

BumpRecorder Web

Manual Book (Professional version)

(2017.12.20)

Bumprecorder Co., Ltd.

Contents

1 What is BumpRecorder Web?	1
2 When to use it?	1
3 Function	1
4 Basic Operation	1
Header navigation area	2
Map display area	2
Display data operation panel	2
5 Function Instruction	3
Change background map	3
Search data by date and user	3
Check the latest data uploaded in Japan and abroad	4
Compare old and new data	4
Display the traveling route of the data on the map	5
Change the data type displayed on the map	5
Select the area you want to analyze from the map	6
(1).Rectangle	6
(2).Polygon	7
(3).Line	7
Select analysis type and create graph and form	8
Histogram at select point	8
Time Series at select point	8
Data download	9
Distance based graph between select points (Rectangle only)	9
Distance based Table between select(Rectangle only)	9
Create and download statistical data along the route (Line only)	10
Download upload data	12
How to download multiple data at once	12
About calculation result	14

1 What is **BumpRecorder Web**?

When you measure the vibration of the running vehicle with the smartphone application **BumpRecorder** and upload it to our server, you can check it on the map in about 10 minutes. You can also create graphs and forms.

2 When to use it?

Traditionally, road surface measuring service took you several days to get result after measurement, but with **BumpRecorder Web** you can get results quickly!

By displaying data such as IRI and JRI on the map, you can check the properties of the road at a glance. You can also download the data as a text file.

You can easily collect daily data and analyze it and use it for formulating pavement plan.

3 Function

- You can check the IRI, Flatness sigma, Crack rate on measurement line, Step height, and Linearity sigma on a background map.
- You can compare old and new data on the map.
- You can check the data for each direction of travel.
- You can create a IRI graph of each distance mark.
- You can create a time series graph.
- You can download analysis data in text format

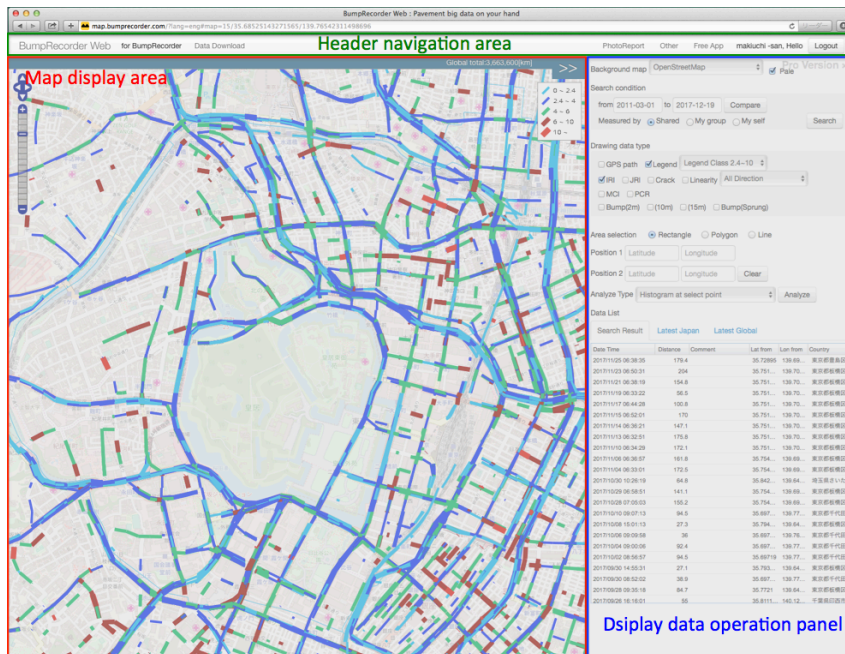
4 Basic Operation

Please access to the following URL link.

<http://map.bumprecorder.com/>

The top page can be divided into the following three areas.

- 1 Header navigation area
- 2 Map display area
- 3 Display data operation panel



Header navigation area

There are links to each function, login, logout button, etc.

Map display area

The data extracted by “Display data operation panel” will be displayed on the map in this area.

