

SALVIA-OCT.

Smart AnaLysis of a Vessel In Actual seas

PRELIMINARY DATA CHECK

☐ (A) using mean value and standard deviation

☐ (B) using mean value

CALCULATION ITEMS

☐ (1) Preliminary data filtering

☐ (1A) using mean value and standard deviation

☐ (1B) using mean value

☐ (2) Data correction on sea state

☐ (3) Ship performance Assessment

☐ (3A) based on Resistance Criteria Method

☐ (3B) based on Estimated Performance Curve

☐ (4) Assessment of fouling and aging

Data Input

Calculation

Save

Load

Data Import

Data Export

Manual

Converter



SALVIA-OCT.-web V2.2

Startup Guide

ver. 2

Introduction

Before Use

To use this application, please access NMRI Cloud and complete the following:

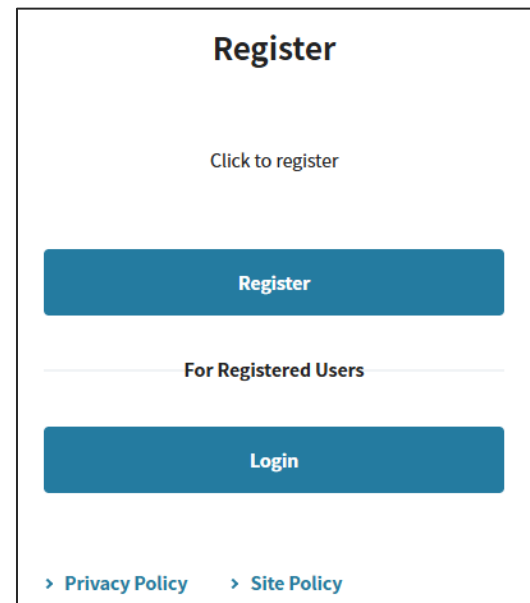
- ✓ User registration
- ✓ Application usage request

NMRI Cloud Registration:

<https://cloud.nmri.go.jp/portal/auth/signup>

Please note that usage may become available in as little as approximately two weeks after submission of the request.

Recommended browsers: Google Chrome, Microsoft Edge

A screenshot of a web registration page. At the top, the word "Register" is displayed in bold. Below it, the text "Click to register" is centered. A large blue button with the word "Register" in white is positioned below the text. Underneath the button, a horizontal line separates the registration section from the login section, with the text "For Registered Users" centered above the line. Below the line, a large blue button with the word "Login" in white is displayed. At the bottom of the page, two links are shown: "> Privacy Policy" and "> Site Policy".

Register

Click to register

Register

For Registered Users

Login

> Privacy Policy > Site Policy

Registration page
(Once registration is completed, you will be redirected to the application usage request page.)

Introduction page

SALVIA-OCT.-web (Program for onboard data analysis)

SALVIA-OCT.-web is a program for assessing the performance of a ship in actual seas based on onboard monitoring data using the standard onboard monitoring method.

Support 

Startup Guide 

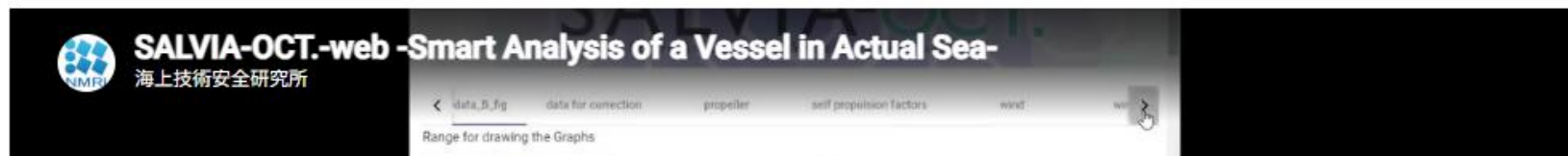
Use

Click "Use" (authentication may take a short time).

You may download this startup guide from the same page.

Outline

SALVIA-OCT.-web is a program for assessing the performance of a ship in actual seas based on onboard monitoring data using the standard onboard monitoring method.



What is SALVIA-OCT.-web?

- ✓ **SALVIA-OCT.-web** is an application that extracts actual ship performance from onboard monitoring data and enables performance comparison and evaluation.
- ✓ Data analysis is conducted based on standardized methods developed in the OCTARVIA project.
- ✓ This application enables analysis of the monitoring data without arbitrariness

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- ☐ (1) Preliminary data filtering
 - ☐ (1A) using mean value and standard deviation
 - ☐ (1B) using mean value
- ☐ (2) Data correction on sea state
- ☐ (3) Ship performance Assessment
 - ☐ (3A) based on Resistance Criteria Method
 - ☐ (3B) based on Estimated Performance Curve
- ☐ (4) Assessment of fouling and aging

Data Input **Calculation** **Save** **Load** **Data Import** **Data Export** **Manual**

Converter

■ Calculation items

- ✓ Preliminary data check
- ✓ (1) Data filtering
- ✓ (2) Data correction on sea state
- ✓ (3) Ship performance assesment
- ✓ (4) Assessment of fouling and aging

■ Workflow

- ✓ Select calculation items
- ✓ Prepare input data
- ✓ Execute calculation
- ✓ Review outputs

Required Data

1. Principal particulars and engine specifications
2. Onboard monitoring data (including weather and sea conditions)
3. Self-propulsion factors and propeller performance
4. External force data (winds and waves)

Data can be imported via:

- ✓ EAGLE-OCT.-web / MiPoLin[®] (propulsion & propeller data)
- ✓ OCTARVIA-web (external forces)

Monitoring data can also be obtained via APIs from:

- ✓ ShipDC (charged service*)
- ✓ Japan Weather Association (charged service*)

*Please see the introduction page of SALVIA-OCT.-web

<https://cloud.nmri.go.jp/portal/pub/salvia>

Data Input

Data Import

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1. Select calculation items (Power curve estimation: (1)+(2)+(3))

2. Data Import

As this function is required for calculation item (2), it becomes active when (2) is selected.

Data Input **Calculation** **Save** **Load** **Data Import** **Data Export** **Manual**

Converter

Data Import



Data Import from EAGLE-OCT

Import Items

- propeller open characteristics
- self-propulsion factors(1-t, η_R)
- projected transverse area above water line

Data Import from EAGLE-OCT

1. Select export files from EAGLE-OCT.-web

Note:

When using MiPoLin®, importing data from EAGLE-OCT.-web is not required.
For details about MiPoLin®, please refer to Slide 27.

