voyage plan can be created and updated.

On each of the 3 screens, a control unit is shown on the left hand side of the screen and the chart on the right. In the control unit, buttons, selectors and edit fields are available for operating the system; most are self-explanatory. Simply click on the desired option and the result is displayed or the required action is carried out.
It is advisable to start using the weather screen first and then to start using the other screens once you get acquainted with the system.

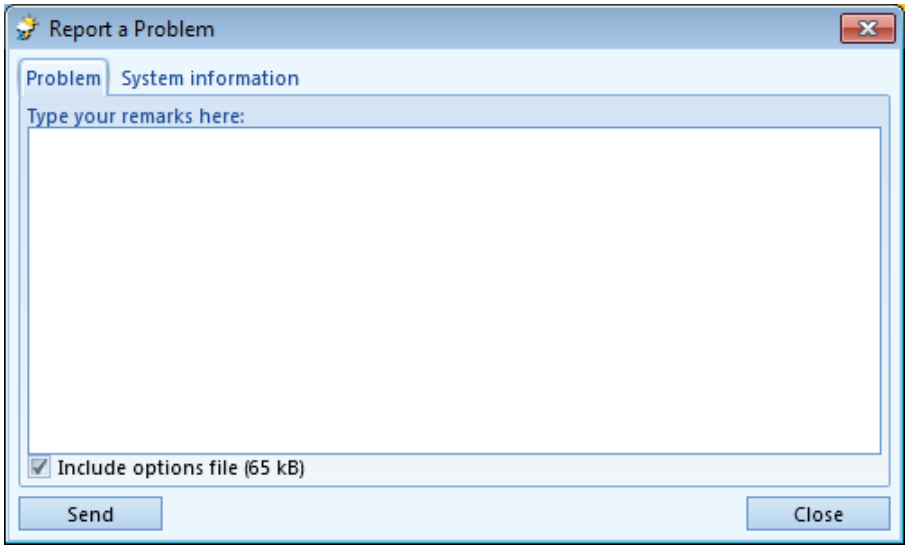
4.3 About SPOS

Latest version and build information on the program can be found here and as well as the registered license information.

4.4 Report a problem

Whenever you encounter a problem we would like to receive a problem report via SPOS. This will enable us to view the settings and configuration closely. You can enter the description of the problem in the space provided. If you include the option file we can offer you fast and focused support. The complete report will then be compressed before you send the file to spos@meteogroup.com.

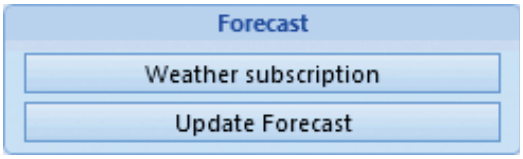
The communication method for the report can be set in the System Settings tab Import/ Export Settings.



5. Weather

5.1. Forecast

The Forecast group box contains the functionality which enables you to select and subscribe to the weather updates.



5.1.1 Weather subscription

Subscribing to a forecast is done in SPOS itself. Select the **Weather subscription** button in the weather screen.

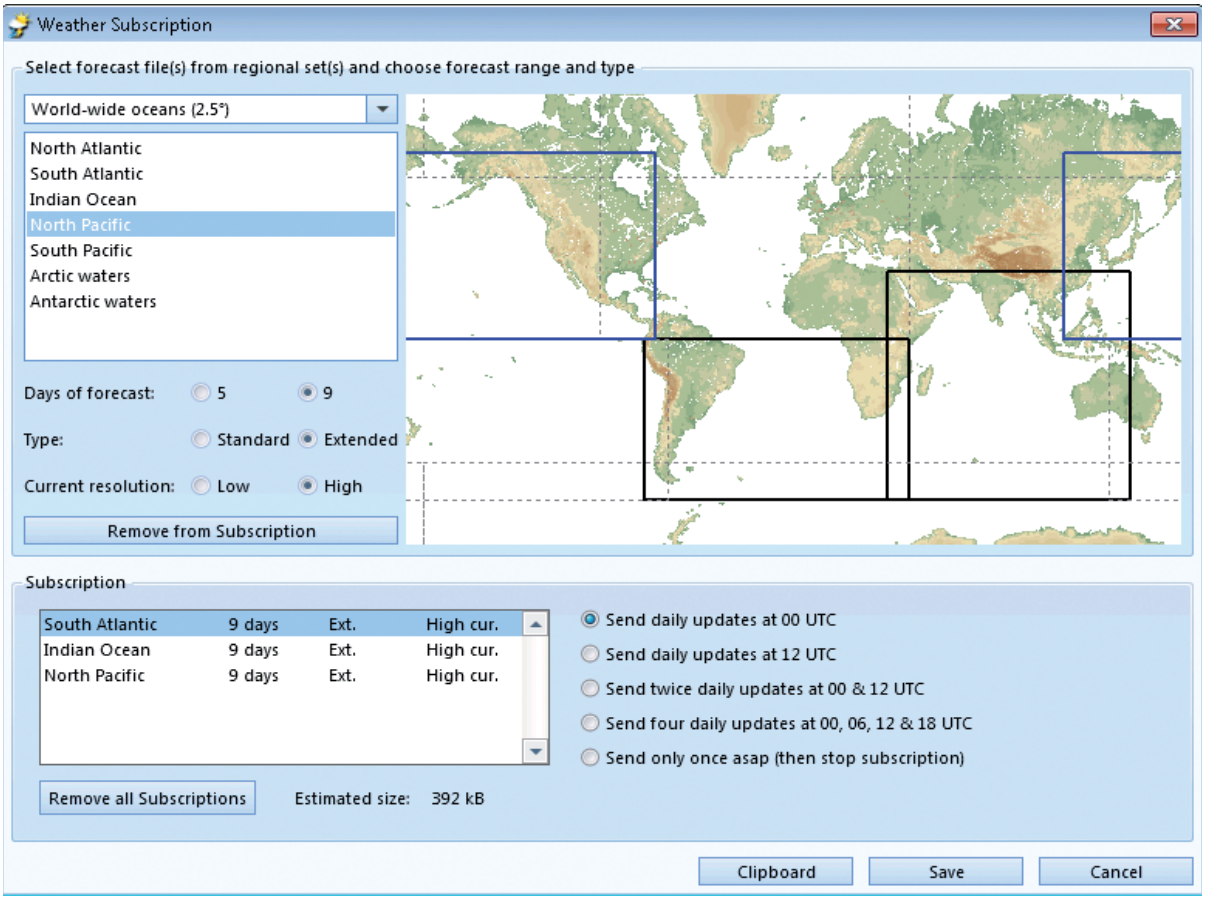
A popup will appear allowing you to select a region from the drop list (the chartlet will show selected region/s) and an area from the list below the drop list.

After selecting the area please choose :

- the forecast range (5 or 9 days),
- the forecast type (standard or extended)
- current resolution (low / high).

Then press **Add to subscription** and the forecast area is listed in your subscription box below. You can add/remove areas.
Then select the update frequency (once / twice / four times daily).

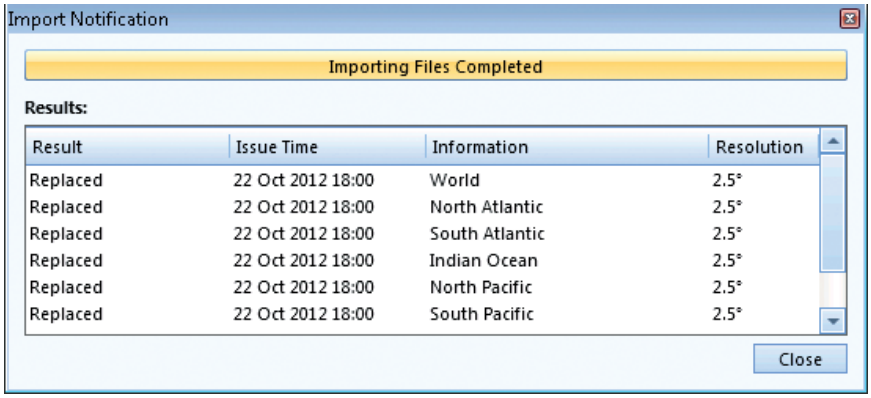
Depending on the communication method chosen you will be given the option to Copy to Clipboard, Save or Submit.



5.1.2 Update Forecast

See section **3. System settings** for options of updating the SPOS weather forecasts via Folder, Mail or HTTP.

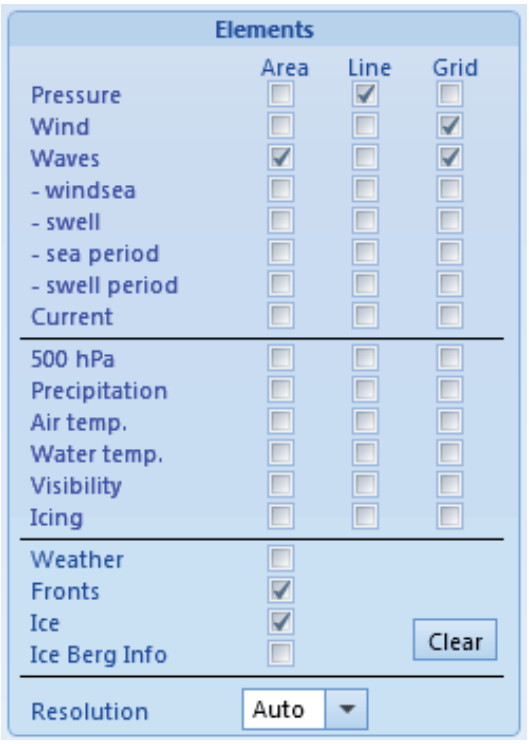
To update SPOS with the latest forecasts available press the **Update Forecast** button. SPOS will use the method specified in the System Settings tab Weather Update to retrieve forecast files and update the system. There will be an Import Notification window shown with the actions performed.



Note that the updates found and replaced / inserted can be older than the current weather forecast. Which forecast is displayed, is controlled in the Source group box on the left side of the screen.

5.2 Elements

The Elements group box controls the display of the weather elements on the chart. In order to display the active weather forecast, select the elements you wish to see on the chart by ticking the checkboxes and the display type; Area – Line or Grid. The information is then shown in the chart.



You can select three display types: **area, line** or **grid/arrows** at the same time.
All weather is removed from the map by deselecting the selected checkboxes or pressing the **clear** button.

The Elements section is divided in three areas; **Standard** information, **Extended** information and **Graphical** elements.

5.2.1 Standard elements

The **Standard forecast** includes: **Surface pressure** in hPa/millibars, **Wind** in knots, (total) **Waves** which is the combined height of wind waves and swell in meters, representing the significant wave height. The total waves are split in **windsea, swell, and their respective period**, each with height, period and direction. The standard set also includes an **Ocean current** forecast in knots.

Current forecast resolution

The current resolution within the SPOS forecast files depends on whether you have selected low or high current resolution within the weather subscription dialogue.

When you have selected low current resolution, the resolution of the current data displayed has the same resolution as the weather data.

When you subscribe for high resolution current, the resolution of the current data will be higher than the weather data: 1 degree for ocean regions and 0.5 degrees for coastal areas.

The standard SPOS forecast contains actual **ice information**; ice concentration and ice berg information.

5.2.2 Extended elements

When you receive an **Extended forecast** (which also includes all standard elements), the Extended checkboxes will be available. Now you can also select the extended weather elements such as 500mb charts, weather, precipitation, air/sea temperatures, visibility and risk of icing.

The display of standard and extended elements may be combined. When you subscribe to a Standard forecast, the checkboxes of the Extended elements are disabled.

The following extended elements are available:

- 500hPa height in meters
- risk of precipitation (in %, not the amount!)
- air temperature in degrees Celsius
- water temperature in degrees Celsius
- visibility in 5 classes (shades of grey): good (5+nm), mod/gd (3-5nm), moderate (1-3nm), mod/pr (0.5-1nm), poor (<0.5nm)
- risk of icing in 5 classes (shades of ice blue) : none, light, moderate, severe and very severe

5.2.3 Display type

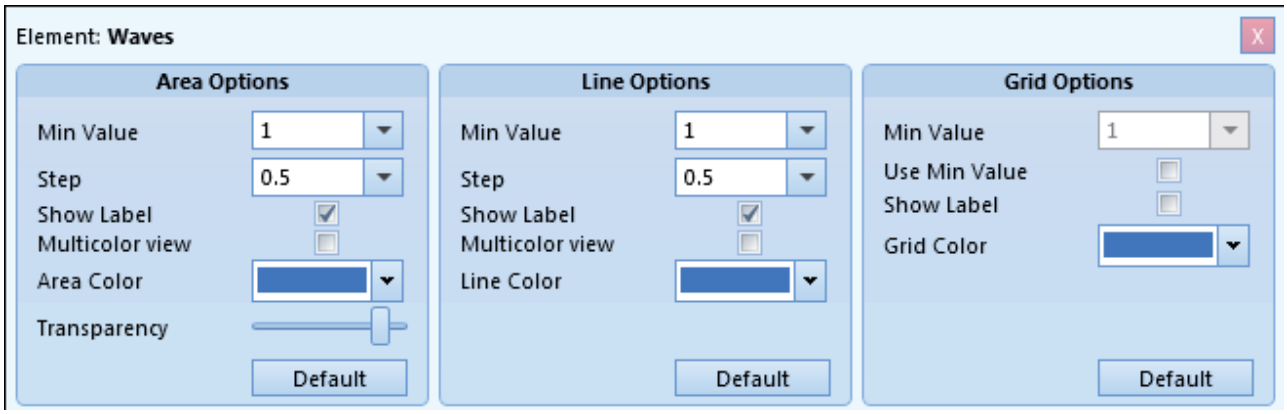
You can select the display types within the elements group : **Area, Line or Grid**. These will then be in the chosen display type illustrated in the chart.

5.2.4 Display options

By clicking on the name of an element you can set the display parameters per display type and per weather element.

For each element you can choose a Step or Minimum Value, show Labels and apply Color. All weather elements for each display type can be restored to default values separately by use of the Default button.

The Area Option will allow you to set the **Transparency** of the color.
For elements Waves and Current you may also select a **Multicolor view** for Area and Line display which will allow you to easily detect the attention areas for that element.



5.2.5 Graphical elements

Graphical elements include fronts, weather information, ice concentration and ice berg information.

5.2.5.1 Weather

SPOS extended forecasts display graphically weather elements such as fog, drizzle, rain, freezing rain, snow, rain shower, snow shower, hail and thunder. These are displayed using the following symbols: 

5.2.5.2 Fronts

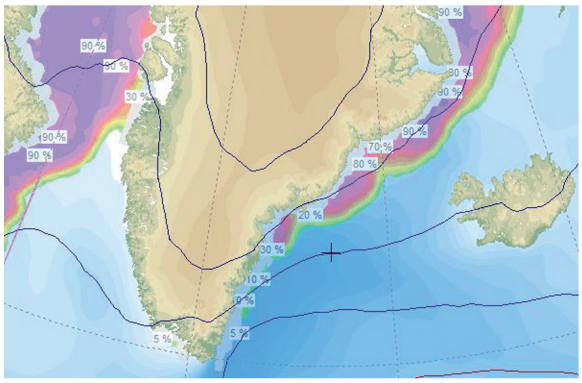
SPOS standard forecasts include automatic fronts for the first 108 hours of the forecast. The cold fronts are plotted in blue with triangles indicating the direction of the front, warm fronts are plotted in red with semi-circles and occluded fronts are displayed in purple with both triangles and semi-circles. Fronts are displayed for the first 24 hours with an interval of 6 hours, after that with an interval of 12 hours.

5.2.6 Ice Information

SPOS features improved ice information in 10 ice concentration levels and ice berg information. The information can be used to set restrictions on each level.

5.2.6.1 Ice (concentration)

Ice concentration is featured in SPOS in 10 different levels. Each level is displayed in a different color and can be set as restriction in the **Input** screen.
For the identification of the Ice Concentrations SPOS uses colors and each color represents the concentration level as shown in the table below:



	GREEN	5-9 %
	LIGHT GREEN	10-19 %
	YELLOW	20-29 %
	SAND	30-39%
	BROWN	40-49%
	BROWN/RED	50-59%
	ORANGE	60-69%
	RED	70-79%
	PINK	80-89%
	LILA	90-100%
	GREY	UNDEFINED

5.2.6.2 Iceberg info

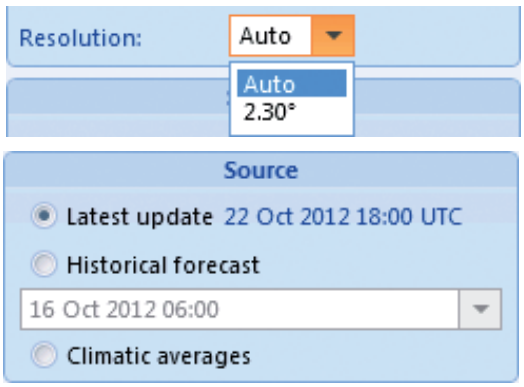
In the North Atlantic the outer iceberg limit is displayed, in the southern hemisphere there is detailed information on the largest icebergs available.

Please note that this information is only displayed and will not be used in routing calculations. Always check other (local) sources of information for the latest warnings.

5.2.7 Resolution

SPOS forecasts are available in different resolution types, 2.50 degrees for ocean areas and 1.00 degree for coastal areas. When different sets of resolution are available you can set the resolution via the drop down list to:

- Auto: will display data in best available resolution (default)
- 1.00: will display only the 1.0^0 data
- 2.50: will display only the 2.5^0 data



5.3 Source

SPOS has three sources of weather Information which can be selected through the options in the Source group box.

- Latest
- Historical
- Climate

Latest: will display the most recent forecast available in the database. The issue time is displayed directly beside the radio button.

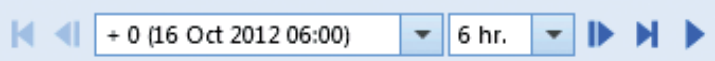
Historical: will enable you to review older forecast files available in the weather database.

Climate: will display climatic averages for a specific month.

Although the selection of elements to be displayed from the SPOS weather files is controlled in the Weather screen, the information will also be displayed in the Input and Routing screen. The interval and time step can be changed / set using the controls in the tool bar above the chart.

The interval can be set in steps of 1 – 2 – 3 – 6 – 12 or 24 hours.

The time steps can be chosen via the drop-down list or controlled via the multimedia buttons found on either side of the Valid Time Selector.



With the multimedia buttons you can go through the forecast step-by-step or play an animation. The animation speed can be set separately when animation is activated.

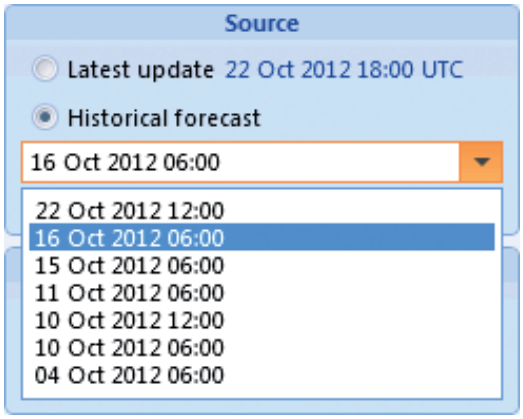
Note that all forecast times are in UTC. Forecasts are originally delivered in 12-hourly time steps for oceans and 6-hourly steps for coastal waters. Intermediate time steps will be calculated via interpolations, it does not make the forecast more accurate.

5.3.1 Latest update

The most frequently used function is the latest update. The date and time of this update is displayed here automatically.

5.3.2 Historical forecast

Whenever you update the weather the older forecast(s) will be archived. You can review the archived weather forecasts by activating the Historical forecast option and then selecting the historical date. You can control the number of days to archive in the System Settings tab Weather Update.

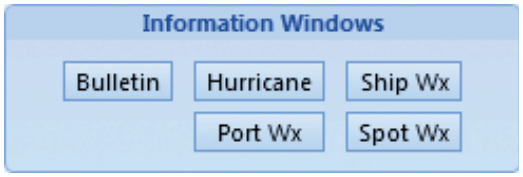


5.3.3 Climate averages

SPOS is equipped with a climatic database. This will include only standard elements and averages for each month of the year.

