

**International Association of Marine Aids to Navigation
and Lighthouse Authorities
Association Internationale de Signalisation Maritime**



IWRAP Mk II

Creating a model

Commercial version

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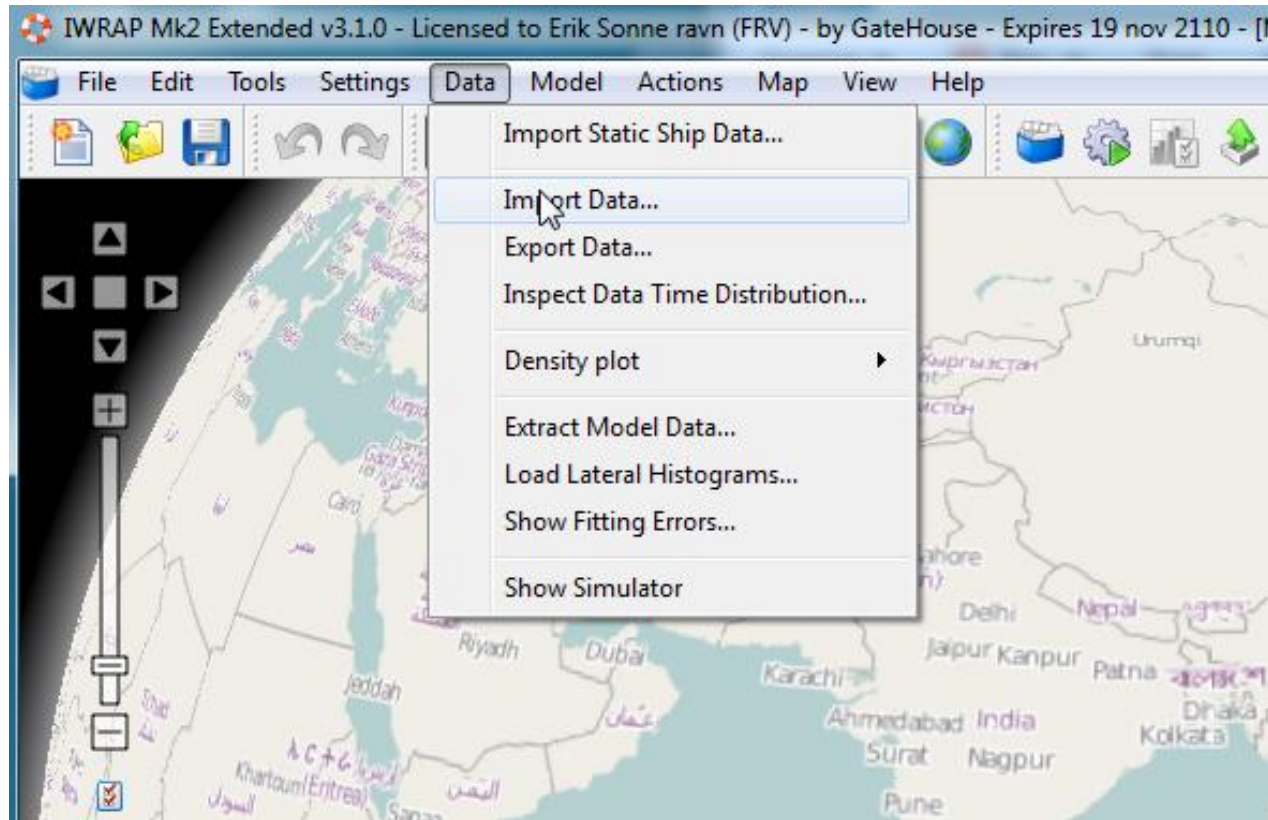
Danish Maritime Safety Administration



Steps for creating a model

1. Import AIS data in the correct format
2. Create density plot
3. Chart overlay
4. Draw legs
5. Extract model data. Vol., distributions. etc.
6. Create depth curves
7. Run model and do what if analysis

1. Import AIS data



AIS data can be imported from several text files

1. Import AIS data

Format examples: (The date format is user defined)

Raw data, NMEA:

```
2008-09-22 22:04:52      AIVDM,1,1,,A,15AspL02Ch7=puF1bwqLmb5`00s>,0*62
2008-09-22 22:04:52      AIVDM,2,1,0,B,57u2SF02>JLwULHsT00mJp@4qDn3T000000
!AIVDM,2,2,0,B,000000000000,2*27
2008-09-22 22:04:53      AIVDM,1,1,,B,13:s;d0PB:7?JO@1T0cni5?b06hd,0*17
```

Do not use , to separate date and !AIVDM

Plain text:

datetime	mmsi	longitude	latitude	navstatus	rateofturn	cog	sog	heading	imo	callsign	name	typeo
01-04-2009 04:35:14	244632000	10.95000000	55.92283333	0	0	219.00	13.70	217	9234290	PBDL	VIRGINIABORG	70
01-04-2009 04:34:05	244632000	10.95483333	55.92616667	0	0	220.00	13.70	217	9234290	PBDL	VIRGINIABORG	70
01-04-2009 04:34:25	244632000	10.95350000	55.92516667	0	0	219.00	13.70	217	9234290	PBDL	VIRGINIABORG	70

A separate table with static data can also be imported (ex. Lloyds data)

Before the import starts the program asks where the data is to be stored.

