HITACHI
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Exercise: Creating a map of the expected flood area

DioVISTA/Flood

株式会社 日立パワーソリューションズ

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practice

HITACHI
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1. Launch and map operation
2. Getting used to the operation: Recreating the 2004 Fukui flood
3. Practice: Analysis of the Tsurumi River

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DioVISTA/Flood

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- Contents
  a. HDD (USB)
  b. License key (USB)

(a) HDD (UDB)

(b) License Key

a.and b. to a USB port

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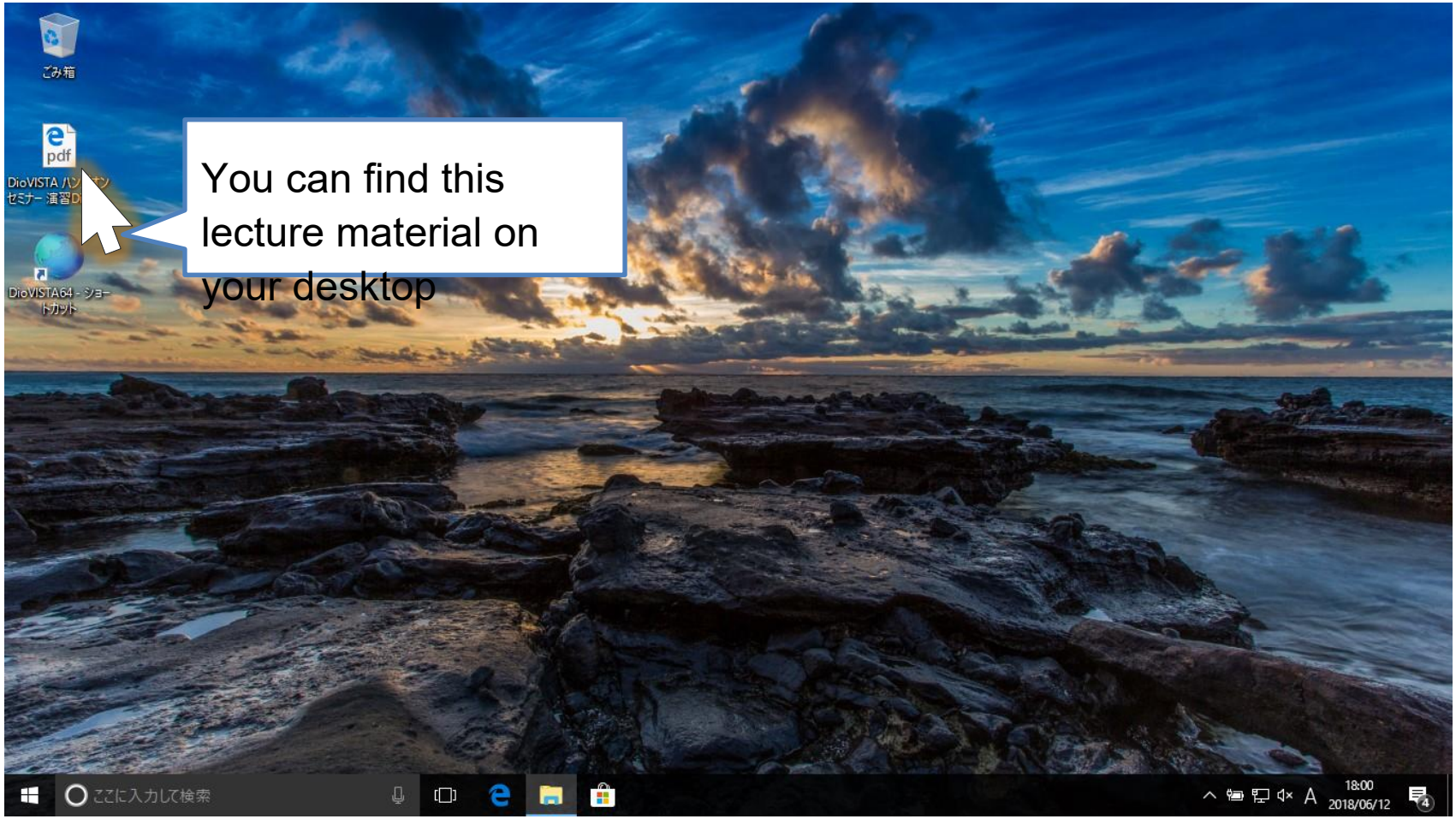
Review lecture materials



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DioVISTA Launching (1)

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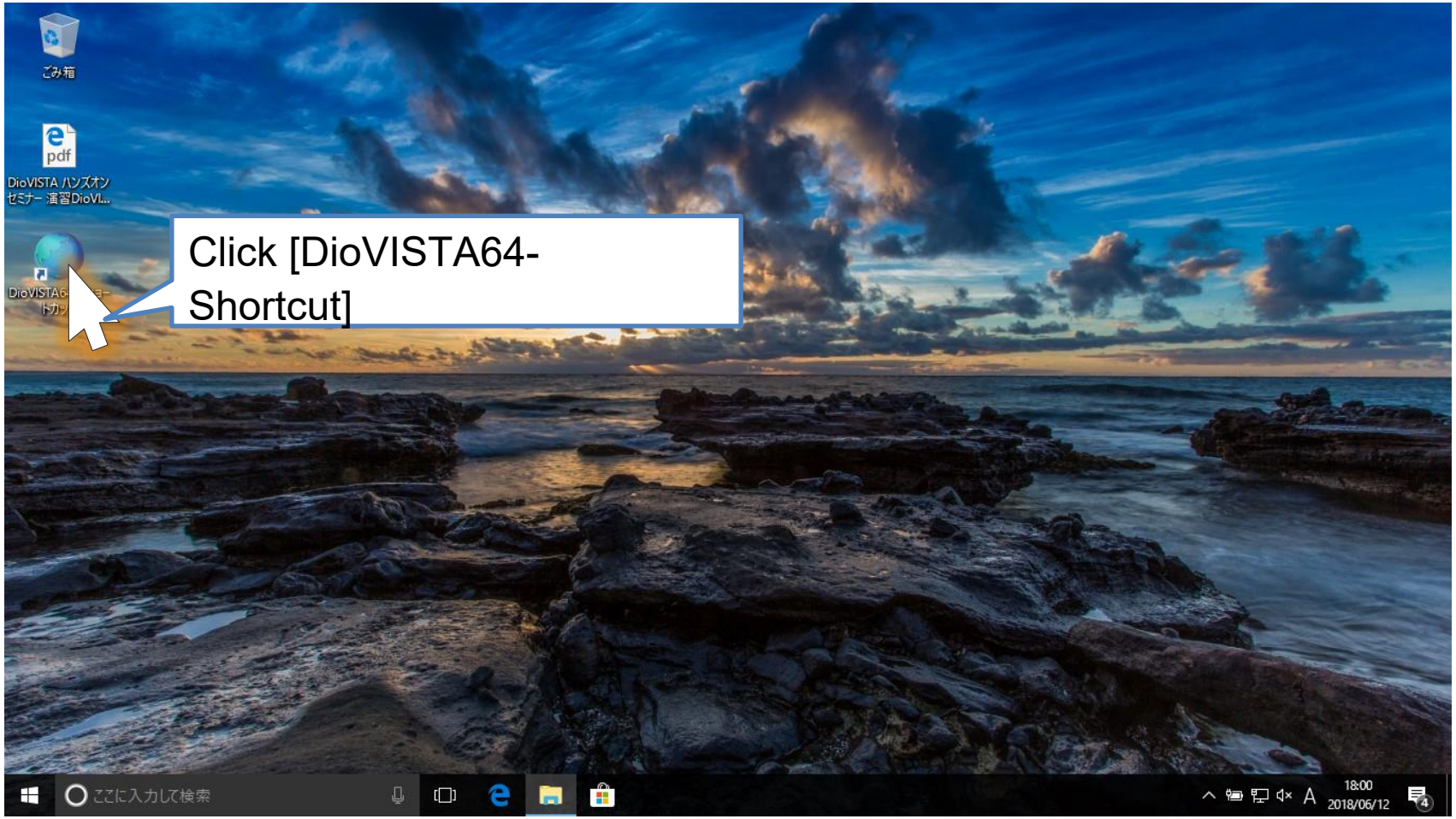

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DioVISTA Launching (2)

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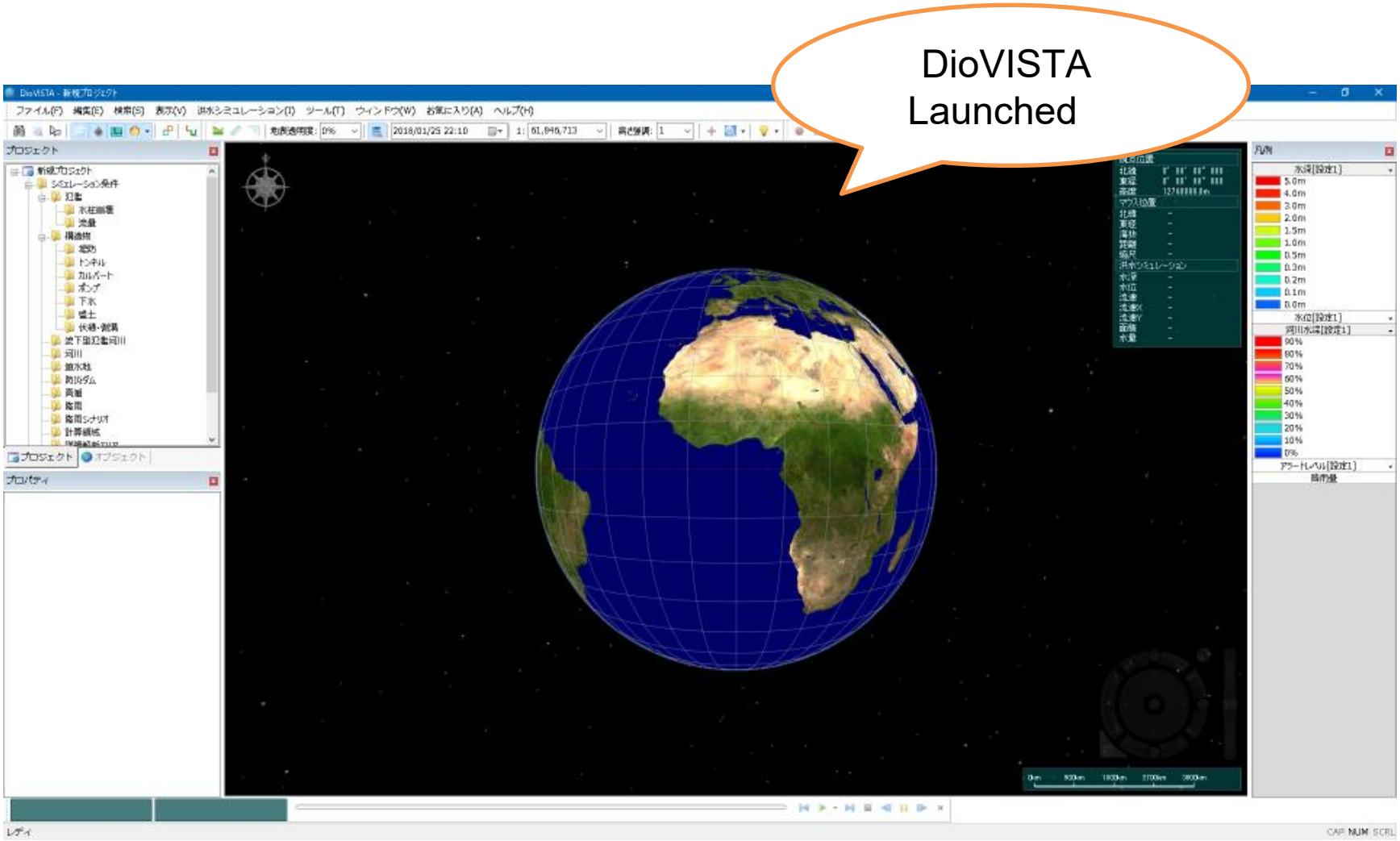

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Working with maps (1)

HITACHI
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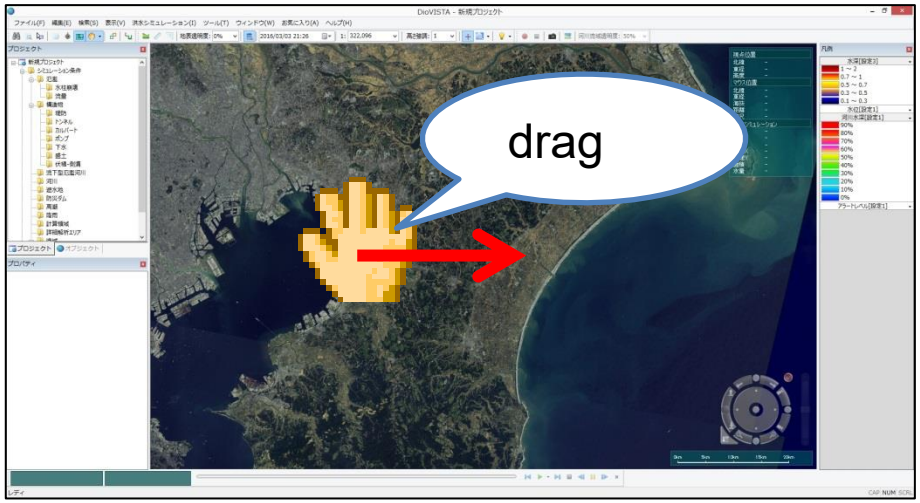
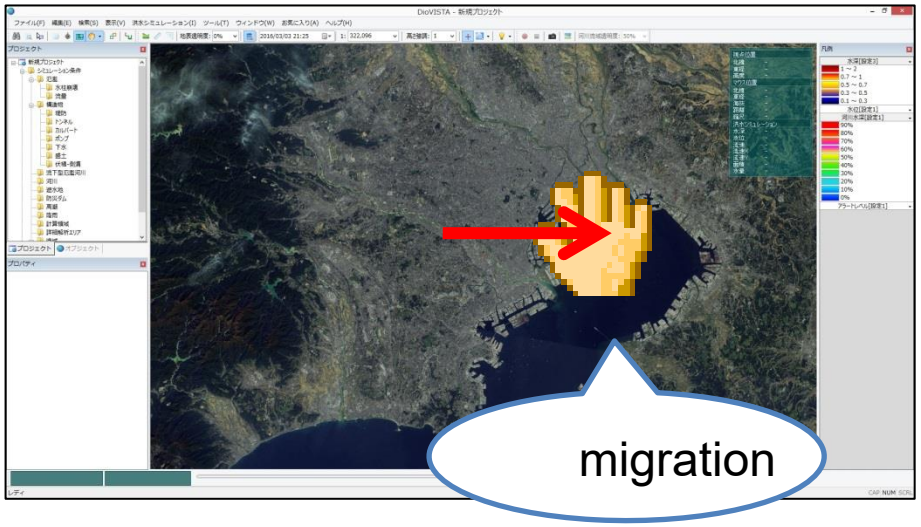
- Scrolling
  - Drag





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Working with maps (2)