Data Import from OCTARVIA-prediction

Import Items

- added resistance in short crested irregular waves [wind waves]
- added resistance in short crested irregular waves [swells]
- wind force coefficients
- hydrodynamic coefficients

Data Import from OCTARVIA-prediction(1)

2. Select export files from OCTARVIA-web

cloud.nmri.go.jp の内容
following values were imported;
AT in 'input'
Cws0 in 'self propulsion factors'
Cws1 in 'self propulsion factors'
Cth0 in 'self propulsion factors'
Cth1 in 'self propulsion factors'
CetaR0 in 'self propulsion factors'
CetaR1 in 'self propulsion factors'
DP in 'propeller'

OK

Click OK when the import completes successfully

cloud.nmri.go.jp の内容
following sheets were imported;
wind sheet
wind waves sheet
swells sheet
hydrodynamic coef sheet

OK

Input: Principal Particulars & Engine Specifications

After checking the input, go to "Parameter" tab

<	top	import	input	parameter	voyage data_B
ship data					
Item	Value	Unit	Remark		
Builder	NMRI	-	builder		
ID	4894	-	ship ID number		
L_{ps}	300	m	length between fore position of water line and A.P./aft position of water line; L_{ps}		
B_{max}	40	m	maximum breadth; B_{max}		
d_{mid}	14	m	mean draft; d_{mid}		
d_{aft}	14	m	aft draft; d_a		
d_{fore}	14	m	fore draft; d_f		
A_T	1546.667	m ²	projected transverse area above water line; A_T		
V_S	25	knot	designated ship speed; V_S		
Δ_{rep}	109200	ton	representative displacement; Δ_{rep}		
engine					
Item	Value	Unit	Remark		
gear	1	-	gear ratio; gear (N_P =gear N_E)		
η_s	0.98	-	transmission efficiency; η_s		
MCR	59540	kW	maximum continuous rating of engine for setting the limit; MCR		
N_{Elim}	98.5	rpm	engine revolution at MCR for setting the limit; N_{Elim}		

Principal Particulars

- Length between perpendiculars
- Maximum breadth
- Draft
- Projected transverse area
- Design ship speed
- Representative displacement*1

*1 Please specify a representative displacement value, such as the design full-load displacement.

Engine Parameters

- Gear ratio (default: 1 if not applicable)
- Transmission efficiency
- MCR
- Engine revolution at MCR

Input: Parameter Settings

port				input				parameter				voyage data_B				voyage data_B_fig				propeller			
selector of calculation																							
Item	Value	Unit	Remark																				
i_{sw}	1	-	definition of wind [0: relative wind, 1: absolute wind]																				
i_{sv}	1	-	definition of wave direction [0: based on the north direction (0 deg. means waves from north.), 1: based on the heading direction (0 deg. means head waves.)]																				
i_{pow}	1	-	calculation method [0: Direct Power Method (DPM), 1: Extended Power Method (EPM)]																				
i_{cal}	0	-	identification of weather [0: calm sea condition, 1: specific weather condition]																				
i_{sp}	0	-	load variation effect on self propulsion factors by ISO15016:2015 [0: not considered, 1: considered]																				
selector of external forces for correction [0: not corrected, 1: corrected]																							
Item	Value	Unit	Remark																				
i_{wind}	1	-	correction on winds																				
i_{wave}	1	-	correction on wind waves																				
i_{swell}	1	-	correction on swells																				
i_{drift}	0	-	correction on drift motion																				
i_{rudder}	0	-	correction on rudder																				
setting for filtering based on normalized apparent slip ratio																							
Item	Value	Unit	Remark																				
$i_{d_{slip}}$	1	-	filtering by normalized apparent slip ratio [0: not use, 1: use]																				
$slip_m$	1	-	criteria for normalized apparent slip ratio ; $slip_m$																				
setting for Resistance Criteria Method (RCM)																							
Item	Value	Unit	Remark																				
ID_{VP}	1	-	selector for iteration in RCM [0: off, 1: on]																				
C_{DPC}	2	%	criteria for evaluation in ship speed V_S - engine output BHP plane																				
δR_{eval}	10	%	rate of resistance increase for extracting the data for evaluation																				
δR_{fit}	50	%	initial rate of resistance increase for extracting the data for fitting																				

[1] i_{sw} , i_{sv} : Setting for wind and wave

Set the definitions of wave and wind directions according to the onboard monitoring data to be used.

- Wind definition (absolute/relative)
- Wave definition (earth-based / ship-based)
earth-based : 0 deg. means waves from north
Ship-based : 0 deg. means head waves

[2] i_{cal} : Weather and sea conditions for power curve

Set 0 to calculate the power curve under calm sea condition.

Set 1 to calculate the power curve under specific weather and sea conditions.

[3] After configuring the settings, go to "voyage data_A" or "voyage data_B" tab. The available tab depends on the calculation item selected on the Top tab ((1A) or (1B)).

Input: Monitoring Data

< meter **voyage data_B** voyage data_B_fig propeller self propulsion factors >

Load Data

set criteria for steady condition [mode-B]

Item	Value	Unit	Remark
Builder	NMRI	-	builder
ID	4894	-	ship ID number

Item	Unit	Remark
time		time(UTC)
longitude	deg.	longitude
latitude	deg.	latitude
V_g	knot	ship speed over the ground
V_w	knot	ship speed through the water
ψ_N	deg.	ship direction
ξ_N	deg.	heading angle
β	deg.	drift angle
δ	deg.	rudder angle
N_{Ec}	rps	orderd main engine revolution
BHP	kW	engine output
FOC	ton	fuel consumption
U_{wind}	m/s	mean wind speed
γ	deg.	wind direction (0deg means head winds.)
H_w	m	significant wave height of wind waves; H_w
T_w	s	mean wave period of wind waves; T_w
θ_w	deg.	primary wave direction of wind waves (0deg means heading waves.) ($0 \leq \theta_w$); θ_w^*
H_s	m	significant wave height of swells; H_s
T_s	s	mean wave period of swells; T_s
θ_s	deg.	primary wave direction of swells (0deg means heading waves.) ($0 \leq \theta_s$); θ_s^*
Δ	ton	displacement
ΔV	knot	difference between ship speed over the ground and ship speed through the water
SFC	g/(kWh)	specific fuel consumption

* subscript 'one side' means [0, 360], 'both side' means [0, 180]

[1] Load CSV-formatted onboard monitoring data

[2] Upon successful loading, a pop-up window will appear. Click OK.

cloud.nmri.go.jp の内容

The uploaded file has been loaded.

OK

If the dataset is large, it may take some time for the data to appear in the web application. After clicking OK, please wait while the data is being processed.

Maximum supported size: approx. 30,000 rows

[3] Once the data has been displayed in the web application, scroll down to the middle section of the tab.

SALVIA-OCT.-web : Input (Actual Vessel Data)

File format for actual vessel data

(when Calculation Item 1B is selected): CSV

date	latitude	latitude	Speed over ground (knot)	Speed through water (knot)	Ship direction (deg.)	Heading angle (deg.)	Rudder angle (deg.)	Main engine revolution (rpm)	Main engine output (kW)	Fuel consumption (t/day)	Wind Speed (m/s)	Wind direction (deg.)	Wind waves			Swells			Displacement (ton)
													Significant Wave Height (m)	Average Wave period (s)	Peak Wave Angle (deg.)	Significant Wave Height (m)	Average Wave period (s)	Peak Wave Angle (deg.)	
2016/9/4 2:00	123.067	29.75	18.9914	19.27	110	108.7	0	82.2	18942.59	2.6	5.6989	293.034	1.6	6.1	348.5	0	0	0	107016
2016/9/4 2:30	123.233	29.7	19.0395	19.39	109.831	108.2	0	82.2	18720.3	2.6	7.0953	300.408	1.61	6.1	348.4	0	0	0	107016
2016/9/4 3:00	123.417	29.7	19.4103	19.79	89.95293	72.8	0	82.3	18695.58	2.6	3.4112	327.869	1.61	6	23.2	0	0	0	107016
2016/9/4 3:30	123.6	29.75	19.7586	18.94	72.30686	68.2	0	82	18647.87	2.6	6.304	311.997	1.62	5.9	27.4	0	0	0	107016
2016/9/4 4:00	123.783	29.8	19.7054	19.47	72.29863	79.1	0	82.4	18691.39	2.6	9.2742	293.694	1.64	5.8	16.1	0	0	0	107016
2016/9/4 4:30	123.967	29.82	19.6787	19.73	83.13015	84.2	0	82.1	18987.73	2.6	7.1368	283.859	1.65	5.8	10.4	0	0	0	107016
2016/9/4 5:00	124.167	29.8	20.2104	20.16	96.62404	89	0	82.3	18793.97	2.6	3.8151	254.389	1.66	5.7	4.9	0	0	0	107016

You can download sample files for each load condition from the Manual button on the Top tab.