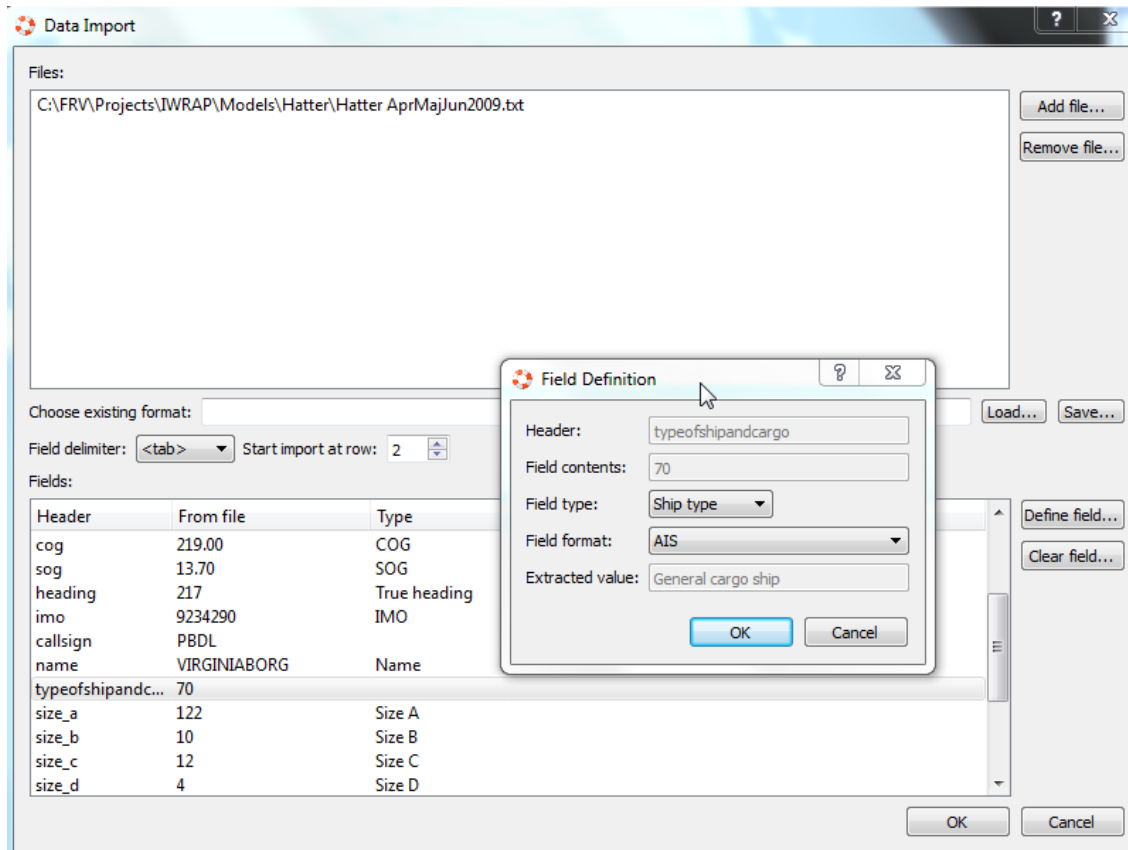
This could be in a new folder together with the project file.

YOU HAVE TO CHOOSE THIS AND REMEMBER IT

1. Import AIS data

When importing decoded plain text AIS data, the fields (column) are defined manually. The program makes a first guess, but check it!