Display data operation panel

Background map
OpenStreetMap
Pro Version x

Search condition
from 2011-03-01 to 2017-12-19 Compare
Measured by Shared My group My self Search

Drawing data type
GPS path Legend Legend Class 2.4-10
IRI JRI Crack Linearity All Direction
MCI PCR
Bump(2m) (10m) (15m) Bump(Spring)

Area selection Rectangle Polygon Line
Position 1 Latitude Longitude
Position 2 Latitude Longitude Clear
Analyze Type Histogram at select point Analyze

Data List
Search Result Latest Japan Latest Global

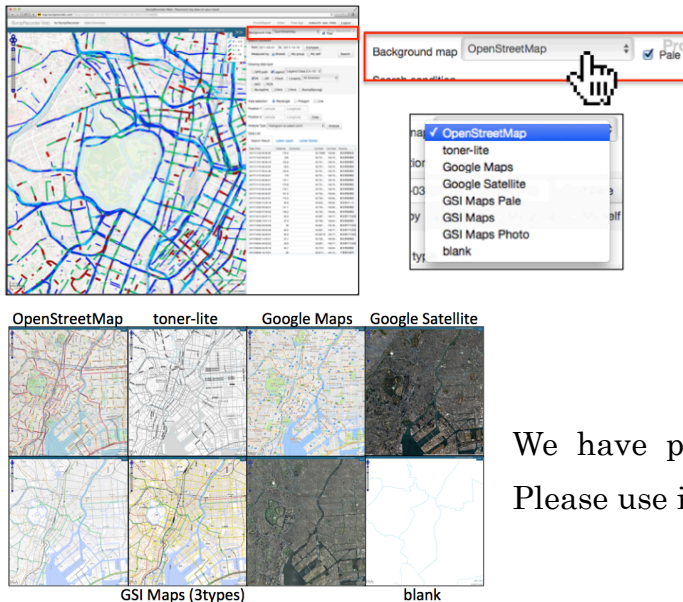
Date Time	Distance	Comment	Lat from	Lon from	Country
2017/11/25 06:38:35	179.4		35.72895	139.69...	東京都豊島区
2017/11/23 06:50:31	204		35.751...	139.70...	東京都板橋区
2017/11/21 06:38:19	154.8		35.751...	139.70...	東京都板橋区
2017/11/19 06:33:22	96.5		35.751...	139.70...	東京都板橋区
2017/11/17 06:44:28	100.8		35.751...	139.70...	東京都板橋区
2017/11/15 06:52:01	170		35.751...	139.70...	東京都板橋区
2017/11/14 06:36:21	147.1		35.751...	139.70...	東京都板橋区
2017/11/13 06:32:51	175.8		35.751...	139.70...	東京都板橋区
2017/11/10 06:34:29	172.1		35.751...	139.70...	東京都板橋区

- Change background map
- Filter by date or upload user
- Compare old and new data
- Select data type
- Analyze the selected range on the map
- Switching domestic and international data list
- List data matching the search condition

5 Function Instruction

Change background map

You can change the background map. Please select from the drop-down list "Background map" at the top of "Display data operation panel".



We have prepared 8 kinds of background maps. Please use it according to your preference.

Search data by date and user



You can search data by measurement date or Measurer.

- (1) In " Search condition (red frame)", please set the measurement date or measurer you want to search.
- (2) Please click the "Search" button.
- (3) The search result is reflected in the Data list.

NOTES

- If the amount of data is large, it may take several minutes to be reflected in the data list
- In the initial display, data from all the Measurer is displayed for the entire period in the Map display area.

Check the latest data uploaded in Japan and abroad

Data List

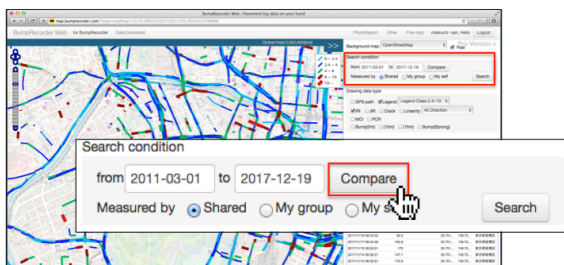
Search Result Latest Japan Latest Global

Date Time	Distance	Comment	Lat from	Lon from	Country
2017/11/25 06:38:35	179.4		35.72895	139.69...	東京都豊島区
2017/11/23 06:50:31	204		35.751...	139.70...	東京都板橋区
2017/11/21 06:38:19	154.8		35.751...	139.70...	東京都板橋区
2017/11/19 06:33:22	56.5		35.751...	139.70...	東京都板橋区

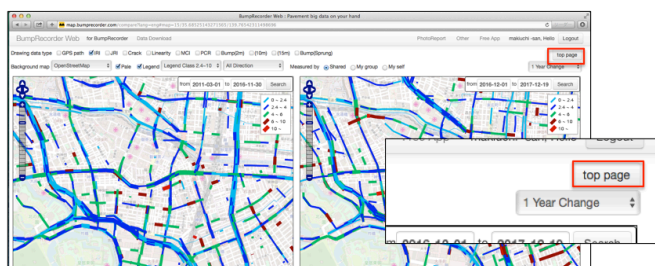
You can check the latest data uploaded in Japan and abroad by switching tab of “Data List”

Compare old and new data

You can compare old and new data.