Notes for File Creation

- ✓ Enter dates in the format YYYY/MM/DD HH:MM(:SS).
- ✓ Set the rudder angle to 0 degrees when the rudder is in the neutral position.
- ✓ If wind waves and swells are not separated, set all swell-related parameters to 0.
- ✓ Do not enter any non-numeric values (such as text).
- ✓ If any parameter could not be measured, enter 0. Do not leave fields blank or omit values.

SALVIA-OCT.-web : Input (Actual Vessel Data)

File format for actual vessel data (when Calculation Item 1A is selected): CSV
Create the file by arranging the data in the following order.

1. Date and Time (UTC)
2. Longitude
3. Latitude
4. Speed Over Ground (Mean)
5. Speed Over Ground (Standard Deviation)
6. Speed Through Water (Mean)
7. Speed Through Water(Standard Deviation)
8. Course Over Ground(Mean)
9. Course Over Ground(Standard Deviation)
10. Heading (Mean)
11. Heading (Standard Deviation)
12. Rudder Angle(Mean)
13. Rudder Angle (Standard Deviation)
14. Main Engine Revolution (Mean)
15. Main Engine Revolution (Standard Deviation)
16. Main Engine Power (Mean)
17. Main Engine Power (Standard Deviation)
18. Fuel Consumption
19. Wind Speed (Mean)
20. Wind Direction(Mean)
21. Wind Speed (Standard Deviation)
22. Wind Direction (Standard Deviation)
23. Significant Wave Height (Wind Waves)
24. Mean Wave Period (Wind Waves)
25. Primary Wave Direction (Wind Waves)
26. Significant Wave Height (Swells)
27. Mean Wave Period (Swells)
28. Primary Wave Direction (Swells)
29. Displacement

SALVIA-OCT.-web : Input (Onboard Monitoring Data)

parameter voyage data_B voyage data_B_fig propeller self propulsion factors

θ_s deg. primary wave direction of swells (0deg means heading waves.) (0 <= θ_s ; θ_s °

Δ ton displacement

* subscript 'one side' means [0, 360], 'both side' means [0, 180]

ΔV knot difference between ship speed over the ground and ship speed through the water

SFC g/(kWh) specific fuel consumption

setting for direction of winds and waves

Item	Value	Unit	Remark
mode _{dir}	0	-	0: one side (0~360 deg.), 1: both side (0~180 deg.)
filter _{dir}	0	-	0: pass, 1: fall

The Calculation button on the Top tab will not become active unless the "Set True Wind" button is clicked.

set true wind

No.	time	longitude	latitude	V_s	V_w	ψ_N	ψ_E	δ	δ	N_{re}	BHP	FOC	U_{wv}
		deg.	deg.	knot	knot	deg.	deg.	deg.	deg.	rpm	kW	ton	m/s
1	2016 / 09 / 04 02 : 00	123.067	29.75	18.991	19.27	110	108.7	1.3	0	82.2	18942.59	2.6	5.6
2	2016 / 09 / 04 02 : 30	123.233	29.7	19.039	19.39	109.83	108.2	1.6309	0	82.2	18720.3	2.6	7.0
3	2016 / 09 / 04 03 : 00	123.417	29.7	19.410	19.79	89.952	72.8	17.152	0	82.3	18695.58	2.6	3.4
4	2016 / 09 / 04 03 : 30	123.6	29.75	19.758	18.94	72.306	68.2	4.1068	0	82	18647.87	2.6	6.3
5	2016 / 09 / 04 04 : 00	123.783	29.8	19.705	19.47	72.298	79.1	-6.801	0	82.4	18691.39	2.6	9.2
6	2016 / 09 / 04 04 : 30	123.967	29.82	19.678	19.73	83.130	84.2	-1.0691	0	82.1	18987.73	2.6	7.1
7	2016 / 09 / 04 05 : 00	124.167	29.8	20.210	20.16	96.624	89	7.6240	0	82.3	18793.97	2.6	3.8
8	2016 / 09 / 04 05 : 30	124.35	29.83	20.641	19.51	79.171	75.7	3.4710	0	82	18588.09	2.6	6.5
9	2016 / 09 / 04 06 : 00	124.55	29.87	20.658	19.36	77.064	76.7	0.3647	0	81.9	18715.82	2.6	3.7
10	2016 / 09 / 04 06 : 30	124.75	29.92	20.649	19.47	73.963	77	-3.036	0	82.2	18857.23	2.6	4.8
11	2016 / 09 / 04 07 : 00	124.933	29.93	20.772	19.26	86.377	76.1	10.277	0	82	18951.24	2.6	2.6
12	2016 / 09 / 04 07 : 30	125.133	29.97	20.718	19.5	77.052	86.3	-9.2471	0	82.2	18733.35	2.6	6.6
13	2016 / 09 / 04 08 : 00	125.333	29.98	20.515	19.51	86.746	81.9	4.8464	0	82.1	18748.56	2.6	6.0
14	2016 / 09 / 04 08 : 30	125.517	30	19.929	19.25	83.118	82.4	0.7180	0	82.1	18504.12	2.6	6.8
15	2016 / 09 / 04 09 : 00	125.7	30.03	19.556	19.2	79.150	81.7	-2.5491	0	81.8	18510.83	2.6	8.2

① After loading the onboard monitoring data, click the "Set True Wind" button to convert wind speed and wind direction.

Based on the definitions in the Parameter tab, relative wind data in the onboard monitoring data are converted to true wind, while true wind data are used as-is.

② Set the data extraction conditions.

- For the main engine revolution, enter 40% of the MCR revolution as the lower limit (min.).
- For displacement, use the reference displacement (Δ_{rep}) entered in the Input tab and specify the following range:

Lower limit (min.) : $0.95 \Delta_{rep}$

Upper limit (max.) : $1.05 \Delta_{rep}$

③ Return to the Top tab.

SALVIA-OCT.-web : Calculation

The screenshot displays the SALVIA-OCT.-web interface. At the top, the logo 'SALVIA-OCT.' is shown with the tagline 'Smart Analysis of a Vessel In Actual seas'. Below the logo is a navigation bar with links: top, import, input, parameter, ShipDC, polaris, voyage data_B, and vo. The main content area is divided into two sections: 'PRELIMINARY DATA CHECK' and 'CALCULATION ITEMS'. The 'PRELIMINARY DATA CHECK' section contains two checkboxes: (A) using mean value and standard deviation, and (B) using mean value. The 'CALCULATION ITEMS' section contains several checkboxes: (1) Preliminary data filtering (checked), (1A) using mean value and standard deviation, (1B) using mean value (checked), (2) Data correction on sea state (checked), (3) Ship performance Assessment (checked), (3A) based on Resistance Criteria Method (checked), (3B) based on Estimated Performance Curve, and (4) Assessment of fouling and aging. At the bottom, there is a row of buttons: Data Input, Calculation (highlighted with a red box), Save, Load, Data Import, Data Export, and Manual. Below this row is a single button labeled Converter.