HITACHI
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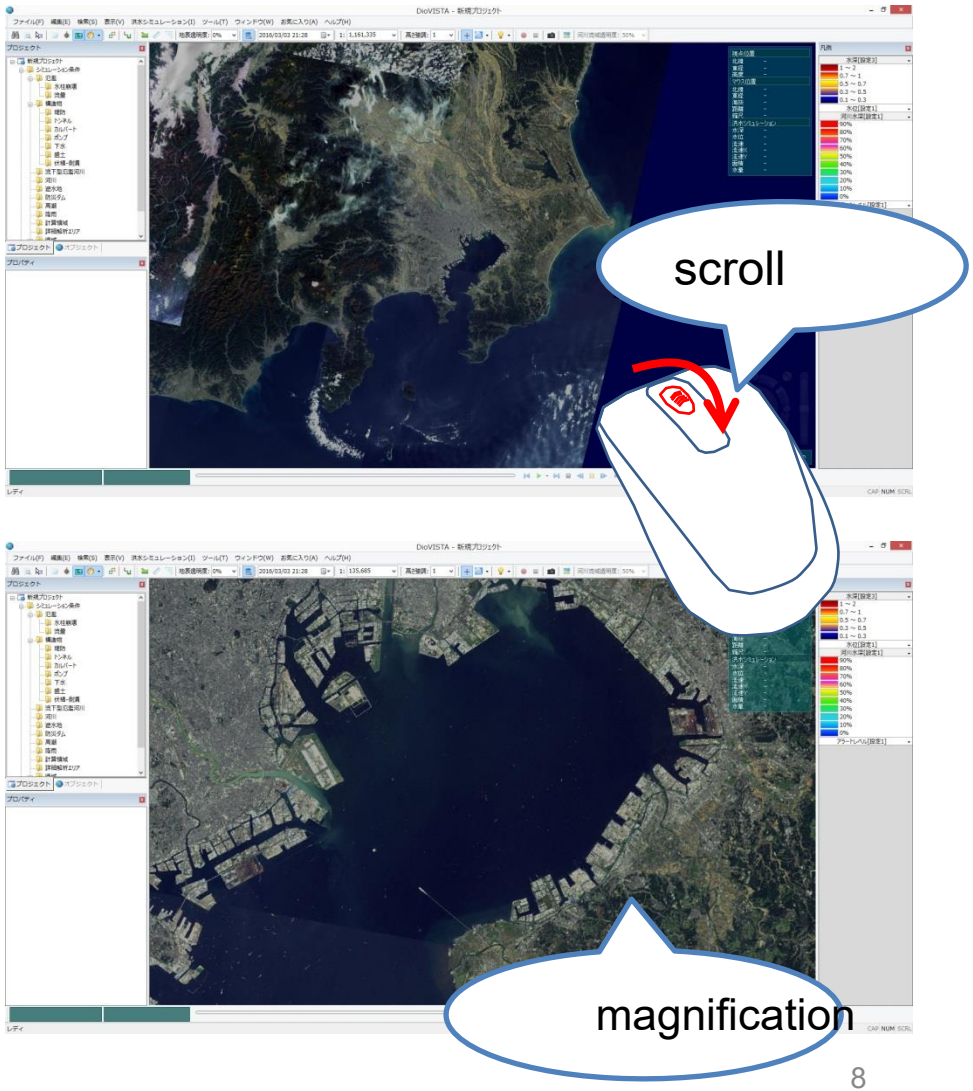
- Zoom in/out
  - Scroll the wheel



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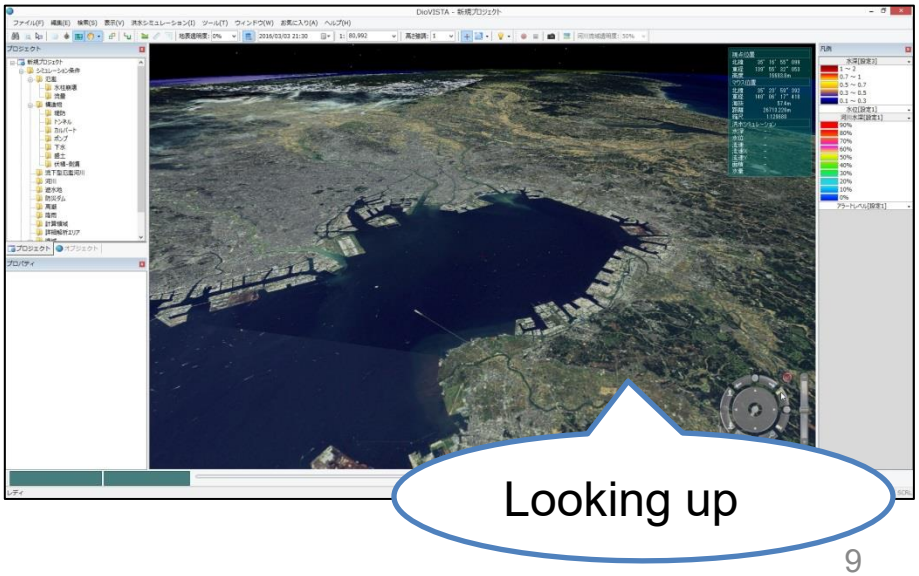
Working with maps (3)

HITACHI
Inspire the Next

- Gaze up and down
  - Click the button shown on the right



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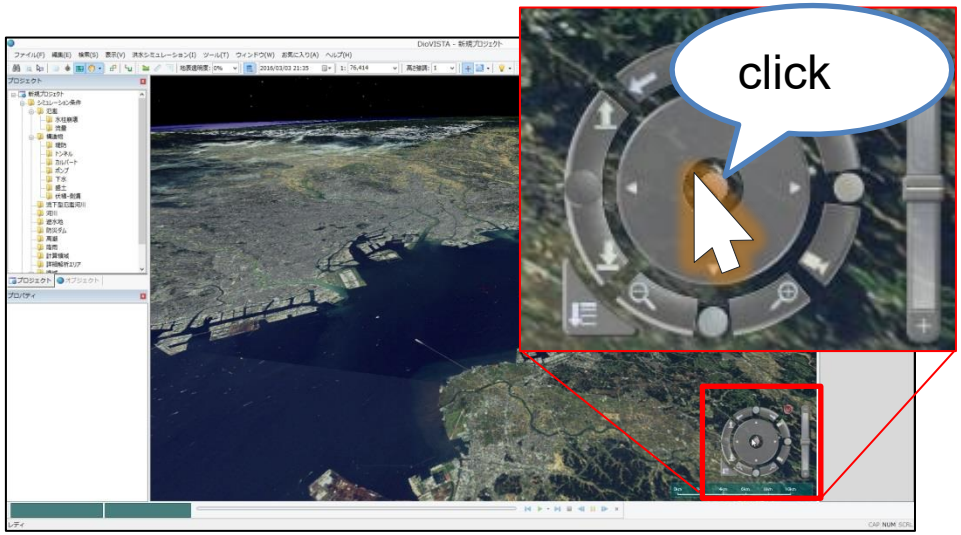
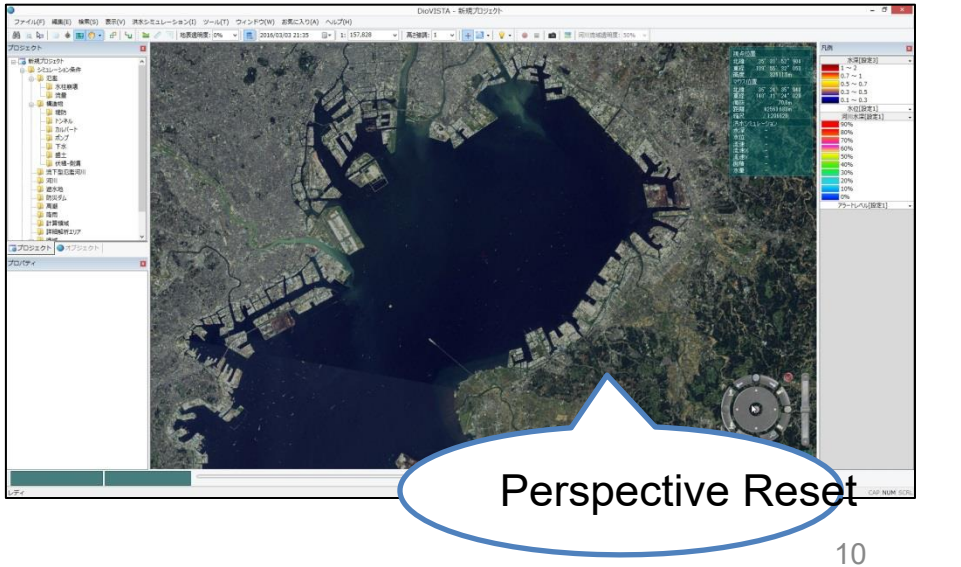
Working with maps (4)

HITACHI
Inspire the Next

- Reset Perspective
  - Click the reset button in the figure on the right





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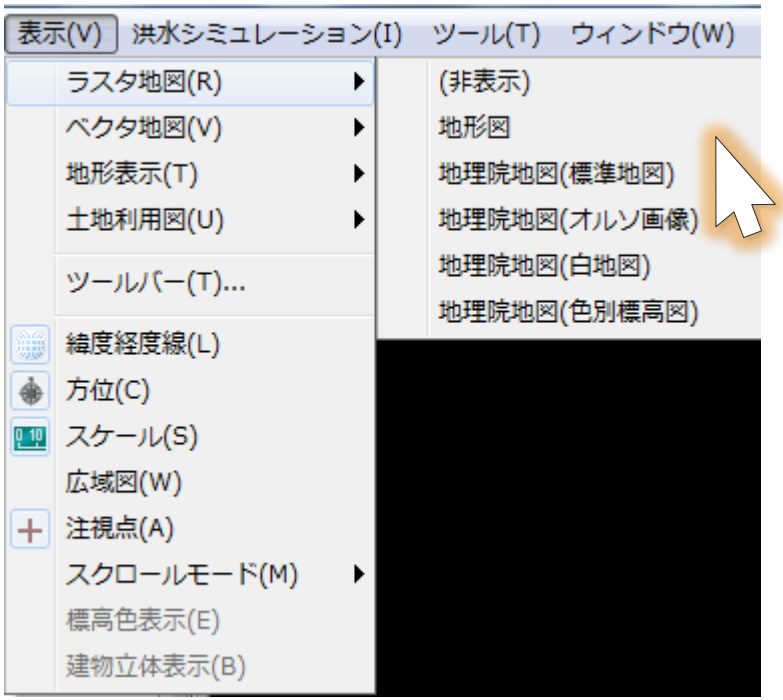
Working with maps (5)

HITACHI
Inspire the Next

- Map selection
  - [Display] - [Raster Map]
    - Topographic maps
    - GI Map (Standard Map)
      - Map of the Institute of Geography (Orthoimage))
      - Map of the Institute of Geography (White Map)
    - GI Map (Elevation map by color



* Maps of the Institute of Geography (GSI) (various types) require an Internet connection.

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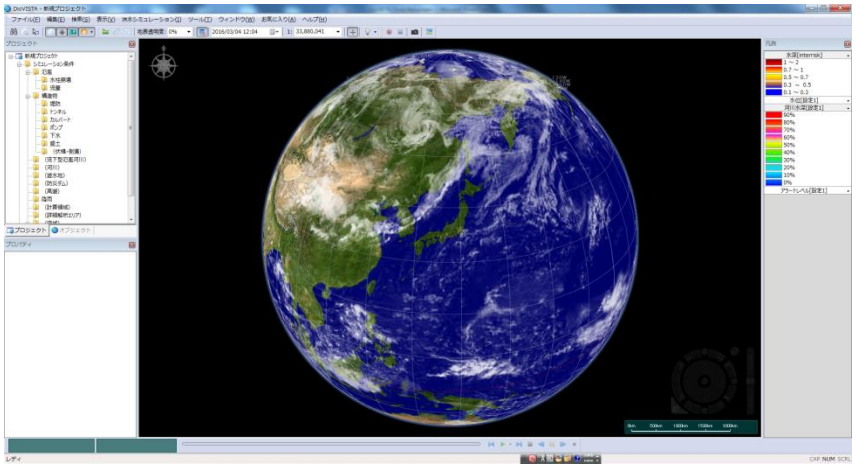
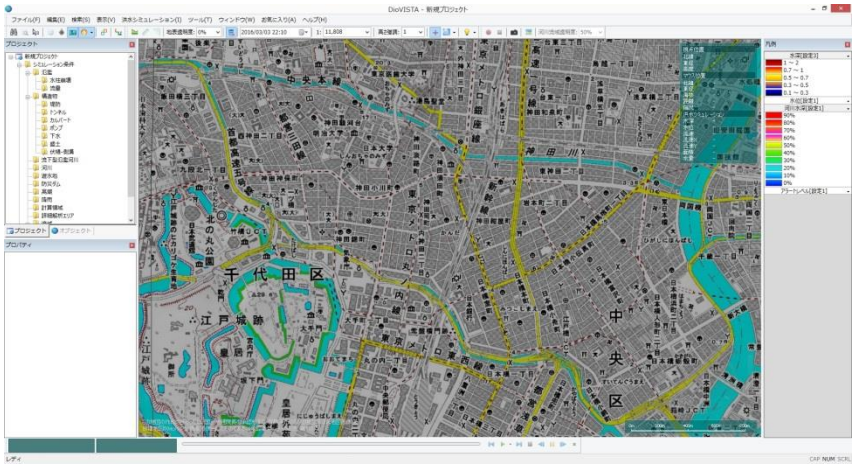
Types of maps(1)

HITACHI
Inspire the Next

NASA satellite imagery



Topographic map



Geospatial Information Authority of Japan Numerical Map 25000 (Map image)

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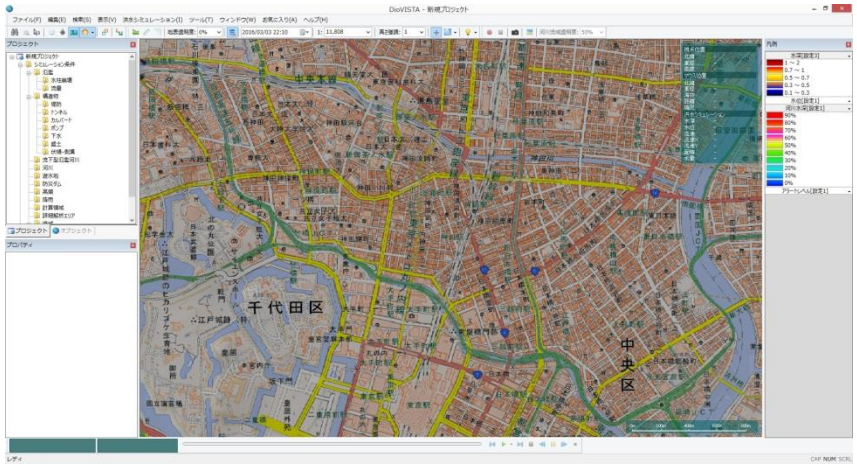
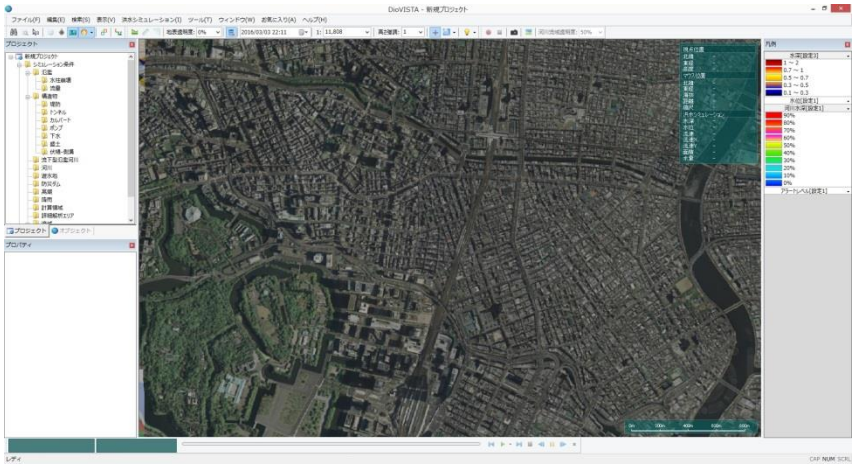
Types of maps(2)

HITACHI
Inspire the Next

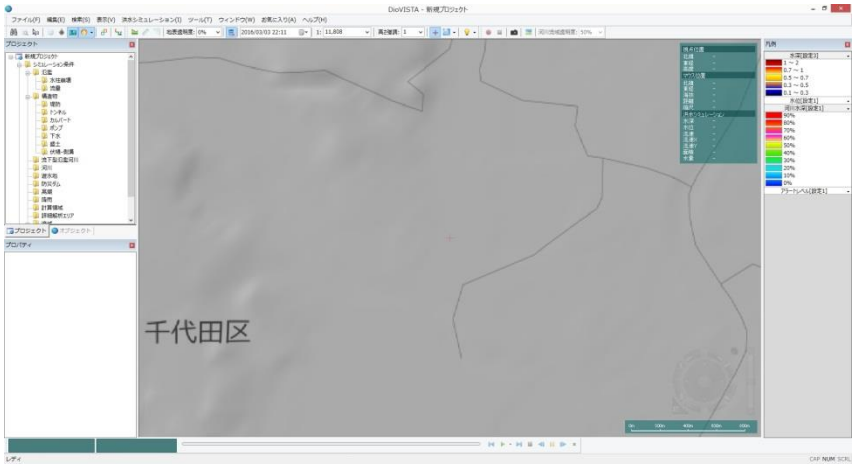
GI Map (Standard Map)