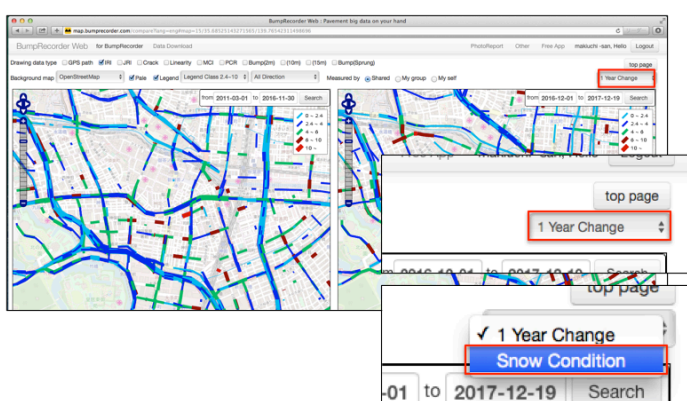


Click the "Compare" button on the “Display data operation panel”.



You can narrow down and compare each map. If you click and drag on one of the maps, the other map will move in the same way.

If you return to the original page please press the "normal page" button at the top right of the screen.

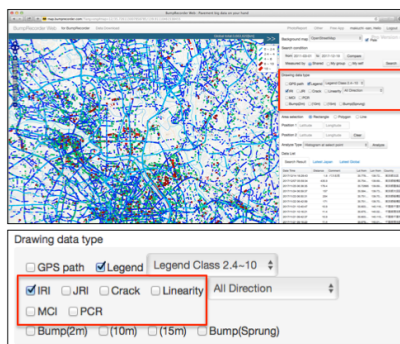
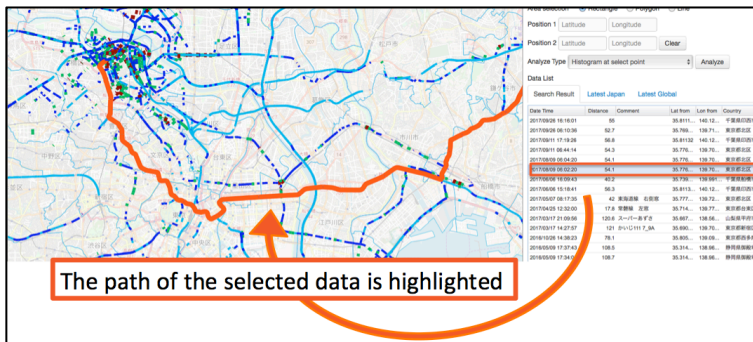


By selecting "Snow removal situation", you can compare snow removal situation on 2 maps.

Display the traveling route of the data on the map

You can check the traveling route of the data on the map.

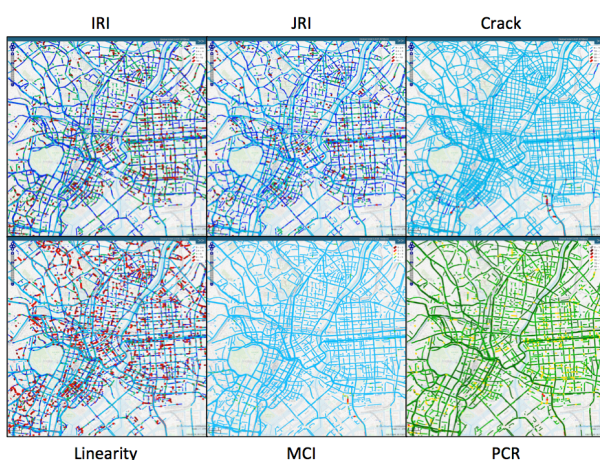
By clicking on the data from the “Data List” at the “Display data operation panel”, you can display the route on the map.