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< top import input parameter ShipDC polaris voyage data_B vo >

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CALCULATION ITEMS

☒ (1) Preliminary data filtering

☐ (1A) using mean value and standard deviation

☒ (1B) using mean value

☒ (2) Data correction on sea state

☒ (3) Ship performance Assessment

☒ (3A) based on Resistance Criteria Method

☐ (3B) based on Estimated Performance Curve

☐ (4) Assessment of fouling and aging

Data Input **Calculation** Save Load Data Import Data Export Manual

Converter

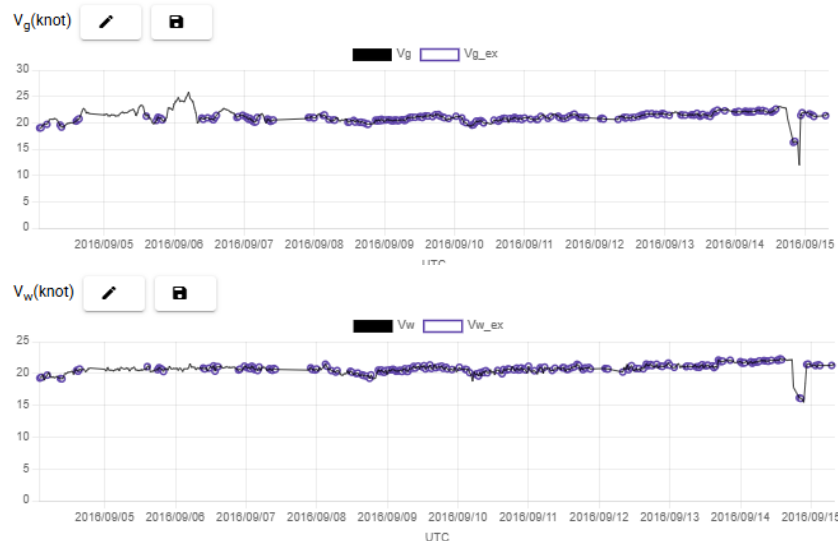
Once all required data has been entered, the Calculation button becomes active.→Click the Calculation button to run the calculation.

Calculation Results

SALVIA-OCT.-web : Output

Onboard Monitoring Data and Steady-State Filtering

The Voyage Data A/B tabs display graphs, and the Preliminary Filtered Data A/B tabs display the data after steady-state filtering.



number of filtered data

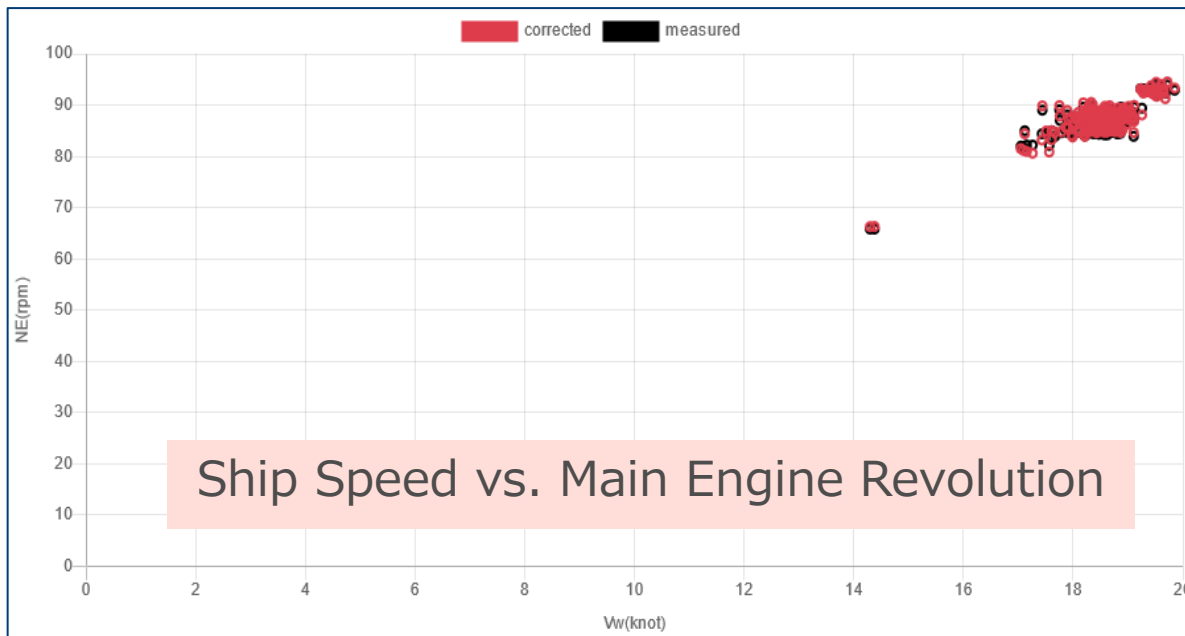
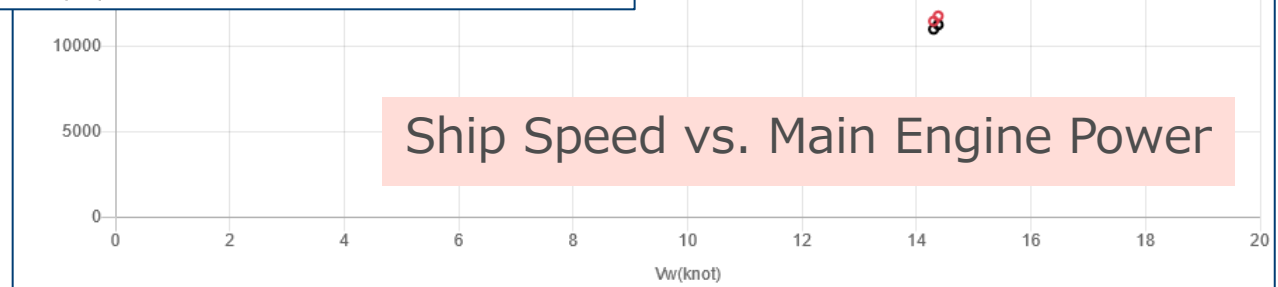
206