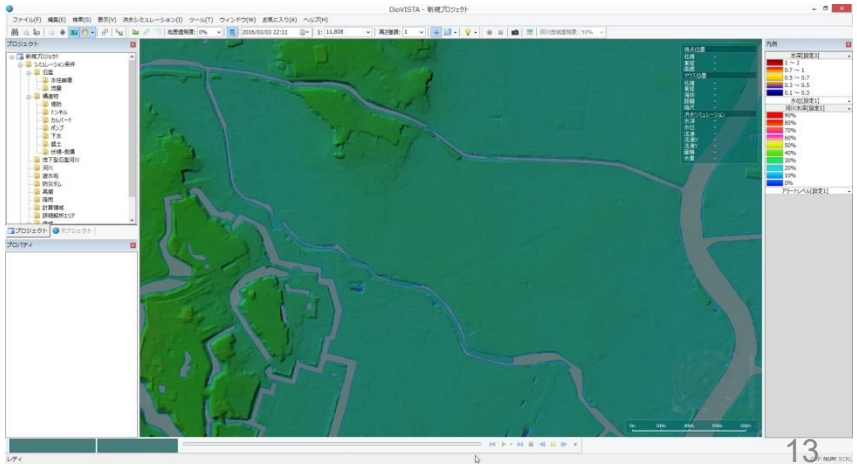
Map of the Institute of Geography (Ortho image)



Map of the Institute of Geography (White Map)



Map of the Institute of Geography (Elevation map by color)



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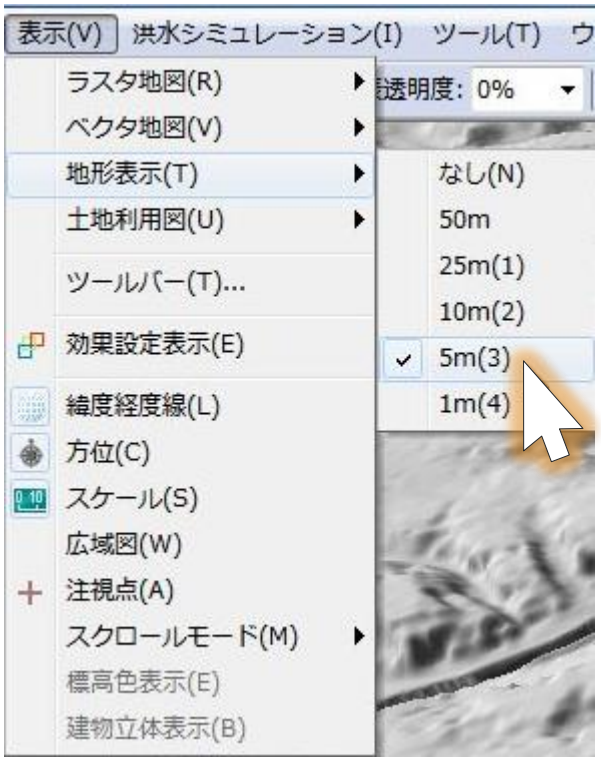
Working with maps (6)

HITACHI
Inspire the Next

- Terrain selection
  - [Display] - [Terrain Display]
    - None
    - 50m
    - 25m
    - 10m
    - 5m
    - 1m



If you select terrain data that has not been imported, it will not be displayed.

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Working with maps (7)

HITACHI
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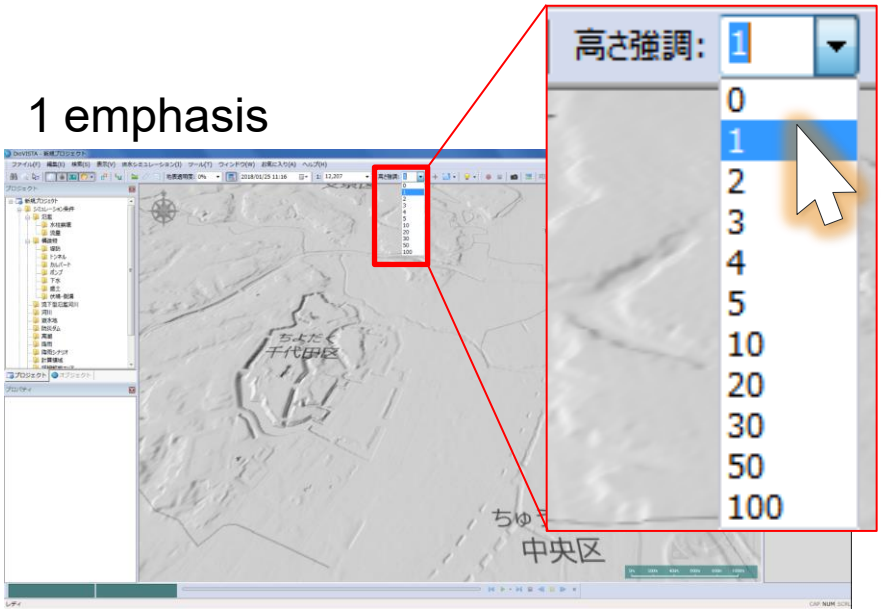
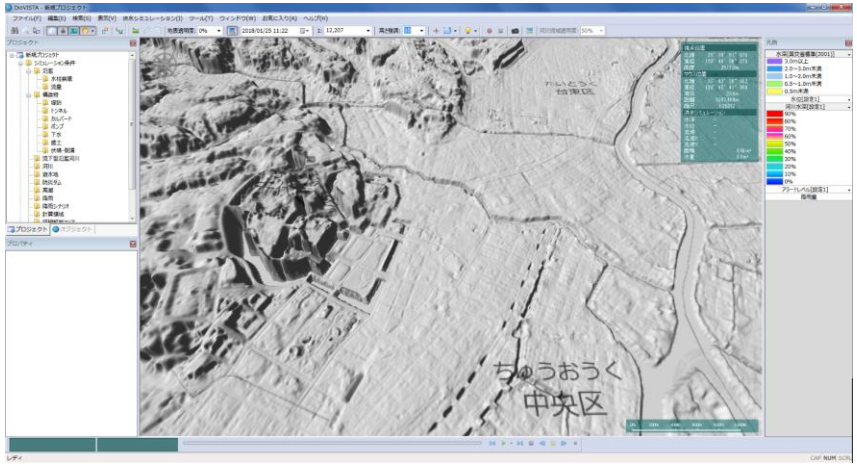
- Terrain height enhancement
  - Toolbar [Height Enhancement]

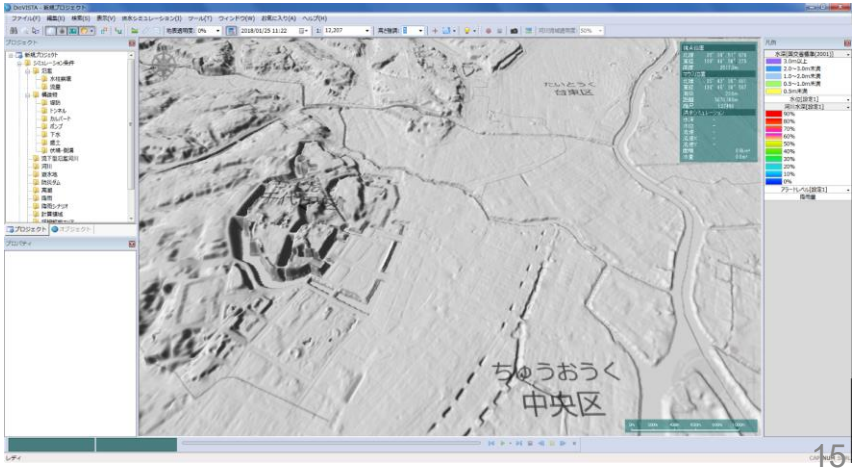
1 emphasis



10 emphasis



5 emphasis



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practice

HITACHI
Inspire the Next

1. Launch and map operation
2. Getting used to the operation: Recreating the 2004 Fukui flood
   - Preparation of embankments and culverts
   - Ground clearance editing
   - 25m mesh flood calculation
3. Practice: Analysis of the Tsurumi River

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Where the data is stored

HITACHI
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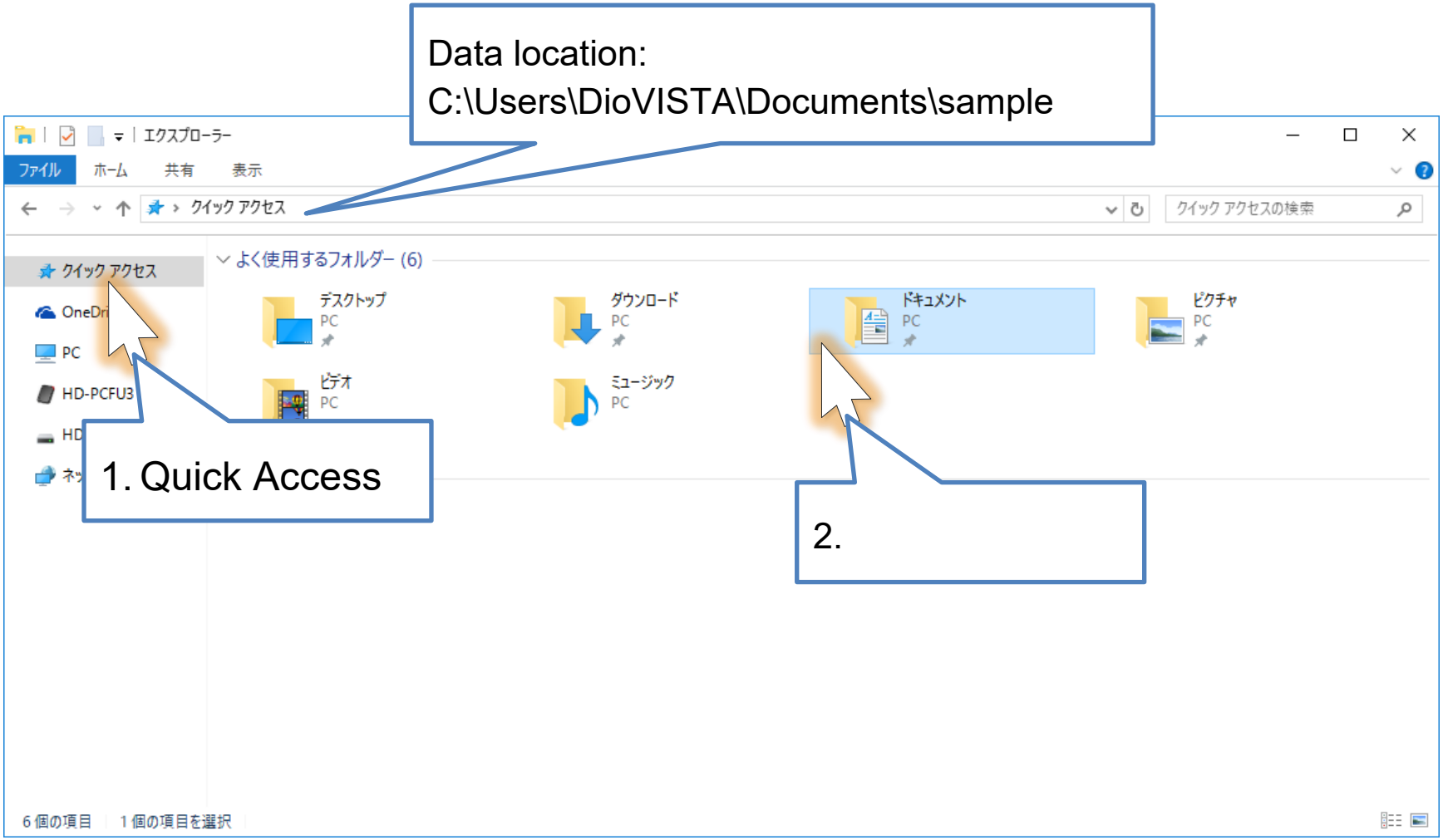

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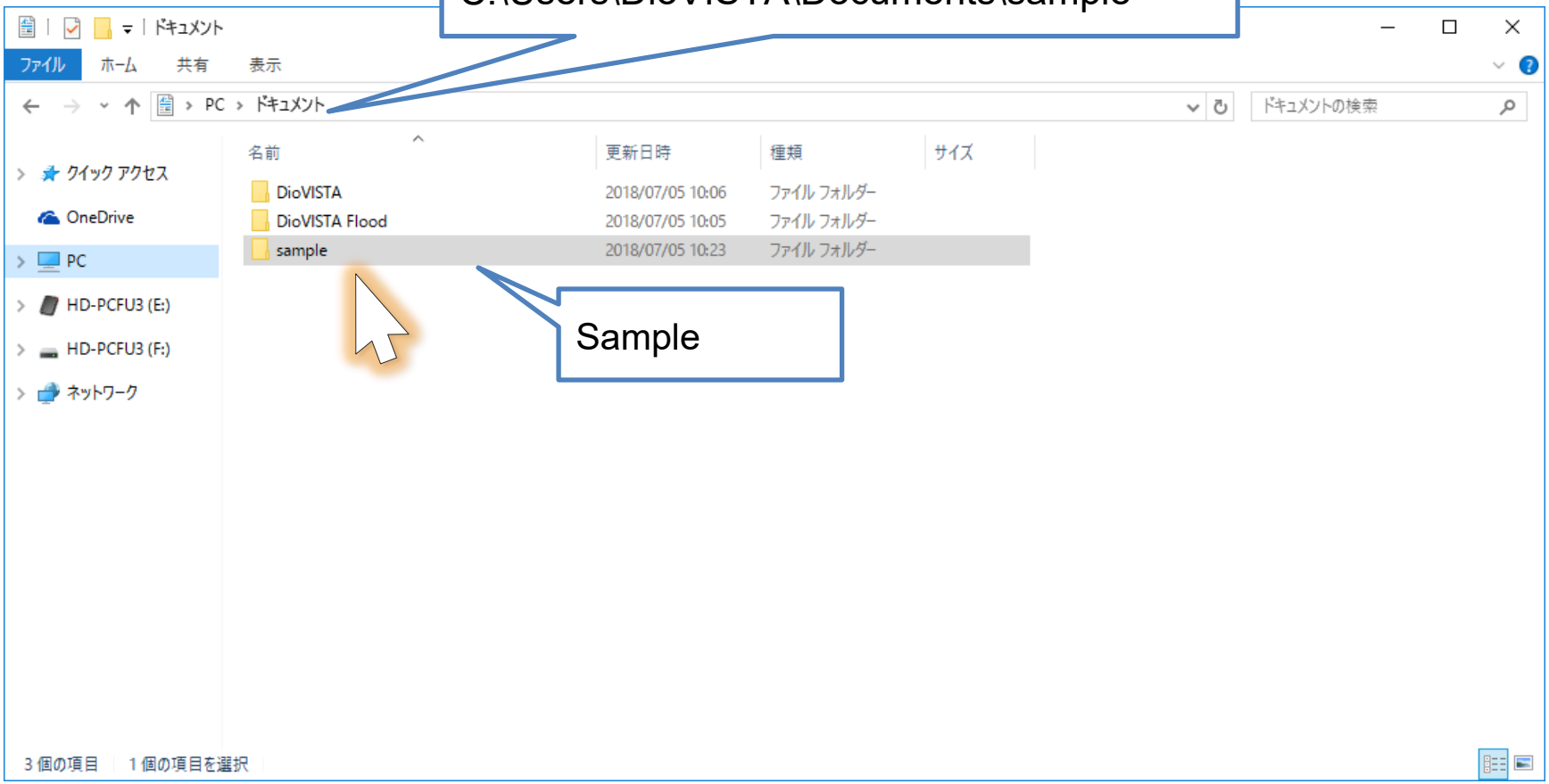
Where the data is stored