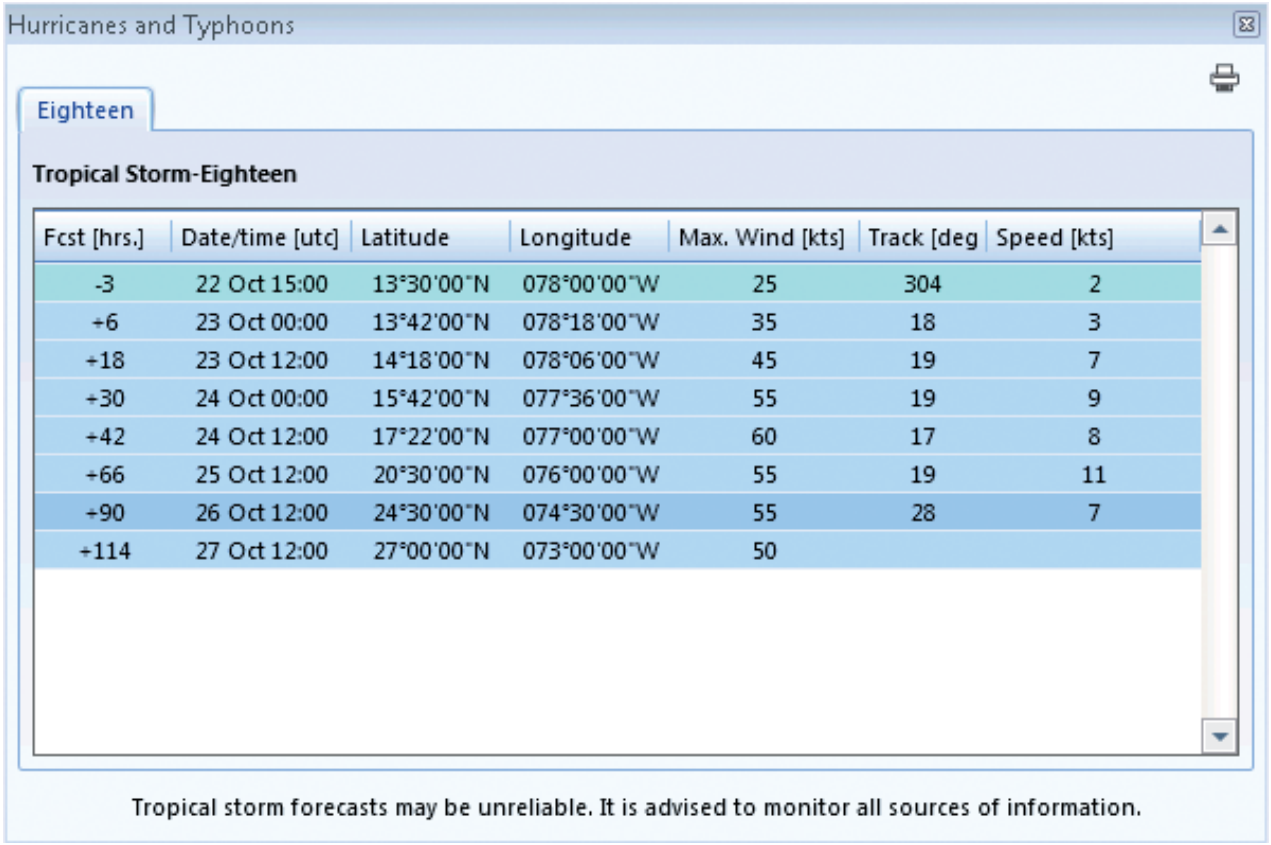
5.4 Information Windows

Some information can be shown in additional windows and/or tables when available.



5.4.1 Hurricane

The hurricanes, typhoons, tropical storms and depressions are displayed on the chart, but it is also possible to display detailed information about the track, movement and wind speed. When pressing the Hurricane button, the following table is displayed:



Fcst [hrs.]	Date/time [utc]	Latitude	Longitude	Max. Wind [kts]	Track [deg	Speed [kts]
-3	22 Oct 15:00	13°30'00"N	078°00'00"W	25	304	2
+6	23 Oct 00:00	13°42'00"N	078°18'00"W	35	18	3
+18	23 Oct 12:00	14°18'00"N	078°06'00"W	45	19	7
+30	24 Oct 00:00	15°42'00"N	077°36'00"W	55	19	9
+42	24 Oct 12:00	17°22'00"N	077°00'00"W	60	17	8
+66	25 Oct 12:00	20°30'00"N	076°00'00"W	55	19	11
+90	26 Oct 12:00	24°30'00"N	074°30'00"W	55	28	7
+114	27 Oct 12:00	27°00'00"N	073°00'00"W	50		

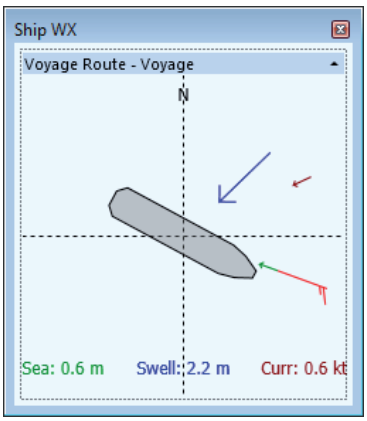
The historical track of the hurricane is shown in green, the forecasted track in blue. Latest hurricane information is featured in the SPOS weather updates every 6 hours (00, 06, 12, 18 UTC).

Please note that hurricane forecasts could be less reliable than regular weather forecasts. Other hurricanes (when present) may be selected via the tabs above the table. Via the print option a pdf file of the table is generated which can be printed and/or saved.

5.4.2 Ship Wx

The Ship Wx button is only enabled when a voyage is active or when a route has been calculated. With this toggle button, you can display or remove the ship weather window on the screen. For each calculated route SPOS will create a window which can be moved and closed individually.

While the vessel will indicate the course, the arrows indicate the weather impact relative to the vessel.



The height of the waves and the current speed are plotted at the bottom of the impact display.
When you step through the forecast periods, the weather data in the impact window is also updated.
The vessel's position is plotted in the chart, indicated with circles.

5.4.3 Port Wx

When extended weather is available, you can create a port weather forecast in SPOS. Default the port weather will be shown for the position of the center of the chart. Alternatively you can select a port from the port list in the toolbar above the chart.
The weather At Sea is available when nautical information is present (position is at sea).

Port Weather for Selected Port or Center of Map

Port Weather | At Sea

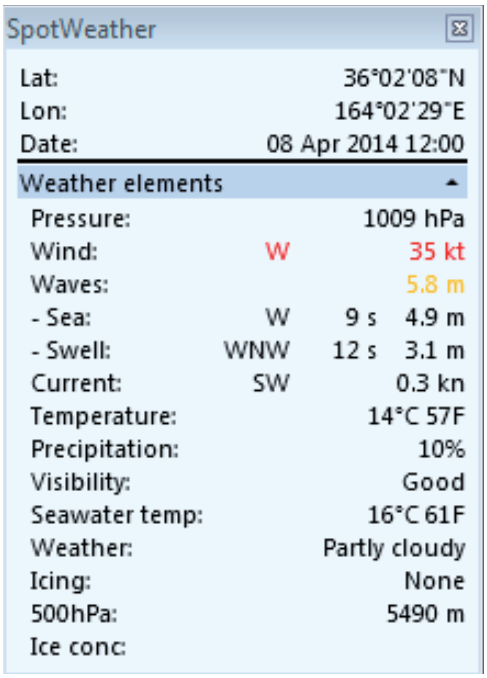
Date Local Time	Mon 22 Oct 19:00	Tue 23 Oct 07:00	Tue 23 Oct 19:00	Wed 24 Oct 07:00	Wed 24 Oct 21:00
Weather					
Description	Clear	Clear	Clear	Clear	Clear
Temperature	18°C 64F	19°C 66F	20°C 68F	21°C 70F	23°C 73F
Precipitation	0%	0%	0%	0%	1%
Wind (Bft)	WNW 4	WSW 4	SW 4	SW 4	S 4

5.4.4 Spot Wx

With the SPOT WX toggle button, you can numerically display all weather elements at the mouse position. Move the mouse over the chart and you will see the spot weather forecast in a window in a corner of the chart.

The displayed data is valid for the same time as set for regular weather display. The colors represent your set 'warn' and/or 'avoid' criteria. (See Chapter Input how to configure these criteria). Red color means that your limit is exceeded for the chosen location and time. Orange means that the limit is almost exceeded (above 75% of your limit). You can fold and unfold the weather and/or motion elements by clicking on the small triangles.

The spot condition display is cancelled by clicking on the SPOT WX button again.



5.4.5 Bulletin

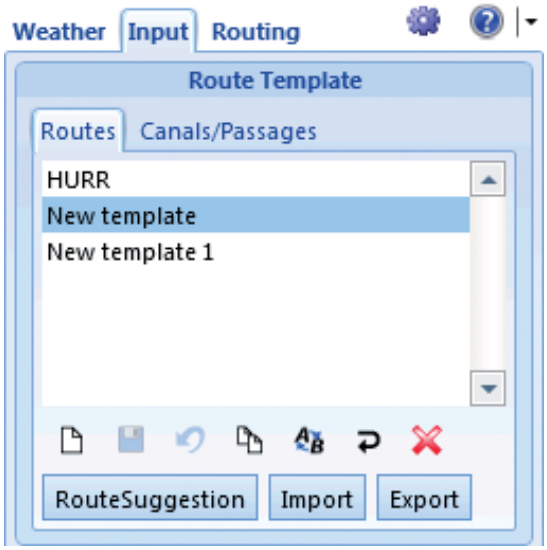
MeteoGroup may decide to add a text bulletin to the forecast. This may be used to inform you about deviations in the forecast or for any other reason believed to be relevant for SPOS or your operation. On most days however there will be no bulletins present.
In the case where the bulletin is present it will be displayed automatically when the weather forecast is updated, and will also be available via the bulletin button.

6. Input

6.1 Route template

6.1.1 Routes

In SPOS, route templates can be made, consisting of a list of fixed waypoints. The route definitions are saved and can be modified at all times.



Create a new route template

When pressing the new template button a prompt will appear requesting a name for the route. You may then create a route by mouse click in the chart, finishing with double click. Alternatively you can enter the waypoints manually by pressing the **Manual Input** button. Close the editor after entering the last waypoint.

Save a template

You can **save** changes to the route template by pressing the SAVE TEMPLATE icon. By pressing the UNDO TEMPLATE icon you can discard all changes made to the template since the last save.

Copy a template

A route template can be **copied** to a new template e.g. to review possible alternatives without having to edit in the existing template. Route templates may also be renamed.

Reverse

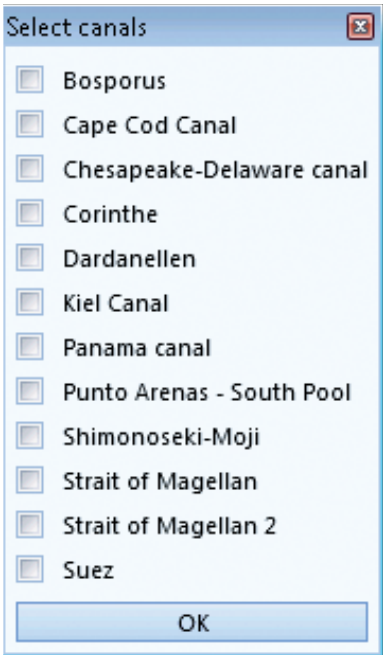
The waypoints of the selected route may be **reversed**. Departure and destination, but also intermediate waypoints are placed in a reverse order. This option may be useful when making a return trip.

Delete a template

With the DELETE TEMPLATE icon routes may be removed from the database. Please note that this cannot be undone.

Request a Route Suggestion RouteSuggestion

SPOS is able to suggest intermediate waypoints within a route template.
Route Suggestion will prompt you for possible **Canals / Passages** to be used.
By preselecting canals (like Suez Canal) the suggestion will take predefined passages through those channels into account and when appropriate suggest a route template using the selected channel.
You may create your own passages which also will be considered.

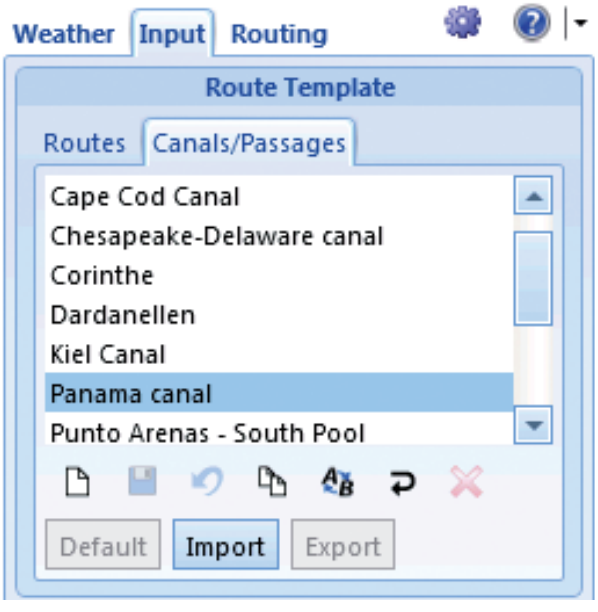


Export a route Export

In SPOS 8 you can import and export routes in different formats depending on your requirements. In the System Settings tab 'Import / Export Settings' you can select a default format. Please refer to the information on this subject in chapter **3.6 Import / Export Settings**.

6.1.2 Canals / Passages

The tab canals / passages allows you to select and / or define a canal passage along your route. The canals / passages can also be used to insert predefined passages in existing route templates. Note that is extremely useful for traffic separation schemes.



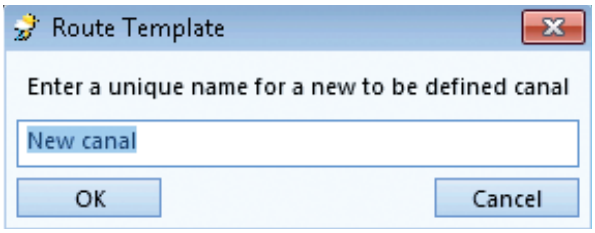
The same function buttons are shown along the bottom of this window. This functionality is outlined in the table 6.1.1.

SPOS comes with some predefined canals and passages. These can be edited as usual in the waypoint information panel below the chart.

Once a template is edited by the user it can be restored to the original by selecting the passage template and pressing the Default button.

Import
To import a passage SPOS will allow these formats:
- SPOS route template xml
- Various third party formats, Transas, NavMaster, E-Navigator, TGNS Voyager, SPERRY Marine.
- Simple text format

6.1.3.1 New
Create a new canal / passage with a unique name and at least two waypoints.



6.1.4. Route template waypoint table
At the bottom of the screen you will find a table / window showing detailed information about the route template.
In the WP table for each numbered waypoint the name, latitude and longitude and track type are given.

They are also displayed in the table as in the chart with a coloured flag which show the following;
- GREEN flag, the departure waypoint.
- BLUE flag, intermediate waypoint.
- RED flag, the destination waypoint.
- GREY flag, a WP calculated by Route Suggestion.

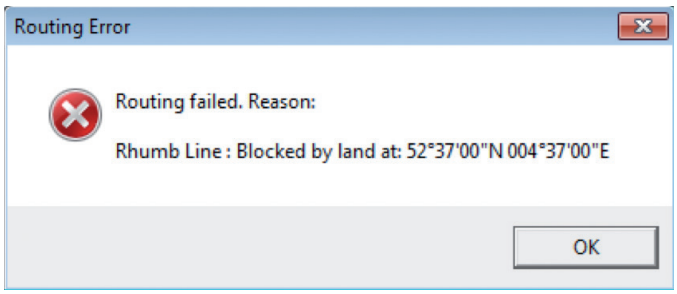
6.1.4.1 Edit Operations
Select a waypoint → Click on the waypoint in the WP table or directly on the waypoint in the chart. In the chart the selected waypoint is marked with a square.

Move a waypoint → Select the waypoint in the chart and use the drag & drop function to move the waypoint to the desired position. Alternatively you can select the waypoint in the chart, press the CTRL-key down while clicking in the chart on the desired position.

Insert a waypoint → To insert a waypoint select a waypoint in the chart. Now by pressing the keyboard INSERT you will insert a waypoint after the selected waypoint. With right mouse click a menu will be available, here select Insert to add a waypoint before the selected.
Alternatively you select a waypoint in the chart, press the SHIFT-key down while clicking in the chart on the desired position and the waypoint will be added before the selected.

Modify a waypoint→ If you want to make changes to a waypoint, double click this in the waypoint edit table.

Ignore Land check box



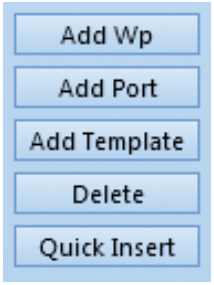
Calculating a route might result in an error message 'blocked by land'. This will be indicated in the chart with a red arrow and in a pop-up the coordinates are given.
SPOS is not meant to be used as a definite navigation tool, the bathymetry used in the calculations will vary from admiralty charts and ECDIS charts. Therefore the routing calculation will occasionally be blocked by land. It is possible to 'ignore land' in order to calculate your whole route and as a result check your weather forecast.
To do so take the following steps:

- INPUT: use extra waypoints in the route segment where the route is blocked by land. This way the Routing error might be solved.
- ROUTING: start a calculation to see if and where the route, between which wp's, is blocked by land.
- Check in your navigation software the safest route in this passage.
- Manually add wp's to your template in the INPUT screen; use SHIFT+click in the map, via the Add Wp button or Quick Insert button beside the waypoint table.
  Note that you can drag and drop the new wp's to the desired position.
- Start a new calculation to see where the calculation in the new route template will be blocked by land.
- To avoid this Routing error and to complete your route template make sure to check the checkboxes in the column Ignore Land (in the table in the INPUT tab) for the track segments concerned.

	Wp	WP Name	Latitude	Longitude	Distance [nm]	Delay [hrs]	Speed [kts]	Track	Ignore Land
	1	wp-1	52°29'32"N	004°27'35"E	1.6	0	Input value	Rhumb Line	
	2	wp-3	52°58'14"N	004°42'32"E	30.1	0	Input value	Great Circle	
	3	wp-5	52°58'52"N	004°46'05"E	2.2	0	Input value	Great Circle	✓
	4	wp-4	52°59'10"N	004°51'13"E	3.1	0	Input value	Great Circle	✓
	5	wp-0	52°56'59"N	005°02'41"E	7.3	0	Input value	Rhumb Line	✓

Now you are able to calculate your route.

For recurring passages, pilot approaches and TSS schemes you can use the Canal/ Passage template function. This way you can save a passage and add this to your route template with the Add Template button. Template created under the Canal-Passages feature will have the ´Ignore land´ flag as a standard.



6.1.4.2 Add Wp

Allows you to add a waypoint before or after the selected Wp.

6.1.4.3 Add Port

Add a port before, after or convert a waypoint that you have selected.

6.1.4.4 Add Template

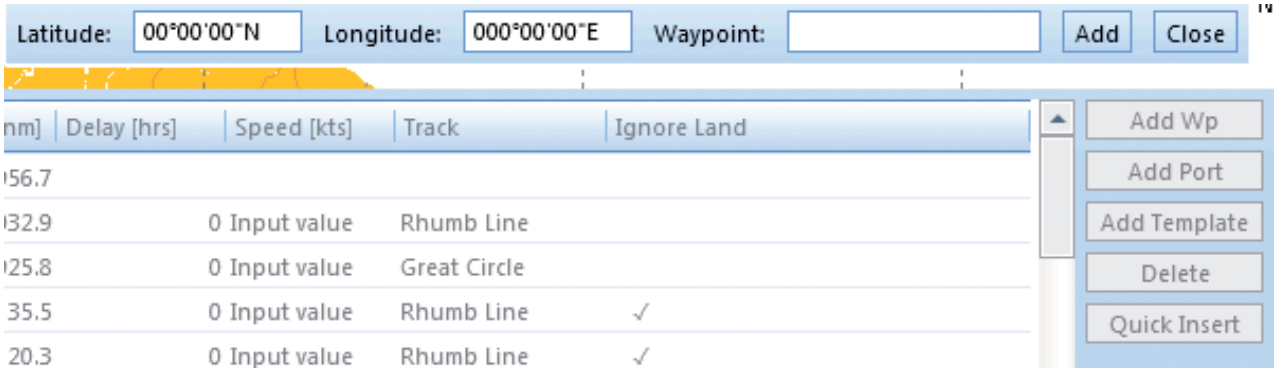
Add a template before or after the way point that you have previously defined.

6.1.4.5 Delete

Deletes the selected waypoint. Note that a route template consists of a minimum of 2 waypoints, the departure and destination position.

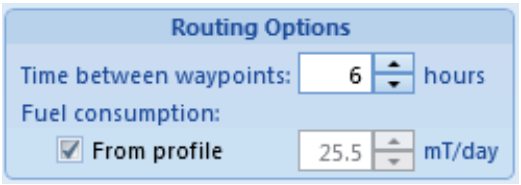
6.1.4.6 Quick Insert

The Quick Insert allows you to easily add positions into a new template or into an existing template. The Add button will only be enabled when a name for the waypoint has been entered. Your amendments will be saved by pressing Close. Within this feature you can use the “TAB” button to jump from and between fields.



6.2 Routing Options

In this group box you can set the parameters to be considered when calculating routes.



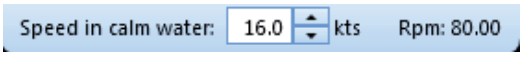
6.2.1 Time between Waypoints

When SPOS calculates a route this is done with fixed time intervals (Time between waypoints) in order to determine the weather and speed of the vessel on each section. In the output of the route, calculated waypoints are placed between the fixed waypoints such as given in the route template. You may select a value between 1 and 24 hours. Most commonly used are 4,6,12 or 24. For optimum route calculations, a short interval is better for navigating through small passages.

6.2.2 Fuel Consumption

The average fuel consumption which will be used for calculations can be set as a static figure. SPOS will then calculate your fuel consumption according to the total voyage time. To fine-tune the fuel calculations can define the consumption in a Profile. When this option is chosen SPOS will calculate your fuel consumption relevant to your speed.
NB: Please note the fuel curve is based on good weather conditions only.

