



Avalon VPP (Velocity Prediction Program)

User's Guide

Avalon Offshore for iOS
Avalon Offshore for Android

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1. Introduction

To calculate the best route for your next cruise with a Weather Routing system, you need to:

- Get accurate weather forecast
- Know precisely your boat polars (or VPP) i.e. the speed of your boat for every TWS (Wind Speed) and TWA (Wind Angle)

Unfortunately, the VPPs that you can get on the web, computed by architects or by sailing organizations, are given for specific ideal navigation conditions, most often regattas with brand new racing sail sets, empty boat, folding propellor, optimum number of thinking crew, etc ...

Therefore, they will rarely match the way you sail and will need to be roughly adapted to match your specific boat and navigation equipment (cruising sails, additional displacement due to water and diesel tanks, food, tender, ...)

Net: whatever the VPP you have loaded in your navigation system, they will never be precise enough as ideally, you would need a specific set of VPPs for each of your sailing type: regatta, week end sailing, long distance cruise.

The « one size fits all » does not work when it comes to calculate the best sailing route !

We have build Avalon VPP to enable you to create as many sets of VPPs as needed. This system will enable you calculate your own polars and integrate them directly into Avalon Offshore for Android or Avalon Offshore for iOS.

It will provide results for several types of boat:

- sloop
- ketch
- yawl
- some schooners.

Most of the available sail types:

- jib
- genoa (roller furling or not)
- spinnaker
- asymmetric spinnaker
- code 0
- optionally a mizzen sail.

For the TWS values: 6, 8, 10, 12, 16, 20, 25 and 30 knots

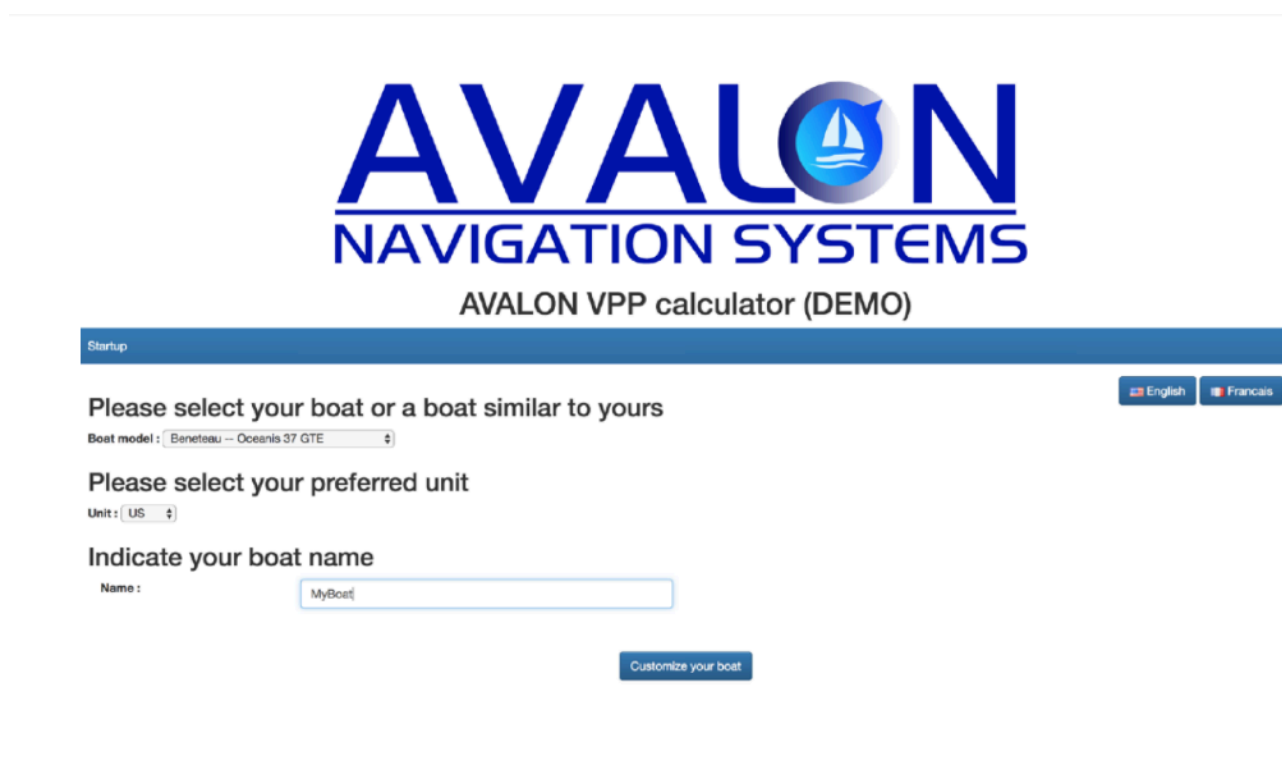
For the TWA value: 38, 40, 42, 45, 50, 55, 60, 65, 70, 75, 90, 95, 100, 110, 120, 135, 140, 150, 160, 170 and 180 degrees.