HITACHI
Inspire the Next

Document data location:
C:\Users\DioVISTA\Documents\sample



Sample

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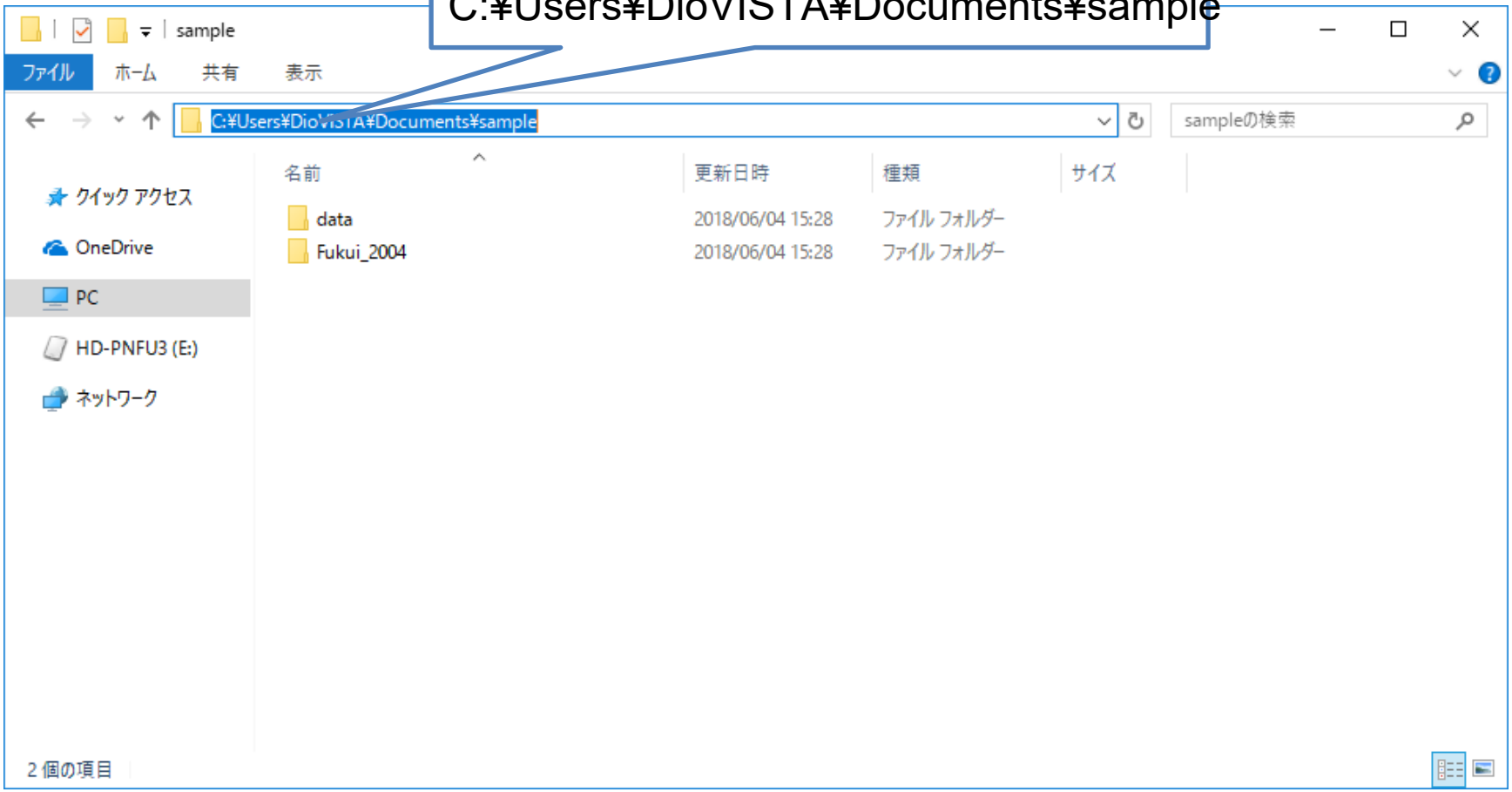
Where the data is stored

HITACHI
Inspire the Next

data location:
C:¥Users¥DioVISTA¥Documents¥sample



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.KMLLoading

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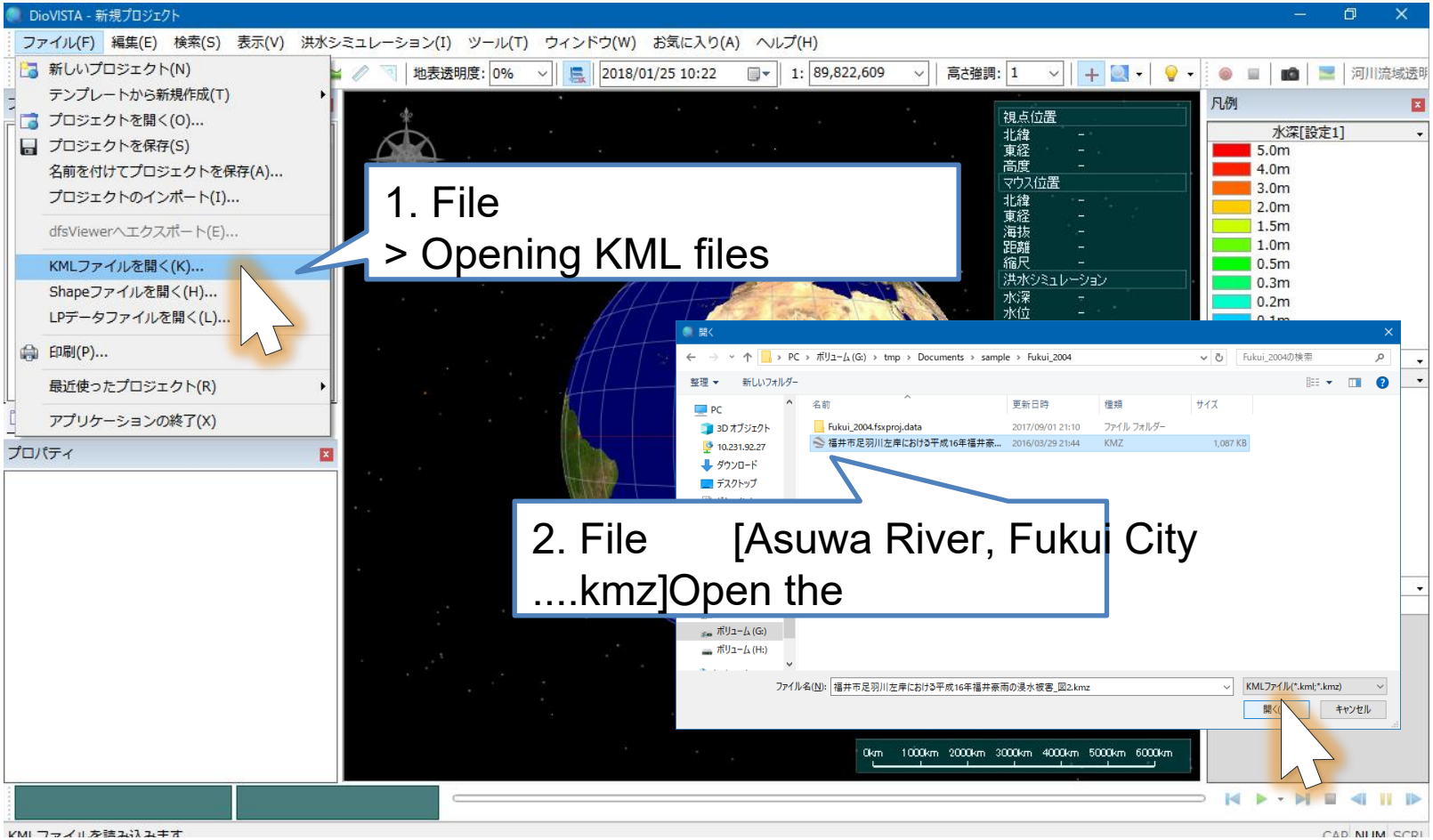

Specify the file [Flood damage .kmz of heavy rain in Fukui in Heisei 16 on the left bank of the Asuwa River in Fukui City]

The inundation area of the KMZ file was created based on the following documents. Flood damage caused by heavy rain in Fukui in Heisei 16 on the left bank of the Asuwa River, Yamamoto Fukui City, Natural Disaster Science, Vol. 26 , No. 1, pp. 41-53, 2007

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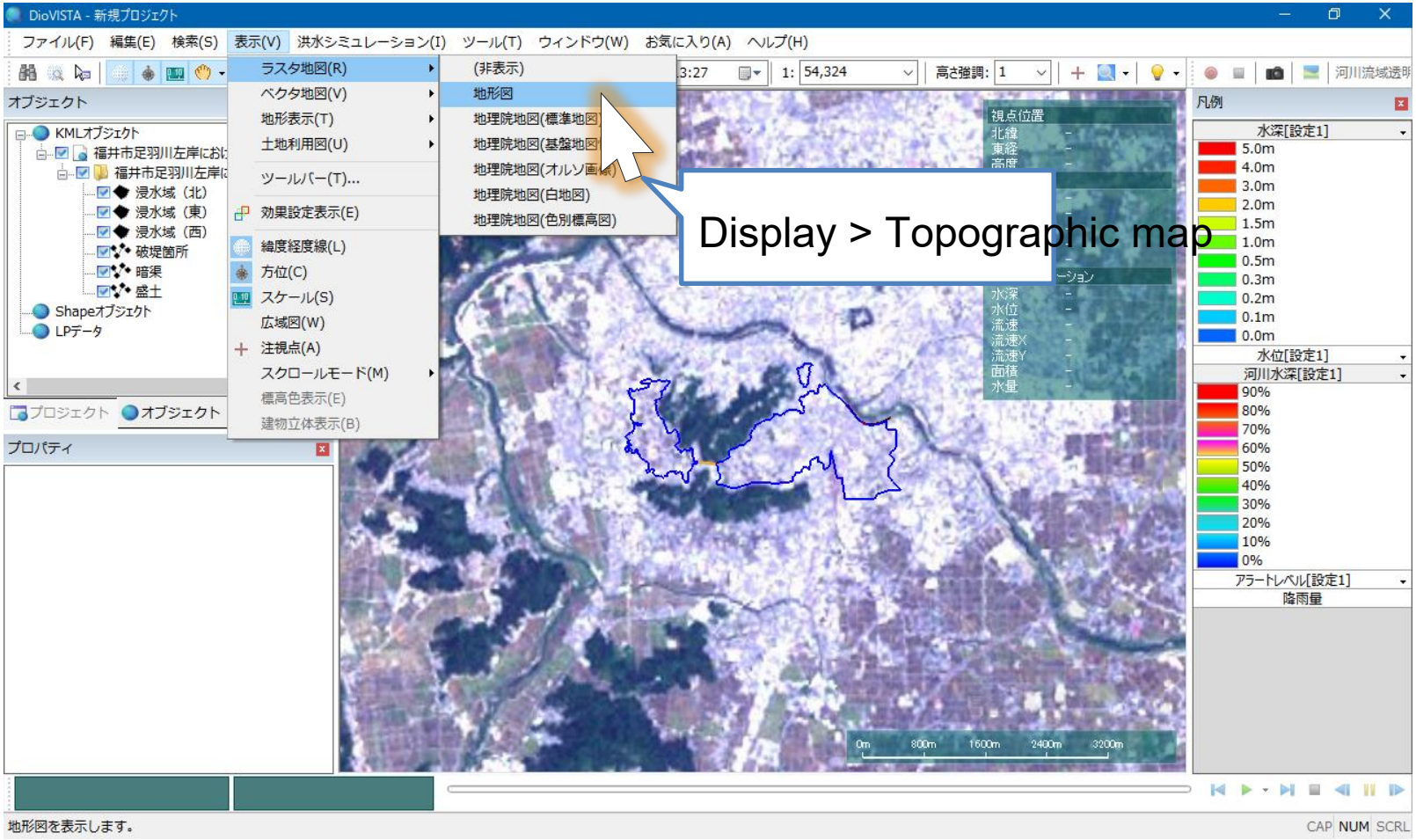
Switch between maps

HITACHI
Inspire the Next



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Move to the break point

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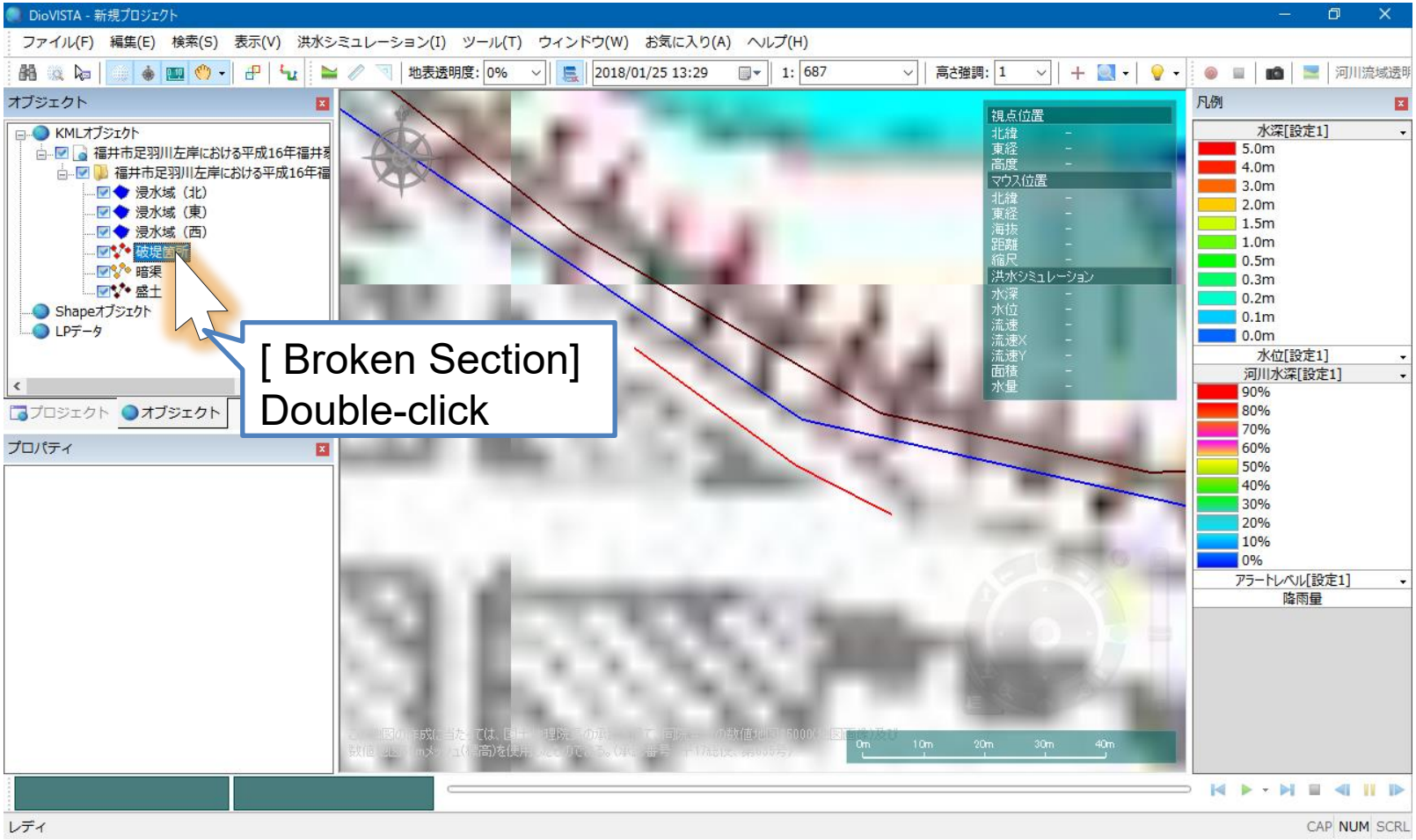