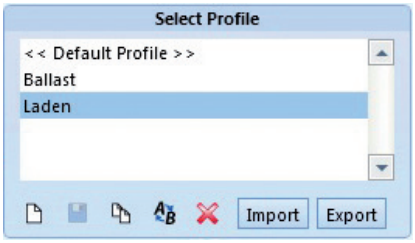
6.2.3 Speed in Calm Water

In the speed-rpm box on top of the chart 

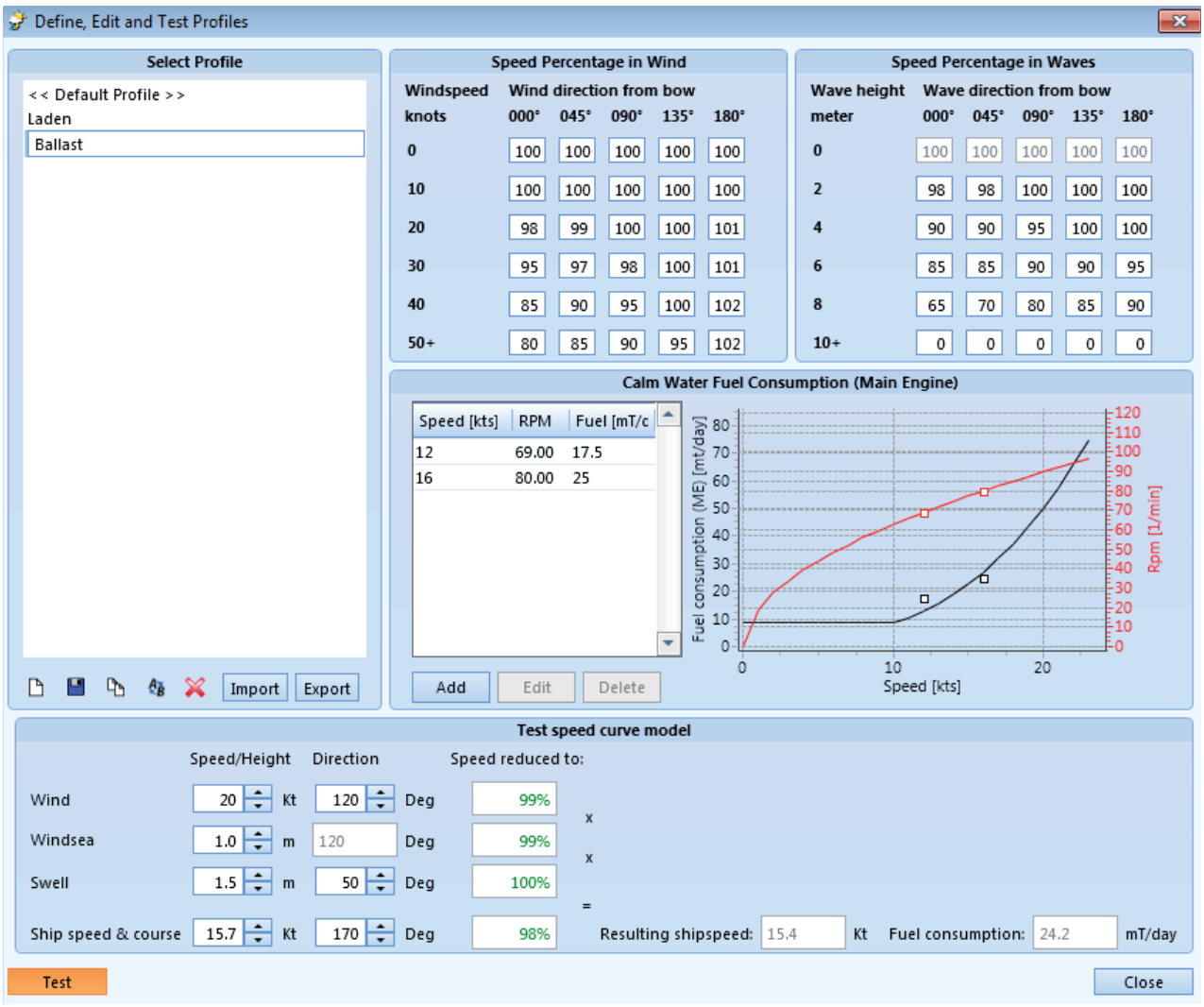
you can enter your speed depending on loading conditions, trim, hull fouling and engine settings. Alternatively SPOS uses a speed calculation model. This model is based on a speed in calm water and a reduction factor due to wind and waves. The reduction factors are defined in profiles.

6.3 Profile

In the profile group box you can select to use the default profile or define your own.



6.3.1. Select Profile



The profile defines the speed reduction of a vessel due to wind and waves and the calm water fuel consumption. The speed in calm seas is used as a 100% speed and for different wind and wave conditions, a reduction percentage is applied.

SPOS comes with a default speed reduction table, which is a very general reduction curve. It is important to define a curve for your ship and possibly for different ship conditions (e.g. laden, ballast, with deck cargo, sensitive cargo). Each time you calculate a route, you can select the appropriate profile from the list.

You can always **DELETE** or **RENAME** profiles except for the default profile. To share profiles with your colleagues and/or office you may save/import them in xml format. When you select a profile in the list (left), the curve values are displayed on the right in two square sections:

Speed Reduction due to wind - Speed reduction due to waves (applied to windsea and swell).
In each section, combinations of direction and speed/height are given. You can enter a reduced speed from 0% to 150% (in most cases the speed will not exceed 100%).

Example1:
Assume a speed in calm seas of 20 knots. Waves of 6 meters high are coming from the bow (=000° from bow) may result in 85% of the speed in calm seas being 17 knots.

Example2:
Assume a speed in calm seas of 20 knots. A wind speed of 40 knots coming from port-side (e.g. 045° from bow) may result in 90% of the speed in calm seas being 18 knots.

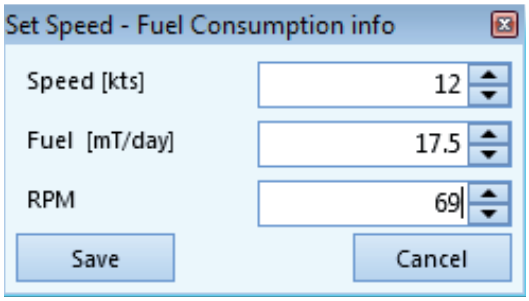
The combination of example 1 and 2 is 85% * 90% is about 76% of the speed in calm seas (15.3 knots).

Since the speed model is relatively simple, it can be maintained and fine-tuned on board. For better understanding and fine-tuning, the speed curve window has a TEST button. When clicking on this button, the window is extended with a test window where you can enter wind/wave and ship conditions.

One can fine-tune the model by entering the actual weather conditions and checking the resulting ship speed with the actual speed of the ship. Now modify the percentages until the correct speed is reached.

The test window is removed by clicking on the **TEST** button again. The profile model window is closed by clicking on the **CLOSE** button.

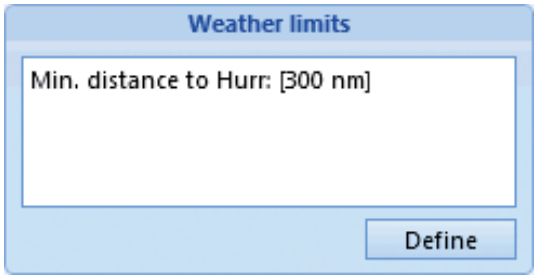
6.3.2 Calm Water Fuel Consumption

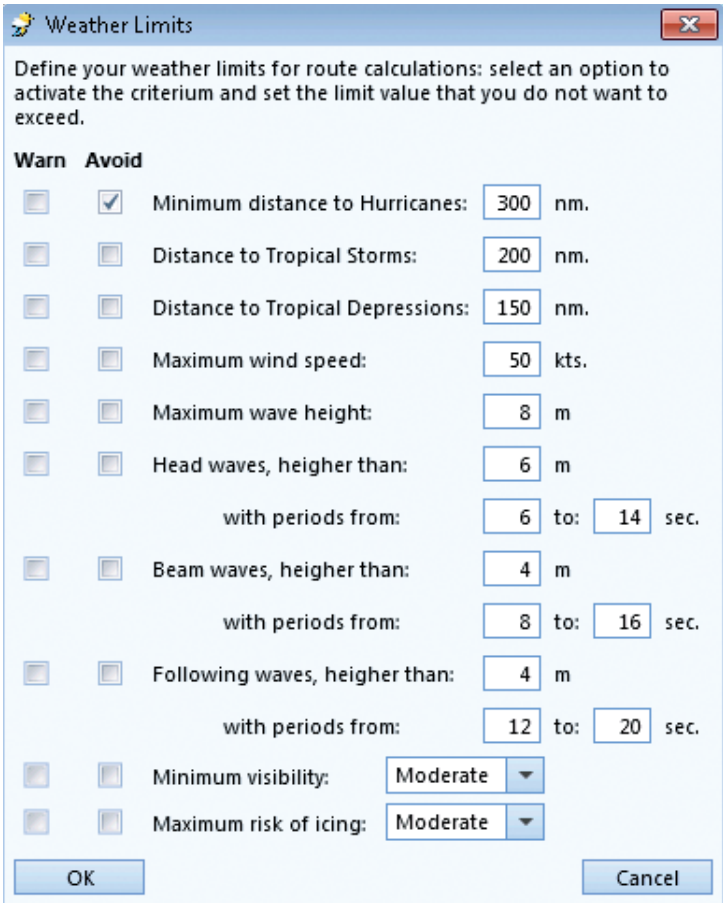


The Calm Water Fuel Consumption which will be used for calculations if set in the Routing Options can be defined here. Enter relevant consumption, RPM and speed in the table. The profile will be graphically displayed on the right. When you use the test function a fuel consumption value is calculated to be compared to actual consumption. Provide several inputs to create a good curve for both fuel and RPM.

6.4 Weather Limits

You can define a number of weather limits for a route calculation.
Avoid weather limits (optimum route will search for alternative routes)
Warn, the routes calculated will exceed weather limits but you will get a warning.





Please note that the three tropical system warnings are interlinked in such a manner that if you set the parameter of a tropical depression to **Avoid** this will also apply to the more severe categories tropical storm and hurricane. This will also apply for the minimum distance you can set for each phenomenon.

When selecting Minimum visibility and / or Maximum risk of icing please make sure that these elements are included in the forecast (extended elements).

6.5 Restrictions

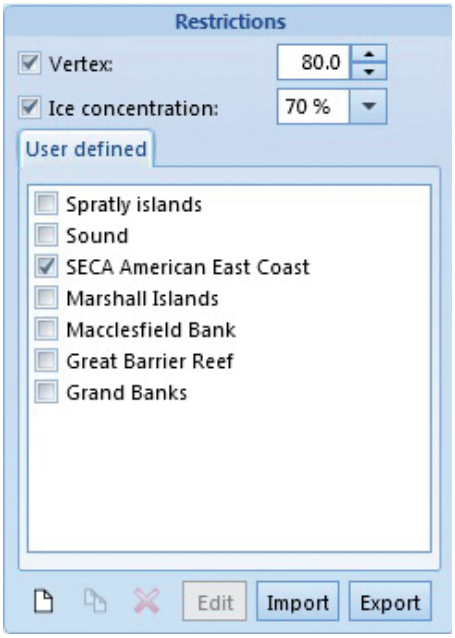
You may restrict certain areas from navigating. This is useful for avoiding certain areas because of environmental constraints (e.g. ice edges as provided by MeteoGroup) or a vertex maximum latitude. You may also draw restriction areas in the chart in accordance with your personal preferences.

Restrictions may be imported from these formats:
- SPOS restriction xml files
- Simple text format

To edit the positions of the restriction points double click these in the chart.

6.5.1 Vertex

The vertex maximum is set here in degrees. When set, the great circle and optimum calculations will switch to a rumb line course when reaching the vertex, and back to great circle when reaching the next intersection at an optimized position making the total distance sailed shorter. This will result in shorter sailing time and therefore in better ETA and less fuel consumption.



6.5.2 Ice Concentration

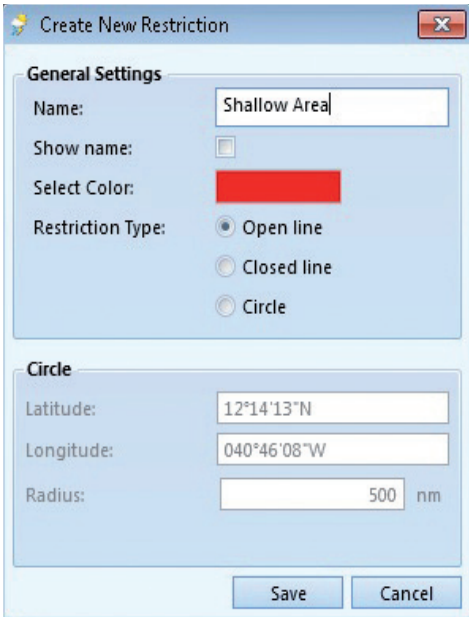
Ice concentration is featured in SPOS in 10 different levels. You can set a maximum level that will be used as restricted area when routing. This is indicated by a black line around the ice concentration level. When activated this line will be visible whether the ice information in the Weather screen is selected or not.

6.5.3 User defined Restrictions

You may also draw restriction areas on the chart in accordance with your personal preferences.

Press the NEW button for creating a user defined restriction and enter a name identifier in the space provided.

There are 3 types of restrictions available: **Open line, Closed line, Circle**



The **Open Line** restriction will draw a line with 2 points in the center of the chart. You can add more positions by selecting either point and clicking while holding the **SHIFT** key down. Inserted points will precede the selected point.

The **Closed Line** restriction will also draw a 2 point line in the chart. However, when adding extra positions the restriction will automatically be closed connecting first and last position.

The **option Circle** will create a circular restriction. You will be given the option to enter the center position and radius of the restriction. The radius can be edited or changed by dragging the edge.

In the list box, all available restrictions are shown. A restriction is (de)activated by clicking on the square box before the name.

Activated restrictions are displayed on the map and when calculating routes, it is not possible to cross/enter those restricted areas.

7. Routing

7.1 Route Template

From the drop down list in the Route Template group box, you can select a route template for routing calculations. There are two types of templates;

- Voyage template
- User defined route templates.

When selecting a regular route template you will have the opportunity to enter the **Departure time** that will be used for calculations.

In cases where you already have an active voyage and have selected this voyage route template, the Voyage group box will be available.

7.1.1 Voyage route

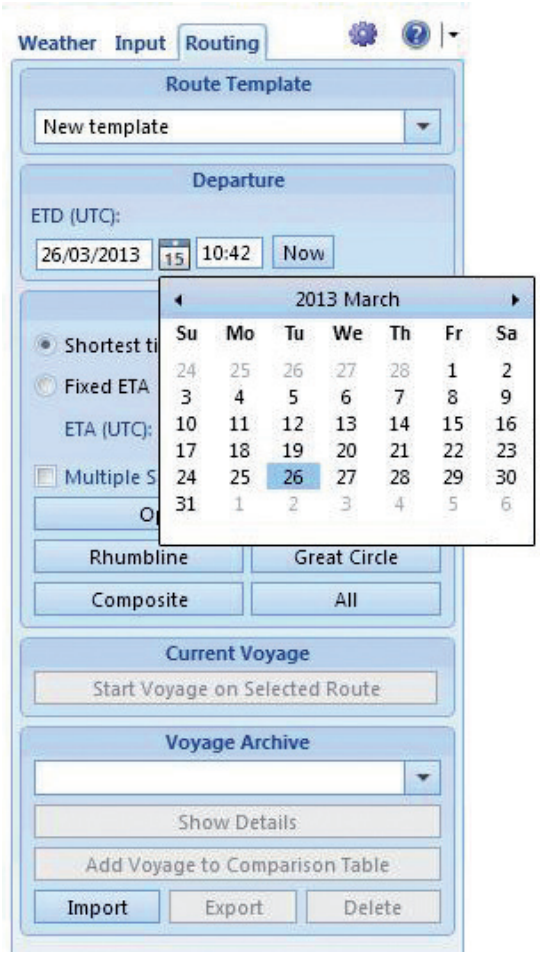
The voyage route will appear once you have started a voyage. The voyage template is a copy of the route template used to create the voyage. The voyage template ensures that template changes in the voyage template (due to the daily updating process) will not automatically effect the original template.

7.1.2 User defined route templates

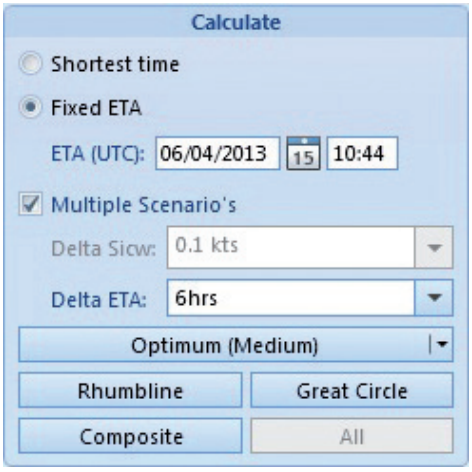
When there is no active voyage you may select a route template from the drop down list to be used for calculations.
This is also possible when there is an active voyage but you will have to switch back manually to the voyage route template for your daily updates.

7.2 Departure Time (time at first waypoint)

Here the operator can enter the departure time for the new route calculation. The time is always connected to the first position (departure) of a route. The date is edited by clicking on the date and entering the new value via keyboard or via the calendar function.
The time is edited by clicking on hour or minute and entering the new value via keyboard or with the keyboard navigation keys (arrow keys).
With the NOW button, the actual time of the PC is set as the departure time. Note that all times in SPOS are in UTC !



7.3 Calculate



SPOS offers two alternatives for route calculations;

- Shortest time
- Fixed ETA

Both calculation types can also be performed with a Multiple Scenario option;

- For the Shortest Time option with different Speed in calm water (sicw)
- For the Fixed ETA option with different arrival times around the Fixed ETA

7.3.1 Shortest time

The shortest time calculation will route you to your destination with the speed in calm waters as set in the Input screen or the input speed as set in the waypoint table, taking into account the weather circumstances and weather limits.

7.3.2 Fixed ETA

The Fixed ETA option will calculate routes taking into account the desired ETA of your destination. You can set the ETA in the Calculate group box. Please note that the algorithm will allow some time as a safety margin.

7.3.3 Multiple Scenario's

This option will allow the user to do scenario planning. When selected, SPOS will calculate multiple scenario's, based on the chosen method of routing (Rhumbline /Great circle, Composite or Optimum). This provides the user attractive alternatives to estimated fuel consumption as defined in the Speed/Fuel consumption curve (Profile). With Scenario planning it is possible to create a route advice and several alternatives (based on the same routing method). The calculated routes will vary from the best route and can therefore experience different weather conditions and consume a different amount of fuel. The calculated alternatives will be shown in the chart with details presented in the comparison grid below the chart.

To create alternative routes, the user needs to select a routing variable to be considered. Depending on the selection Shortest time or Fixed ETA the user may enter a variable for either SICW or ETA. The maximum variation of SICW is 1.0 kts, with steps of 0.1 kts. The maximum variation for ETA is 48 hrs, with steps of 6 hrs.

Multiple Scenario planning will calculate one standard route and 3 alternatives with the delta that was selected.

For Shortest time
- based on SICW (from the Input tab, Routing options, Speed in calm water)
- based on SICW plus the selected variable
- based on SICW minus the selected variable
- based on SICW minus twice the selected variable

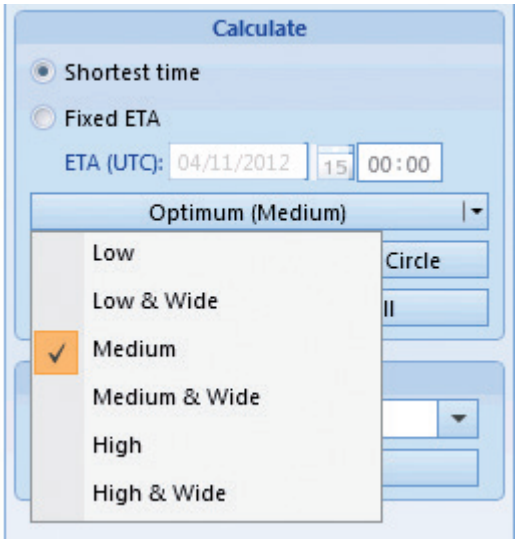
For Fixed ETA
- based on Fixed ETA (from the Routing tab, Calculate, Fixed ETA)
- based on Fixed ETA minus the selected variable
- based on Fixed ETA plus the selected variable
- based on Fixed ETA plus twice the selected variable

The results can be reviewed in the Comparison information panels below the chart. Note that you can choose to list the results in the table in ascending or descending order from every column by clicking on the header.

IMPORTANT
When you select a multiple scenario calculation as your voyage template, make sure that you adjust the Speed In Calm Water in the Input screen or the Fixed ETA time in the Routing screen depending on the chosen calculation method.

7.3.4 Optimum calculation

An optimum route calculation is not bound by restrictions such as the shortest distance or a fixed course. When started, the program calculates routes with different initial courses for 'time between waypoints' hours. For each arrival position, new sections are calculated with different courses. On each section, the weather is determined, weather limits are checked and the speed is calculated.
When reaching the destination, the fastest route (out of thousands calculated) is selected as the optimum. The route is plotted and status information is displayed in dark blue.



The optimum route button has a special option via the drop-down arrow next to the optimum button. From the drop-down list, a selection for the type of optimum calculation can be made. You can select one of three accuracy options:

- LOW: initial courses are 5 degrees apart
- MEDIUM: initial courses are 3 degrees apart
- HIGH: initial courses are 1 degree apart

All three accuracies can be selected with the extra option WIDE which means that the number of initial courses is doubled and an extra wide waiver of courses is created.