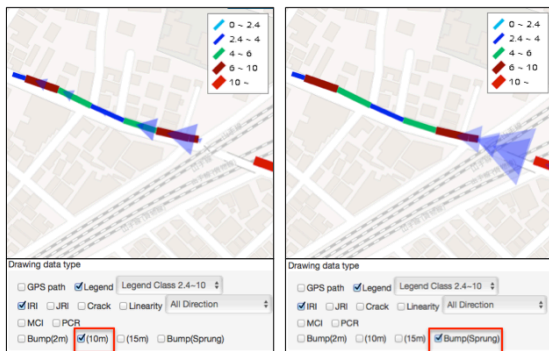
Change the data type displayed on the map

You can change the data displayed on the map for each data type, such as IRI and flatness.

The data type can be selected from six types of “IRI”, “JRI”, “Crack”, “Linearity”, “MCI”, “PCR”. In addition, you can specify the “Legend Class “ and “Travel Direction”.



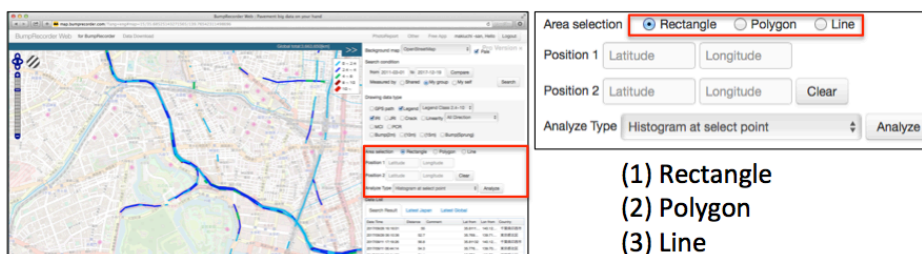
With this function, you can overlook various analyzes on the map.



"Bump" represents the height of the step with the triangle mark,

"Bump(Spring)" represents the amount of vertical displacement above the spring with triangle mark.

Select the area you want to analyze from the map

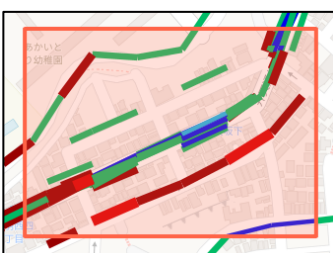
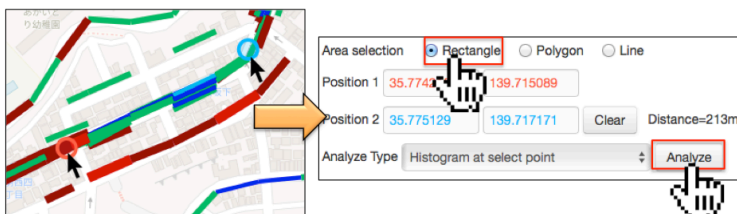


- (1) Rectangle
- (2) Polygon
- (3) Line

3type	(1) Rectangle	(2) Polygon	(3) Line
Analysis type	<ul style="list-style-type: none"> Histogram at select point Time Series at select point Data download Distance based graph between select points Distance based Table between select points 	<ul style="list-style-type: none"> Histogram at select point Time Series at select point Data download 	<ul style="list-style-type: none"> Histogram at select point Time Series at select point Data download Create and download statistical data along the route

(1). Rectangle

When you click two points on the map, the point information is automatically entered.

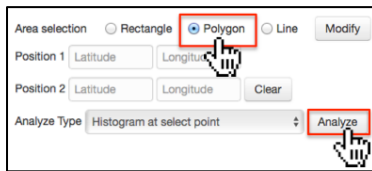


When you click the "Analysis" button, various data analysis is performed within the rectangle area.

(2). Polygon

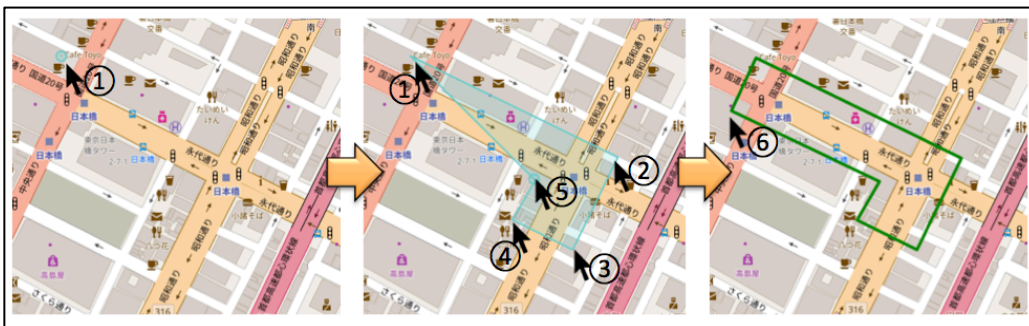
You can connect the click points on the map and draw a polygon area.