No.	time	longitude	latitude	V_g	V_w	Ψ_N	ξ_N	β	δ	N_{Ec}	BHP	FOC	U_{wind}
		deg.	deg.	knot	knot	deg.	deg.	deg.	deg.	rpm	kW	ton	m/s
1	2016-09-04 02:00:00	123.067	29.75	18.9914	19.27	110	108.7	1.3	0	82.2	18942.59	2.6	5.7
2	2016-09-04 02:30:00	123.233	29.7	19.0395	19.39	109.831	108.2	1.6	0	82.2	18720.3	2.6	7.1
6	2016-09-04 04:30:00	123.967	29.82	19.6787	19.73	83.1302	84.2	-1.1	0	82.1	18987.73	2.6	7.14
15	2016-09-04 09:00:00	125.7	30.03	19.5561	19.2	79.15	81.7	-2.5	0	81.8	18510.83	2.6	8.29
16	2016-09-04 09:30:00	125.883	30.05	19.1474	19.15	82.731	80.6	2.1	0	82	18636.76	2.6	7.46
26	2016-09-04 14:30:00	127.767	30.23	20.2882	20.49	73.1123	73.8	-0.69	0	84.8	20064.79	2.6	6.05
27	2016-09-04 15:00:00	127.95	30.28	20.556	20.36	72.2186	75	-2.8	0	85.2	20101.15	2.6	5.24
28	2016-09-04 15:30:00	128.15	30.32	20.7336	20.69	77.0083	78.7	-1.7	0	84.8	19872.1	2.6	6.24
65	2016-09-05 14:30:00	137.05	33.45	21.232	21.08	62.0175	60.9	1.1	0	84.7	20208.14	2.6	5
72	2016-09-05 18:00:00	138.283	34.07	20.4339	20.59	58.9484	60.7	-1.8	0	84.8	20195.98	2.6	2.92
73	2016-09-05 18:30:00	138.467	34.15	21.0358	20.91	63.0981	61.1	2	0	84.5	19976.47	2.6	4.5
74	2016-09-05 19:00:00	138.65	34.25	20.8657	20.75	56.1611	58.1	-1.9	0	84.8	20029.03	2.6	5.1
75	2016-09-05 19:30:00	138.833	34.33	20.8369	20.63	61.7731	59.9	1.9	0	85	19897.58	2.6	7.11
76	2016-09-05 20:00:00	139	34.42	20.5263	20.3	57.3706	60.2	-2.8	0	84.7	19620.64	2.6	7.33
103	2016-09-06 09:30:00	144.467	36.95	20.8879	20.85	62.2861	64.4	-2.1	0	84.6	19813.74	2.6	9.49
104	2016-09-06 10:00:00	144.667	37.02	20.6285	20.71	66.399	67.1	-0.7	0	84.6	20040.87	2.6	8.82
107	2016-09-06 11:30:00	145.25	37.27	20.9333	20.83	60.5881	62.1	-1.5	0	84.7	20122.81	2.6	7.18
110	2016-09-06 13:00:00	145.833	37.5	20.7054	21.19	63.3164	64	-0.68	0	84.5	20342.66	2.6	9.25
111	2016-09-06 13:30:00	146.033	37.57	20.5431	20.36	66.2456	64.6	1.6	0	84.7	20052.3	2.6	8.42
112	2016-09-06 14:00:00	146.217	37.65	20.9801	21.01	62.0669	63.2	-1.1	0	84.7	20222.29	2.6	9.07
113	2016-09-06 14:30:00	146.417	37.73	21.3939	21.05	63.2456	65.5	-2.3	0	84.8	20247.38	2.6	16.18
127	2016-09-06 21:30:00	149.35	38.9	20.9763	20.54	62.8737	60.3	2.6	0	84.6	19760.19	2.6	9.92
128	2016-09-06 22:00:00	149.55	38.98	21.1383	20.68	62.8476	62.9	-0.052	0	84.8	20182.68	2.6	12.82
131	2016-09-06 23:30:00	150.167	39.22	21.4152	21.14	67.7514	66.7	1.1	0	84.5	19598.29	2.6	8.77
133	2016-09-07 00:30:00	150.583	39.35	21.1307	20.86	66.758	67.1	-0.34	0	84.2	19943.71	2.6	9.14

SALVIA-OCT.-web : Output

Environmental Correction Results

The environmental correction results are displayed in the Corrected Data ALL tab and the Corrected Data for RCM tab.



SALVIA-OCT.-web : Output

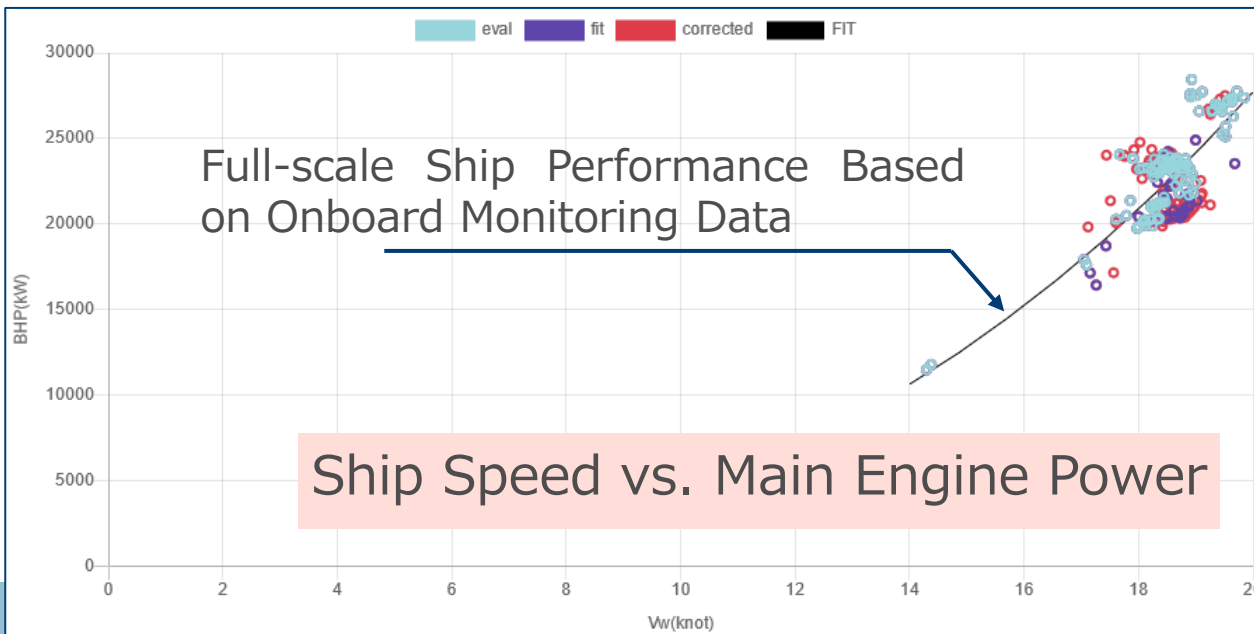
Full-scale Ship Performance Evaluation Results

(Resistance Criteria Method: RCM)

<	waves	swells	corrected data ALL	corrected data for RCM	summary of RCM	data f >
results of RCM						
Item	Value	Remark				
Pass Grade	Pass	Pass : power curve obtained by the straight procedure G1 : power curve by the initial criterion of δR for the fitting data G2 : power curve by the initial criterion of δR for the fitting data with $b_n=3$ G3 : power curve by no filtering of δR for the fitting data with $b_n=3$				
δR_{resfit}	50	resultant δR for extracting the data for fitting (unit : %)				
N_{d_eval}	107	number of the data for evaluation				
N_{d_fit}	136	number of the data for fitting				

The environmental correction results are displayed in the Summary of RCM tab (when 3A is selected) and in the Based on the estPC tab (when 3B is selected).