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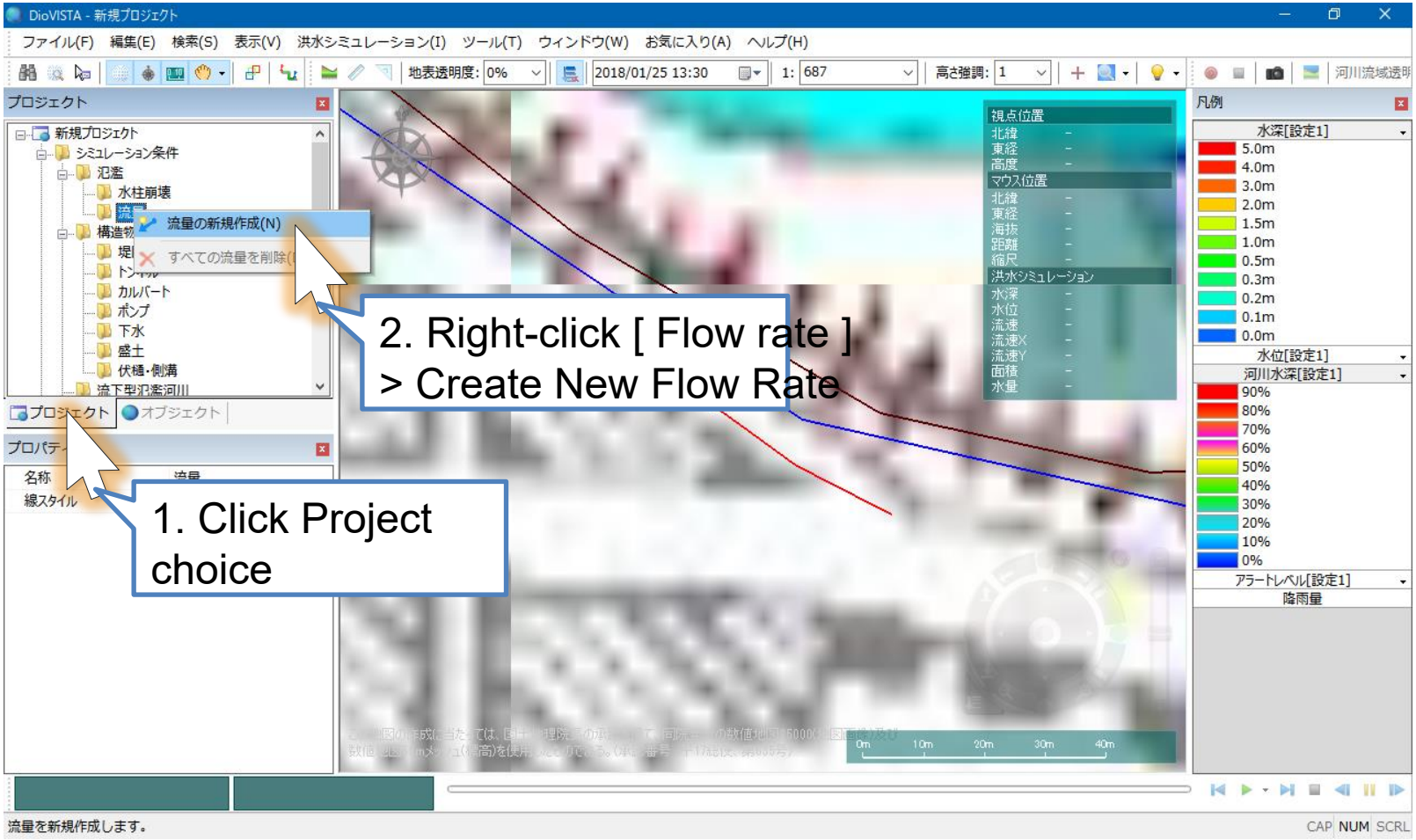
Set the location of the levee (1)

HITACHI
Inspire the Next



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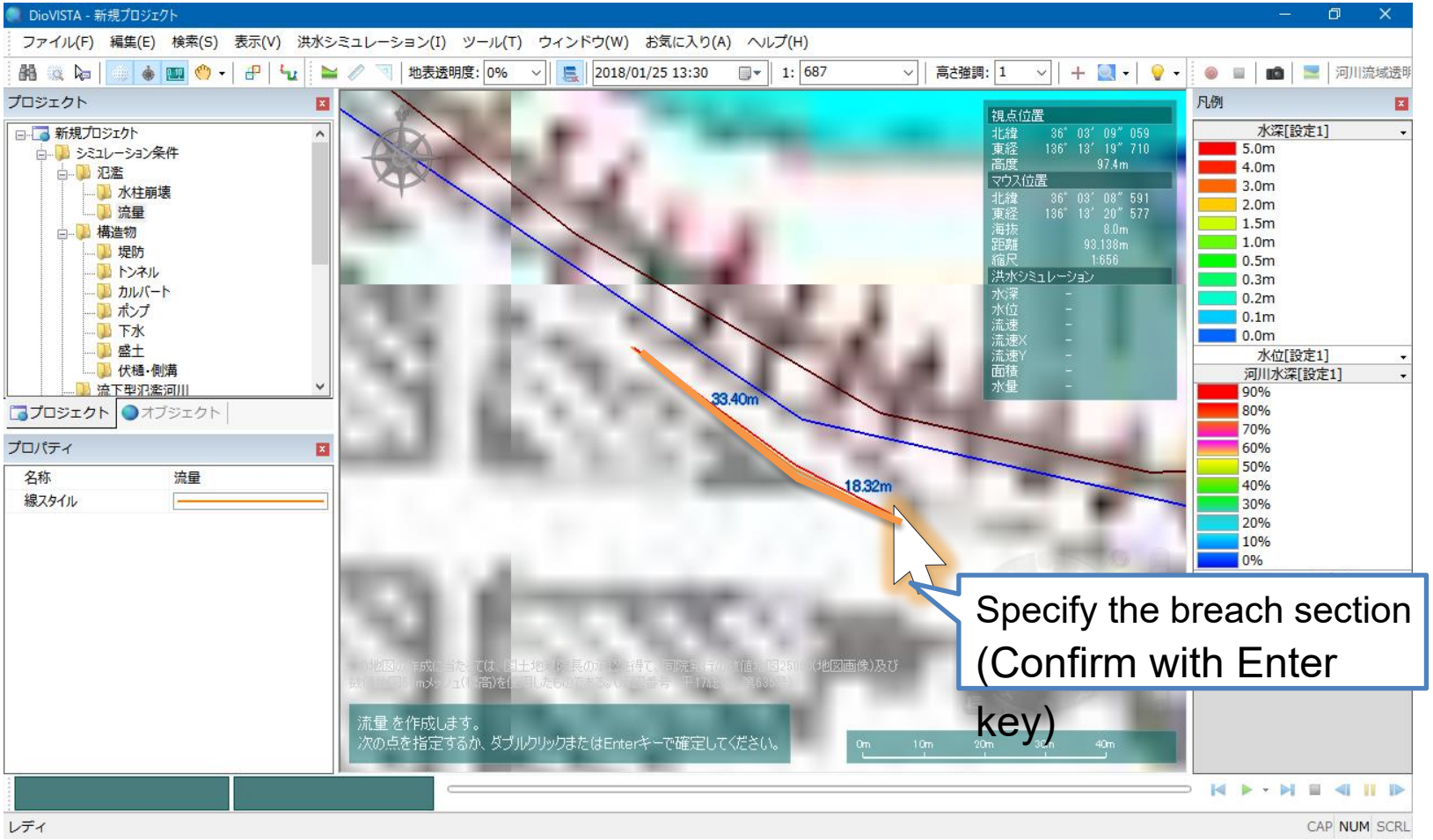
Set the location of the levee (2)

HITACHI
Inspire the Next



Specify the breach section (Confirm with Enter key)

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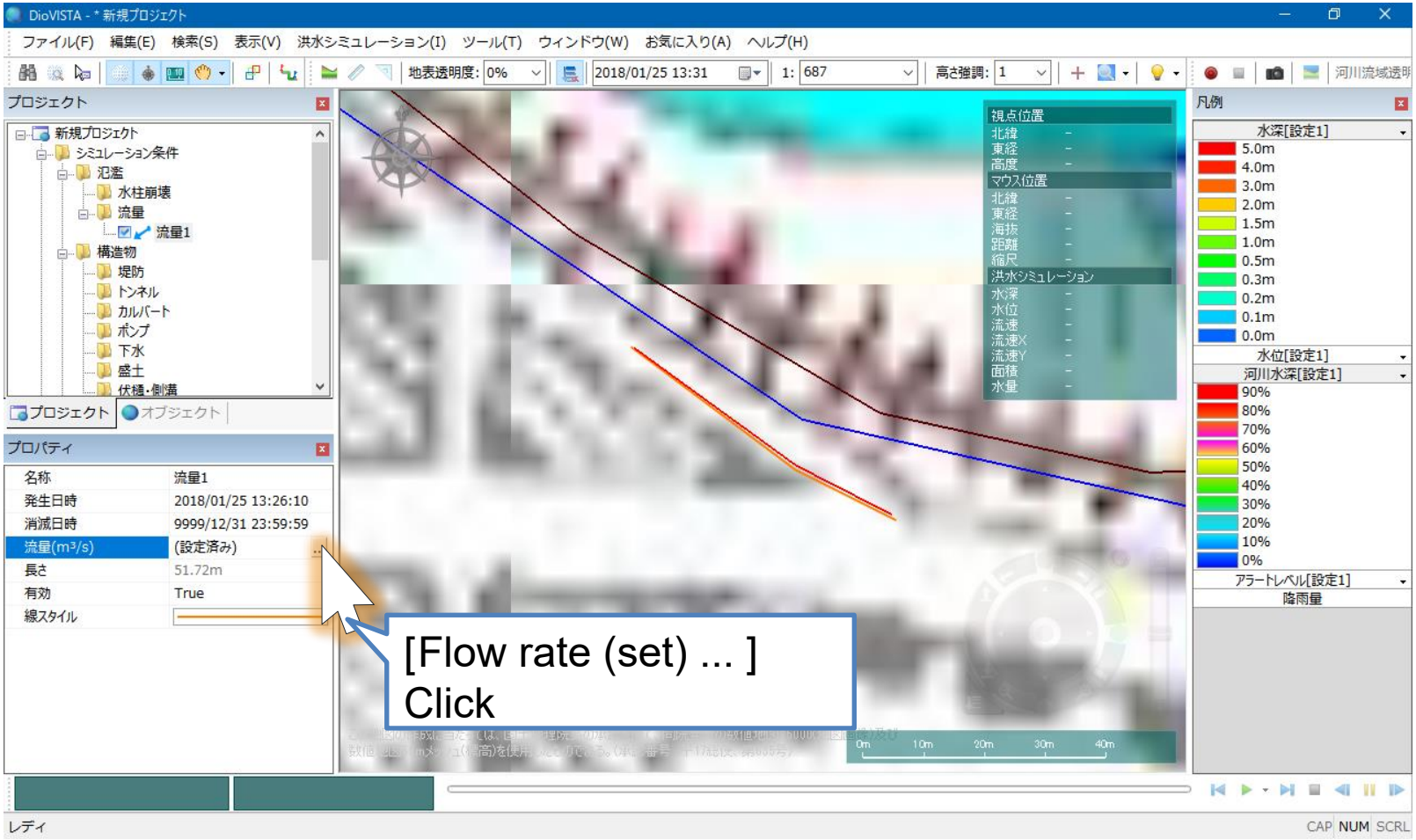
Set the location of the levee (3)

HITACHI
Inspire the Next



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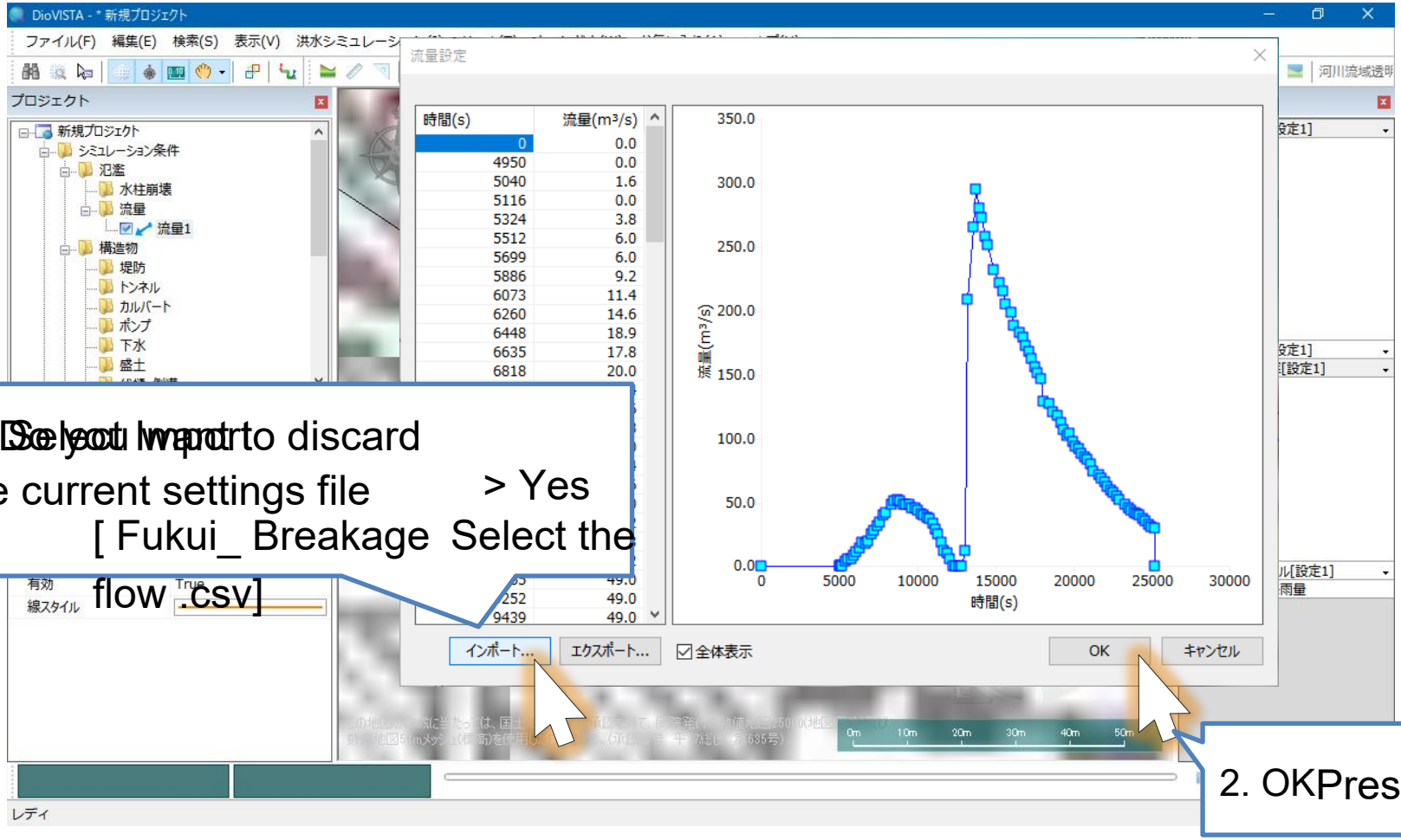
Set the location of the levee (4)

HITACHI
Inspire the Next



CSV file created based on the following documents: Fukui Prefecture, Asuwa River Flood Disaster Investigation Countermeasure Study Report, March 17 Yamaguchi , Iwamura, 2004 Accuracy verification of flood simulation by Asuwa River flood case, Proceedings of the Annual Annual Conference of the Japan Society of Civil Engineers , 2006