2. Instructions

Please go to our web site at web www.avalon-routing.com then to the « VPP » tab where you will find a link to the Avalon VPP page.

You will arrive to a first screen where you have to:

- Select a a boat among a list of about 250 boats. If you don't find your boat, pick one close to yours. You can then create your boat from this one by modifying all the parameters.
- You can also modify the type of the boat and add the name of your boat. You can save it under the name of your own boat.
- Select between US and Metric system.
- Name your boat.



The screenshot shows the 'Startup' screen of the 'AVALON VPP calculator (DEMO)'. At the top is the 'AVALON NAVIGATION SYSTEMS' logo, with 'AVALON' in large blue letters and 'NAVIGATION SYSTEMS' below it. Below the logo is the text 'AVALON VPP calculator (DEMO)'. The main content area has a blue header bar with 'Startup' on the left. Below this, there are three sections: 'Please select your boat or a boat similar to yours' with a dropdown menu showing 'Beneteau -- Oceanis 37 GTE'; 'Please select your preferred unit' with a dropdown menu showing 'US'; and 'Indicate your boat name' with a text input field containing 'MyBoat'. To the right of these sections are two buttons: 'English' and 'Francais'. At the bottom right is a button labeled 'Customize your boat'.

Click on « Customize your boat » to continue.

You can then open several tabs:

- Crew and Settings
- Hull
- Jib/Genoa
- Spi
- Asy (Asymmetric Spinnaker)
- Code 0
- Mizzen

Crew & Settings

Total crew number and average crew number will contribute to the total weight of the boat. This is useful for both racers and cruisers.

Hiking crew number and crew ARM will be useful in regattas. We have made some tests and we clearly saw that a Sun Fast 3200 was gaining up to 2 degrees upwind with a hiking crew vs same crew but non hiking.

Max heel angle is a useful data for family cruisers that do not want the boat to heel by more than 20 or 25 degrees. To comply such a constrain, Avalon VPP will increase the reefing.



AVALON VPP customization of cajou

Crew & Settings

Total crew members :	1			
Hiking crew members :	0			
Average crew weight :	74.8427	kg	<input type="button" value="⚙ Default"/>	
Crew ARM :	1.4173	m	<input type="button" value="⚙ Default"/>	
Max heel angle :	30 ⬆ ⬇ ⬆			

Hull
Main sail
Jib/Genoa
Spinnaker
Asymetric
Code 0
Mizzen

⬇ Save for future use

✓ Compute Main+Jib VPP

✓ Compute Main+Spi VPP

✓ Compute Main+Asy center VPP

✓ Compute Main+Asy pole VPP

✓ Compute Main+Ro

Hull

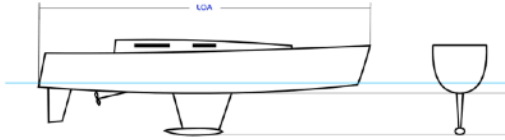
You have to check the pre loaded data and correct them if necessary. If you do not know the exact data for some fields, you can click on the related « default » button » and the field will be set to a defaulted value. Most of the missing but required information can be measured during the yearly careening of your boat (keel and rudder measurements).

To help you, diagrams showing requested data are displayed when you move the mouse over the required field.