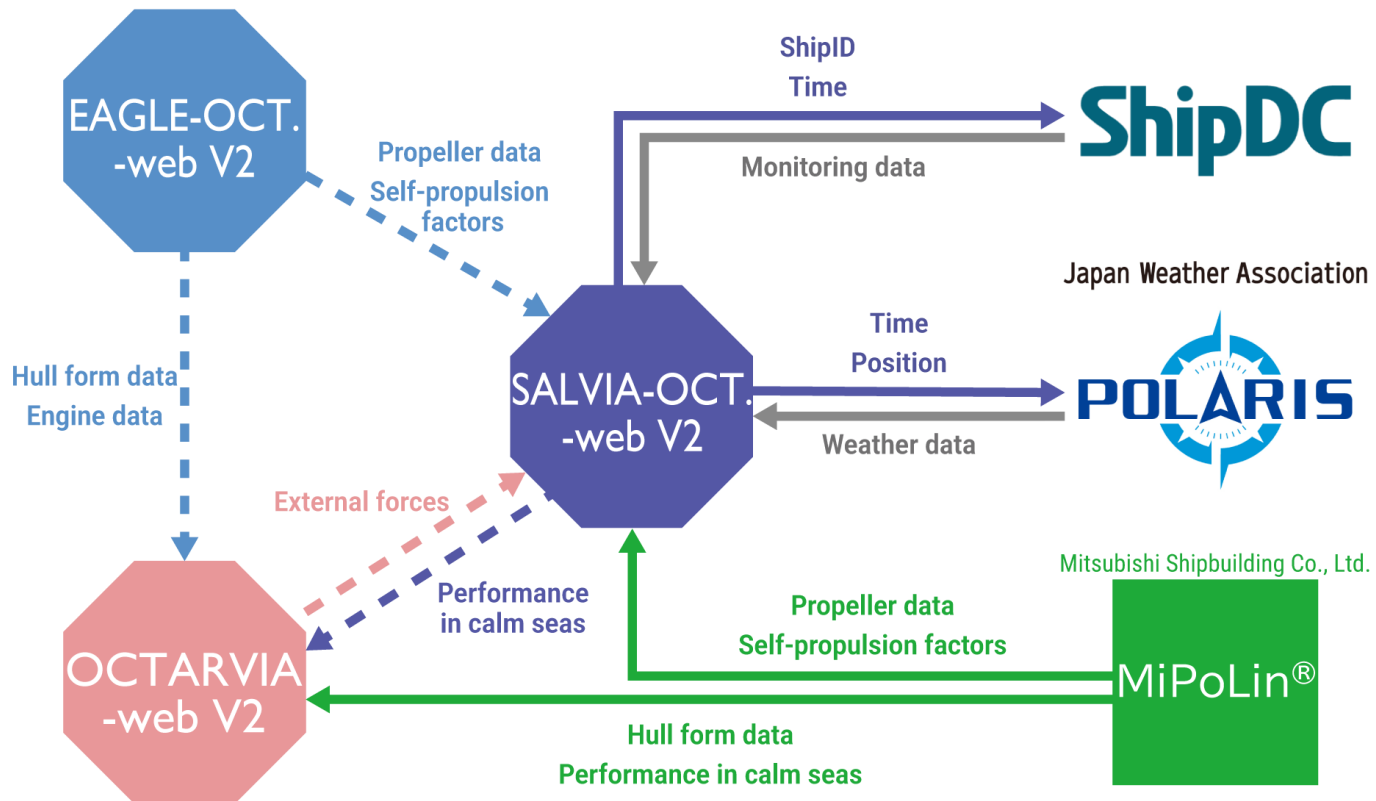
Quality Information for the Evaluation Results (when 3A is selected)



Use of External Services

Use of External Services

This application provides functionality to retrieve data from ShipDC and the Japan Weather Association's POLARIS Hindcast service. It also provides functionality to convert and apply selected output data generated by Mitsubishi Shipbuilding's MiPoLin®.



Use of External Services

For detailed information on the ShipDC service provided by ShipDC, POLARIS Hindcast provided by the Japan Weather Association (JWA), and MiPoLin® provided by Mitsubishi Shipbuilding, please refer to the links below.

ShipDC

<https://www.shipdatacenter.com/>

A service that enables the sharing of onboard monitoring data held by platform users (PU) such as ship owners are stored in highly secure onshore data centers.

JWA POLARIS Hindcast

<https://www.jwa.or.jp/>

- The ocean data provided as POLARIS Hindcast data are highly accurate hindcast database based on JWA original wave estimation model, using objective analysis values of wind speed and direction as input data.
- It provides the ocean data linked to ship position by spatiotemporal interpolation.

Mitsubishi Shipbuilding MiPoLin®

MiPoLin® enables efficient estimation of propulsion performance and generation of hull forms by leveraging Mitsubishi Shipbuilding's extensive towing tank test database, along with the experience and expertise accumulated through shipbuilding. It is useful for initial ship design and performance evaluation.

<https://www.mhi.com/jp/business/products-services/ships-ocean/shipbuilding-engineering/power-prediction-lines-selection-mipolin>

- To retrieve onboard monitoring data from ShipDC, a key file must first be issued by ShipDC, and an account must be registered on NMRI Cloud.
- To retrieve the data of weather and sea conditions from POLARIS Hindcast, an account registration on NMRI Cloud is required.
- Users of Mitsubishi Shipbuilding's MiPoLin® can import selected MiPoLin output data into SALVIA-OCT.-web.

Use of External Services : Retrieving Onboard Monitoring Data from ShipDC



Users must enter into a contract with ShipDC and complete the necessary application procedures through NMRI Cloud in advance.

Navigation: < top input parameter **ShipDC**

Confirm available data

key .key select key file

Confirm

Available data

	shipid	dataClass	datatype/shipField	availableFrom	availableTo
☒	<input type="text" value=""/>	losData	ShipData	2021-10-01	2022-12-31

Input target range

ship ID DataType/ShipField

from to range target

GET DATA Check API LOG

Output to SALVIA-OCT

☐ Select average value (recommended)
☐ Select instantaneous value

Write to SALVIA-OCT. Download CSV file

Specify the key file issued to the user.

Click the button to retrieve a list of data available for access

Select the target vessel

All vessels available for access are displayed in the list

The vessel ID and data period are automatically set, although they can be changed manually

Start data acquisition

Select whether to retrieve average values or instantaneous values (for some vessels, only one of these data types may be available)

Download the data

Display the data in the browser

Use of External Services : Retrieving Onboard Monitoring Data from ShipDC

Voyage Data_B Tab After Loading ShipDC Data

parameter ShipDC polaris **voyage data_B** voyage data_B_fig

nweather 24

frequency of sampling data

Item	Value	Unit	Remark
fsd	30	min	period of measurement

set true wind

No.	time	longitude	latitude	V _g	V _w	Ψ _N	ξ _N	β	δ	N _{Ec}	BHP	FOC	U _{wind0}	V
		deg.	deg.	knot	knot	deg.	deg.	deg.	deg.	rpm	kW	ton	m/s	d
1	2023/08/10 00:00	153.9560	-7.7491	10.778	10.339	0	0	0	-0.13	61.308	4043.393	0	6.93	
2	2023/08/10 01:00	153.9581	-7.6491	10.517	10.632	0	0	0	-0.07	61.875	4230.867	0	7.07	
3	2023/08/10 02:00	153.9602	-7.5501	9.8302	9.8605	0	0	0	0.05	60.369	4281.662	0	7.38	
4	2023/08/10 03:00	153.9623	-7.4511	11.080	10.765	0	0	0	0.14	59.632	4233.452	0	7.73	
5	2023/08/10 04:00	153.9644	-7.3521	10.501	10.119	0	359.99	-0.0091	0.22	60.621	4223.117	0	8.1	
6	2023/08/10 05:00	153.9665	-7.2531	11.469	10.312	0	359.99	-0.0091	0.25	59.905	4172.423	0	8.48	
7	2023/08/10 06:00	153.9686	-7.1541	10.482	9.9635	0	359.98	-0.0191	0.25	60.078	4279.309	0	8.86	
8	2023/08/10 07:00	153.9707	-7.0541	9.3676	9.8003	0	359.98	-0.0191	0.28	61.706	4164.124	0	8.23	
9	2023/08/10 08:00	153.9728	-6.9551	10.091	9.8685	0	359.98	-0.0191	0.27	60.470	4279.806	0	7.67	
10	2023/08/10 09:00	153.9748	-6.8561	10.558	10.374	0	359.99	-0.0091	0.25	60.122	4032.515	0	7.18	
11	2023/08/10 10:00	153.9769	-6.7571	11.029	10.735	0	359.99	-0.0091	0.2	61.287	4126.011	0	6.76	
12	2023/08/10 11:00	153.9790	-5.9911	11.033	10.708	0	359.99	-0.0091	0.11	59.667	4094.755	0	6.43	
13	2023/08/10 12:00	153.9811	-6.559	10.917	10.269	0	359.99	-0.0091	0.04	60.133	4260.513	0	6.03	
14	2023/08/10 13:00	153.9832	-6.4591	11.084	10.720	0	359.98	-0.0191	0.2	59.925	4276.359	0	5.43	
15	2023/08/10 14:00	153.9853	-6.3601	11.099	10.817	0	359.97	-0.0291	0.35	60.077	4081.962	0	4.81	