Ship type = Type of ship and cargo



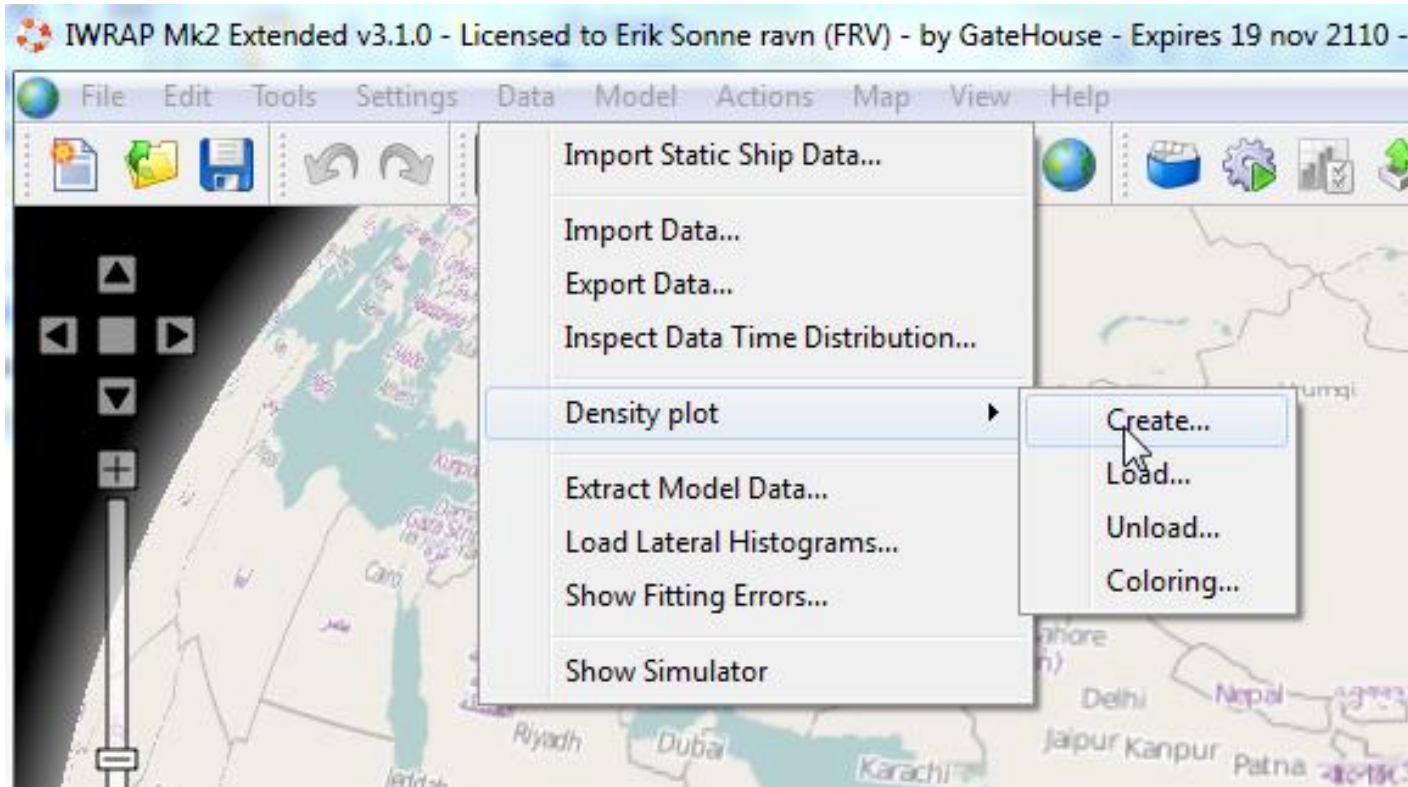
The screenshot shows the 'Data Import' dialog box with a 'Field Definition' sub-dialog open. The 'Data Import' dialog has a 'Files' list containing 'C:\FRV\Projects\IWRAP\Models\Hatter\Hatter AprMajJun2009.txt'. Below the file list, there are options for 'Choose existing format:', 'Field delimiter: <tab>', and 'Start import at row: 2'. A table of fields is displayed, and the 'Field Definition' dialog is currently focused on the 'typeofshipandc...' field.

Header	From file	Type
cog	219.00	COG
sog	13.70	SOG
heading	217	True heading
imo	9234290	IMO
callsign	PBDL	
name	VIRGINIABORG	Name
typeofshipandc...	70	
size_a	122	Size A
size_b	10	Size B
size_c	12	Size C
size_d	4	Size D