The wide option is especially useful in areas with land/sea restrictions (e.g. from North Sea to America) or when a significant detour between departure and destination has to be made (e.g. around Australia).

Route calculation will be performed with the selected accuracy option. This option becomes the default for the optimum calculation and the new accuracy setting is displayed in the optimum button.

7.3.5 Rhumb line route

When this button is selected, the rhumb line or loxodrome route (route with fixed course) is calculated. This option works similarly to the Great circle route option. The rhumb line route is plotted in the chart in Orange.

If for some reason, the rhumb line cannot be calculated, the reason is reported in a popup, e.g. when the rhumb line crosses land or when user defined weather limits are exceeded. The position is indicated in the chart with a red arrow.

7.3.6 Great Circle

With this button, the great circle (orthodrome) route is calculated, based on the input as defined in the Input screen. The route calculation goes from fixed waypoint to fixed waypoint in sections of '**Time between waypoints**' hours.

For each section, the weather (forecast or climatic data) is determined and with the speed in calm seas and the speed curve model, the expected speed of the vessel is calculated.

7.3.7 Composite

The composite track as the word already indicates is a composite of great circle, rhumbline and/or optimum tracks. The previous route calculation options, such as the great circle, calculates the whole route as great circles. But it can be useful to calculate rhumb line sections in coastal areas and a great circle or optimum track for crossing an ocean. The Composite is shown on the chart in Green.

The definition of the different sections (between fixed waypoints) is done in the Input screen. In this screen, the waypoint list box below the chart contains a track type for

each waypoint. By default, it is set to rhumb line, but can be changed by double clicking the entry in the list.

When you select multiple waypoints in the waypoint table below the chart, you may edit all selected waypoints simultaneously for Speed, Track and Ignore Land. To select multiple waypoints, hold down the SHIFT key while clicking them from top down.

When the tracks in a route template are defined in the Input screen, the composite button will calculate the route with these track types. For example the first sections of the route are calculated as rhumb line, followed by an optimum track over the Atlantic.

7.3.8 All

Pressing the All button will initiate all 4 routing calculations at once. Note that this option is disabled for multiple scenario calculations.

7.4 Comparison Information panel

The comparison overview consists of two tabs with track results and weather results. The routes are labeled with the name of the route template and the track type (e.g. great circle or composite track). Each route calculation is displayed in the chart in the colour indicated. The fastest route is always given on top.

Note that the columns can be adjusted to your own preferences in width and/or order. To select / deselect columns right click in the table header. To restore table defaults right click inside the table.

7.4.1 Comparison Track

The comparison track table includes by default these parameters: route template name, track calculated, speed in calm waters, speed over ground, speed percentage, distance, fuel consumption of main engine, fuel difference, calculated CO2 emission, duration, time difference, estimated time of departure and estimated time of arrival.

7.4.2 Comparison Wx

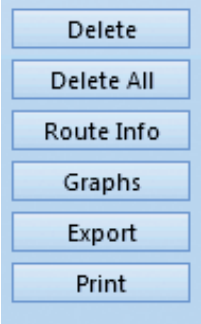
In the Weather comparison tab, key elements give an indication of encountered weather without getting into detail. Elements such as the average and maximum wind speed and wave height, the time along a route where the windspeed exceeds 34 knots (8 Beaufort) and the period where wave heights exceed 4 or 8 metres are shown.

The ocean current column indicates the average current effect on the vessels speed in knots.

When user defined weather limits are exceeded on a route (when selected to be warned only), this will be indicated in the column Wx limit with a red exclamation mark. When the weather limits are not exceeded this will be indicated by a green check mark. The route segments where the warnings are valid, are highlighted red in the Route Info table (see 7.4.4 Route Info).

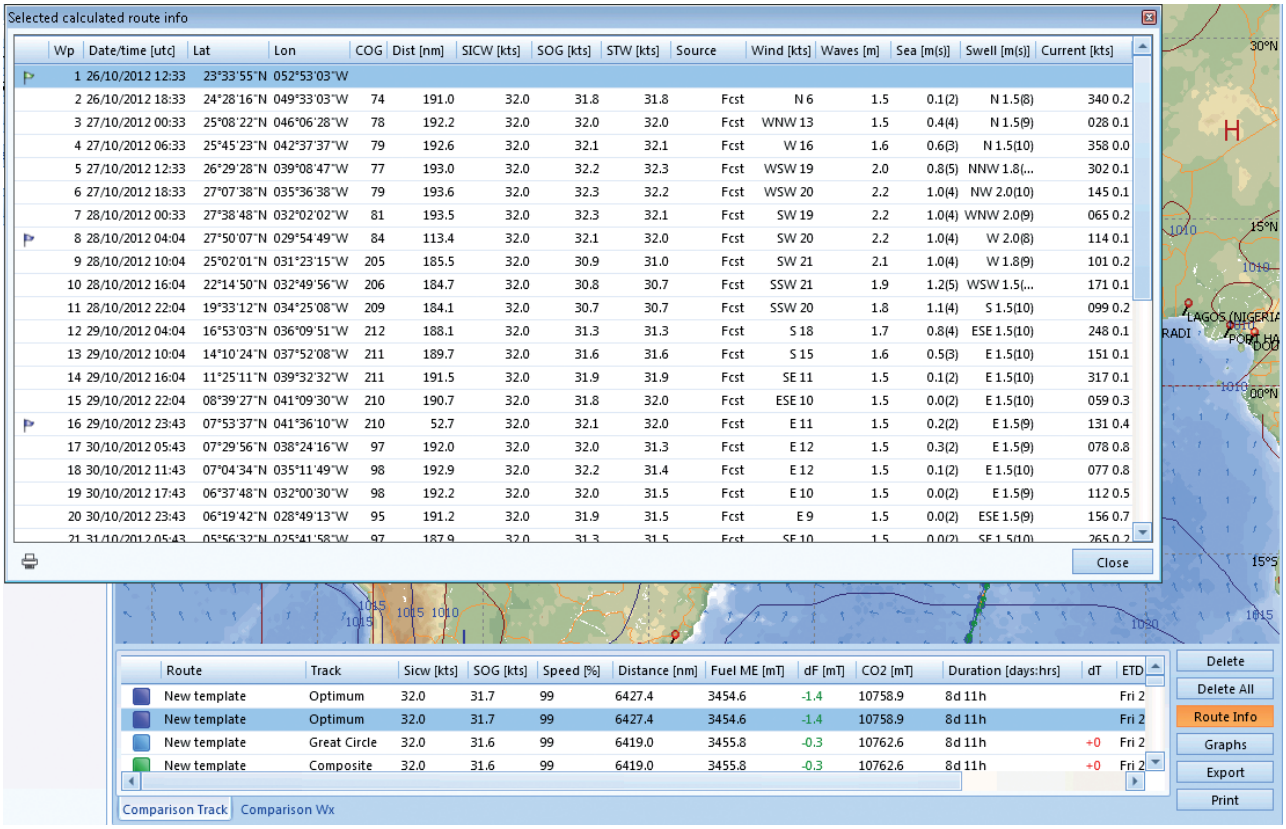
7.4.3 Delete / Delete All

The buttons ‘Delete’ and ‘Delete All’ allow you to delete one selected route or all of the routes shown in the table.



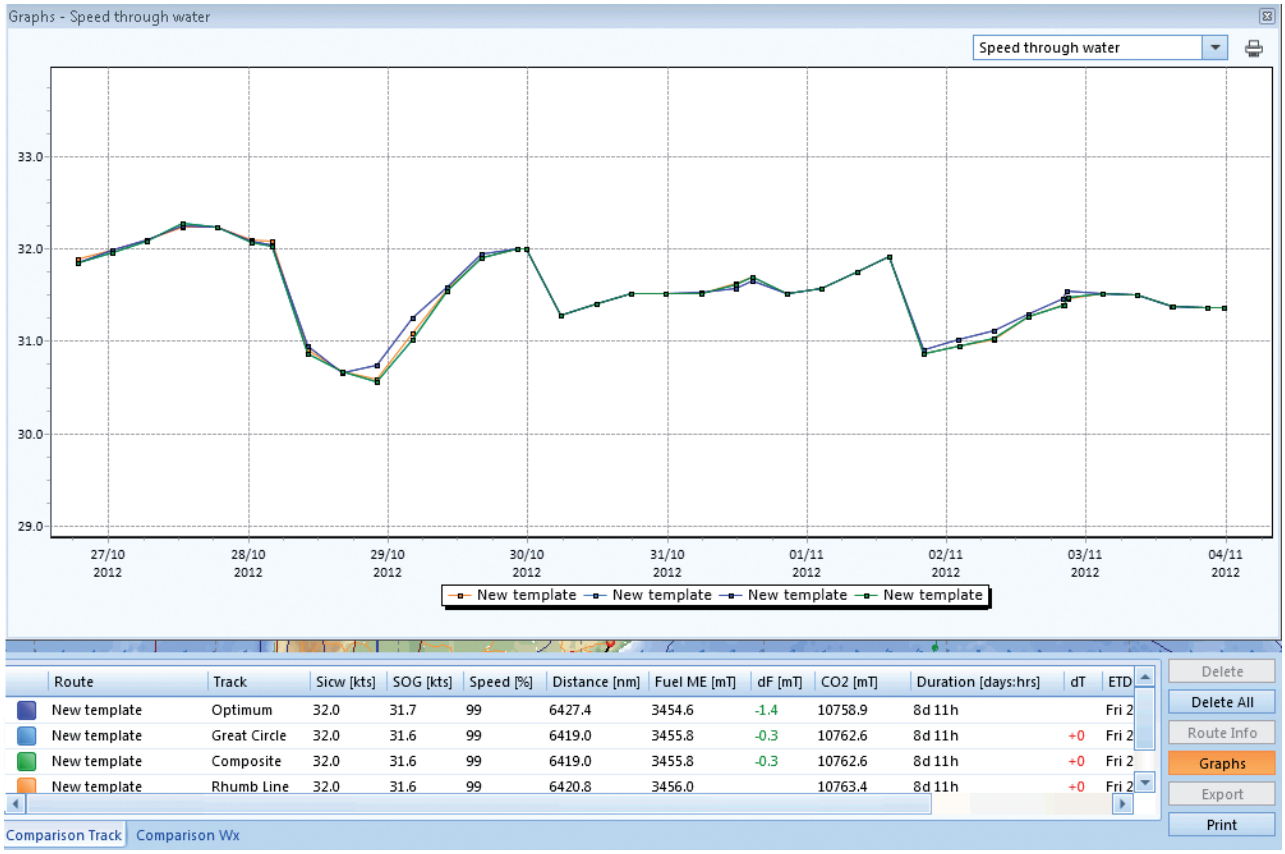
7.4.4 Route Info

When you have selected a route in the table you can display the route information in detail. For each waypoint the calculated result is shown.
In the bottom left-hand corner is a print function which will allow you to print out this table.



7.4.5 Graphs

This option allows you to get a graphical representation of all calculated route data. From the drop-down list on the top right hand side of the graph you can select the comparison element.
For your convenience, there is also a print function.



7.4.6 Export

You can select a route calculation for export into a different format e.g. to check for navigational constraints in your ECDIS system. SPOS offers export formats which can be set in the System Settings tab Common.

7.4.7 Print

You can print the Comparion track or Comparison Wx table with this option. It will be printed in PDF format.

7.5 Voyage

When the calculated route options have been analysed with the performance tools, a track can be selected in the information panel below the chart as the voyage plan to sail. This is done by selecting the **Start Voyage on Selected Route** button. Then follow the wizard instructions to create your voyage plan.
The voyage plan is initialised once and may be updated each day with new weather information and actual position information.

After the start of your voyage you can optionally make changes in the voyage plan and recalculate routes. Upon completion of a wizard a new position report or **Fleet management report** will be created.

When a voyage is active, the voyage data will be available by pressing the Voyage Info button. With the ´Export Fleet management report´ option it is possible to (re)send reports to the designated office address.

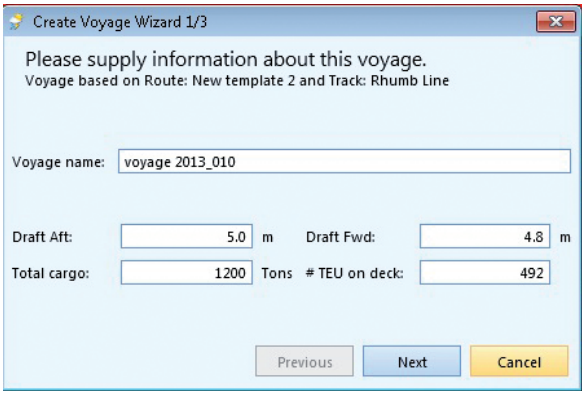
Once the destination is reached, the voyage plan is **completed** and stored on disk for future reference.

7.5.1 Create

When a valid route has been calculated and evaluated as the best route to sail, this route may be selected in the comparison table as your initial voyage plan. Simply click on the desired route calculation in the table and the '**Start Voyage on Selected Route**' will be available. Press this button to start the voyage wizard.

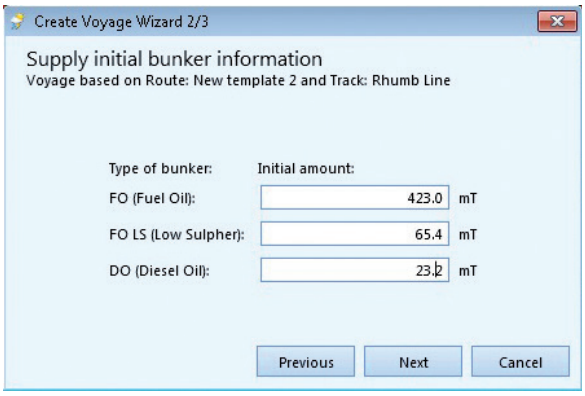
Step 1:
Type a voyage description and enter draft aft / fwd of vessel on this voyage, tons of cargo and number of TEU (optionally)

Press NEXT button for step 2

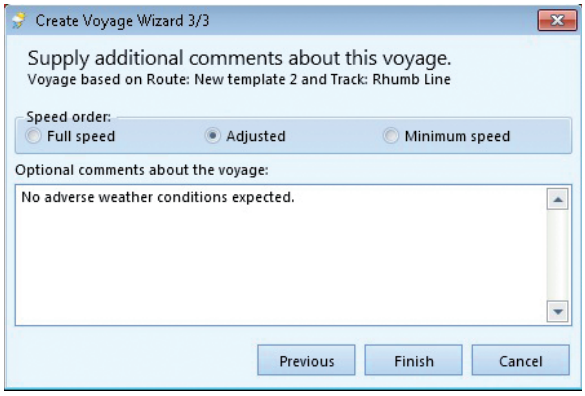


Step 2:
Enter the type of bunkers you want to log and the initial quantities. Up to three fuel types can be logged (leave empty if not used).

Press NEXT button for step 3



Step 3:
Enter the speed order for the voyage and additional comments.

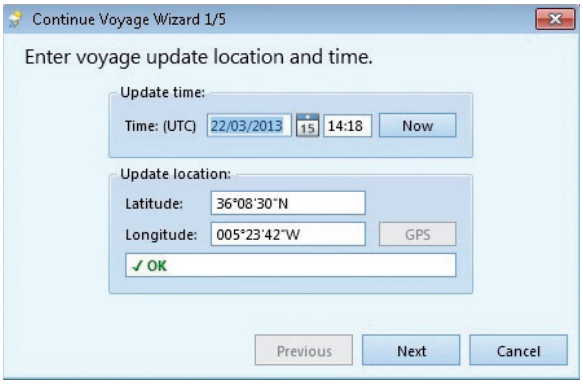


The initial voyage plan is stored in the database and displayed on the map coloured squares waypoints (instead of circles). All other calculated routes will be removed.
If the weather for the next days is expected to be severe, SPOS will suggest to print the **heavy weather checklist**.
When SPOS is closed and restarted again, the voyage will be activated automatically and plotted in the chart.
Voyage plan results such as waypoint listings are available via the **Voyage Info** button.
The voyage may be updated on a daily basis with **new weather information** and **updated position** information.

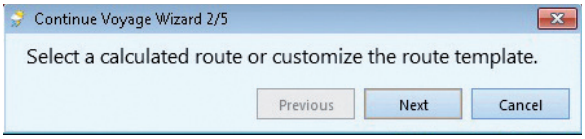
7.5.2 Update Voyage

The voyage plan is updated by pressing the **Update Voyage** button in the Voyage group box. The date of the last position report is indicated as well. The voyage wizard consists of 5 steps.
Depending on weather and/or voyage developments, the master may simply update his current position and recalculate the voyage. In order to make more thorough changes in the voyage plan the master may change different input and route settings.
The voyage update is initiated with the button Voyage Update:

Step 1:
Enter your current position and time. Press the next button and SPOS will recalculate the voyage plan.
This recalculation is carried out for all possible tracks (rhumbline, great circle, optimum, composite).
You can check and evaluate the calculated results in the information panels and optionally edit settings in the Input screen before recalculating.

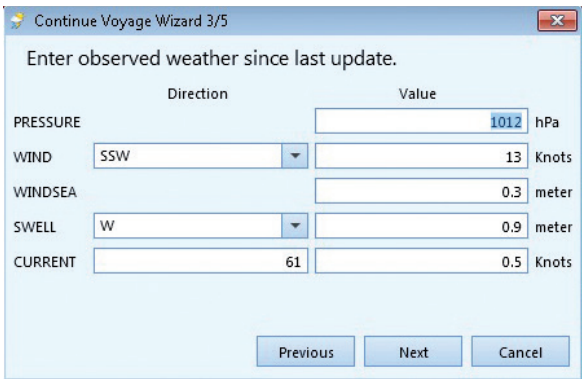


Step 2:
Then select a route in the comparison table to proceed with and press NEXT for step 3.

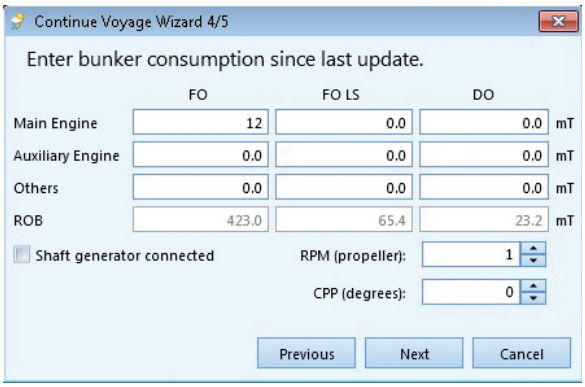


Important: Even whilst you are in the Voyage Wizard, you can still adjust your voyage route. Go to the input screen to adjust the voyage route to your updated plan and recalculate the voyage route. Then select the calculated route that you will continue your voyage on.

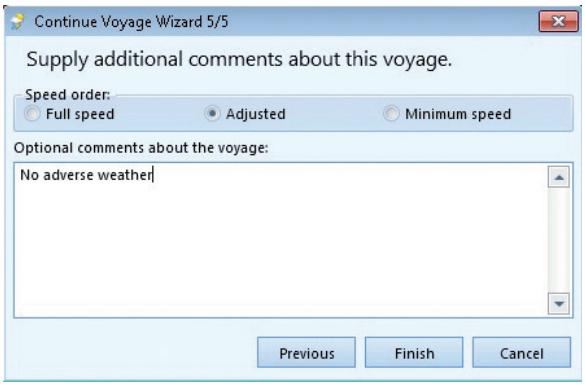
Step 3:
Now enter observed weather on the last sailed section. Initially SPOS suggests the latest forecast data, but you may modify this to actual observed values. This information will be stored in the voyage log.
Press NEXT for step 4.



Step 4:
Here you can specify the fuel consumption and enter the RPM/CPP settings on the sailed section. The remaining bunker amounts at the current position will be calculated. Press NEXT for step 5.



Step 5:
Finish the wizard by entering the speed order and comments for the sailed section.
The sailed sections will be colored black in the chart, the remainder will still be displayed in red. When you have selected a noon reporting option in the System Settings tab Position Reports, this report will be created by pressing Finish.



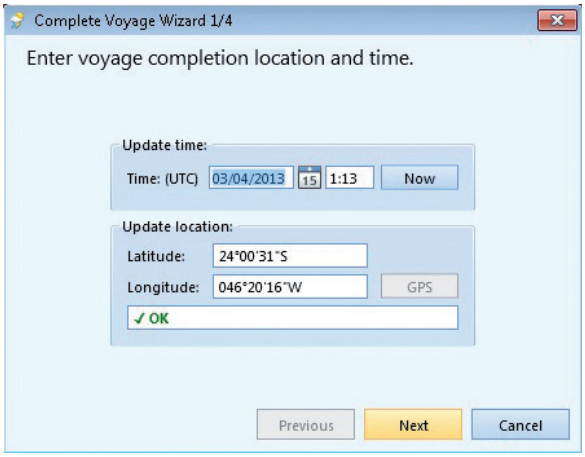
7.5.3 Undo/ Redo
It is possible to **UNDO / REDO** any voyage update made. Please note that reports already sent to the office address cannot be automatically revoked.

7.5.4 Complete voyage
When the destination has been reached, the master may complete the voyage and archive it via the Complete Voyage button.

The completion of a voyage plan is also done **via Complete Voyage Wizard**:

Step 1:
On the first screen, enter the arrival position and arrival time.