1. After data import, the tabs are displayed in red because data of weather and sea conditions and displacement data are not available yet.*

* Displacement data are not included in the data retrieved from ShipDC.

2. Click the "Set True Wind" button to enter true wind speed and direction into the application

3. Click the "Set Profile" button to upload **displacement data** to the application

Set profile

Use of External Services : Retrieving Actual Vessel Monitoring Data from ShipDC

Displacement Data File Format: CSV

3

2023/07/10 07:30:00	182838	16.5	16.5
2023/08/01 10:30:00	182700	16.5	16.5
2023/08/08 00:00:00	175000	15.8	15.8

You can download sample files for each load condition from the Manual button on the Top tab.

<Points to Note>

- Line 1: Number of data records in the subsequent lines
- Enter data in the following order: Date, Time, Displacement (ton), Forward Draft (m), Aft Draft (m)
- For date and time values, ensure the correct number of digits is used. Add a leading zero (0) to any single-digit value

Use of External Services : Data of Weather and Sea Conditions Retrieval from POLARIS Hindcast

The screenshot shows the SALVIA-OCT web interface with the 'polaris' tab selected. The interface includes several sections for configuring data retrieval:

- Weather Data:** Radio buttons for 'Global Data' (selected) and 'Coastal Data'.
- set date and position:** Radio buttons for 'use the data on voyage data_A/B tab' (selected) and 'upload CSV file'. A 'select CSV file' button is next to the second option. A 'package' dropdown menu is set to '2:T1st'.
- Route Hindcast:** A button to initiate the preliminary process.
- Review the preliminary process results:** Fields for 'status', 'message', 'request number', 'count', 'divide size', and 'Type'.
- Route Hindcast Result:** A button to view the results.
- Check API LOG:** A button to check the API log.
- specification of waves:** Radio buttons for 'wind waves and swells' (selected) and 'resulting waves'.
- add wind data to voyage data_A/B tab:** A checkbox to apply wind data to the voyage data.
- Write to SALVIA-OCT:** A button to display the data in the browser.
- Download CSV file:** A button to download the retrieved data.

Prior registration through NMRI Cloud is required

Select either the Global version or the Japan Coastal version

Set the date/time and latitude/longitude

Run the preliminary process to obtain a Request ID

Review the preliminary process results

Check the number of data points to be retrieved

Start data retrieval (**charges will apply**)

Select either "Wind Waves + Swells" or "Combined Waves"

Select this option to apply the wind data to the Voyage Data A/B tab

Download the retrieved data

Display the data in the browser

Use of External Services : Use of MiPoLin®

Results from MiPoLin® (a service provided by Mitsubishi Shipbuilding) can be imported and utilized

Data Import from MiPoLin files

Import Items

- Input (without A_T)
- propeller open characteristics
- self-propulsion factors

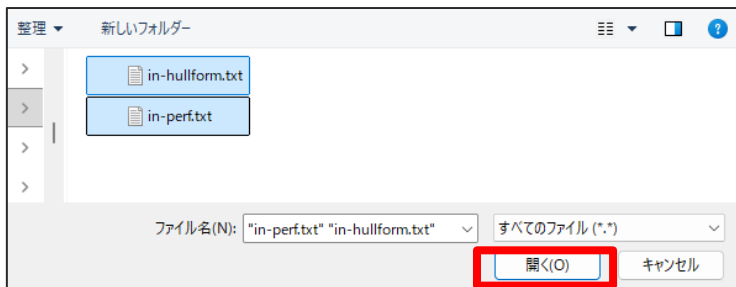
Data Import from MiPoLin files

Click the "Data Import MiPoLin Files" button on the Import tab

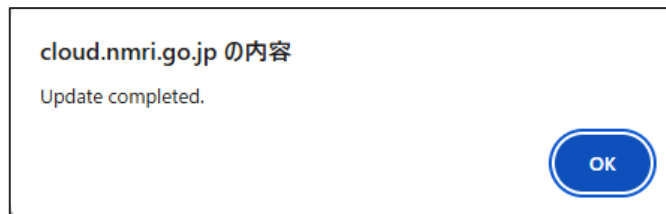
Notice: The projected transverse area above water line (A_T) is not provided by MiPoLin.

Note: If MiPoLin® is used, the EAGLE-OCT.-web import procedure described on Slide 8 is not required

These values are applied to all fields on the Input tab (except Builder, ID and A_T), the Propeller Open Characteristics tab, and the Self-Propulsion Factors tab.



Select the hull data file (in-hullform.txt) and the performance data file (in-perf.txt) generated by MiPoLin® simultaneously



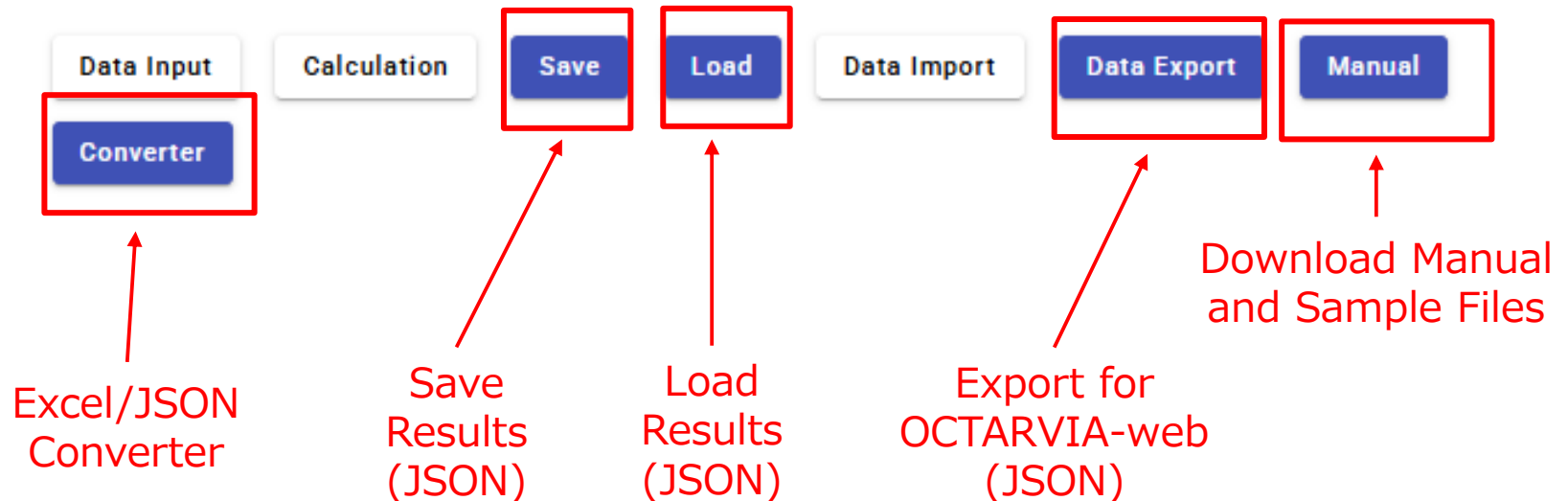
The selected files are automatically converted for use with SALVIA-OCT.-web and the converted data are imported into the application