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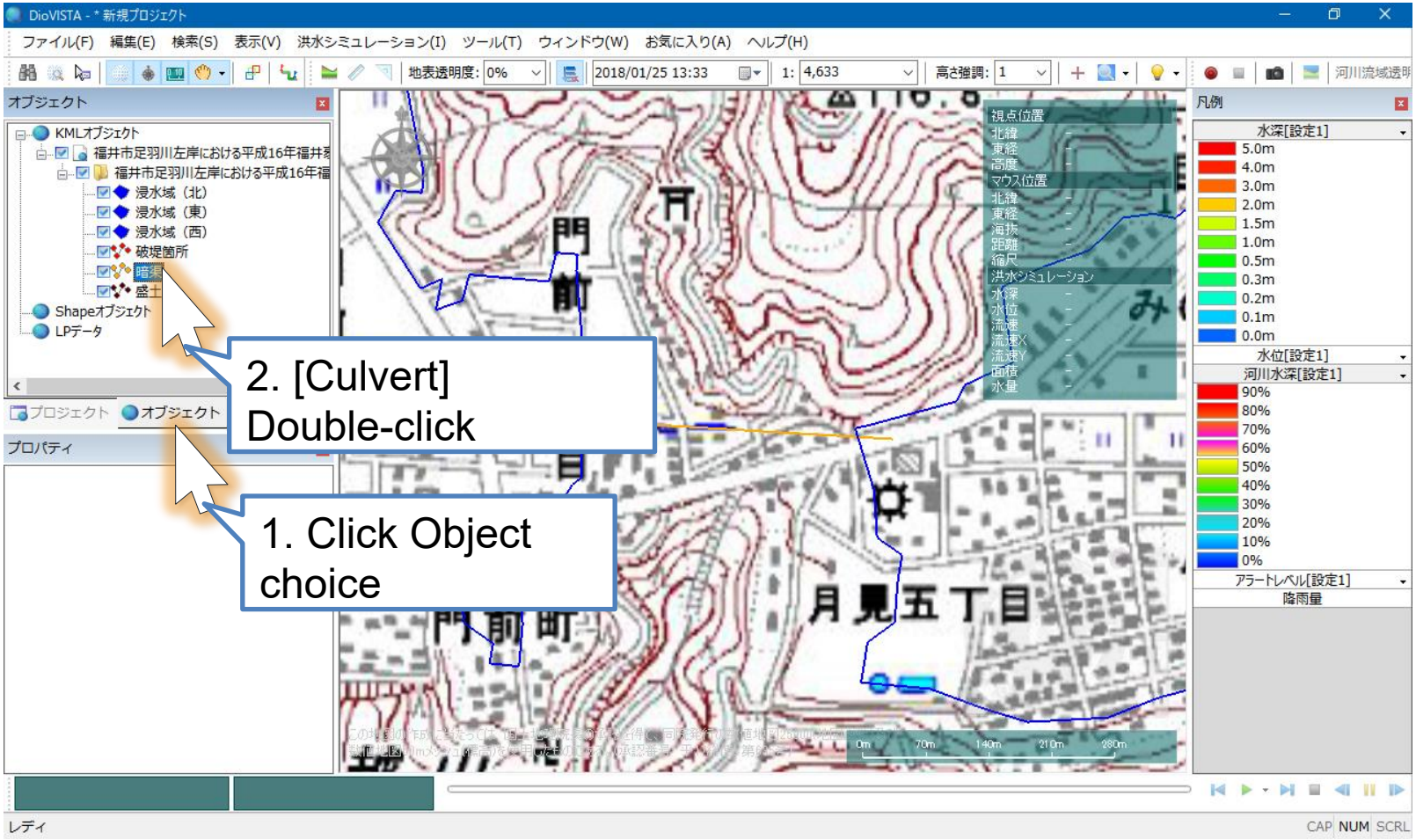
Set culvert (1)

HITACHI
Inspire the Next



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Set culvert (2)

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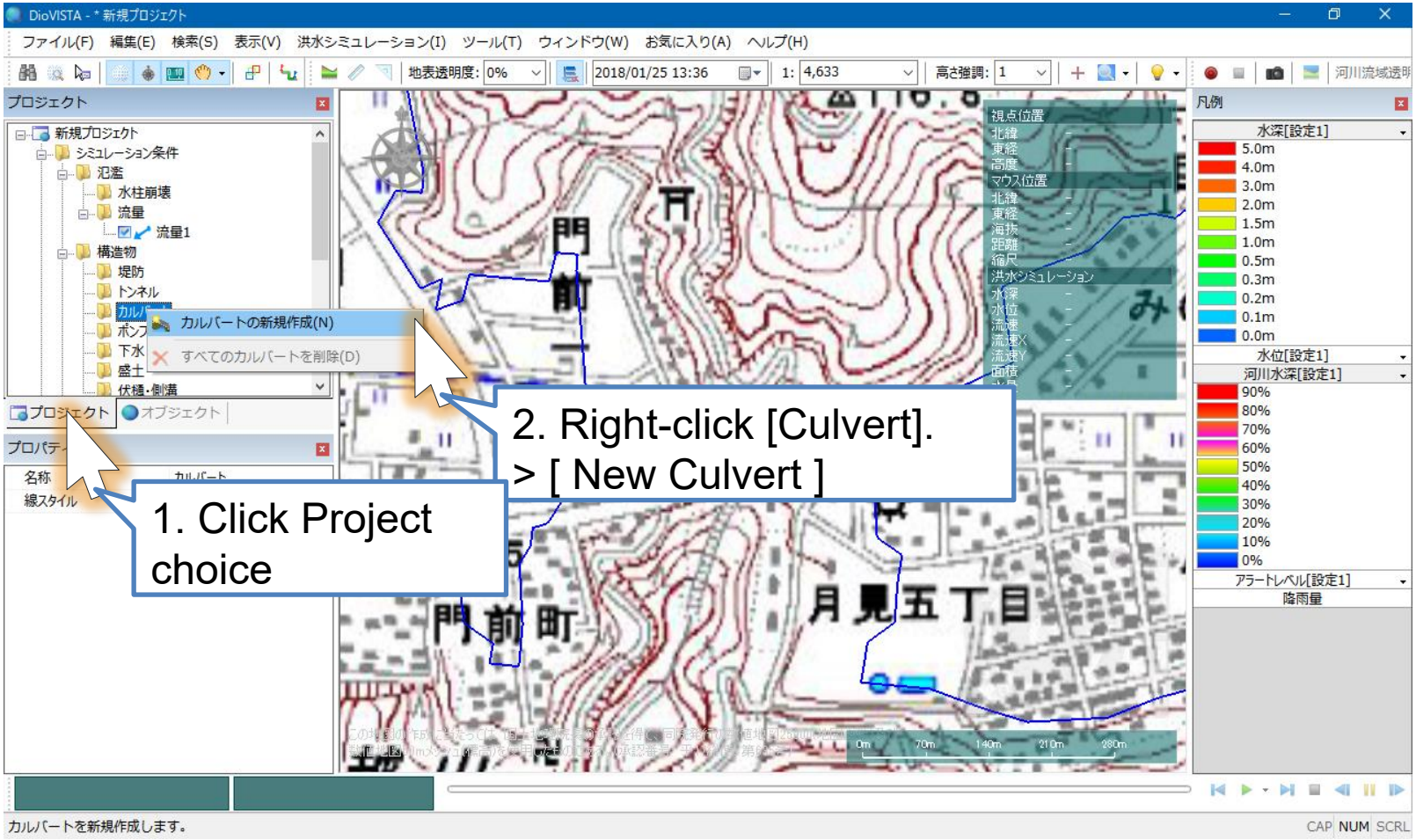

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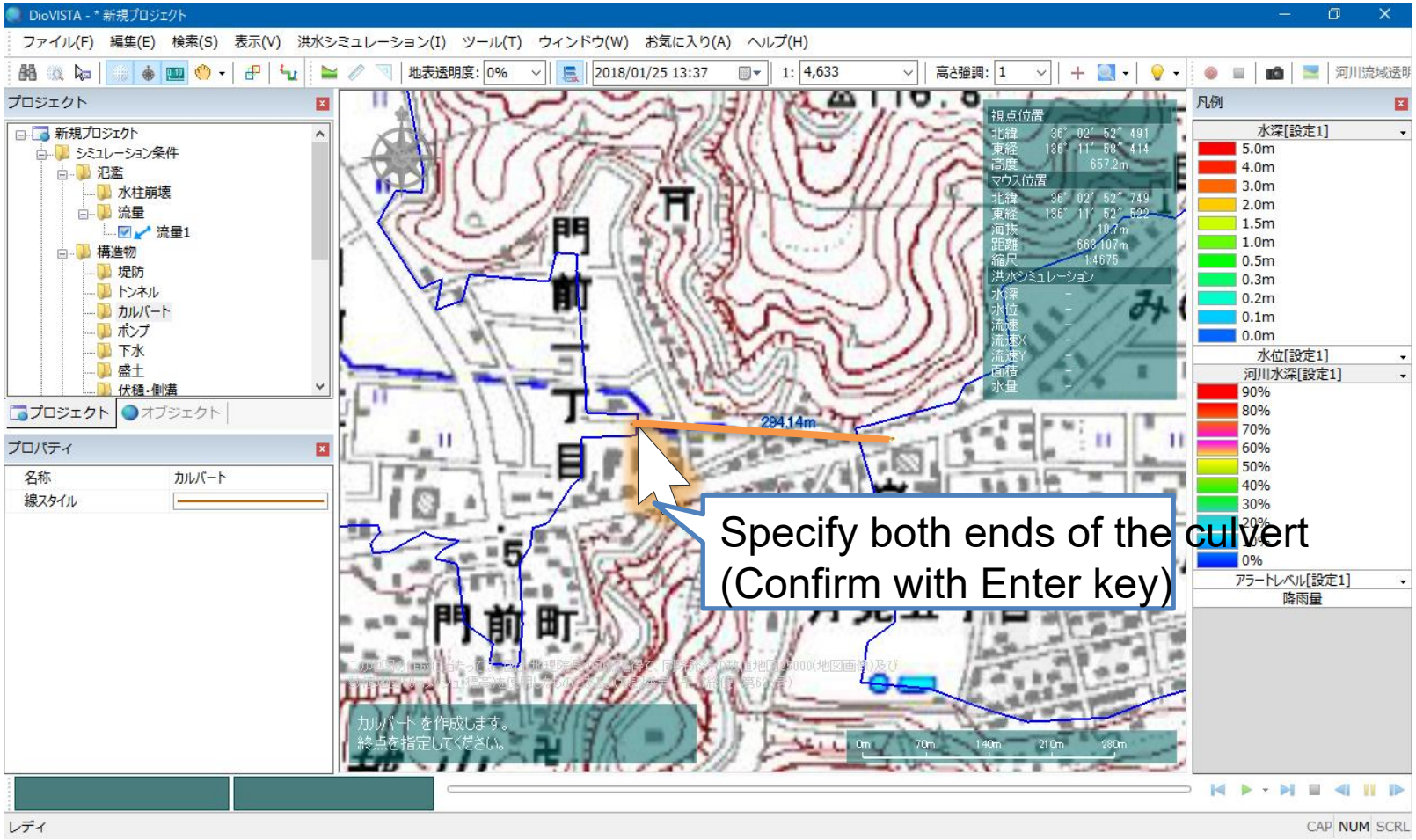
Set culvert (3)

HITACHI
Inspire the Next



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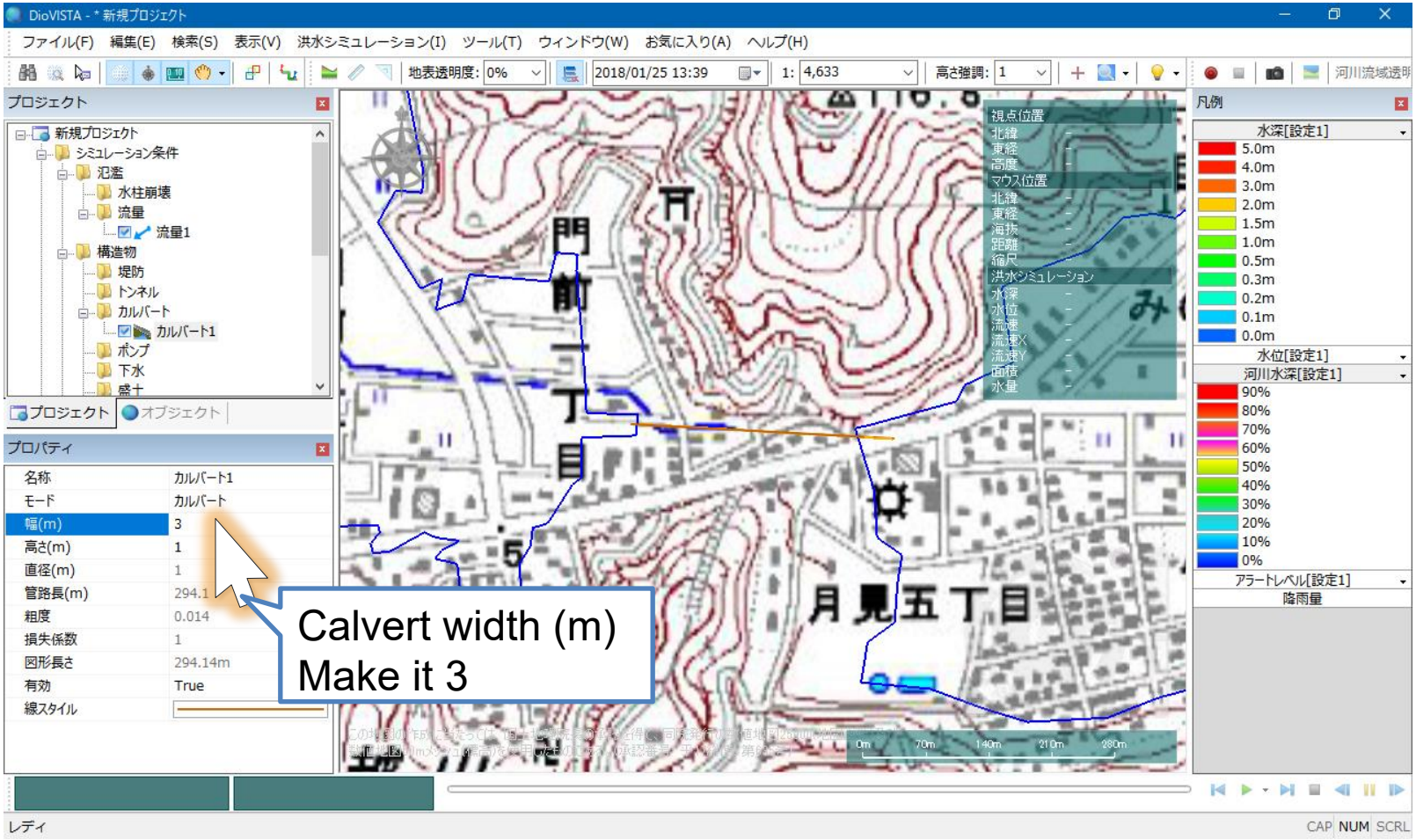
Set culvert (4)

HITACHI
Inspire the Next



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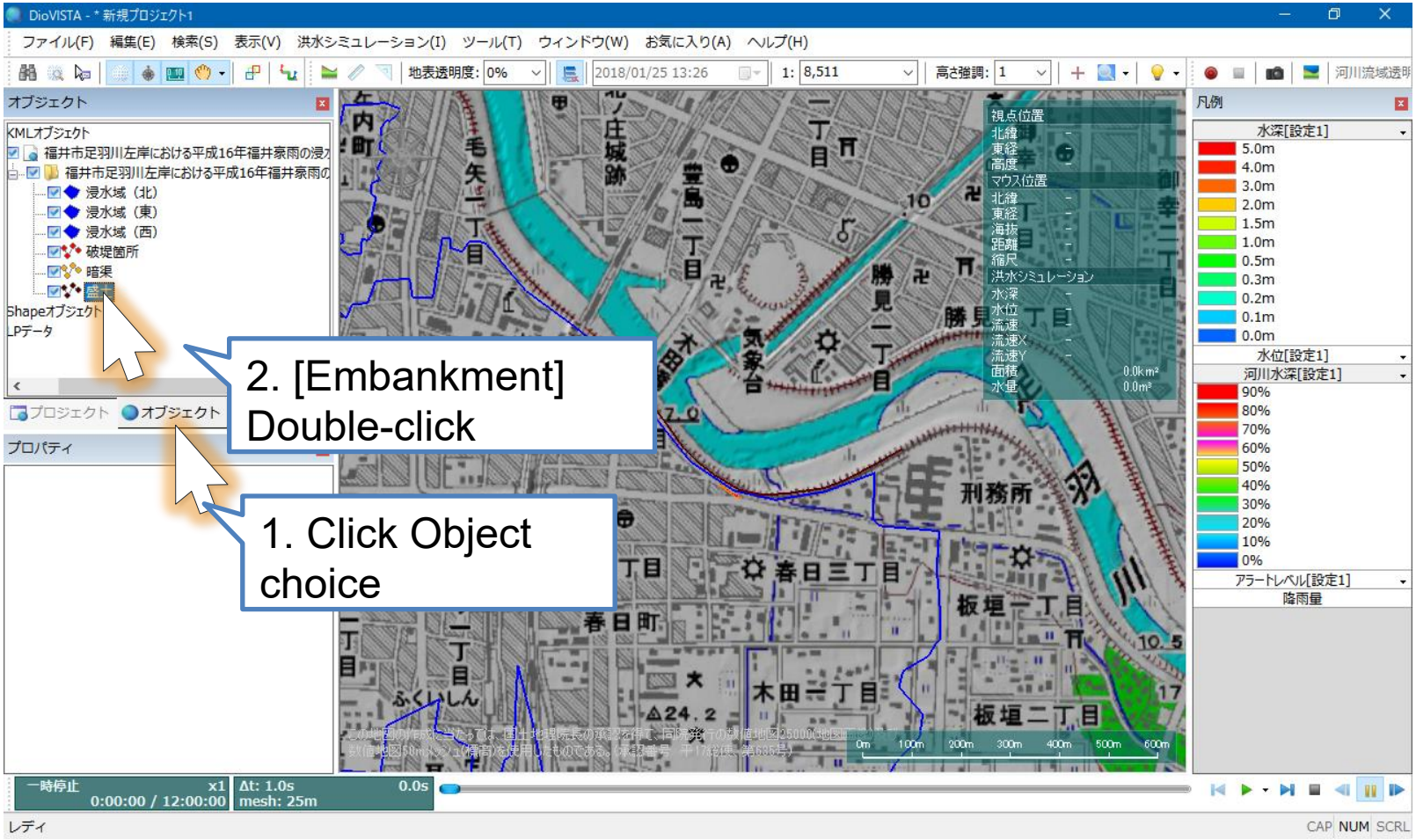
Set the embankment (1)