Step 2, 3 and **Step 4** are identical to the Voyage Update procedure for the logging of weather, fuel consumption and comments described there (see above).



When finished, the voyage is then archived. Completed voyages remain accessible via the **Voyage Archive**.
Only after an active voyage has been completed or **deleted**, a new voyage can be **created**.

7.5.5 Delete voyage

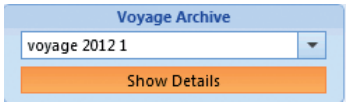
This button enables you to delete the active voyage from the database. Please note that once deleted a voyage cannot be retrieved. You will be asked to confirm your request.

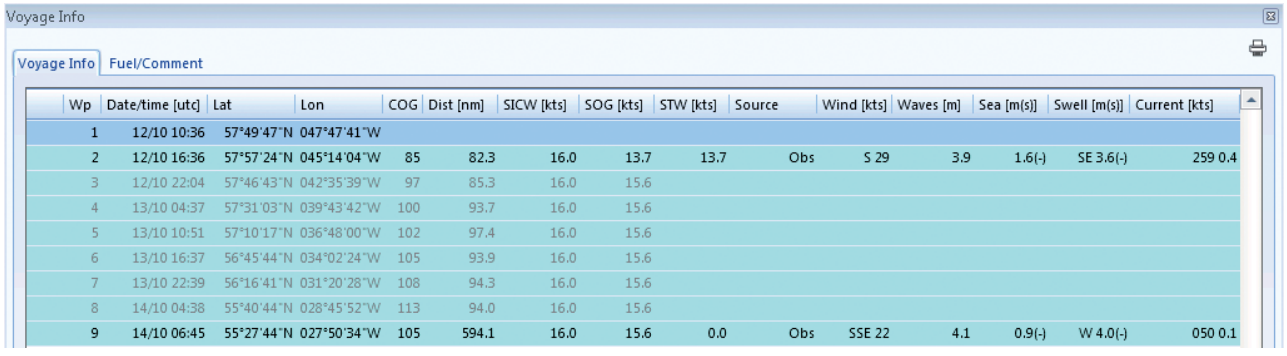
7.5.6 Voyage Info

The complete detailed voyage information can be viewed by pressing the Voyage Info button (see shown in chart 7.6). The logged positions are shown in green, the track still to sail are displayed in blue.

7.6 Voyage Archive

When a voyage has been completed it is archived and saved in the database. All archived voyages can be viewed via the SPOS voyage archive interface in the Routing Tab. When a voyage has been selected in the drop down menu it will be shown in black on the chart.





Wp	Date/time [utc]	Lat	Lon	COG	Dist [nm]	SICW [kts]	SOG [kts]	STW [kts]	Source	Wind [kts]	Waves [m]	Sea [m(s)]	Swell [m(s)]	Current [kts]
1	12/10 10:36	57°49'47"N	047°47'41"W											
2	12/10 16:36	57°57'24"N	045°14'04"W	85	82.3	16.0	13.7	13.7	Obs	S 29	3.9	1.6(-)	SE 3.6(-)	259 0.4
3	12/10 22:04	57°46'43"N	042°35'39"W	97	85.3	16.0	15.6							
4	13/10 04:37	57°31'03"N	039°43'42"W	100	93.7	16.0	15.6							
5	13/10 10:51	57°10'17"N	036°48'00"W	102	97.4	16.0	15.6							
6	13/10 16:37	56°45'44"N	034°02'24"W	105	93.9	16.0	15.6							
7	13/10 22:39	56°16'41"N	031°20'28"W	108	94.3	16.0	15.6							
8	14/10 04:38	55°40'44"N	028°45'52"W	113	94.0	16.0	15.6							
9	14/10 06:45	55°27'44"N	027°50'34"W	105	594.1	16.0	15.6	0.0	Obs	SSE 22	4.1	0.9(-)	W 4.0(-)	050 0.1

7.6.1 Show Details

By choosing Show Details the voyage information table will open with the related data. As always you can generate a pdf to print the information using the printer icon.

7.6.2 Add Voyage to Comparison table

To review and compare an archived voyage with a new calculation you can add this to the Comparison table. This will enable you to compare the archived voyage with actual calculations on the same route template.

7.6.2 Import / Export

Archived voyages can be exported and imported in xml format. This gives users the opportunity to exchange archived voyages, for management purposes and performance calculations.

7.6.3 Delete

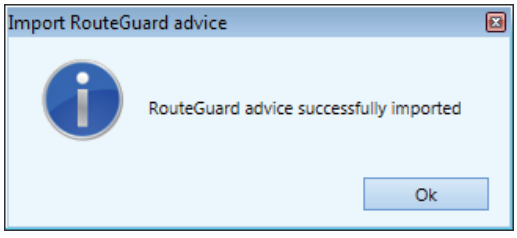
You can delete archived voyages from the database permanently. Deleted voyages are not retrievable. Please consider to export the voyage before deletion.
As voyages are stored in the SPOS database the combined use of the export and delete feature could be used to minimize the size of the database and possibly enhance performance.

7.7 RouteGuard

When you are also receiving our shore based routing service RouteGuard you can receive the issued RouteGuard advice for import and viewing in SPOS. The RouteGuard import method can be set in the System Settings, tab Import/Export settings.

7.7.1 Import

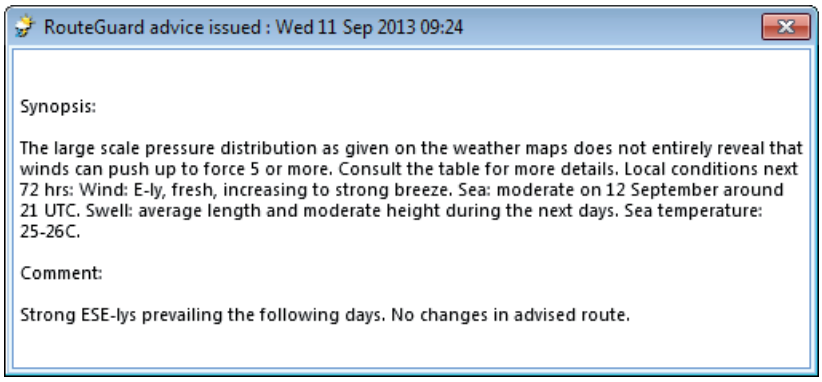
Use the Import button to import the last issued advice. If you are using MAPI to retrieve the advice from your e-mail client, the last received report will be imported. If you are using the Folder method to import, make sure you have saved the last issued advice in the designated folder.



You can delete the RouteGuard advice from the comparison information panels with the delete button beside the panel.
Note that the RouteGuard advice is for display purposes only and will not be imported as route template.

7.7.2 Synopsis

The simple text format synopsis and comments within the RouteGuard advice can be shown by pressing the Synopsis button.



8. SPOS Seakeeping

8.1 About

The Seakeeping ship motions module is an addition to SPOS. The module is a full integration to help the crew to plan their voyage in SPOS, taking the vessels responses and resonances into consideration. This manual describes the use of Seakeeping. In should be used in conjunction with the SPOS manual which is available under the Help facility (F1) in SPOS. The SPOS Seakeeping module is developed by MeteoGroup in close collaboration with Amarcon, member of the ABB Group (www.amarcon.com).

Support

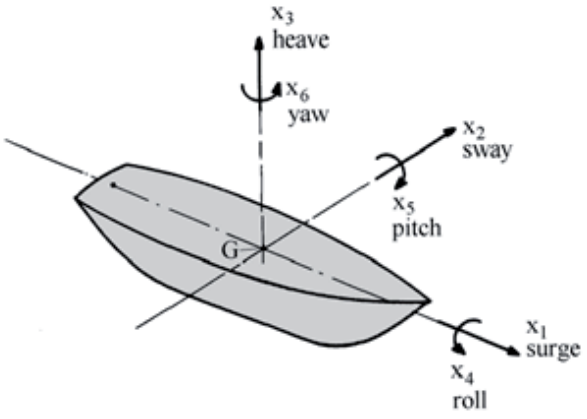
If you have any questions about the configuration or usage of the SPOS Seakeeping module, or if you encounter any issues that might need our attention, please do not hesitate to contact us: spos@meteogroup.com

Abbreviations

APP	Aft Perpendicular
BL	Baseline
CL	Centerline
COG	Center of gravity
FPP	Fore perpendicular
FSM	Free surface moment
GG'	Reduction of metacentric height due to free surface moment
G'M	Effective metacentric height
GM	Metacentric height
LPP	Length between perpendiculars
MPE	Most Probable Extreme
MSI	Motion Sickness Index
RAO	Response amplitude operator
SDA	Significant Double Amplitude
SSA	Significant Single Amplitude

Definition of vessel motions

The six vessel motions, in center of gravity G of a vessel, are defined in the next figure:



All vessel coordinates are defined relative to the following coordinates:
- X-axis points to the bow where x=0 at APP (Aft Perpendicular)
- Y-axis points to port where y=0 at CL (Center Line)
- Z-axis point upward where z=0 at BL (Base Line)

The six vessel motions are defined as:
- Surge: linear movement along the x-axis; to bow is positive
- Sway: linear movement along the y-axis; to port is positive
- Heave: linear movement along the z-axis; up is positive
- Roll: angular movement around the x-axis; starboard down is positive
- Pitch: angular movement around the y-axis; bow down is positive
- Yaw: angular movement around the z-axis; bow to port is positive

These motions are the base to calculate movements, velocities and accelerations at other locations on the vessel.

8.2 Install

The Seakeeping module requires separate installation. The module is available on your SPOS Onboard CD with version 8.3 or higher. If you have an older version of SPOS, please contact us. Close SPOS when open. Choose from the CD menu 'Install Seakeeping module'. The installation wizard will start and will guide you through the installation procedure.

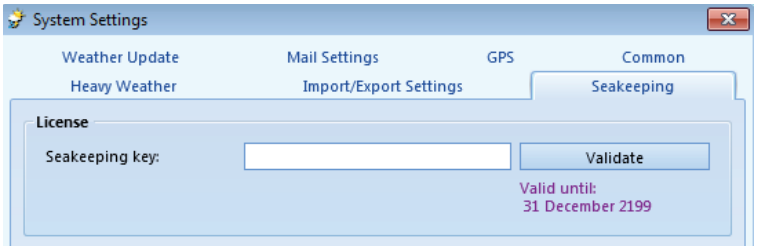
Once you have finished the installation, the module becomes available in SPOS. Start SPOS and go to system settings, click (top left in SPOS), open the tab Seakeeping.

Upgrade from SPOS7 Seakeeping

Users that have SPOS7 with Seakeeping installed can upgrade to the new Seakeeping module. The steps are the same as above. The installer will find your SPOS7 configuration and import these into SPOS8. The result is that your vessel, your parameters and your preferences are pre-set in SPOS. Read chapter System Settings to find and check these settings.

8.3 System Settings

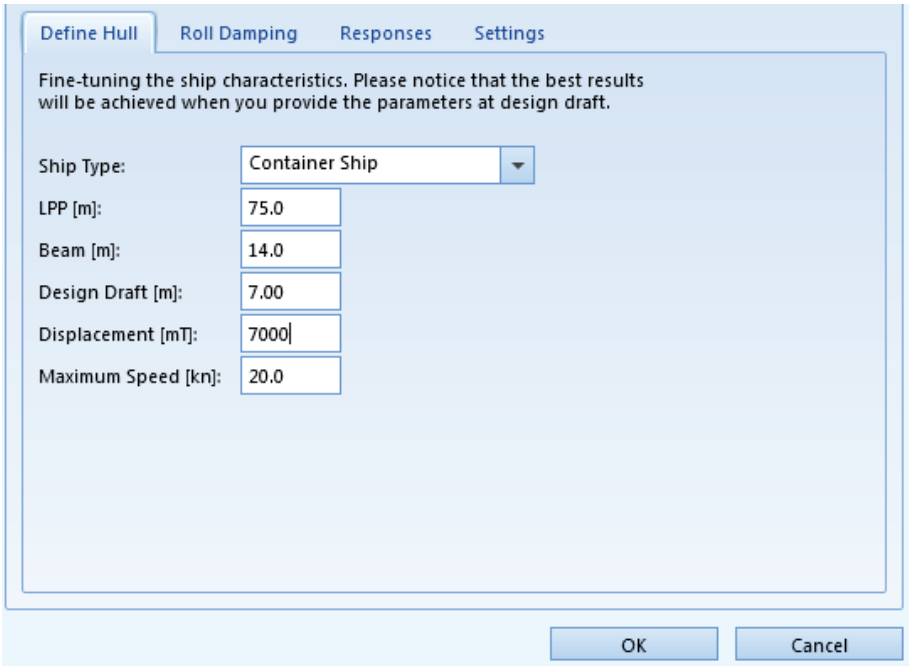
In the system settings, tab Seakeeping, you need to provide your license key. This is a separate key, not the same as your SPOS license key. Press Validate.



When valid, close and restart SPOS, now the other configurable settings become available.

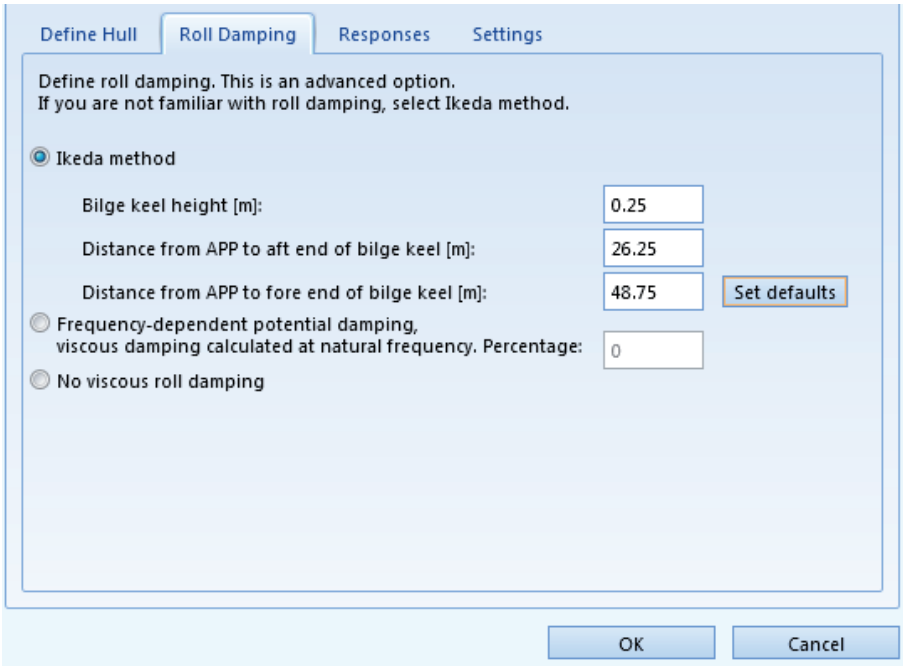
8.3.1 Define your Hull

The first tab Define hull requires input about your vessel characteristics. Type, name, length (LPP), beam width, design draft, displacement and maximum speed are needed to define your hull.



8.3.2 Roll Damping

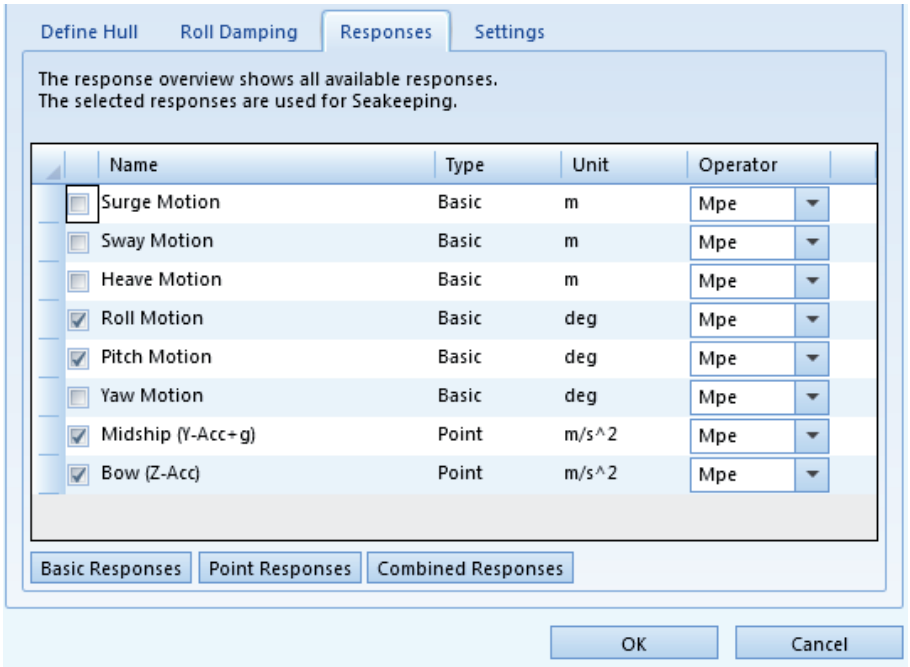
This tab enables you to configure roll damping parameters. If you are not familiar with these parameters, choose Ikeda method and check the predefined bilge keel characteristics. These are based on the ship characteristics you have provided. Once you have changed the values, you can always return to default values by clicking the 'Set defaults' button.
(Note: APP means Aft perpendicular)



8.3.3 Responses

The response overview shows all available responses. In this overview you can select the responses to become visible and used in SPOS Seakeeping. Use the checkboxes to select the responses.

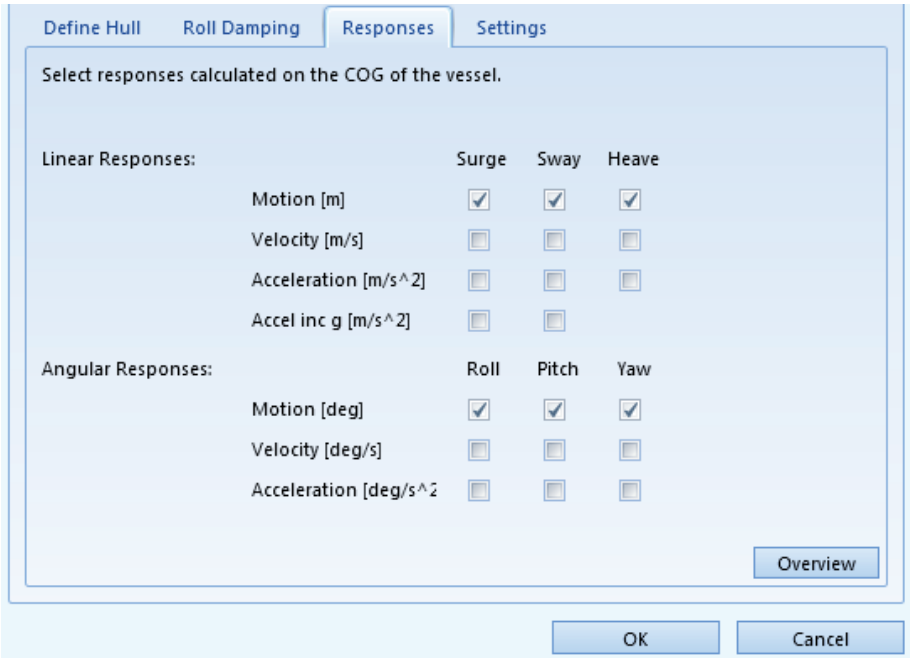
In this Overview you can set the 'operator' for each response. The possibilities are: Mpe (Most Probable Extreme), Sda (Significant Double Amplitude), Ssa (Significant) Single Amplitude, Msi (motion sickness index) and Slamming. Msi is only available for point responses with vertical accelerations.



To edit a response from your Overview, double click on it. Use the three buttons below the overview to add responses: Basic Responses, Point Responses or Combined Responses.

8.3.4 Basic Responses

The Basic Responses, used to calculate most of the other transfer functions, are calculated in the center of gravity of the vessel. Additionally linear velocities and accelerations and angular velocities and acceleration can be added by checking the relevant checkboxes.

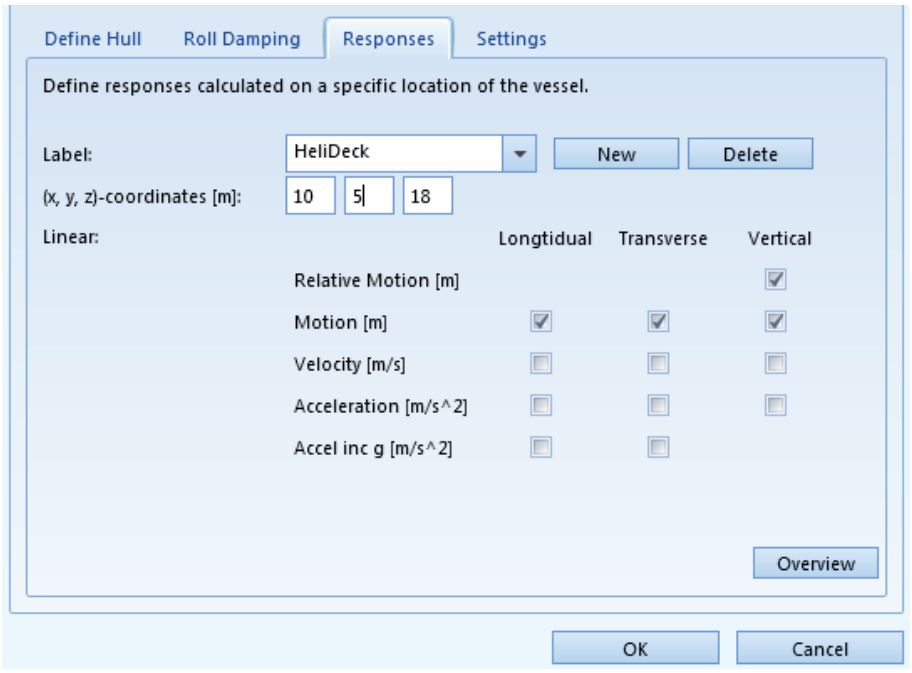


Accelerations without gravity are in the earth-bound system and accelerations including gravity are in the vessel-bound system. The calculation for heave acceleration is for both systems the same.