Crew & Settings

Hull

Loa :	11.9299	m	
Lwl :	10.6189	m	
Light displacement :	6900.0415	kg	
Additional displacement (w/o crew) :	150.1390	kg	
Draft (total) :	2.3991	m	
Draft canoe hull :	0.6902	m	Default
Beam :	3.7490	m	
Waterline beam :	3.5619	m	Default
Freeboard average :	1.2741	m	Default
Wetted surface (canoe) :	25.0002	m ²	Default
Maximum cross sectional area :	1.1799	m ²	Default
Bulb length :	0.0000	m	
Bulb diameter :	0.0000	m	
Keel root length :	2.2300	m	Default
Keel tip length :	2.0176	m	Default
Keel root thickness :	0.1593	m	Default
Keel tip thickness :	0.1274	m	Default
Rudder span :	1.4123	m	Default
Rudder root length :	0.6478	m	Default
Rudder tip length :	0.5203	m	Default
Rudder thickness :	0.0850	m	Default
Propelor type :	Locked fixed blades		
Propelor Diameter :	0.4572	m	Default
Rudder type :	Separate		



Main sail

Main Sail

In the next release, we will add another parameter to consider square top sails.

Hull

Main sail

Sail type :

Racing sail

⌵

P :

14.8855

m

E :

5.4011

m

Area :

40.2070

m²

Mast height above deck :

15.7307

m

Average mast diameter :

0.1966

m

Boom above shoeline :

1.4316

m

⚙ Default

⚙ Default

⚙ Default

⚙ Default

The diagram illustrates the geometry of a sailboat's main sail. The sail is represented by a blue triangle with its base on the boom and its peak at the top of the mast. The boom is labeled 'Boom Above Sheerline' and has a length 'E'. The mast is labeled 'Mast Height' and has a height 'p'. The area of the sail is labeled 'Area'. A small blue circle with a white 'b' is located on the sail. The mast diameter is indicated at the top of the mast.

Jib/Genoa

Spinnaker

Asymetric

Code 0

Jib/Genoa

Jib/Genoa

Sail type :

Racing sail

Type :

Standard

I :

15.7307

m

ISP :

15.7307

m

⚙ Default

J :

4.4105

m

LPG :

7.9400

m

Area :

64.8582

m²

⚙ Default

Spinnaker

Asymetric

Code 0

Spinnaker

Spinnaker

Sail type :
ISP :
SL :
SPL :
SMG :
Area :

Racing sail

15.7307 m

15.5204 m

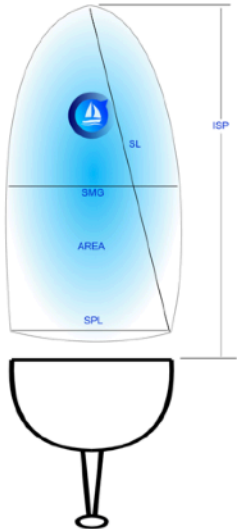
4.4105 m

5.9542 m

97.5447 m²

Default

Default



Asymetric

Code 0

Mizzen

Asymetric Spinnaker

Asymetric

Sail type :
ISP :
ASL :
ASF :
AMG :
Area :

Racing sail

15.7307 m

15.5204 m

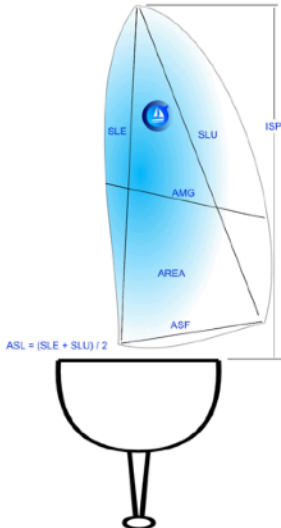
7.9389 m

5.9939 m

82.5498 m²

Default

Default



Code 0

Mizzen

Code 0

Code 0

Sail type :
ISP :
ASL :
ASF :
AMG :
Area :

Racing sail

15.7307 m

0.0000 m

0.0000 m


0.0000 m

0.0000 m²

Default

Default

ASL = (SLU + SLE) / 2



Mizzen

Mizzen

Mizzen

Sail type :
ISP :
Py :
Ey :
Area :
Boom above sheerline (y) :

Racing sail

15.7307 m

0.0000 m

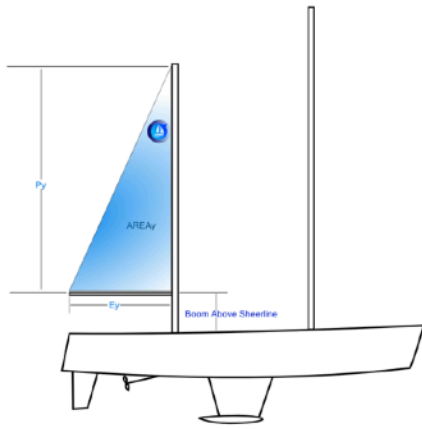
0.0000 m

0.0000 m²

0.0000 m

Default

Default



Save for future use

3. VPP calculation

When you have completed the data entry, you can launch the calculation.