HITACHI
Inspire the Next



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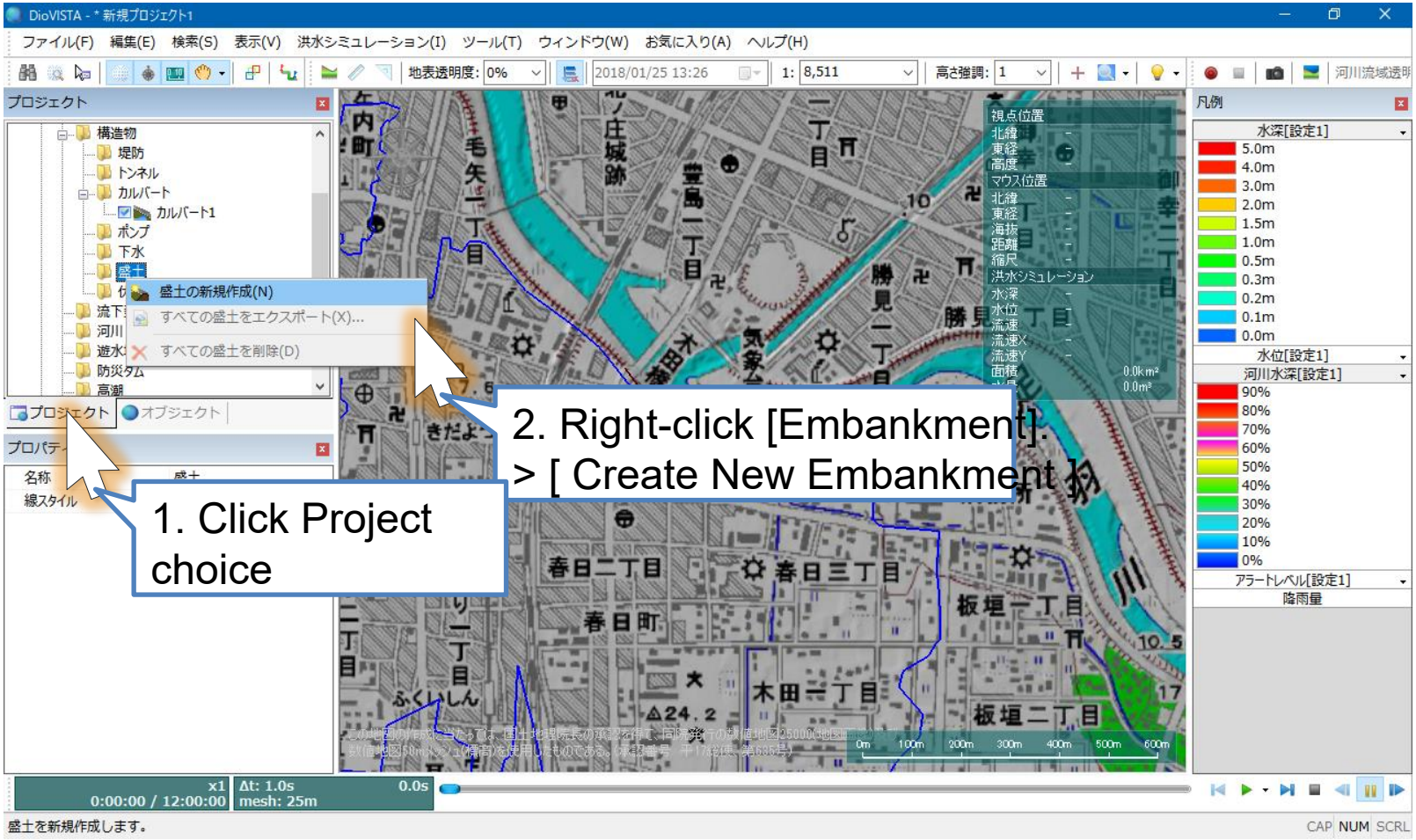
Set the embankment (2)

HITACHI
Inspire the Next



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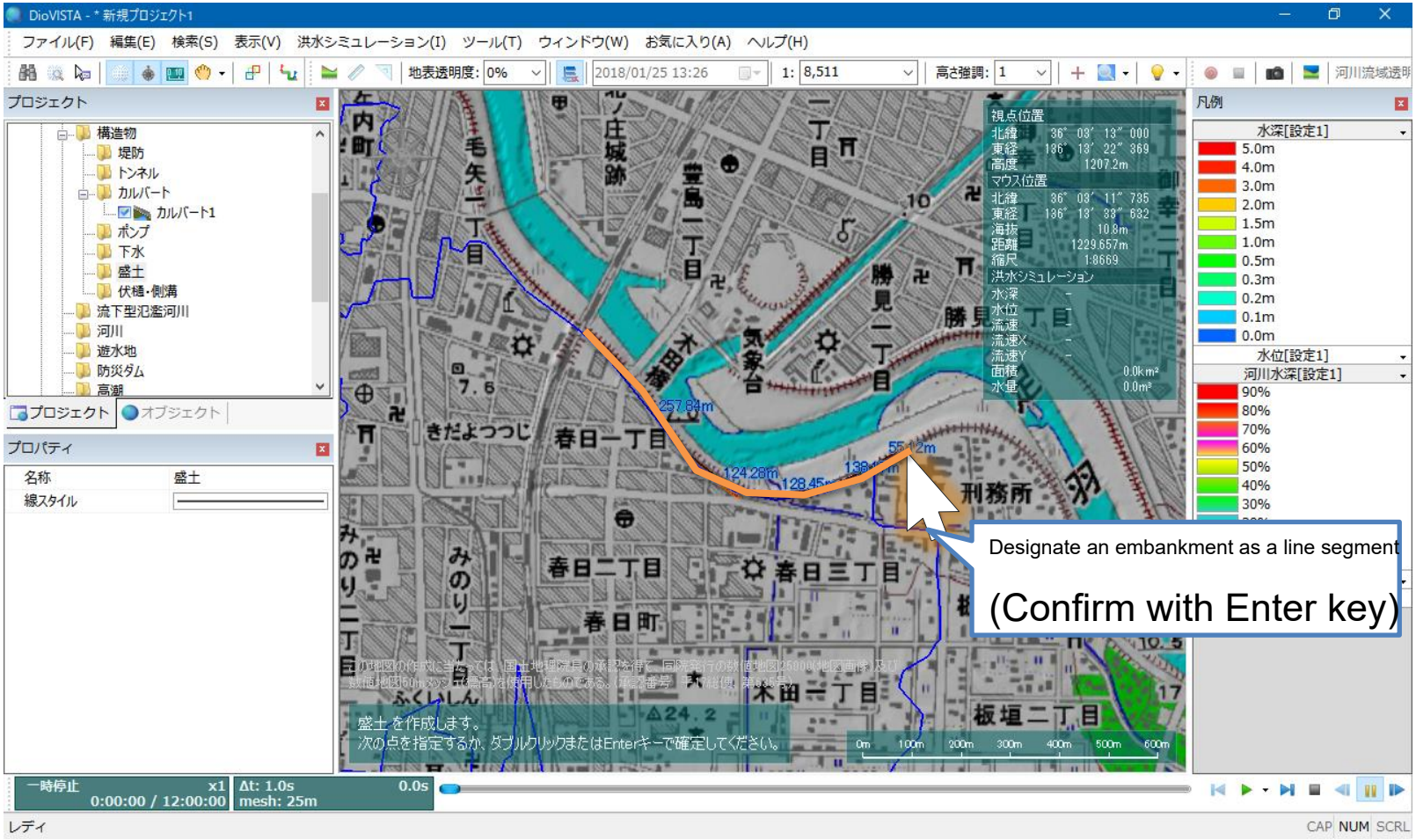
Set the embankment (3)



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Flood analysis (1)

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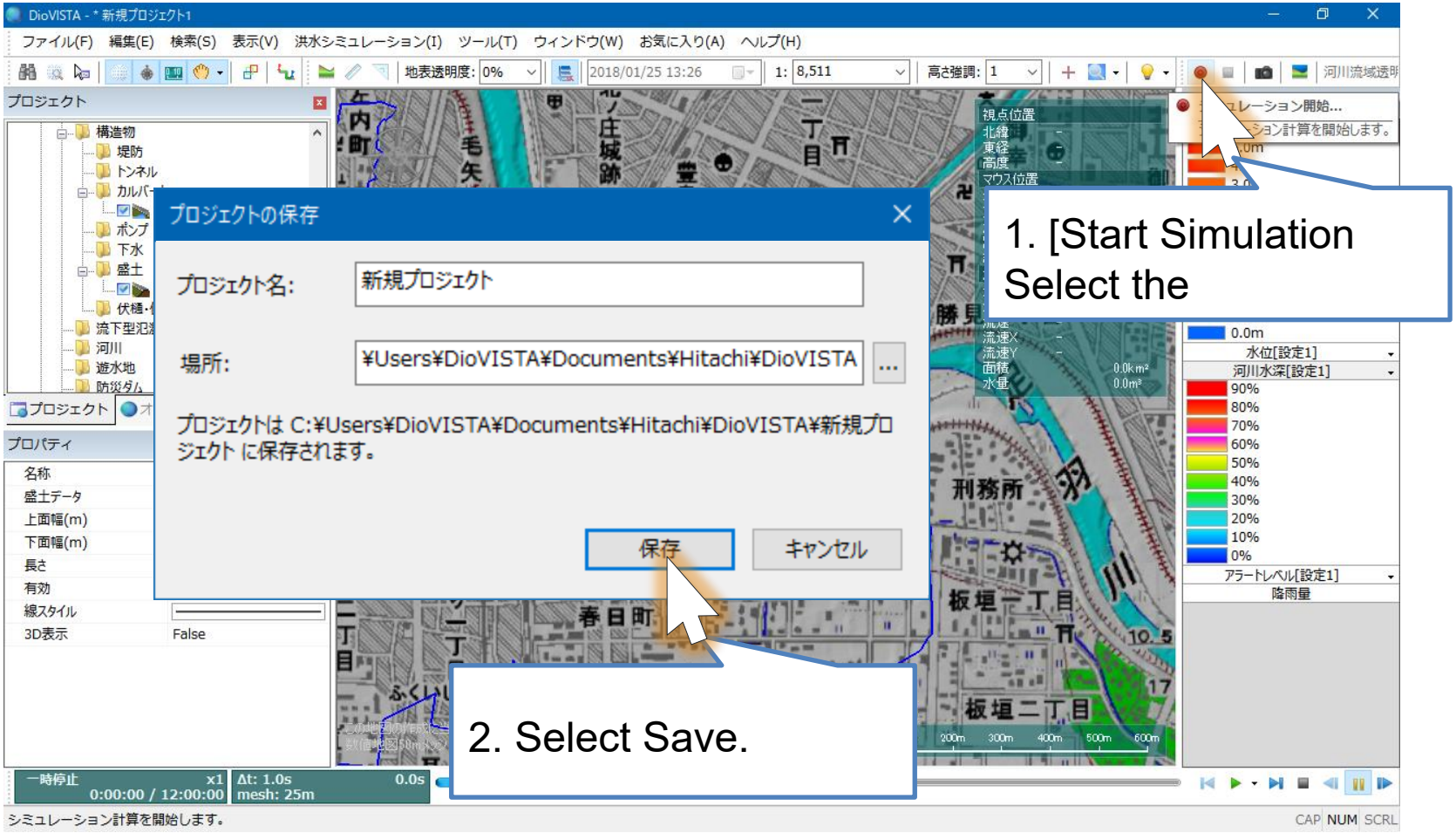
Inspire the Next



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Flood analysis (2)

HITACHI
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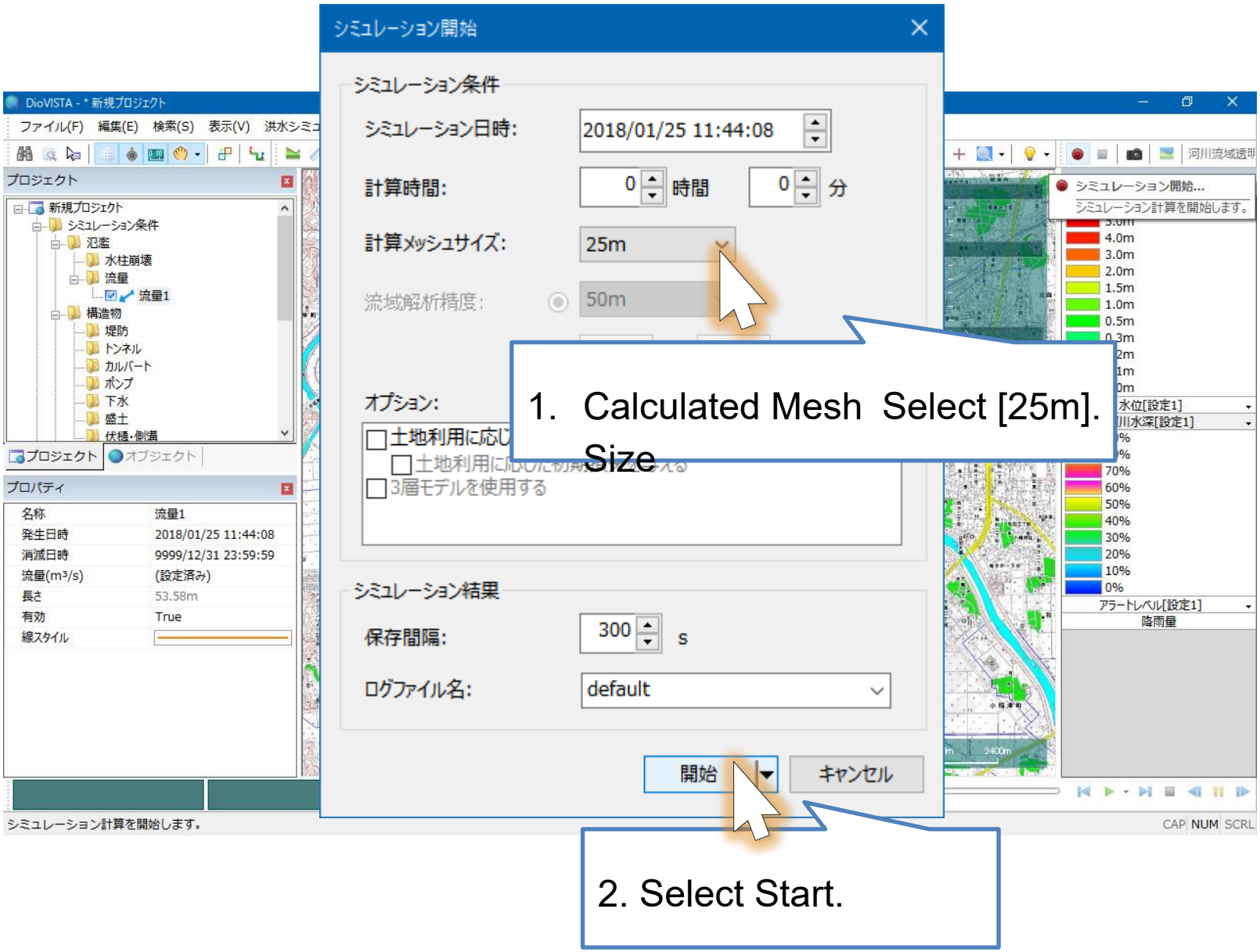