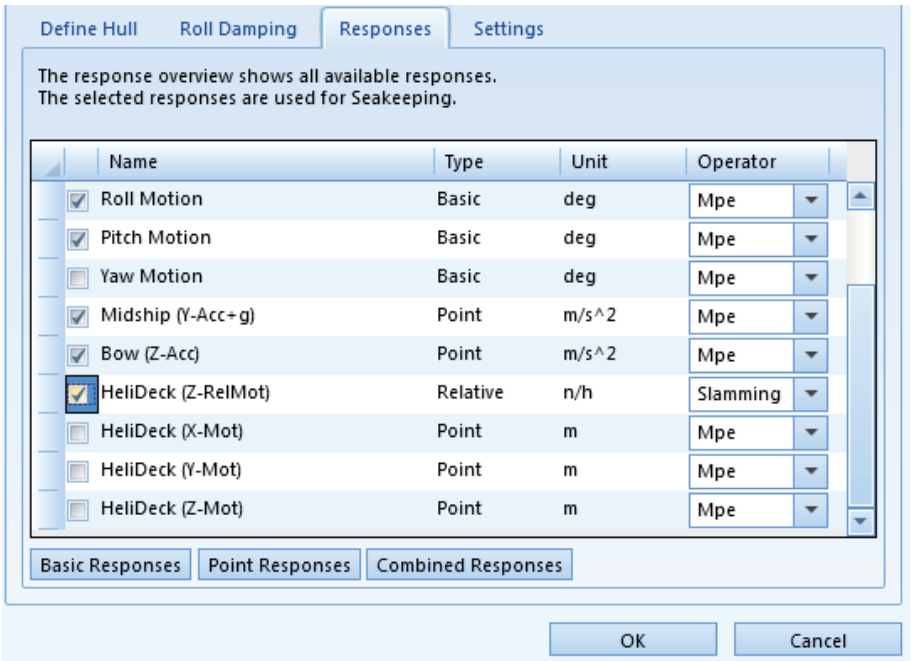
Use the Overview button to go back to your overview with selected responses. In this overview your added responses are available in the list. Use the checkboxes to check the ones of interest. These will become available in SPOS main screens.

8.3.5 Point Responses

Point responses can be used to define responses on a specific location of the vessel. For instance on the heli deck, or the top row containers, or other cargo. Use New and provide a name in the Label box. Use 'Add' to go to editable mode for the new response. To configure a point responses provide the x, y and z coordinates relative to APP, Centerline and Baseline and check the motions, velocities and accelerations of interest.



Use the Overview button to go back to your overview with selected responses. In this overview your added responses are available in the list. Use the checkboxes to check the ones of interest. These will become available in SPOS main screens.



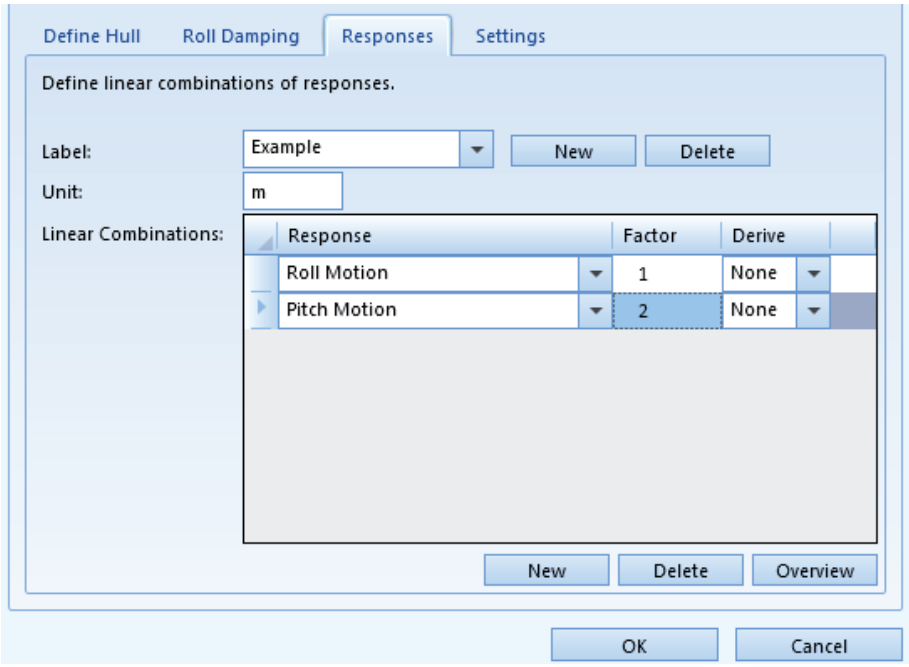
8.3.6 Combined Responses

A combined response consists of a linear combination of responses. Every response can be derived and/or multiplied with a factor.

Use New and provide a name in the Label box. Use 'Add' to go to editable mode for the new response. The Unit of a combined response is free to choose. Define in the table your first response. Choose the Response and the Derive from the pull-down boxes and provide a Factor to multiply with. Use New (below the table) to add a new row and define your second response.

'Derive': 'None' means motions in meters, with 'Once', the velocities are calculated by taking the first derivation of the motions and the accelerations are calculated by taking the second derivation of the motions 'Twice'.

User defined Point responses are available to create Combined responses.

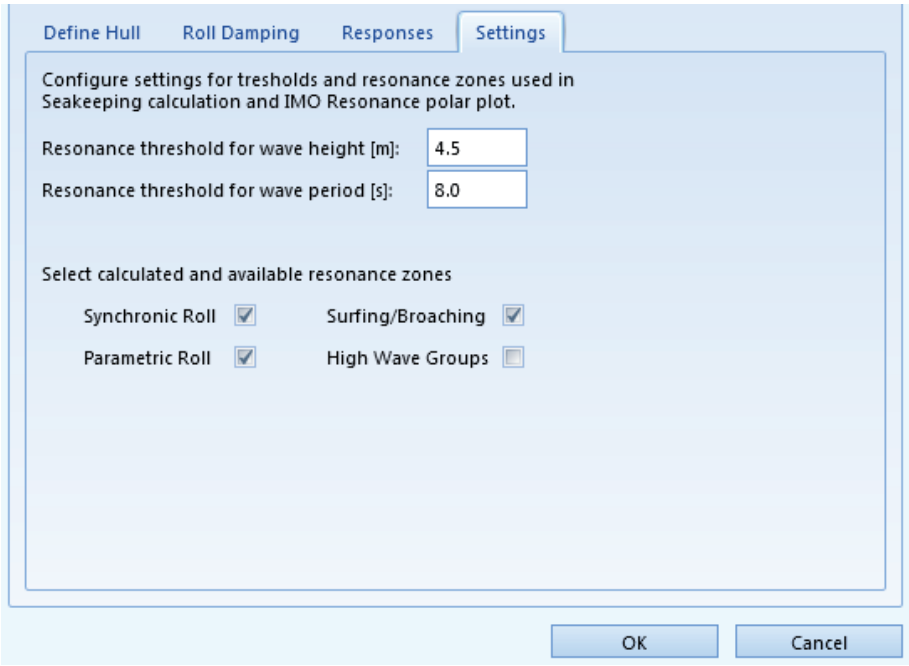


Use the Overview button to go back to your overview with selected responses. In this overview your added responses are available in the list. Use the checkboxes to check the ones of interest. These will become available in SPOS main screens.

8.3.7 Settings

These Settings are used to configure IMO resonance zones and their thresholds. The thresholds for wave height and wave period can be adjusted to your needs. If Seakeeping calculates certain resonances, but the wave height and/or wave period is below the given threshold, SPOS will not show these resonance zones.

Use the checkboxes to select the resonance zones of your interest. The selected resonance zones will be added to SPOS in the same way as the responses.



8.3.8 Save and calculate Hydrodynamic Database

Use the OK button from the System Settings to save your Seakeeping settings. The system will calculate your hydrodynamic database. The vessel motions and responses depend on the vessel configuration, but also on the loading condition of the ship. When you use Seakeeping for the first time, the system assumes certain default loading conditions. You can provide your loading conditions in the Input screen in SPOS.

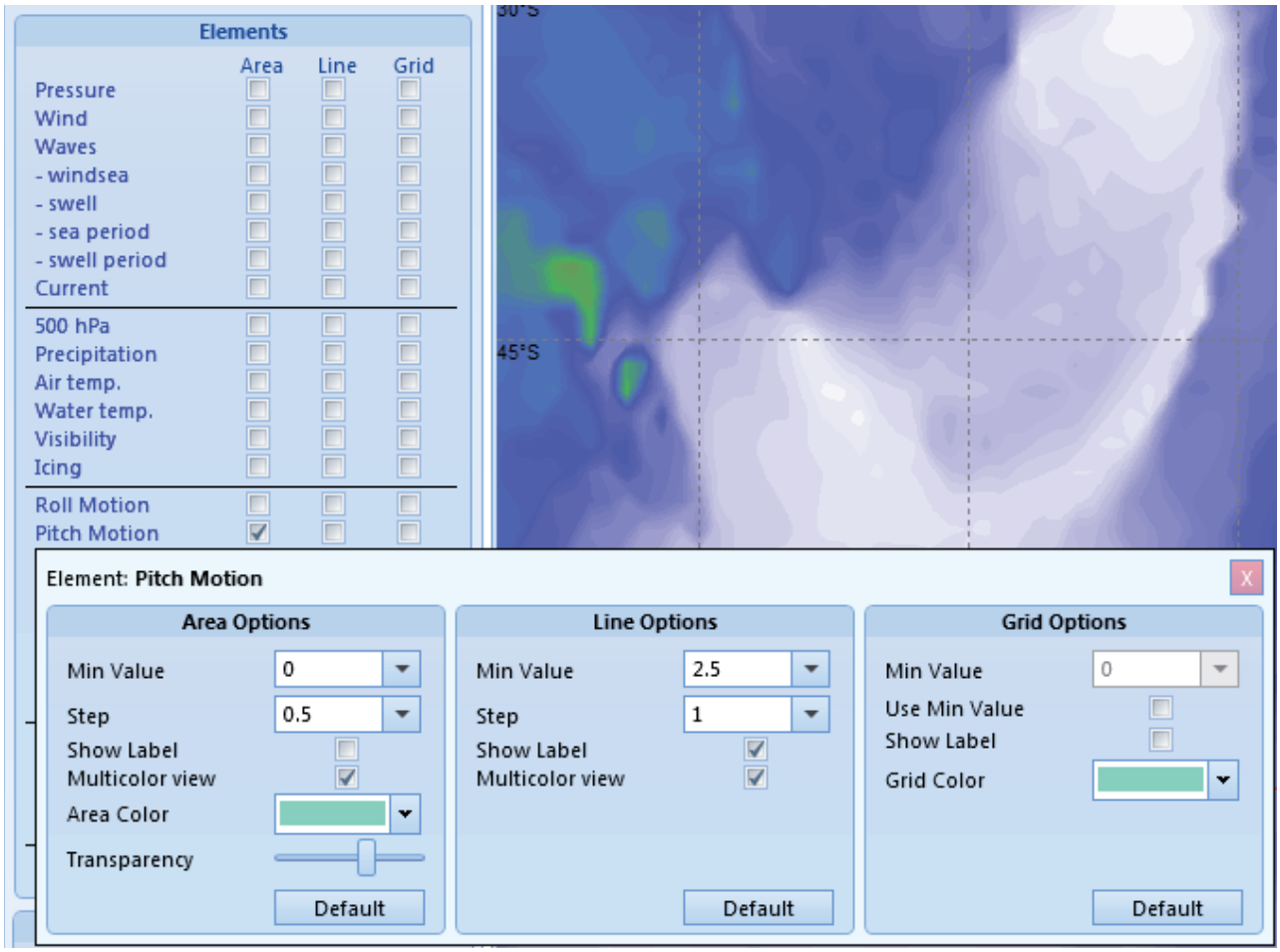
In the SPOS screens your configured responses and resonance zones are now available for route optimization.

8.4 Weather

8.4.1 Elements

The Elements group box controls the display of the weather elements on the chart. Your configured Seakeeping responses and resonances are added to the list of weather elements. In order to display the responses for the active weather forecast, select the elements you wish to see on the chart by ticking the checkboxes and the display type; Area, Line or Grid. The information is then shown in the chart. You can select the display types: area, line or grid/arrows at the same time. Each display type can contain multiple elements. All layers are removed from the map by deselecting the selected checkboxes or pressing the Clear button.

You can change the color, the drawing step size and the minimum value by clicking on an element in the group box. In the unfolded options menu you can configure the elements to your needs.

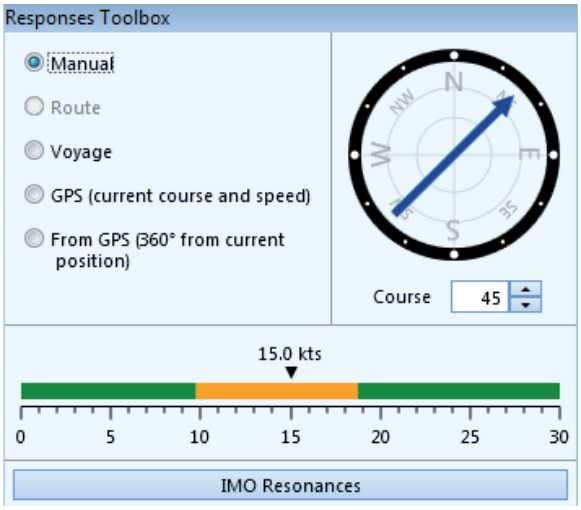


8.4.2 Seakeeping toolbox

When using the Seakeeping module in SPOS, the Responses toolbox becomes visible. This toolbox can be dragged to the position of your preference.

In the toolbox you have access to five responses 'modes'. These modes define what you will see on the chart. Responses and resonance zones are dependent on the course and speed of the vessel. The chart can therefore, only show the responses for the given course and speed.

Use the weather player to see the responses at different forecast times or to 'play' your responses for your calculated route or your current voyage.



Manual mode

In manual mode the speed is taken from the provided speed in calm water, at the top of the chart. The course is set manually, either by dragging the arrow in the compass rose or by typing in the course in the edit box below the compass rose. The selected elements, which are drawn as layers on the chart, will show the results of your selected speed and course, for the selected time step. The best way to visualize this is by using the grid layers.

Route mode

Route mode becomes active when you have a route template calculated (routing screen). Select the calculated route in comparison table in the routing screen and the toolbox will automatically select Route mode and show the selected route calculation. The chart layers now display the responses for the given route. Use the weather player to see how the combination of your calculated positions and responses evolve through time.

Voyage mode

Voyage mode is active when you use SPOS for 'voyaging' with daily voyage updates. Select Voyage and the chart layers now display the responses for your voyage. Use the weather player to see how the combination of your future positions and responses evolve through time.

GPS mode

The GPS mode is only active when a GPS is connected and active. The active chart layers are updated every 10 seconds, based on the GPS course and speed. These are visible in the compass rose and the speed slider.

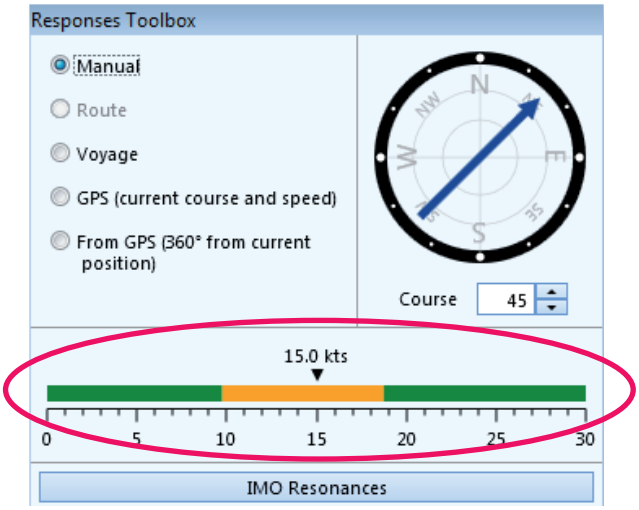
Use the GPS options to see your position on the chart: ‘Zoom to GPS’ or ‘Continuous Tracking’.

From GPS mode

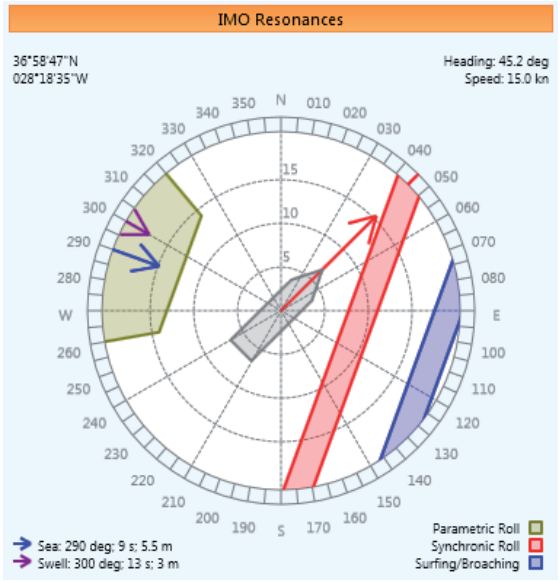
The From GPS mode is only active when a GPS is connected and active. The active chart layers are updated every 10 seconds, based on the GPS position. The chart layers will show the responses in a 360 degree circle around the GPS position. The speed is not taken from the GPS, the set Speed in calm water is used in this mode.

Speed advice

The horizontal speed scale in the toolbox is showing the possible speeds with a color scale showing the safe and unsafe speeds, for the given time, location and direction. This is based on your set limits for your responses (see Input). Red means that one of your limits is exceeded, orange that one of your limits is almost reached (75-100%). Here you can see whether choosing another speed can help you avoiding certain motions or resonances.



IMO resonances – Polar diagram

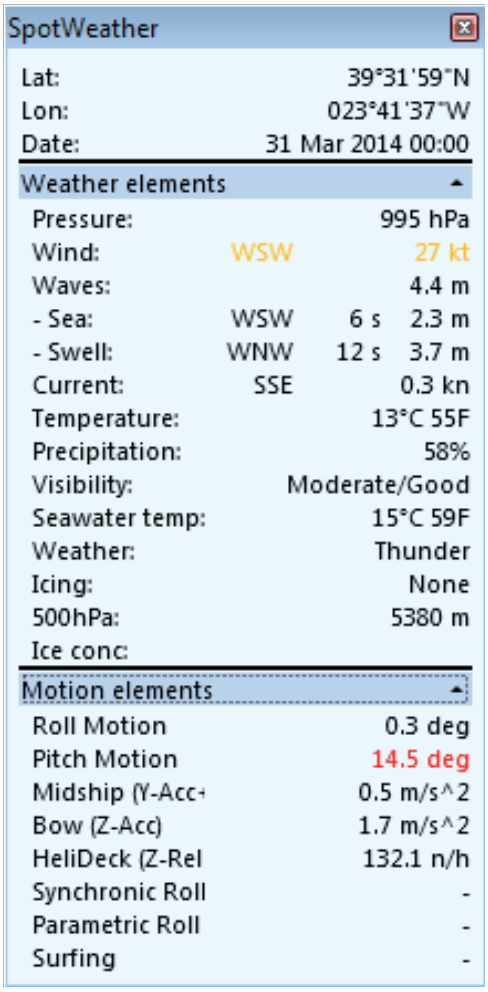


The button 'IMO resonances' in the toolbox unfolds the polar diagram of resonance zones. This polar diagram shows resonance zones in a combination of all directions, all possible speeds, for the given position, selected forecast time step, and loading conditions.

When the toolbox is in Manual mode, the polar plot will display resonance zones for the location on the map, depending on your mouse position. For Route or Voyage mode, the polar plot will display the resonance zones considering the ships position on the route. You can use the weather forecast time selector / player to browse through your route. Small circles on the route show the vessels' position on the selected time step.

The GPS mode shows the polar diagram for the latest GPS-received position. SPOS displays the resonance polar diagram according IMO guidelines (Circular 1228).

8.4.3 SPOT weather



In the weather tab, the SPOT Wx (weather) button opens a pop-up with all the weather parameters at your mouse position on the map. Once Seakeeping is activated and responses are configured, the list of elements is extended with the responses of your choice. The colors represent your set 'warn' and/or 'avoid' criteria. (See Input how to configure these criteria). Red color means that your limit is exceeded for the chosen location and time. Orange means that the limit is almost exceeded (above 75% of your limit).

You can fold and unfold the weather and/or motion elements by clicking on the small triangles.