Others

SALVIA-OCT.-web :

Save/Load and Export Functions

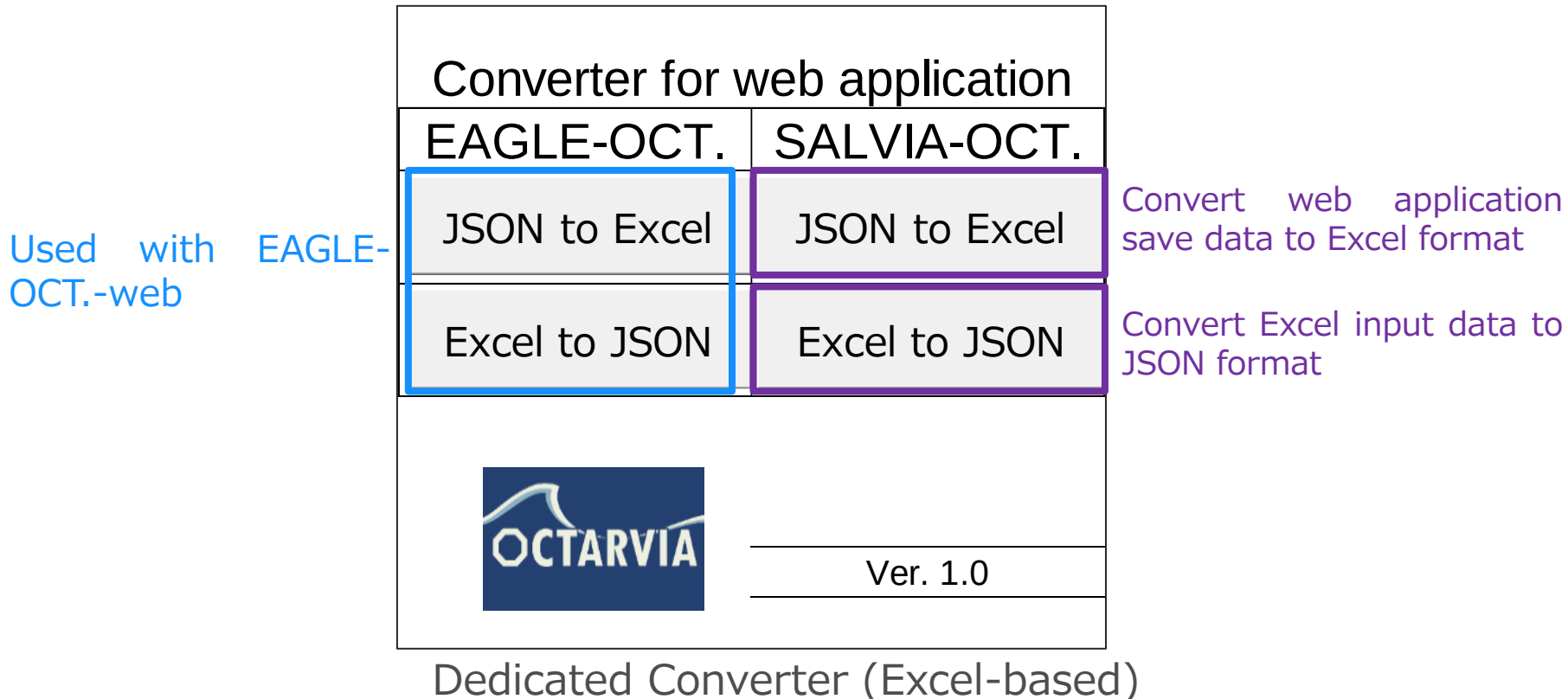
Buttons on the Top tab



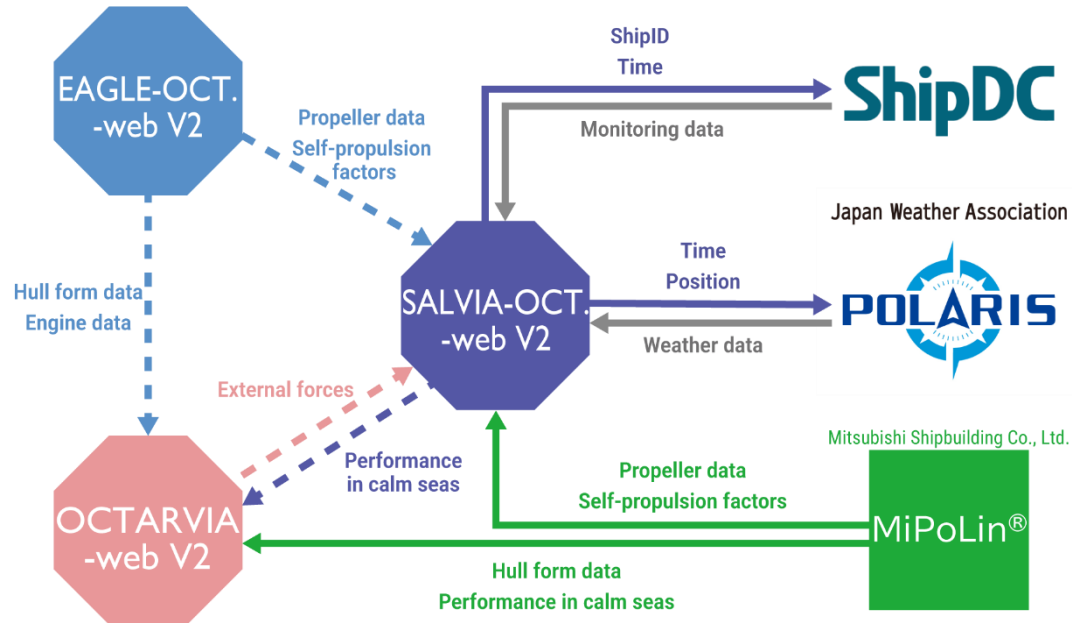
Automatically downloads the file to the local computer when clicked

Conversion of Save Data to Excel Format

- ✓ Save data can be converted to Excel format using the dedicated converter.
- ✓ Conversely, data entered in an Excel file can be converted to JSON format and then loaded into SALVIA-OCT.-web.



Application Integration



Input Data Available from External Services

- (1) Onboard monitoring data required for the analysis of full-scale ship performance, such as ship speed, engine revolution, and engine power, can be obtained through the **ShipDC** data provision service.
- (2) Data of the weather and sea conditions, including average wind speed, average wind direction, significant wave height, dominant wave direction, and mean wave period, can be obtained from **POLARIS Hindcast**, a data provision service operated by the Japan Weather Association.
- (3) Hull and propeller performance data can be obtained from **EAGLE-OCT.-web** or **MiPoLin®**.
- (4) External force data, such as added resistance in waves and wind resistance coefficients, can be obtained from **OCTARVIA-web**.