Polygon will be drawn when you double click at the end.



When you click the “Analysis” button, various data analysis is performed within the polygon area.

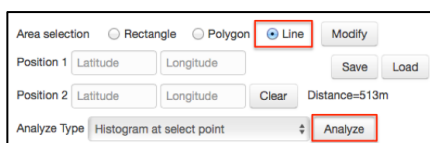
In the example below, To draw a polygon, click 1→2→3→4→5, and double click on 6 at the end.



(3). Line

You can connect the click points on the map and draw a line area.

Line will be drawn when you double click at the end.

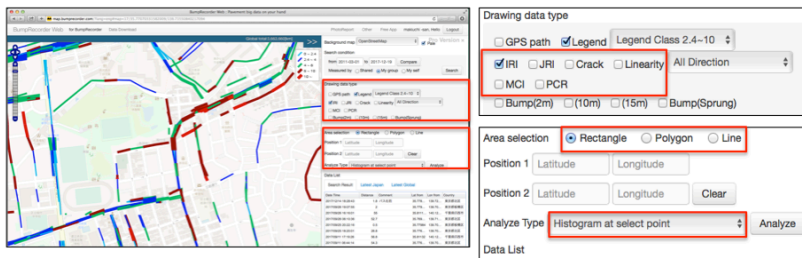


When you click the “Analysis” button, various data analysis is performed along the line.

In the example below, To draw a line, click 1→2→3→4, and double click on 5 at the end.

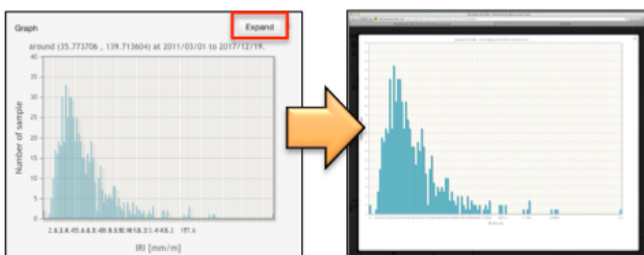
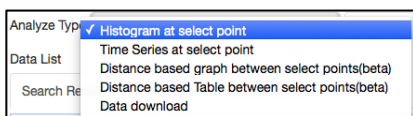


Select analysis type and create graph and form



When you do data analysis, first of all, select "IRI", "JRI", "Crack", "Linearity", "MCI", or "PCR" from "Drawing data type".

Histogram at select point

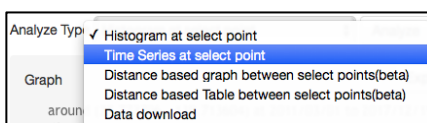


Select "Histogram at select point" from "Analyze Type" and click the "Analysis" button to automatically create a histogram.

The created graph can be displayed on a large screen by pressing the "Expand" button on the upper right.

A histogram can be created by common operation of "Rectangle", "Polygon", and "Line".

Time Series at select point



Please select "Time Series at select point" from "Analyze Type" and click the "Analysis" button to automatically create a time series.

The created graph can be displayed on a large screen by pressing the "Expand" button on the upper right.

A histogram can be created by common operation of "Rectangle", "Polygon", and "Line".

Data download

Search condition

from 2011-03-01 to 2017-12-19 Compare

Measured by ☐ Shared ☒ My group ☐ My self Search

Analyze Type

- ☒ Histogram at select point
- ☒ Time Series at select point
- ☐ Distance based graph between select points(beta)
- ☐ Distance based Table between select points(beta)
- ☐ Data download

Graph

You can only download data uploaded by “My group” or “My self”.

Please select "My group" or "My self" in "Search condition". Then select "Data download" from "Analyze Type" and click the "Search" button to download the data.

You can use this function in common operation of "Rectangle", "Polygon", and "Line".

NOTE

- It may take several minutes to start downloading.