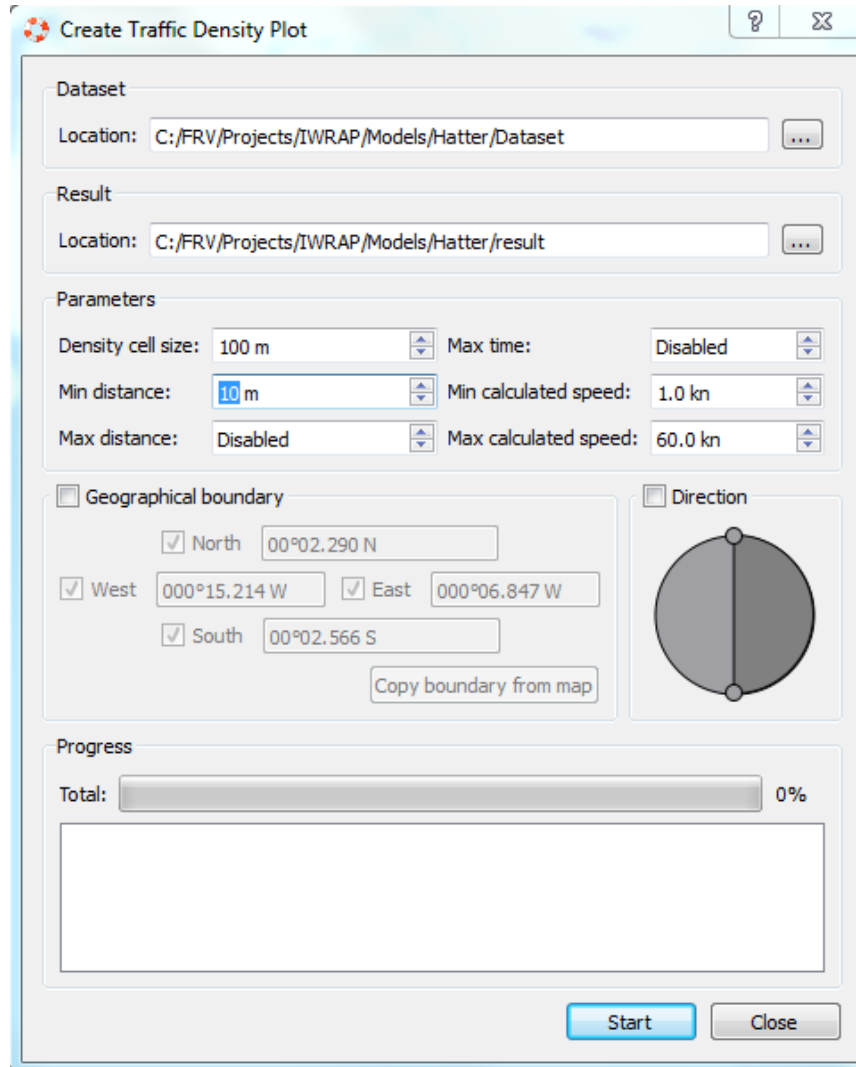
The 'Field Definition' dialog for 'typeofshipandc...' shows:

- Header: typeofshipandcargo
- Field contents: 70
- Field type: Ship type
- Field format: AIS
- Extracted value: General cargo ship