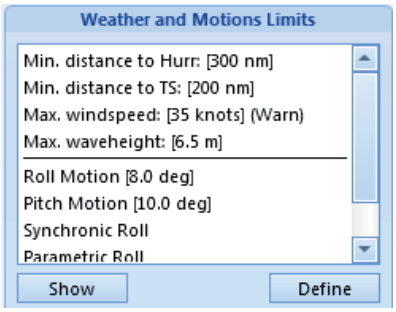
8.5 Input

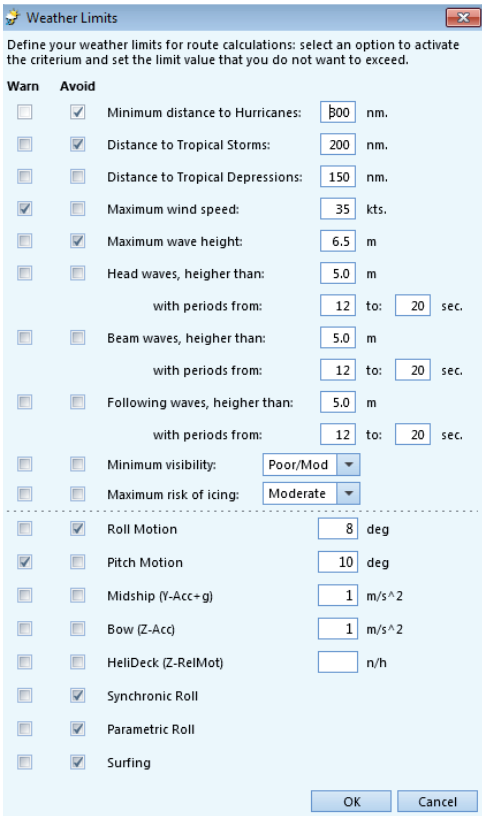
In the weather tab you can see the real values of the motions, based on your vessel characteristics and the selected forecast, speed and direction. In the Input tab you can select your relative limits for your configured motions. With these limits, which are visualized on the map, SPOS will optimize your voyage plan when you (re)calculate a route in de Routing tab.

In the Input tab you can also update your loading conditions.

8.5.1 Weather and motion limits

In the Input tab you can select and set your weather and motion limits.





Click Define to see your responses and resonances and make your choices to be warned when certain limits are exceeded on your route or choose 'avoid' to optimize your routes avoiding your weather and motion thresholds/limits. Press OK when finished.

Visualize your motion limits on the map by clicking the Show button. You can choose for an area overlay, lines and an arrow grid. The colors represent the relative values in relation to your set maximum values:

Green arrow: response(s) less than 75% of maximum

Orange arrows/lines/areas: response(s) between 75% and 100% of maximum

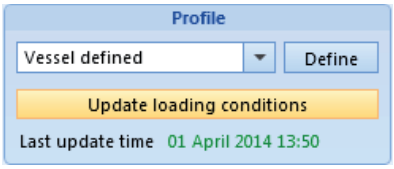
Red arrows/lines/areas: response(s) exceeds 100% of maximum value

When multiple responses and resonances are selected, the worst result will be plotted. E.g. roll motion is for a certain location 50% of max. value (green) and pitch motion is 120% of max. value (red), then the plotted arrow/line/area is red. For IMO resonances only green and red arrows/areas are shown. Indicating there is likely to be no risk or a risk of the chosen resonance.

When response limits are selected, the criteria are automatically used in the route calculations. SPOS will avoid areas where limits are exceeded for the given time and position (or warn in the calculation results).

8.5.2 Update Loading conditions

The vessels loading conditions can be provided in SPOS in two ways: in the Input tab and when updating your voyage. Both options are always synchronized.
The vessel motions and responses depend on the vessel configuration, but also on the loading condition of the ship. This loading condition is easily updated by selecting this button.



In the popup window, you can give this particular condition a name for your own reference (e.g. ballast), then enter the actual draft AFT and FWD. Further, enter the GM value and the GG' value in meters. GG' is a GM correction value for the free surface of fluids. E.g. for tankers, this value has a serious impact. If unknown, enter zero.

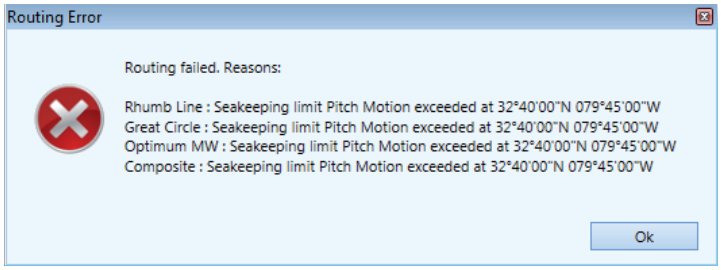
Press OK when completed and the new Seakeeping responses will be calculated and re-initialized in SPOS.

8.6 Routing

8.6.1. Calculations

In the routing tab you can calculate your routes. With motion limits defined (Input tab) SPOS will optimize your route based on your motion limits and all other ocean- and weather parameters.

If your destination cannot be reached due to too strict limits or extreme weather SPOS will return this message:



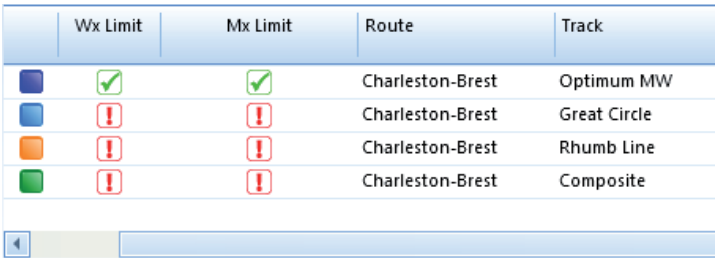
To overcome this routing failure you can try to:

- Adjust your speed; in the toolbox you can see whether a safe speed for the failed locations is possible.
- Adjust your ETD
- Use as less waypoints as possible for the area where the limits are exceeded
- Choose 'High and Wide' for a calculation.

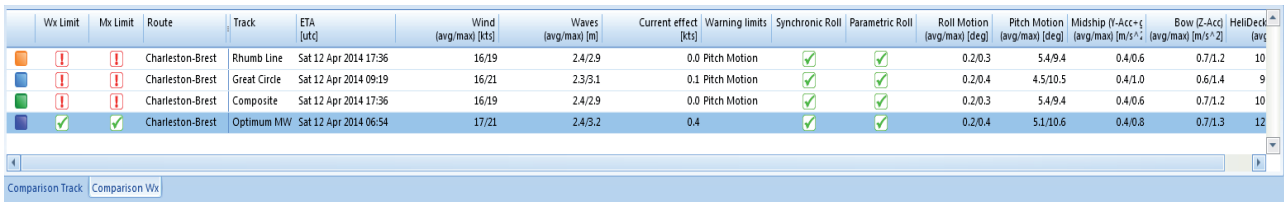
In case you just want to see differences in distance or voyage time at the different route calculations (great circle and rhumbline compared to an optimum route calculation) you need to turn of the Avoid weather and motion limits temporarily (in the Input tab).

8.6.2 Comparison table

The motions at a voyage route calculation are summarized in the comparison table below the chart. The column Mx limit, meaning Motion limit, shows with a red cross or a green check, whether your set Warning limits are exceeded somewhere along the route.



In the comparison Wx table the real values of the motions are represented with a max and average value along the calculated route. The column ‘Warning limits exceeded’ states where at the route which warning limit is exceeded.



Wx Limit	Mx Limit	Route	Track	ETA [utc]	Wind (avg/max) [kts]	Waves (avg/max) [m]	Current effect [kts]	Warning limits	Synchronic Roll	Parametric Roll	Roll Motion (avg/max) [deg]	Pitch Motion (avg/max) [deg]	Midship (Y-Acc+g (avg/max) [m/s^2]	Bow (Z-Acc) (avg/max) [m/s^2]	HeliDeck (avg
!	!	Charleston-Brest	Rhumb Line	Sat 12 Apr 2014 17:36	16/19	2.4/2.9	0.0	Pitch Motion	✓	✓	0.2/0.3	5.4/9.4	0.4/0.6	0.7/1.2	10
!	!	Charleston-Brest	Great Circle	Sat 12 Apr 2014 09:19	16/21	2.3/3.1	0.1	Pitch Motion	✓	✓	0.2/0.4	4.5/10.5	0.4/1.0	0.6/1.4	9
!	!	Charleston-Brest	Composite	Sat 12 Apr 2014 17:36	16/19	2.4/2.9	0.0	Pitch Motion	✓	✓	0.2/0.3	5.4/9.4	0.4/0.6	0.7/1.2	10
✓	✓	Charleston-Brest	Optimum MW	Sat 12 Apr 2014 06:54	17/21	2.4/3.2	0.4		✓	✓	0.2/0.4	5.1/10.6	0.4/0.8	0.7/1.3	12

Comparison Track | Comparison Wx

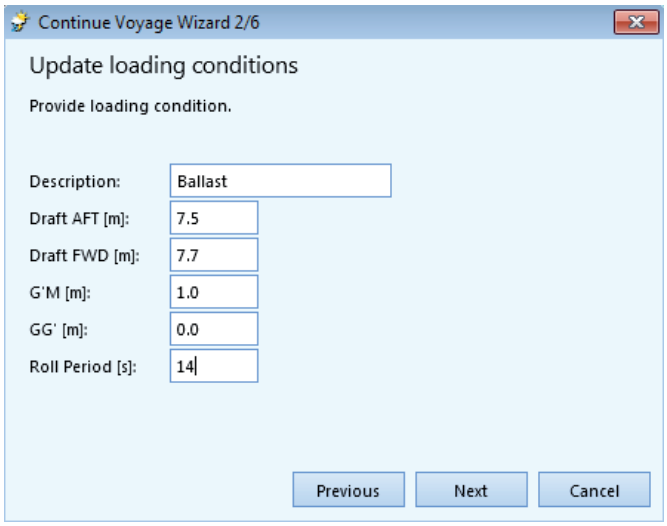
For the selected route calculation the motion values are added as columns in the route info table.

Once you have started a voyage, the list of waypoints in the voyage info table is also extended with the motion values.

8.6.3 Update voyage

When you are updating your voyage on a timely basis, SPOS will ask you to update your loading conditions in the Update wizard. Enter the actual draft AFT and FWD. Further, enter the GM value and the GG’ value in meters. GG’ is a GM correction value for the free surface of fluids. E.g. for tankers, this value has a serious impact. If unknown, enter zero.

Once you have completed this, your vessel characteristics are updated and the route calculations in the next step of the voyage update will use your updated data.

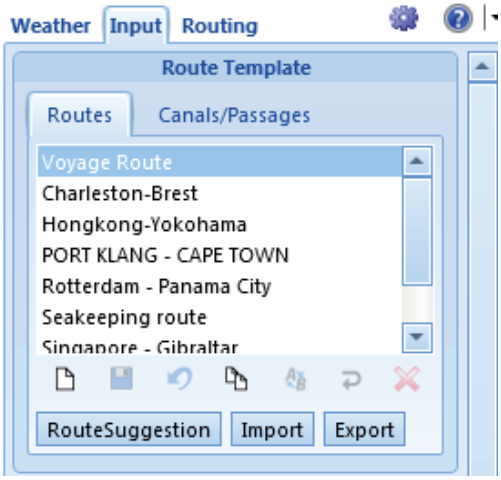


9. How to

9.1 How to – change your voyage plan

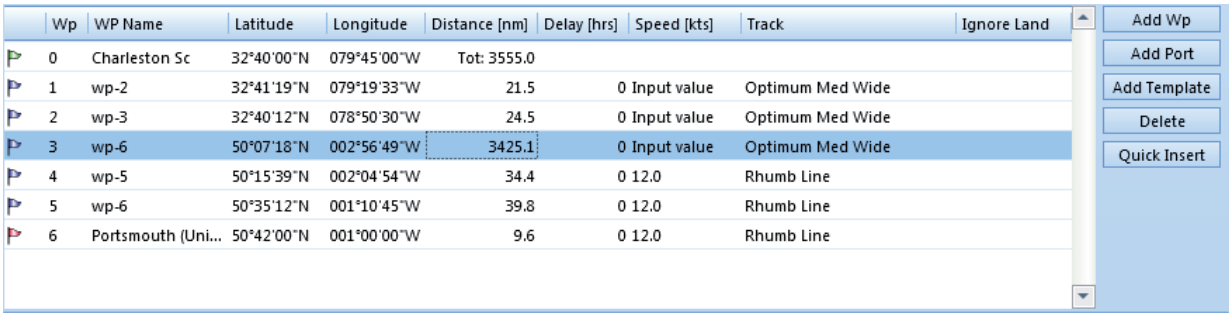
When your voyage plan changes during a voyage, you can make adjustments to the Voyage route e.g. add an extra waypoint, intermediate harbor or change the destination. This is what you do:

1. In the Input screen, select the 'Voyage route'

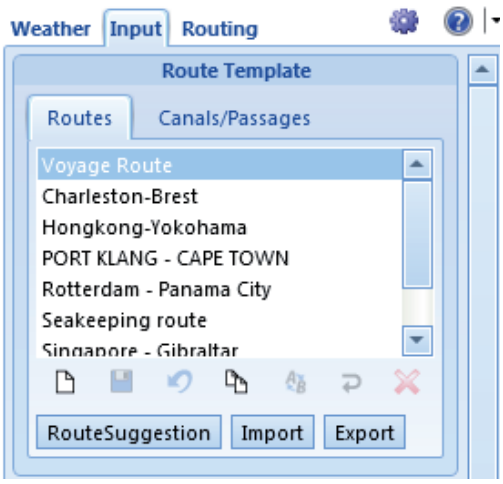


2. In the waypoint table below the chart, select the waypoint that you want to edit.

   By double clicking, you enter the Edit mode, make adjustments e.g. to name, lat/lon. Alternatively you may choose to use the Add Wp, Add Port or Add Template buttons. Each of these buttons will present you the choice whether to add before or after the selected waypoint. The Add Port button has also the option to convert the waypoint to a Port from the Port list.
   When your amendments are done, you may proceed to the Routing screen. You will be prompted to save the changes.



3. In the Routing screen you press Update Voyage and follow the wizard instructions. When sending the Fleet Management report to the office the new voyage plan will be visible in the office system.

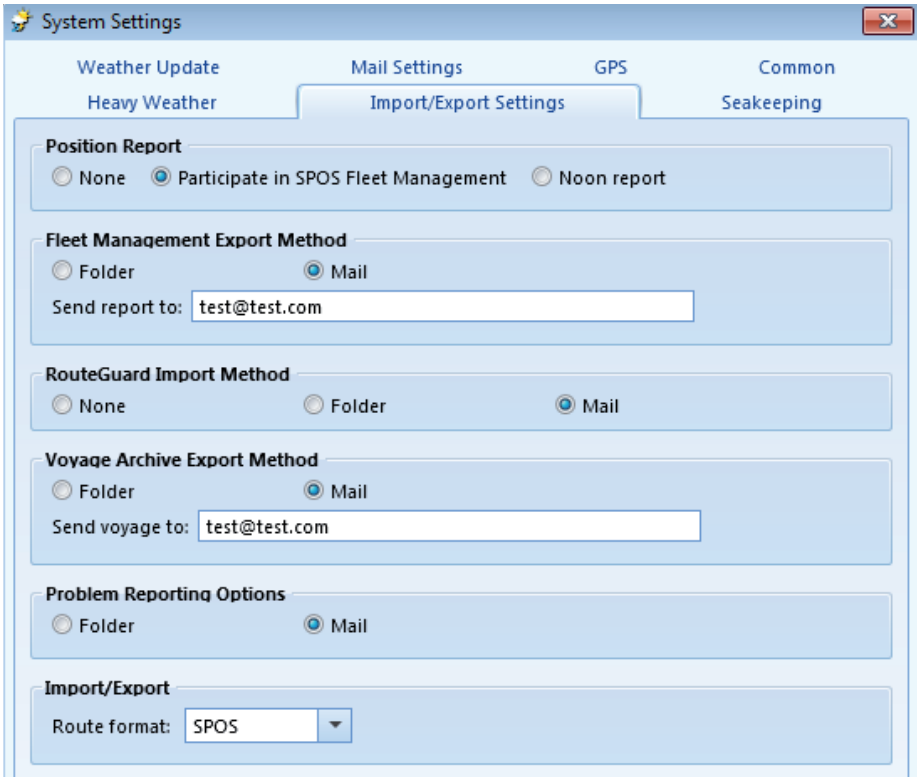


Please note that it is also possible to adjust your route whilst you are in the Update voyage wizard. When you see a need to adjust the route calculations you can go to the Input screen in SPOS and adjust the Voyage route. Once done, recalculate your route in the Routing screen.

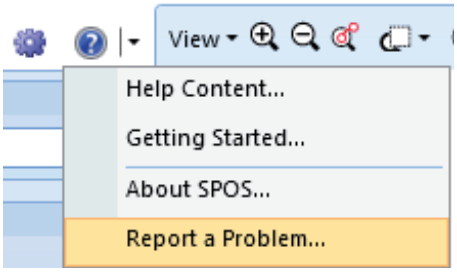
Select the preferred route and go to the next step in the Update voyage wizard.

9.2 How to – report a problem

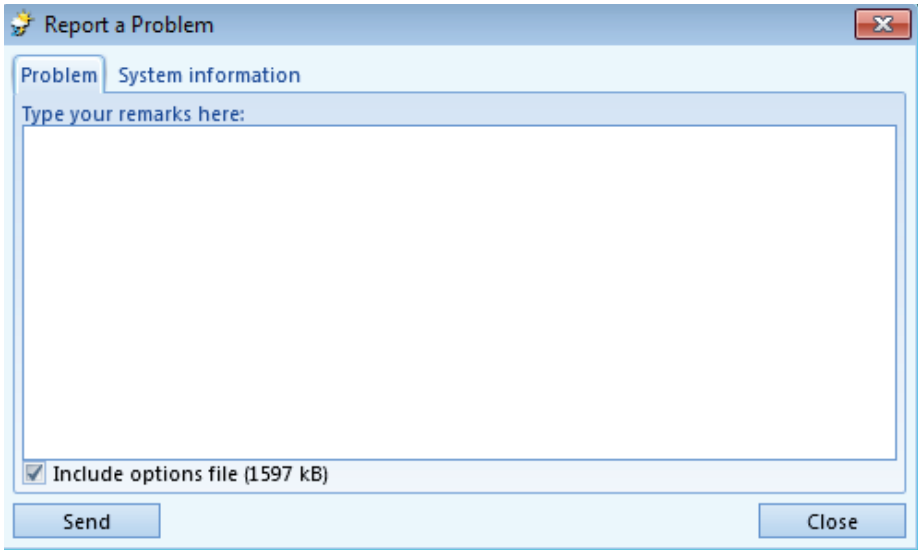
In the SPOS System Settings tab Common you may select the method of reporting problems to the support dept. at support@spos.eu. When you have a MAPI enabled e-mail client please choose Mail. Otherwise select Folder and the location you want to save the report before sending this.



Creating a problem report can be done from the drop down list beside the Help symbol



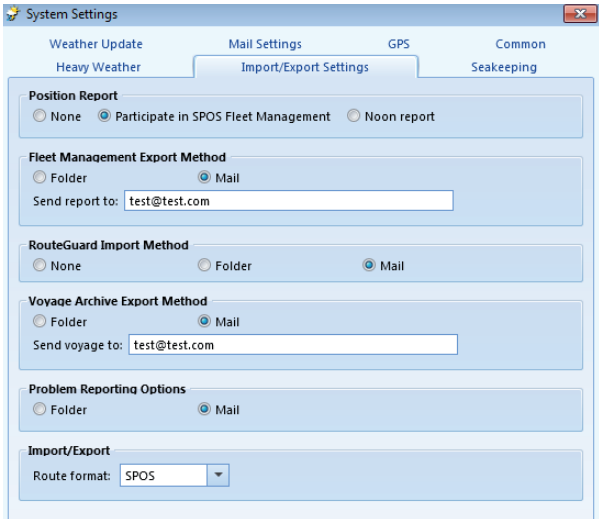
When creating the report please tick the option to include the options file. This will enable us to understand the issue better and help you more precise.



9.3 Voyage reports - RouteGuard

RouteGuard Import Method

When you are also receiving our shore based routing service RouteGuard you can receive the issued RouteGuard advice for import and viewing in SPOS. RouteGuard files have the extension ***.rga**



The RouteGuard import method can be set in the **System Settings**, tab **Voyage Reports**.
The RouteGuard files import method can be set either to **Folder** or **Mail** (via MAPI connection).

Import

Use the **Import** button to import the last issued advice, go to the **Routing** screen. If you are using MAPI to retrieve the advice from your e-mail client, the last received report will be imported.

If you are using the Folder method to import, make sure you have saved the last issued advice in the designated folder.

Synopsis

The simple text format synopsis and comments within the RouteGuard advice can be shown by pressing the Synopsis button.
You can delete the RouteGuard advice from the comparison information panels with the **Delete** button beside the panel.