Avalon VPP will calculate the speed, the heeling and the reefing for every TWS and TWA.

Tou have to run the calculation process for every sail set that you need as Avalon Offshore is able to handle multiple sail sets when it calculates the optimum route.

Computing polars is very resources consuming on our server. Please allow for 15 to 20 seconds to get the results.



AVALON VPP customization of cajou

Crew & Settings
Hull
Main sail
Jib/Genoa
Spinnaker
Asymetric
Code 0
<u>Mizzen</u>

[⬇ Save for future use](#)

✓ Compute Main+Jib VPP

✓ Compute Main+Spi VPP

✓ Compute Main+Asy center VPP

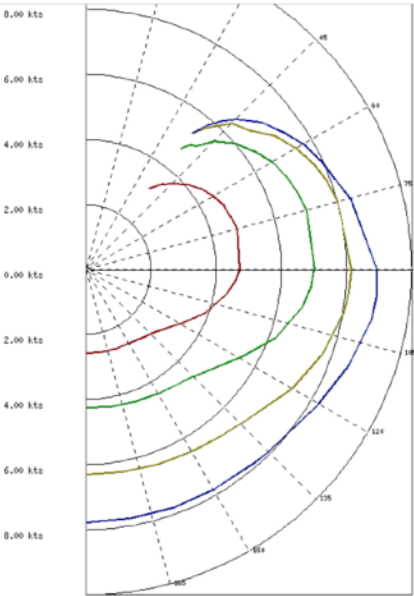
✓ Compute Main+Asy pole VPP

✓ Compute Main+Rolling genoa VPP

✓ Compute Main+Code0 VPP

4. Importing VPPs into Avalon Offshore

Once polars are calculated you should send them to your email by filling in the appropriate fields at the bottom of the page.



Speed @ TWS 6 kts
Speed @ TWS 10 kts
Speed @ TWS 15 kts
Speed @ TWS 20 kts

Receive by email

Warning, the email attached polar file could only be decrypted by AVALON OFFSHORE !

Email :

Go to your email. You will get a similar message (one per sail set)

De Moi <avalon-devt@avalon-routing.com> ☆

↳ Répondre ➡ Transférer 📁 Archiver 🚫 Indésirable 🗑 Supprimer Autres ▾

Sujet **Polar of : Terre Océane - Main_Jib** 17:03

Pour Moi <avalon-mktg@avalon-routing.com> ☆

This is the polar/vpp for your Terre Océane
For Main Jib sail set
Computed by **AVALON**
Quickly download this polar sailset from AVALON whith access code :**40165372**

▶ 1 pièce jointe : Terre_Océane_Main_Jib.pol 962 octets

↓ Enregistrer ▾

Please note the access code and open Avalon Offshore.

Go to Boat Setup and « Create new boat from Avalon VPP code

SFR

21:03

83 %

[Back](#)

Choose boat type or brand

Modify my Bavaria 44 GTE

Use AVALON VPP calculator for my Bavaria 44 GTE

Create new boat from AVALON VPP code

Competition

Hull

Ketch

Motor

Multi

Perso

Rating Group

Albin (1)

Allures Yachting (1)

Aloa (1)

Alsberg (1)

Alubat (7)

Amel (8)

Then enter the received code(s) and name the sail set to load

SFR 21:03 83%

< Back Choose boat type or brand

Modify my Bavaria 44 GTE

Use AVALON VPP calculator for my Bavaria 44 GTE

Create new boat from AVALON VPP code

Competition

Hull

Ketch

Motor

Multi

Perso

Rating Group

Albin (1)

Allures Yachting (1)

Aloa (1)

Alsberg (1)

Alubat (7)

Amel (8)

Import sailset from Avalon VPP
Enter sailset code receive by mail

40165372

Cancel Ok

SFR 21:04 83%

< Back Choose boat type or brand

Modify my Bavaria 44 GTE

Use AVALON VPP calculator for my Bavaria 44 GTE

Create new boat from AVALON VPP code

Competition

Hull

Ketch

Motor

Multi

Perso

Rating Group

Albin (1)

Allures Yachting (1)

Aloa (1)