2. Generate density plot



2. Generate density plot



Create Traffic Density Plot

Dataset
Location: C:/FRV/Projects/IWRAP/Models/Hatter/Dataset

Result
Location: C:/FRV/Projects/IWRAP/Models/Hatter/result

Parameters

Density cell size: 100 m Max time: Disabled

Min distance: 10 m Min calculated speed: 1.0 kn

Max distance: Disabled Max calculated speed: 60.0 kn

Geographical boundary

North 00°02.290 N

West 000°15.214 W East 000°06.847 W

South 00°02.566 S

Copy boundary from map

Direction

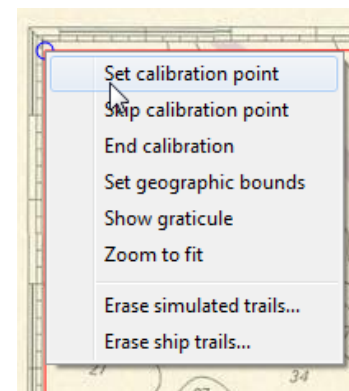
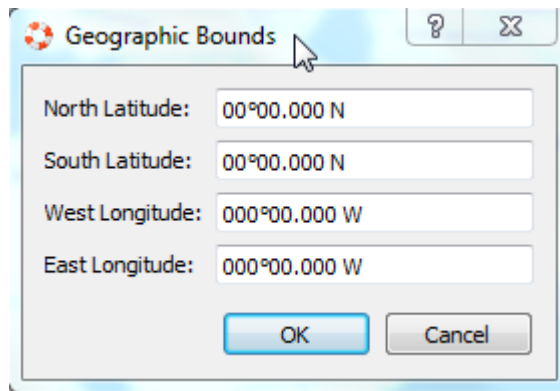
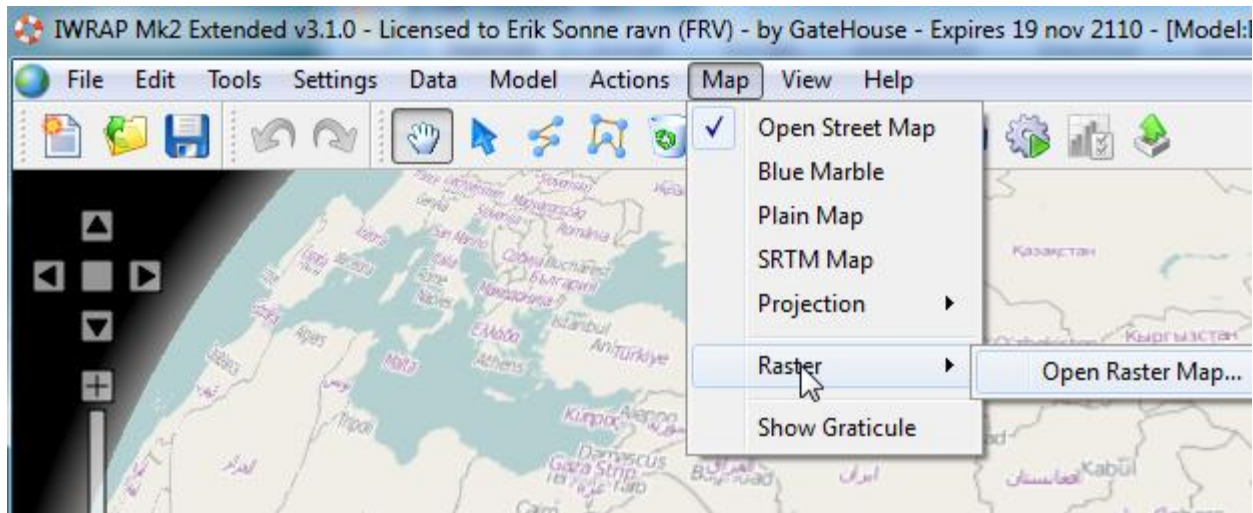
Progress

Total: 0%

Start Close

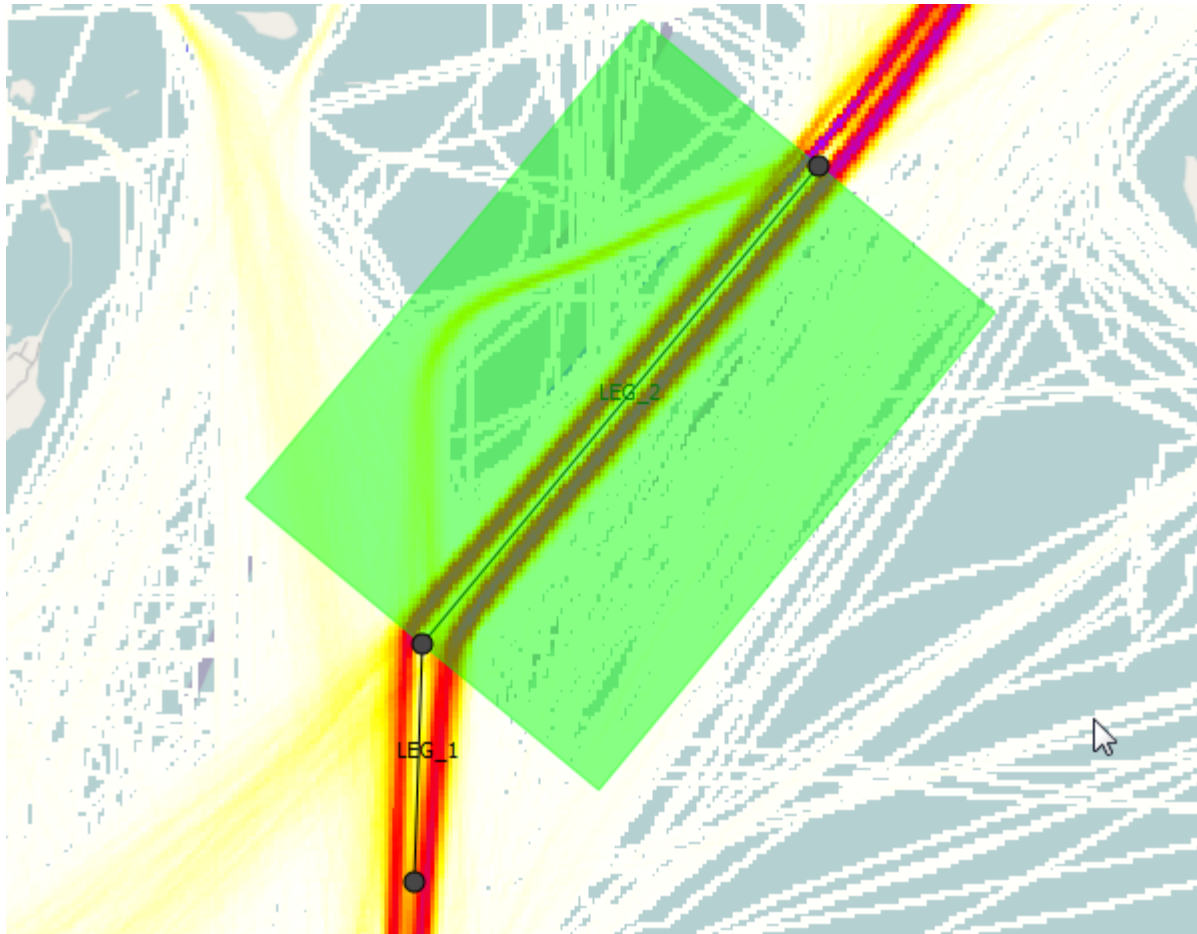
Dicipline here! Or you could end up using the wrong data