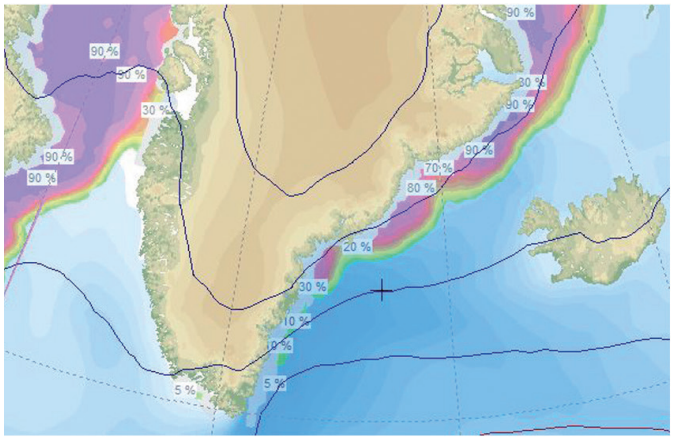
Note that the RouteGuard advice is for display purposes only and will not be imported as route template automatically. You may use the **Export** button beside the comparison table to export to e.g. ECDIS format to check for navigational hazards in your electronic charts.

9.4 How to – Use Ice information in SPOS

SPOS features improved ice information in 10 ice concentration levels and ice berg information. The information can be used to set restrictions on each level.

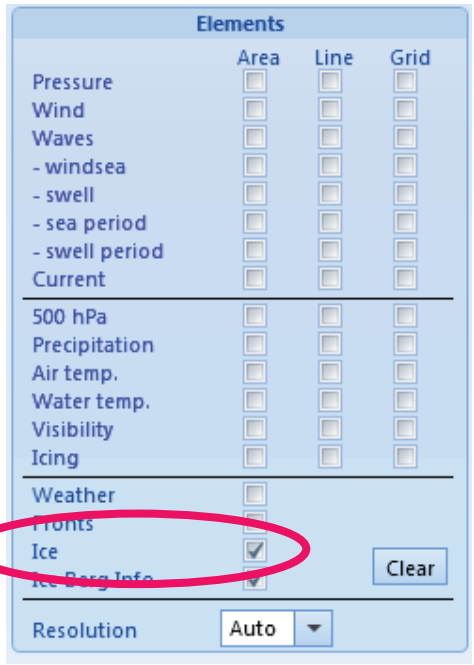
Ice concentration

Ice concentration is featured in SPOS in 10 different levels. Each level is displayed in a different color and can be set as restriction in the Input screen. For the identification of the Ice Concentrations SPOS uses colors. Each color represents the concentration level as shown in the table below:



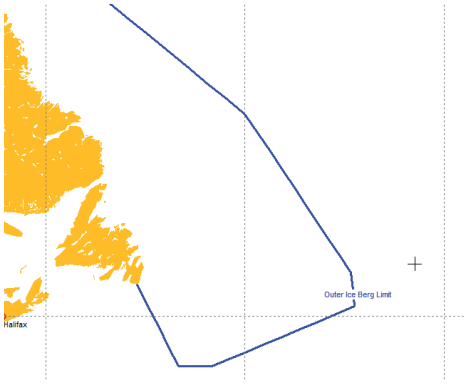
	GREEN	5-9 %
	LIGHT GREEN	10-19 %
	YELLOW	20-29 %
	SAND	30-39%
	BROWN	40-49%
	BROWN/RED	50-59%
	ORANGE	60-69%
	RED	70-79%
	PINK	80-89%
	LILA	90-100%
	GREY	UNDEFINED

To visualize ice concentrations, select the check-box 'Ice' in the 'Elements' group box in the Weather screen.



Iceberg information

In the North Atlantic the outer iceberg limit is displayed. This limit is indicated by a blue line.

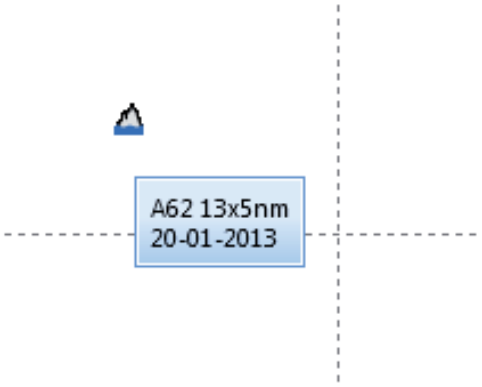


North Atlantic Outer iceberg limit

In the southern hemisphere there is detailed information on the largest icebergs available.

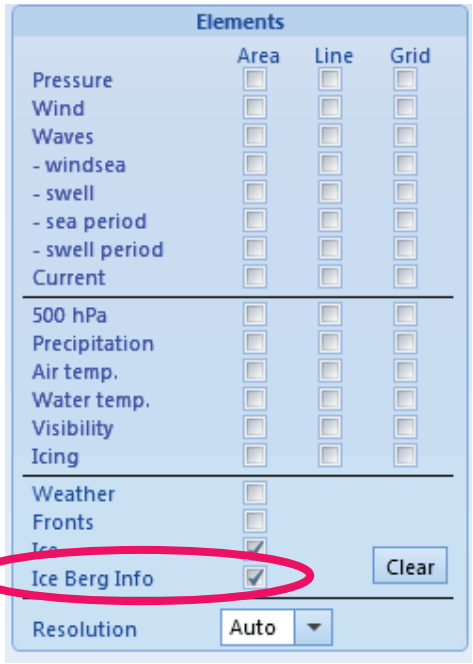
Please note that ice berg information is displayed only and will not be used in routing calculations.

Always check other (local) sources of information for the latest warnings!



Southern hemisphere iceberg information

To visualize this information as shown above, select the checkbox 'Ice Berg info' in the 'Elements' group box in the Weather screen.

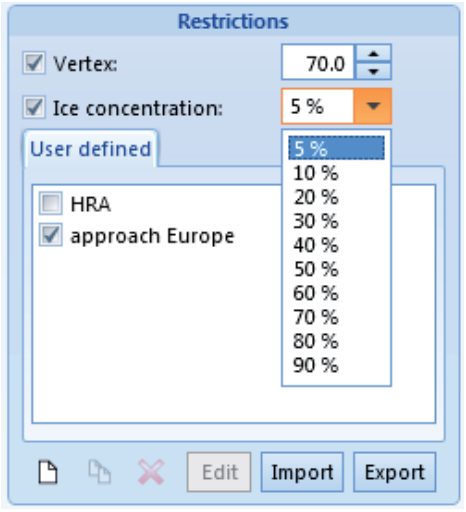


Ice Concentration as restriction

In the Restrictions group box of the Input screen you may set a maximum level of ice concentration that will be used as restricted area when routing.

The restricted area is thus indicated by a black line around the selected ice concentration level. When activated this line will be visible whether the ice information in the Weather screen is selected or not.

To activate this restriction, you can select the checkbox 'Ice concentration' in the 'Restrictions' group box in the 'Input' screen.



9.5 How to – use keyboard shortcuts in SPOS

CTRL + mouse = Move selected waypoint	SHIFT + mouse = Insert waypoint

FUNCTION KEYS

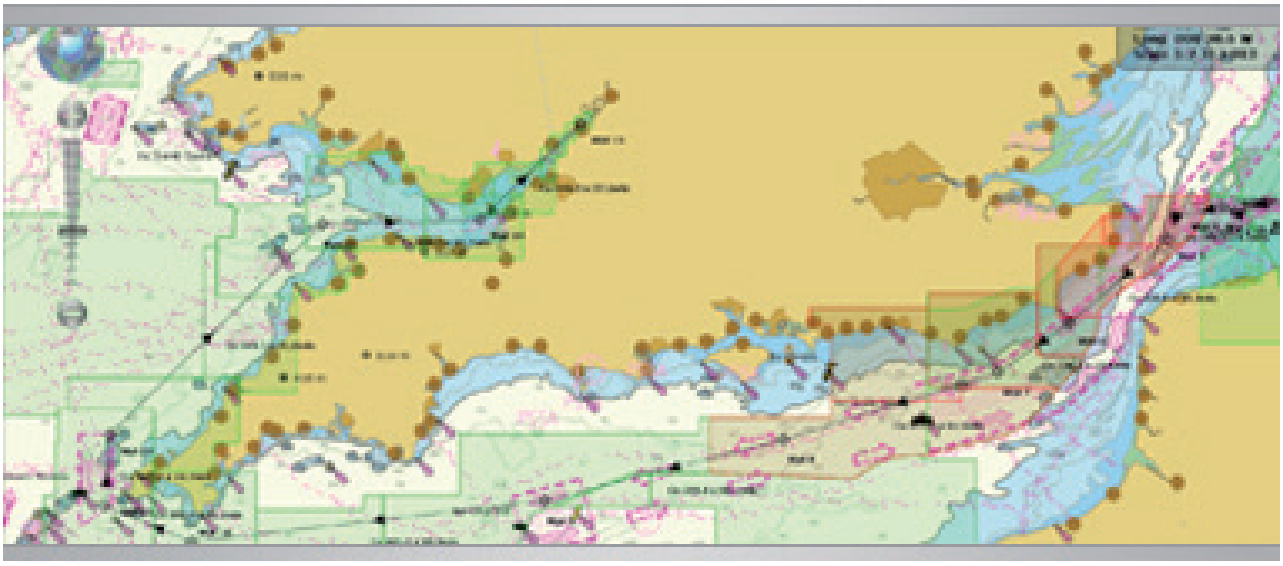
F1 = Help	F10 or Alt = Menu bar

CHART

P = Toggle between globe and Mercator projection	
F = Full screen - toggle	
Z = Zoom in	A = Zoom out
E = Display / hide orography	D = Display / hide bathymetry
G = Display / hide grid	
↑ ← ↓ → = Move chart – left/right/up/down	

9.6 How to – use SPOS and Voyager Planning Station

VOYAGER
ROUTE PLANNER



Voyager Planning Station from the Global Navigation Solutions Group and SPOS offer an integrated solution for optimised voyage planning and ship management. SPOS, developed and maintained by MeteoGroup, runs within the Voyager interface and the integration helps you to easily plan your route taking weather parameters, ocean elements and vessel characteristics into account.

The approach is flexible. This is the proposed working method.

When starting your route, creating your voyage plan:

- Create a route in Voyager.
- Press the Submit to SPOS button and SPOS will be started with the uploaded route selected.
- Use the functionality of SPOS to get a user-defined optimisation.
- Calculate weather route optimisations and select the optimised route to start a voyage.
- Export (in the Routing tab) the voyage (after starting the voyage and after each voyage-update).
- Now the software reloads the route in Voyager and you can recheck it for safe navigation.

When updating your position in SPOS (each noon):

- Select Update Voyage and let SPOS recalculate your optimum route, including the great circle, rhumline and a composite route.
- Select the route you find appropriate and finish your voyage update.
- Now SPOS has automatically saved your new optimised route in the standard file exchange location.
- Pick up this route in your ECDIS and perform your navigation checks.

9.7 SPOS Multiuser Functionality

In order to enable multiple users to operate SPOS at the same time SPOS Version 8 has an embedded multiuser function. With this functionality it is possible to install SPOS on a server (e.g. a Citrix server) and multiple clients will be able to manage their own route templates, routes and voyages.

Installation instructions:

1. Install SPOS Version 8 on a server following the standard installation instructions.
2. Verify that the users of SPOS are registered in Windows as a user with their own user account.
3. For users within the Citrix environment, a desktop Icon and shortcut must be created (on the desktop of the user). This shortcut must appoint to the spos.exe within the server installation.
   The default path is: C:\Program Files\MeteoGroup\SPOS\.
4. Within the shortcut the spos.exe file must be started with the parameter /m.
   For example: “C:\Program files\MeteoGroup\SPOS\Spos.exe” /m

Background

During the installation process SPOS is installed in two directories.
The first directory is not user specific and is installed within the program files tree.
The second directory is called the Read/Write folder and contains user specific information like routes, voyages etc.

In a single user setup the Read/Write folder is installed within the Program Data directory. It is in this case not possible that SPOS is used simultaneously by multiple users.

The /m parameter creates a user specific Read/Write folder within its own specific part of the directory Program Data. Executing SPOS with the parameter /m for each different user will create multiple Read/Write folders where user dependent data can be written to, thereby enabling multiple users to work on SPOS at the same time.

Limitations

Although multiple users can use SPOS at the same time, there are still some limitations in using SPOS:

- Each user can create and send a weather subscription message, this subscription is not user specific and will eventually change the subscription of all users working on the same installation.
- Settings such as the optional Seakeeping module are not user specific. Changing these settings, will also affect the other user’s usage of the Seakeeping module.

9.8 How to - Import and Export ECDIS route templates

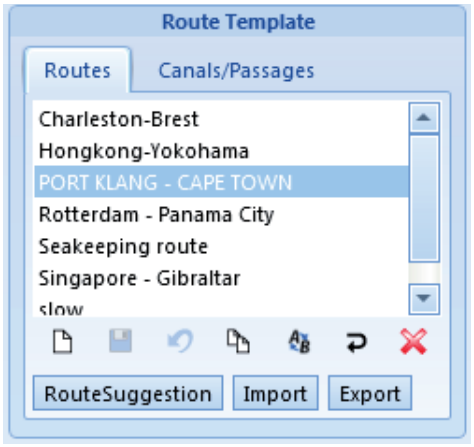
1. In SPOS open the System Settings tab Import/Export settings

2. In the section Import/Export select the desired ECDIS route format.

3. Close System Settings with OK

4. Go to the Input screen

5. With the Import / Export buttons you can navigate to the folder where the ECDIS files must be saved to or imported from. You can select the voyage and you will have the WP's on your screen.



6. Use SPOS as normal

7. From SPOS back to the ECDIS
   - when you Start, Create or Update a voyage in the Routing screen a file is created (# SPOS #.xyz)
   - according to your settings in the System Settings tab Common it is stored in the SPOS Version 8 'Read/Write' folder.
   - select the file # SPOS #.xyz on the ECDIS to import the optimized route.

9.9 How to – find the latest software update

SPOS is always developing. Small improvements can be applied to your version via software updates. The latest software update is available at:
http://download.meteogroup.com/SPOS/SPOSpatch83.msp
If you do not have an internet connection please contact us at spos@meteogroup.com

Run the patch (as administrator) and choose ‘Repair’.
After restarting SPOS Version 8 confirm the installation by simply (re)submitting your subscription message.

Note that we will actively contact you with important updates for SPOS Version 8. We are confident that this will keep your system always updated and will reduce support issues that might arise. You are therefore invited to inform us on any issue that you encounter with SPOS Version 8. Please include a ‘Report a Problem’ message with ‘options.db’ when you contact us through spos@meteogroup.com. You can set the reporting method via the System Settings tab Common.

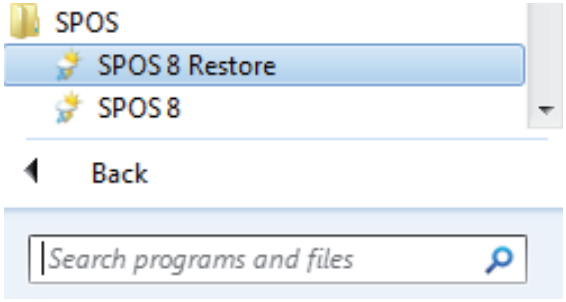
9.10 How to – restore SPOS

The best way to get the program started again is via a reset:

STEP 1: First close the SPOS-program.

STEP 2 : Click on the Windows START button, select (all)PROGRAMS - SPOS - SPOS RESTORE

STEP 3: Now SPOS should start again with the last working configuration.



9.11 How to – Set default mail program in Windows

It can happen that another program sets itself as your default mail program. In that case SPOS will not be able to find the weather forecasts or prepare emails for your voyage updates. You can (re)set your default mail program in Windows:

1. Windows START button and choose SETTINGS - CONTROL PANEL
   (note: in Windows XP the control panel option is often directly available under START)

2. Select INTERNET OPTIONS

3. select tab PROGRAMS

4. change the E-MAIL selector and choose your current e-mail program.
   (e.g. if you use AMOSConnect, select that)

5. Press OK and exit.

Now start SPOS, select menu option FILE - SYSTEM SETTINGS, tab Mail Settings and try the TEST MAPI button to see if it works.

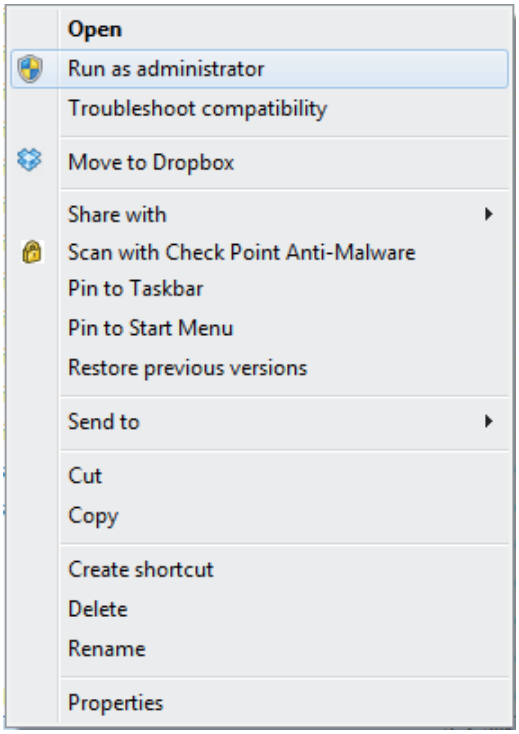
9.12 How to – Run/Install as administrator

Step 1: Insert the cd in the disk drive and choose ‘Open folder to view files’

Step 2: From the file listing select ‘StartSpos.exe’

Step 3: With right mouse click a menu will appear, choose ‘Run as administrator’

Step 4: From the menu choose ‘Install SPOS Onboard’

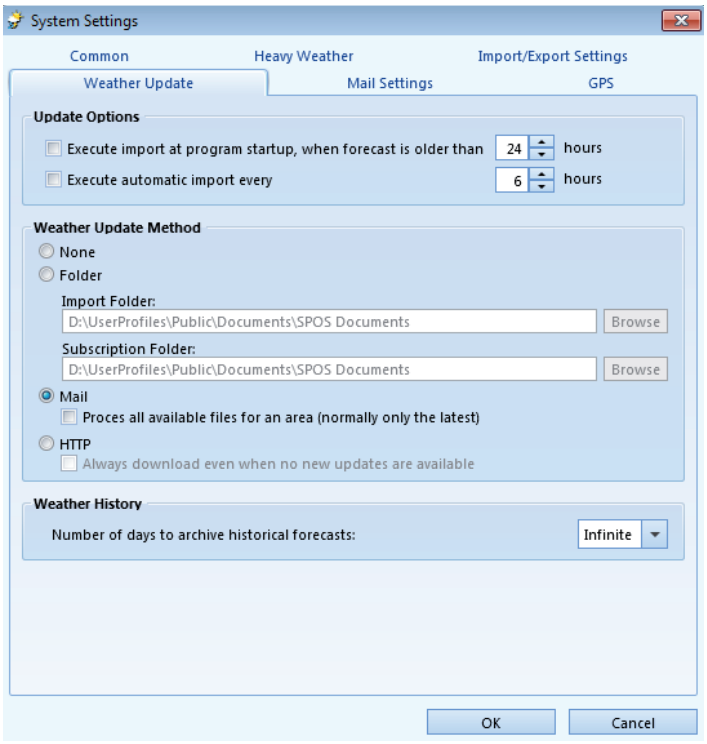


9. 13 How to – setup automatic weather updates

With SPOS 8 and higher you can setup for automatic weather updates from various sources.

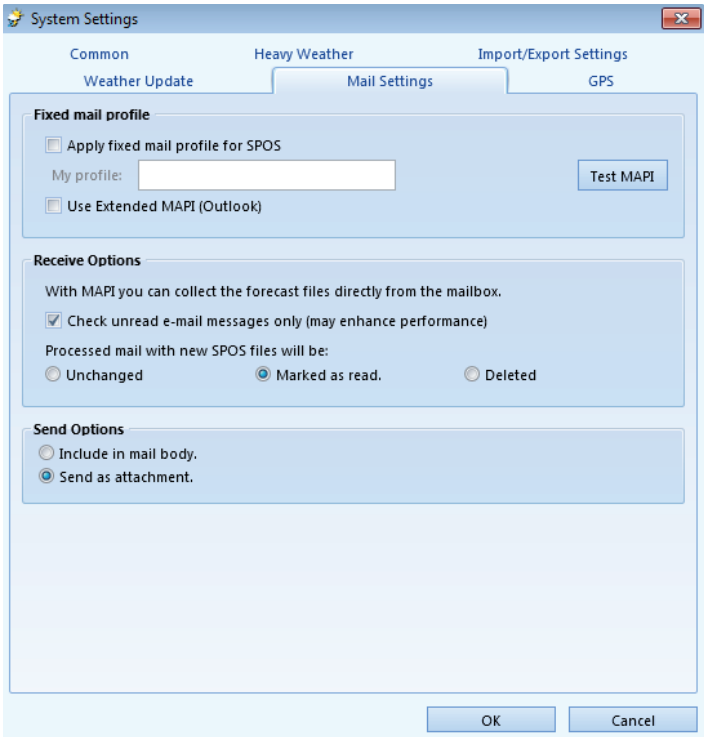
1. Open the SPOS 8 System Settings tab Weather Update

2. In the section Update Options select 'Execute automatic import every' and then select the desired interval (between 1 and 48 hours)



3. If you are using the Weather Update Method 'Mail' in combination with Microsoft Outlook, please go to the System Settings tab MAPI Settings.

4. For MS Outlook to connect to your inbox without the security alert displayed, please tick the box 'Use Extended MAPI (Outlook)'.



Please note

The automatic import only will be executed when the SPOS application is left running.
The timer will start running after startup or when set by pressing OK.
The feature is best used in combination with the Update Option 'Execute import at program startup'.