Distance based graph between select points (Rectangle only)

Area selection ☒ Rectangle ☐ Polygon ☐ Line

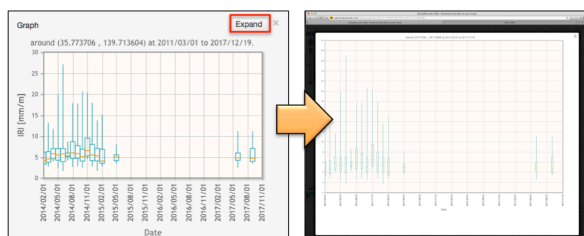
Position 1 35.77408 139.714725

Position 2 35.77455 139.715964 Clear Distance=123m

Analyze Type Distance based graph between select Analyze



Only "rectangle" is supported for this function.



Please select the start and end points on this map. Then select "Distance based graph between select" from "Analyze Type" and click the "Analyze" button to create the graph.

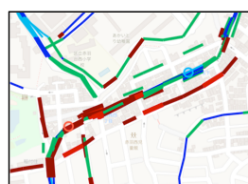
Distance based Table between select(Rectangle only)

Area selection ☒ Rectangle ☐ Polygon ☐ Line

Position 1 35.773671 139.713507

Position 2 35.774737 139.716436 Clear Distance=289m

Analyze Type Distance based Table between select Analyze



Only "rectangle" is supported for this function.

Please select the start and end points on this map. Then select "Distance based Table between select" from "Analyze Type" and click the "Analyze" button to create the graph.

BumpRecorder Web : Pavement big data on your hand

IRI Distance Base Table

Dist [m]	Latitude	Longitude	Avg [mm/m]	2017 09/10	2017 09/10	2017 09/10	2017 06/06	2017 05/21	2016 05/09	2014 06/01	2014 02/25
0	35.775831	139.708496	2.2	2.1	0.9	1.7	2.5	2.0	3.9	2.3	2.3
23	35.775888	139.70874	3.2	2.9	---	3.2	3.3	3.4	---	---	---

abbreviation

Dist [m]	Latitude	Longitude	Avg [mm/m]	2017 09/10	2017 09/10	2017 09/10	2017 06/06	2017 05/21	2016 05/09	2014 06/01	2014 02/25
398	35.776983	139.712647	1.8	2.7	3.6	4.0	3.5	3.3	---	1.6	1.9
425	35.777117	139.712891	2.9	---	---	---	---	---	---	---	---
442	35.77722	139.713036	3.4	3.0	3.5	3.6	4.0	3.5	---	3.5	2.9

Legend

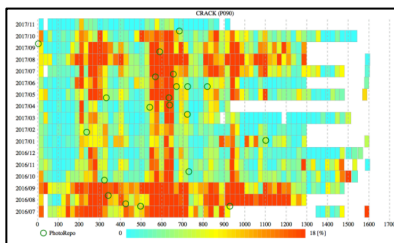
0 2.8 <=5.7

Please wait for a while until the form is created.

Zero is light blue, mean value is yellow, and values twice the average are displayed in red.

Create and download statistical data along the route (Line only)

Based on the data measured on a daily basis, you can create statistical data such as average value or median in monthly / quarterly (3 months) / annual. Of course you can download it in svg format.



You can also create a contour chart like the one on the left.

Search condition

from 2011-03-01 to 2017-12-19 Compare

Measured by ☐ Shared ☒ My group ☐ My self Search

Drawing data type

☐ GPS path ☒ Legend Legend Class 2.4~10

☒ IRI ☐ JRI ☐ Crack ☐ Linearity All Direction

☐ MCI ☐ PCR

☐ Bump(2m) ☐ (10m) ☐ (15m) ☐ Bump(Spring)

Area selection ☐ Rectangle ☐ Polygon ☒ Line Modify

Position 1 Latitude Longitude Save Load

Position 2 Latitude Longitude Clear Distance=1331m

Analyze Type Distance based Table between select Analyze

If you use the PhotoReport at the same time, you can draw the repair time with the green circle mark on the contour chart.

(1) Please check "My group" or "My self", and select a Line by area selection.

(2) Please click on "Data download" in the "Analyze Type"

Analyze Type

☒ Histogram at select point

☐ Time Series at select point

Data List

☐ Distance based graph between select points(beta)

☐ Distance based Table between select points(beta)

Search Result

☒ Data download

(3) When you select "Data download", "Download type" will be displayed, so select monthly statistical data etc.

Analyze Type Data download Analyze

Download Type Individual

Download Type

☒ Individual

☐ Monthly

☐ Quarterly

☐ Annual

Search Result

Total

(4) Please click "Analyze" button to start downloading.

NOTES

- Depending on the distance of the route and the amount of data it may take several minutes to download.
- It is data in square mesh unit. Please see the sample image below.