3. Overlay of raster charts



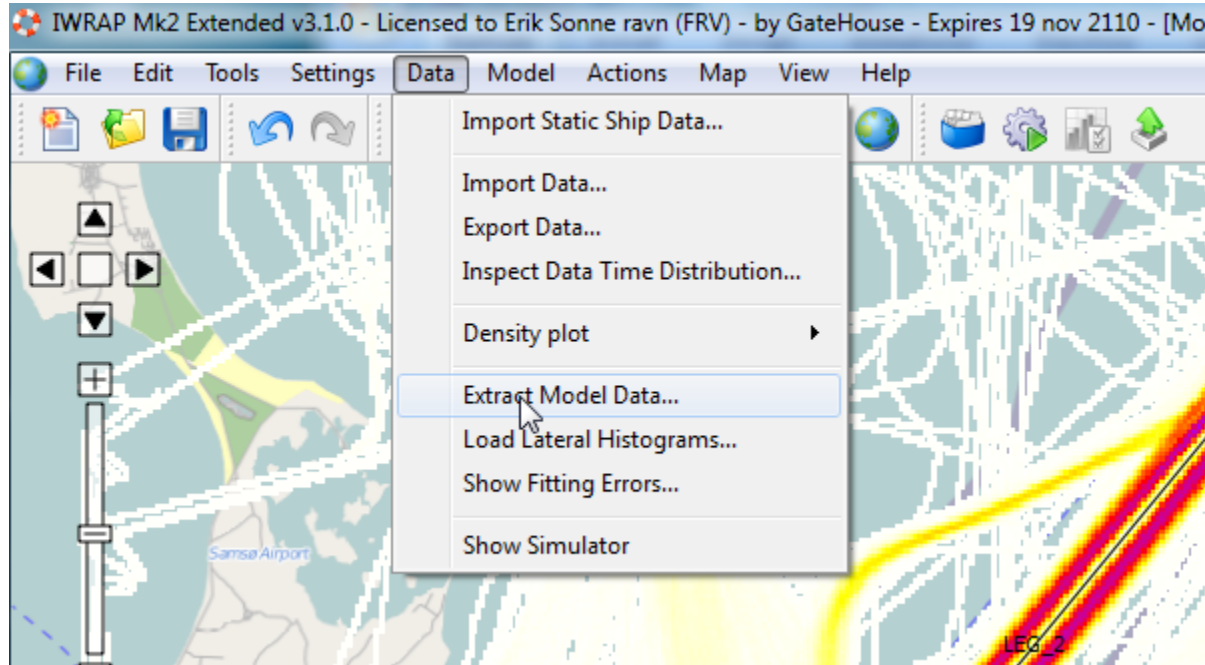
Use right click

4. Create legs



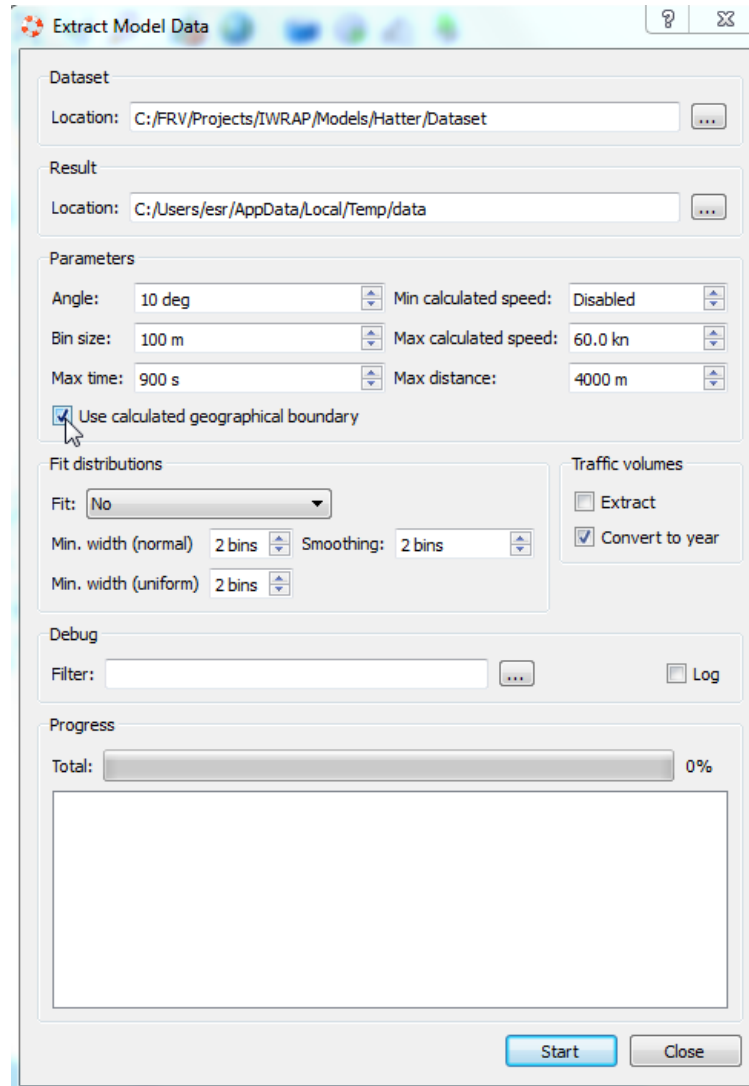
Adjust the width
of the legs

5. Extract model data



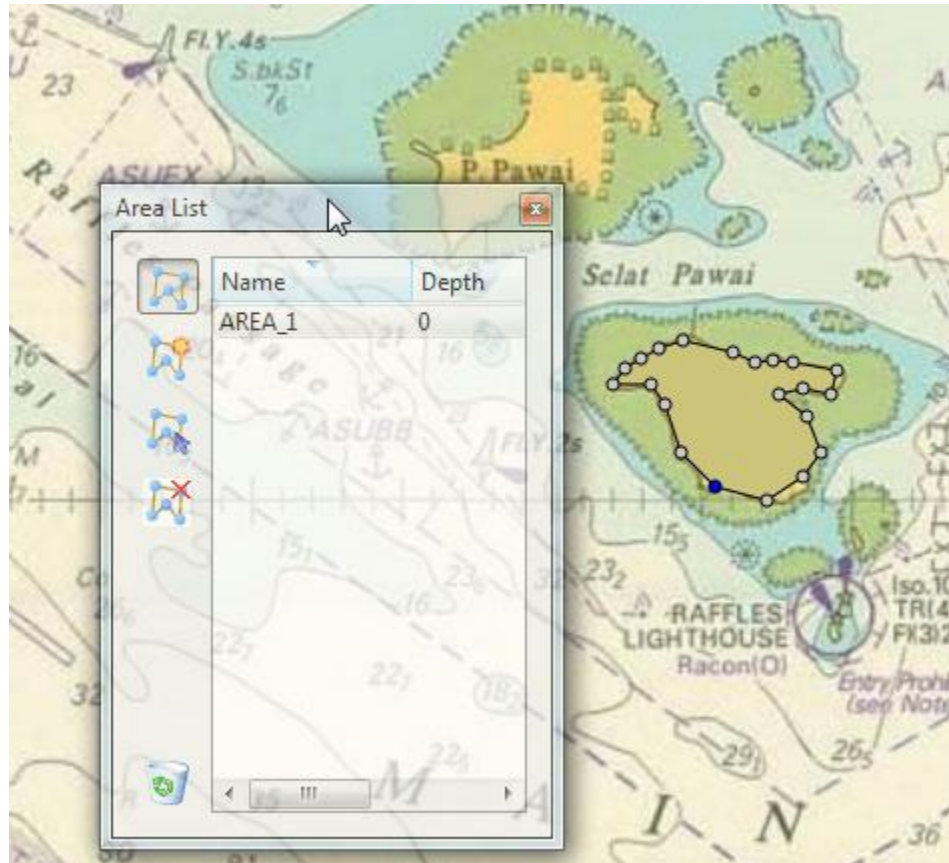
5. Extract model data

Wait with this only the legs have been located

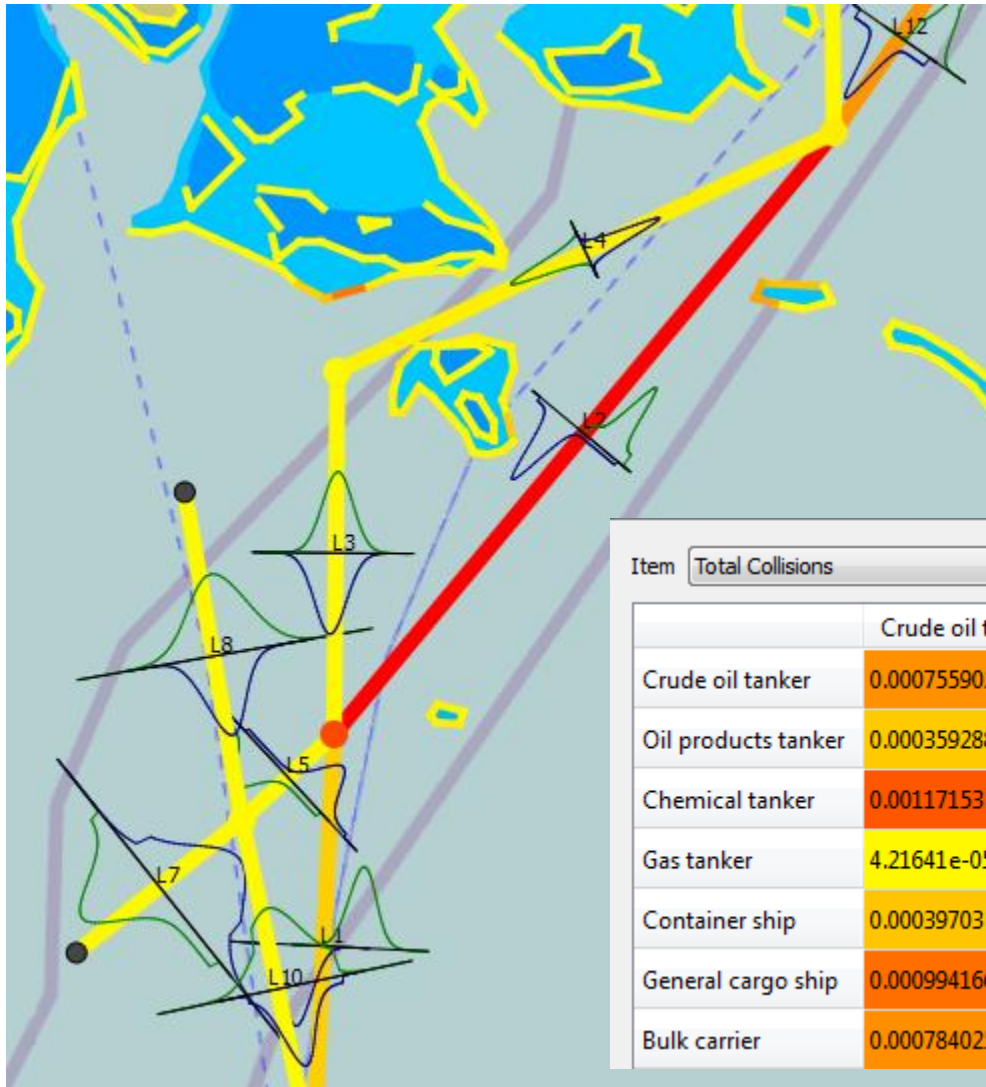


6. Depth curves

Depth curves can be imported or created using the polygon editor



Run model



	Hatter3	Hatter2