Alsberg (1)

Alubat (7)

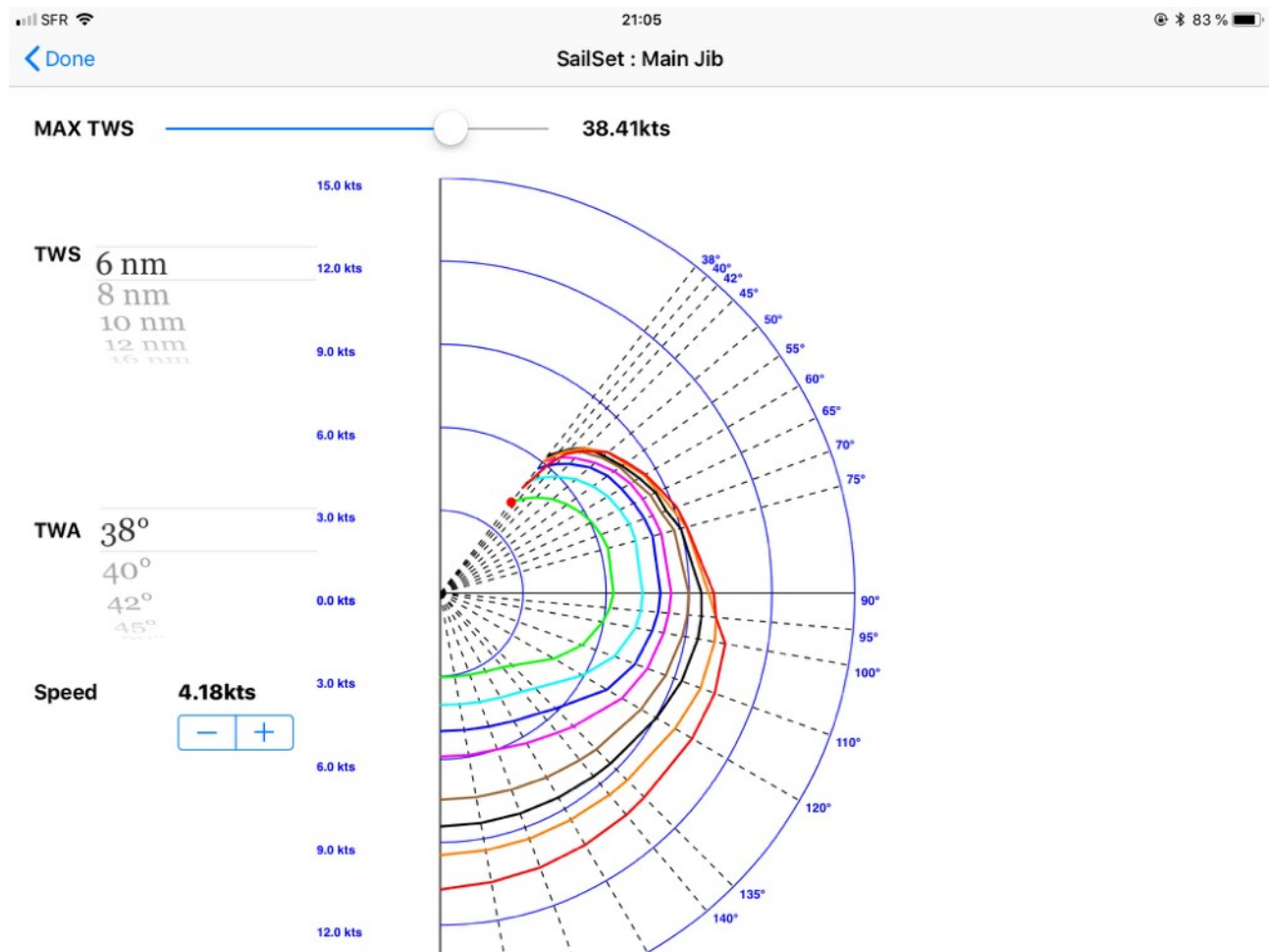
Amel (8)

Import sailset from Avalon VPP
Enter sailset name

Main Jib

Cancel Ok

Once loaded, you can modify the polar curve via our VPP editor.
You can also fix a maximum acceptable TWS for every sail set.



Vous pouvez ensuite régler le TWS maximum acceptable au niveau de chaque voile, et aussi modifier certaines valeurs si nécessaire.

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