Basic statistics												Statistics for each Indicator												
Arc												Arc												
meshsize	lat1	lon1	lat2	lon2	l	speed	no	dist_from	dist_to	avg	sd	n	min	max	avg	sd	n	min	max	avg	sd	n	min	max
2	35.714208	139.729065	35.714011	139.729162	23.6	22.3	0	23.6	22.3	0	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7
3	35.71401	139.729162	35.713812	139.729263	23.7	22.41	1	23.7	22.41	1	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7
2	35.713812	139.729263	35.713614	139.729367	23.9	22.6	2	23.9	22.6	2	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7
3	35.713614	139.729367	35.713416	139.72947	23.8	22.73	3	23.8	22.73	3	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7
2	35.713416	139.72947	35.713218	139.729569	23.7	22.82	4	23.7	22.82	4	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7
3	35.713217	139.72957	35.71302	139.729671	23.8	22.83	5	23.8	22.83	5	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7
2	35.713014	139.729671	35.712822	139.729772	23.7	22.78	6	23.7	22.78	6	7.8	31.3	1.5	0.4	3	1.1	1.2	1.3	1.6	1.7	1.7	1.7	1.7	1.7

Basic Statistics	
meshsize	Mesh size
Lat1,lon1,lat2,lon2	Start point coordinates and End point coordinates of the section
l	Section length[m]
speed	Average speed in section[m/s]
no	Serial number
dist_from, dist_to	Distance from the origin of the route [m]

Statistics for each Indicator	
avg	Average
sd	Standard deviation
n	Number of data
min,max	Minimum, Maximum
p010~p090	Percentile value

iri : IRI[mm/m]

jri : JRI[mm]

crack : Crack[%]

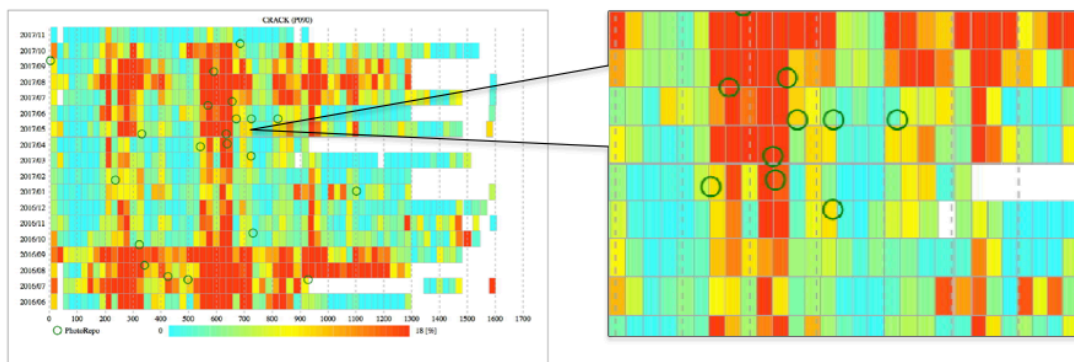
linearity : Linearity[mm]

mci : MCI

pcr : PCR

At the same time, the contour map is saved in svg format.

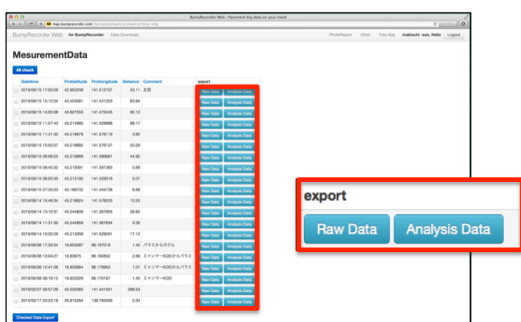
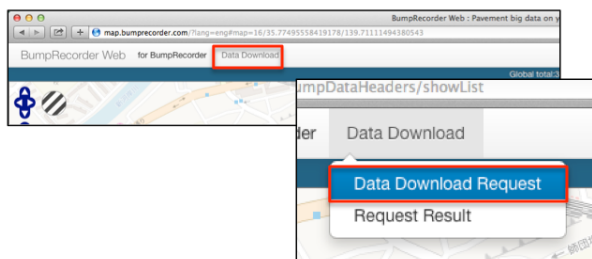
If you use the PhotoReport at the same time, you can draw the repair time with the green circle mark on the contour chart.



Download upload data

This function is available when logging in as a user with group administrator authority.