Powered Grounding	0.0993255	0.173198
Drifting Grounding	0.136376	0.127013
Total Groundings	0.235701	0.300211
Overtaking	0.0254244	0.0156494
HeadOn	0.00501114	0.00710918
Crossing	0.0046906	0.00384203
Merging	0.00566171	0.00239514
Bend	0.023018	0.0164033
Area	6.25829e-07	3.76635e-07
Total Collisions	0.0638065	0.0453994

Item: Total Collisions

Striking (blue arrow) / Struck (red arrow)

	Crude oil tanker	Oil products tanker	Chemical tanker	Gas tanker	Container ship
Crude oil tanker	0.000755902	0.000326592	0.000658663	3.7102e-05	0.000559216
Oil products tanker	0.000359288	0.000166267	0.000453952	2.39363e-05	0.000370792
Chemical tanker	0.00117153	0.000626526	0.00164856	0.000107483	0.00173098
Gas tanker	4.21641e-05	2.35578e-05	7.70011e-05	3.55511e-06	5.70441e-05
Container ship	0.00039703	0.000206595	0.000695889	2.89057e-05	0.000387504
General cargo ship	0.000994166	0.000544339	0.00172212	8.96641e-05	0.00134074
Bulk carrier	0.000784025	0.000415358	0.00112078	6.95708e-05	0.00109947