After logging in please click "Data Download" -> "Data Download Request" in the header navigation. Then the data uploaded by the user of your group will be listed.



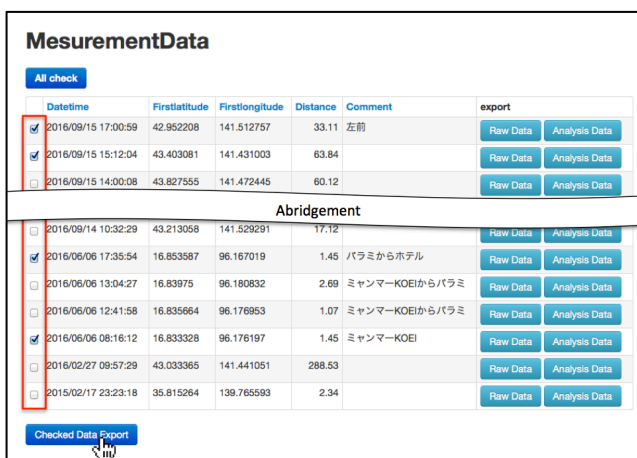
This is the data download page. They are listed in ascending order.

You can download two kinds of data.

"Raw Data": You can download measurement data.

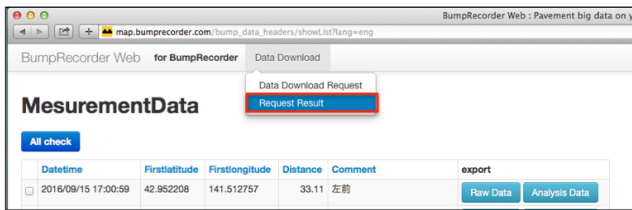
"Analysis Data": You can download IRI data.

How to download multiple data at once



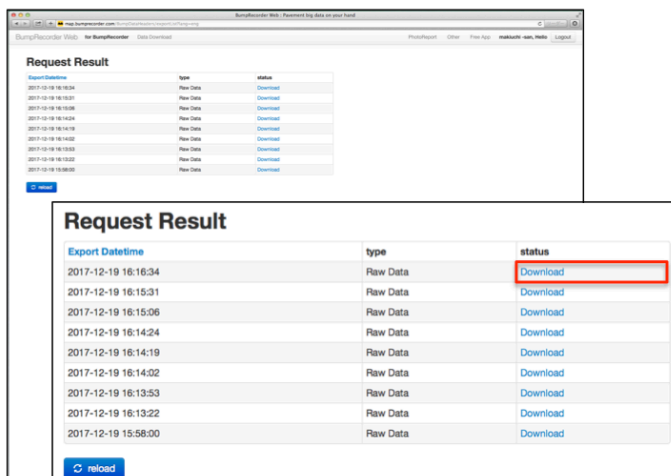
You can also download multiple data in batches.

Please check the checkbox to the left of the data and click "Checked Data Export". Please wait until the download starts.



You can download on "Request Result" page.

Please click "Download" in the status column on the download page to start the download. If the size is large, it is divided into multiple files. Please click each to download.



Please wait for a while if the status column is “under preparation” and press the "reload" button and double check the progress.

When the status column is “Download”, you can download them.

About calculation result

Sample

1431476406033	2	314168	1144522	35.77108	139.712233	35.771112	139.712401	15.5	7.29	8.61
1431476501485	2	314172	1144530	35.77148	139.713347	35.771672	139.713313	21.5	6.03	3.55
1431476501485	4	314172	1144528	35.77148	139.713347	35.771672	139.713313	21.5	6.03	3.55
1431476501485	8	314168	1144528	35.77148	139.713347	35.771672	139.713313	21.5	6.03	3.55

devicetime	Time indicated by OS Epoch seconds UTC [ms]	
meshsize	meshsize	meshsize
latcode	Latitude mesh number	
loncode	longitude mesh number	
lat1	Latitude on the origin side of the IRI calculation section	
lon1	Longitude on the origin side of the IRI calculation section	
lat2	Latitude at the end point side of the IRI calculation section	
lon2	Longitude on the end point side of the IRI calculation section	
l	Section length [m]	
speed	Average speed in section [m / s]	
iri(jri)	IRI(JRI)[mm/m]	

Contact

Bumprecorder Co., Ltd.

1-59-6 102, Akabane, Kita-ku, Tokyo, 115-0045, Japan

TEL : 03-6454-4255 FAX : 03-6369-4618

URL : <http://www.bumprecorder.com>