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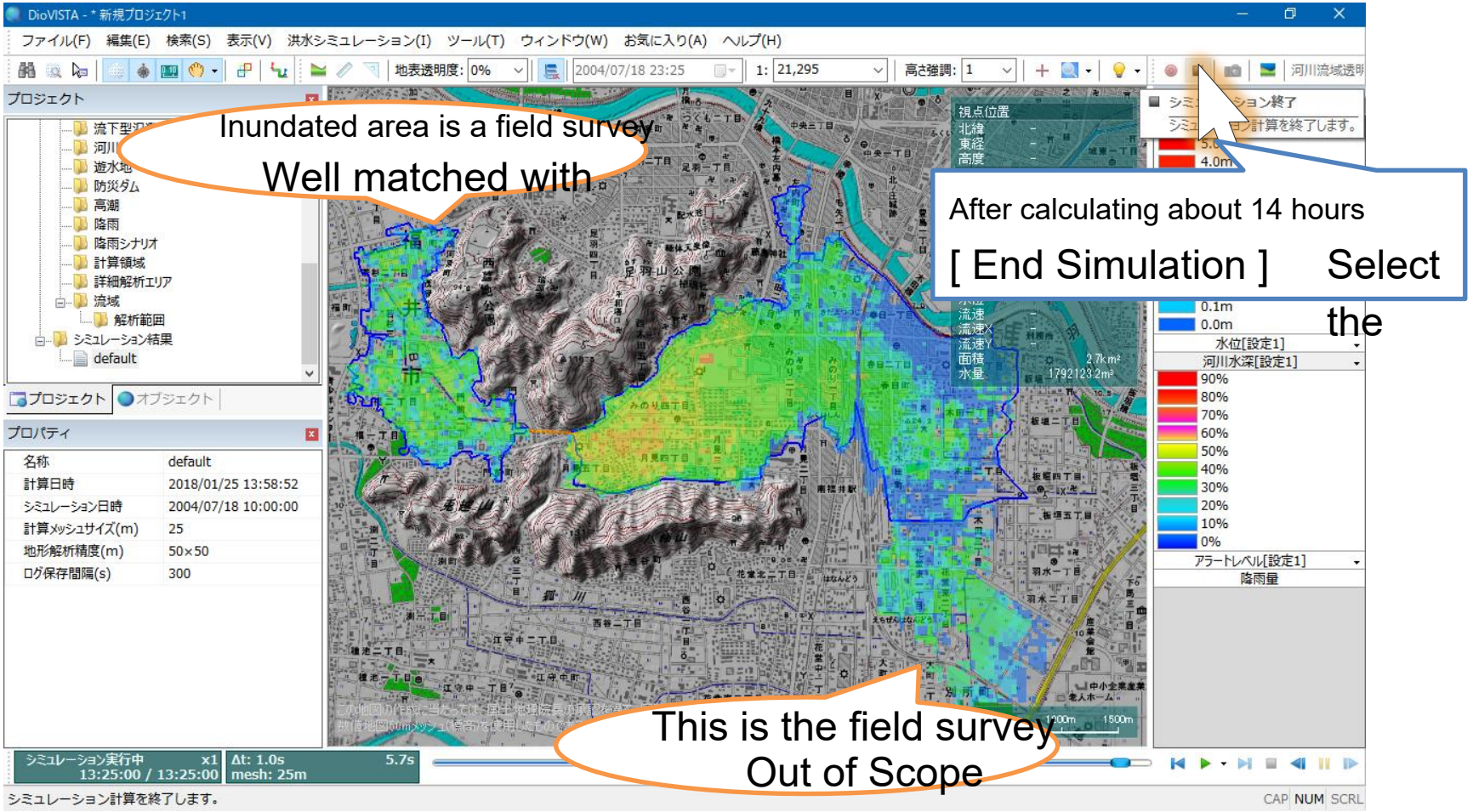
Flood analysis (3)

HITACHI
Inspire the Next



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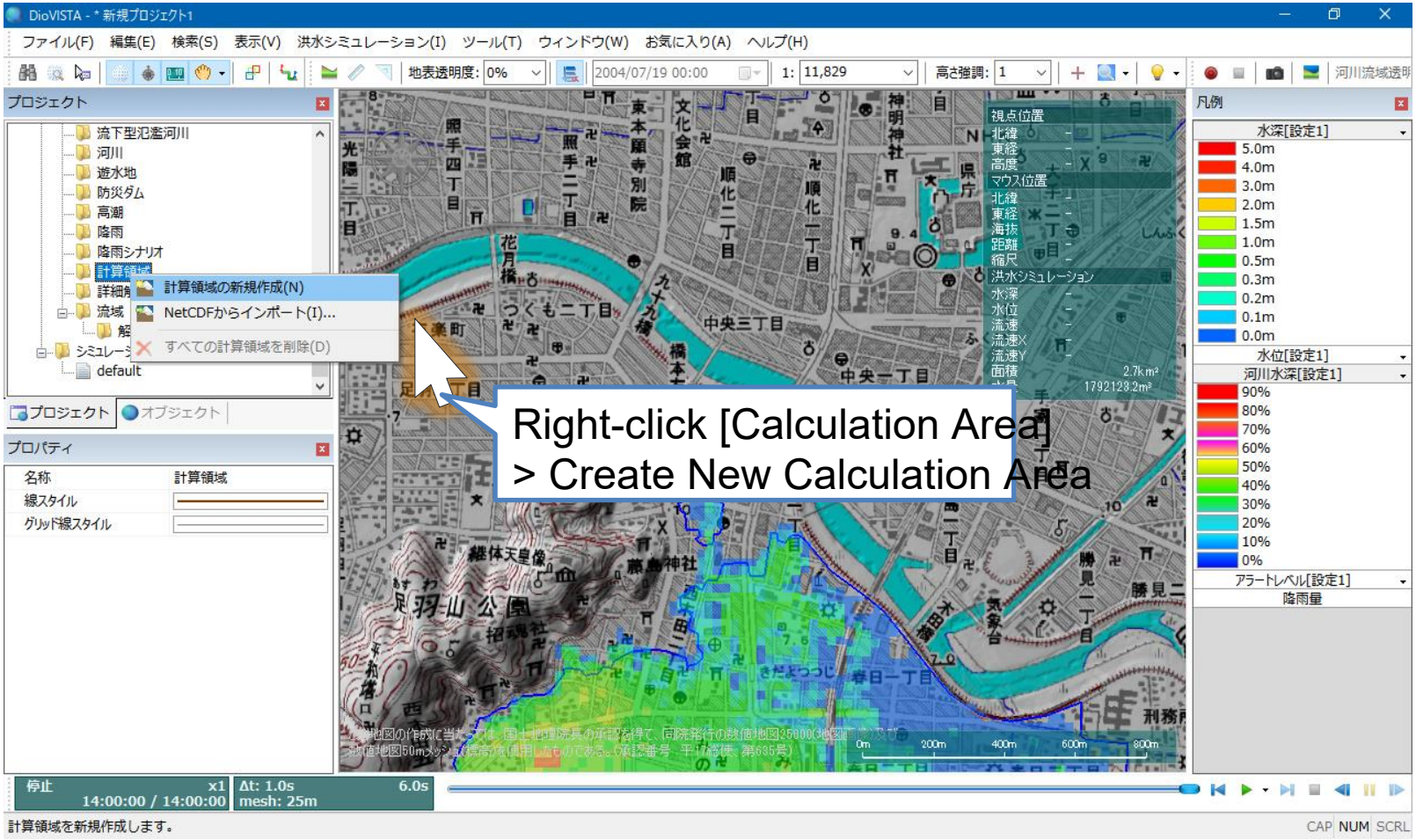
Edit ground clearance (1)

HITACHI
Inspire the Next



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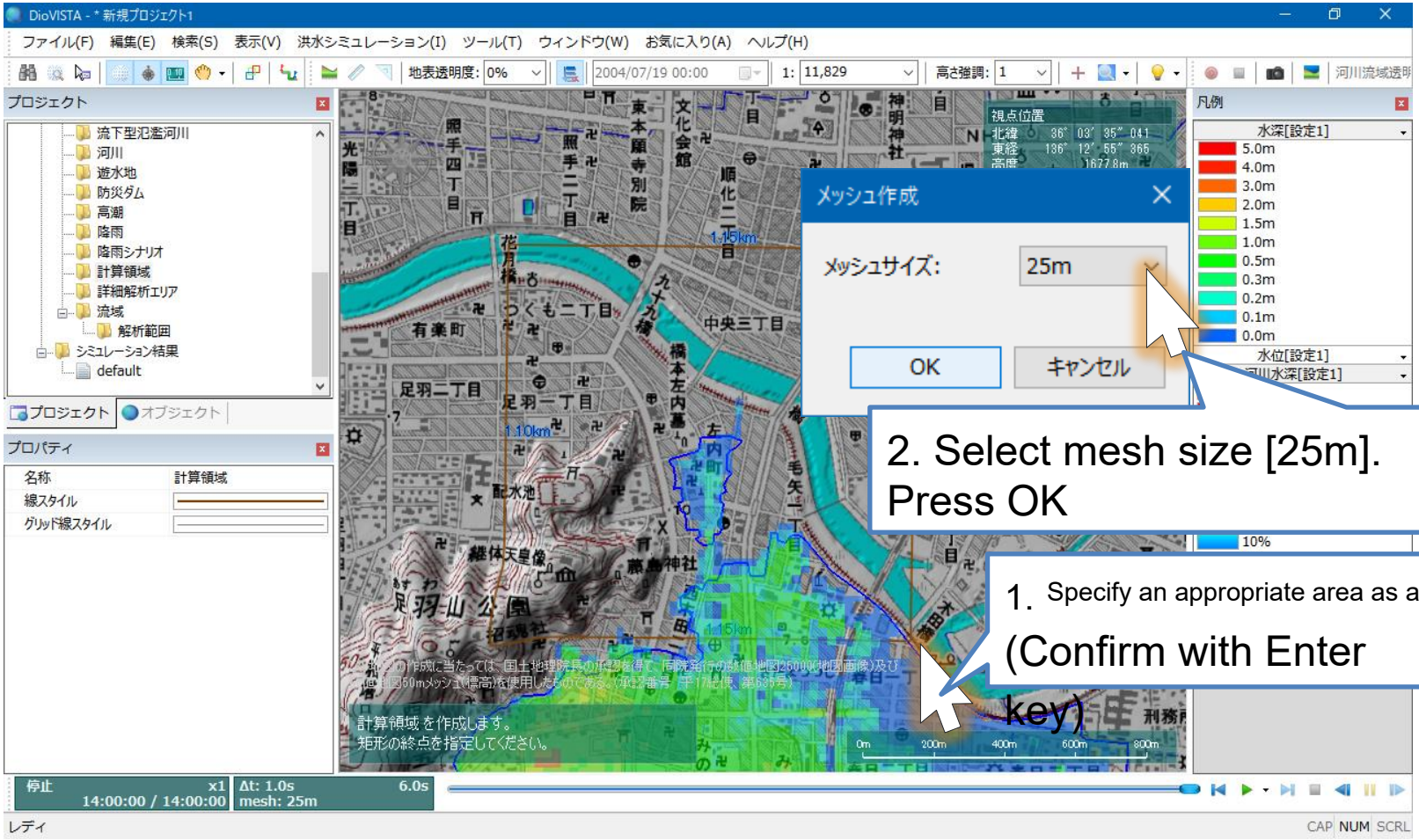
Edit ground clearance (2)

HITACHI
Inspire the Next



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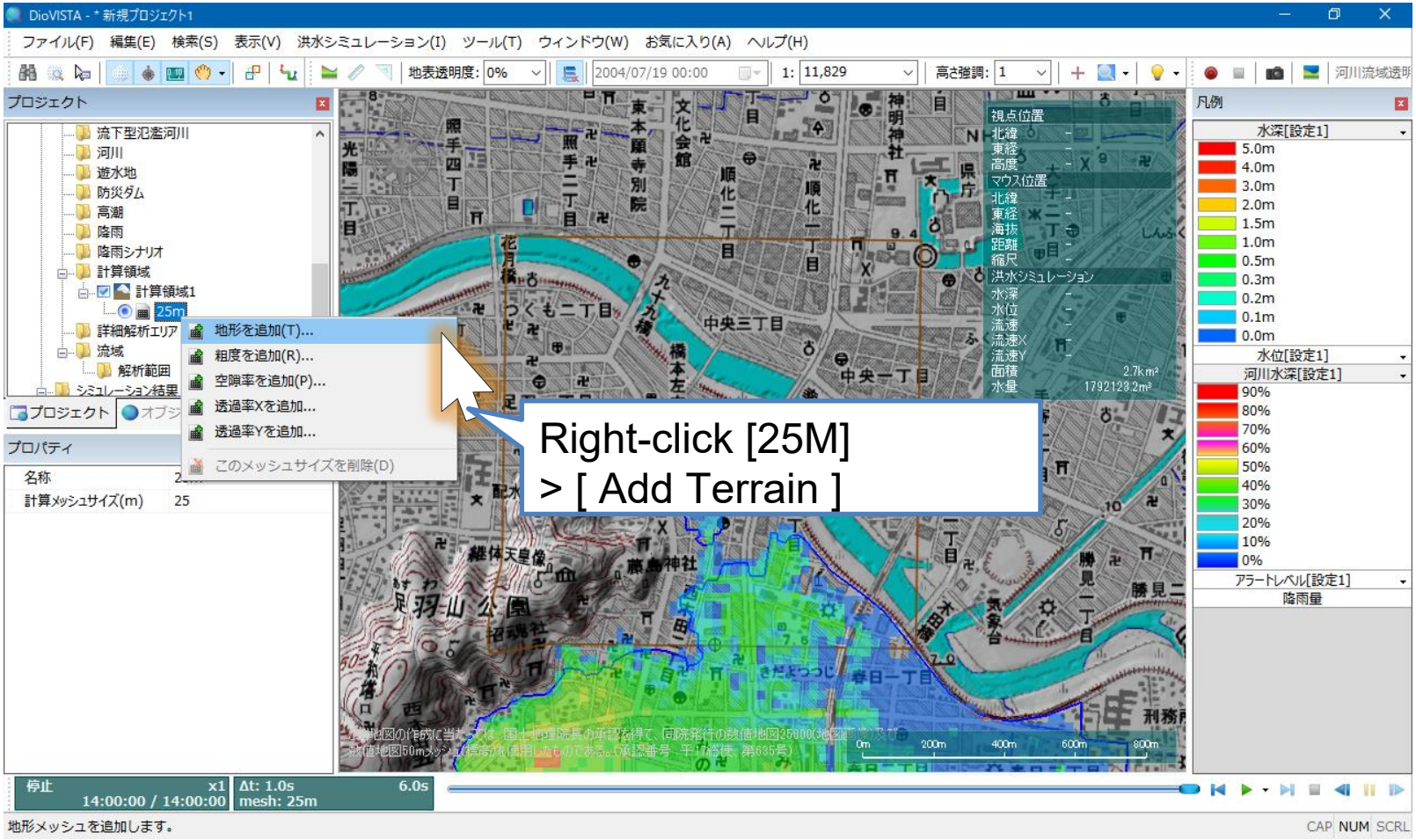
Edit ground clearance (3)

HITACHI
Inspire the Next



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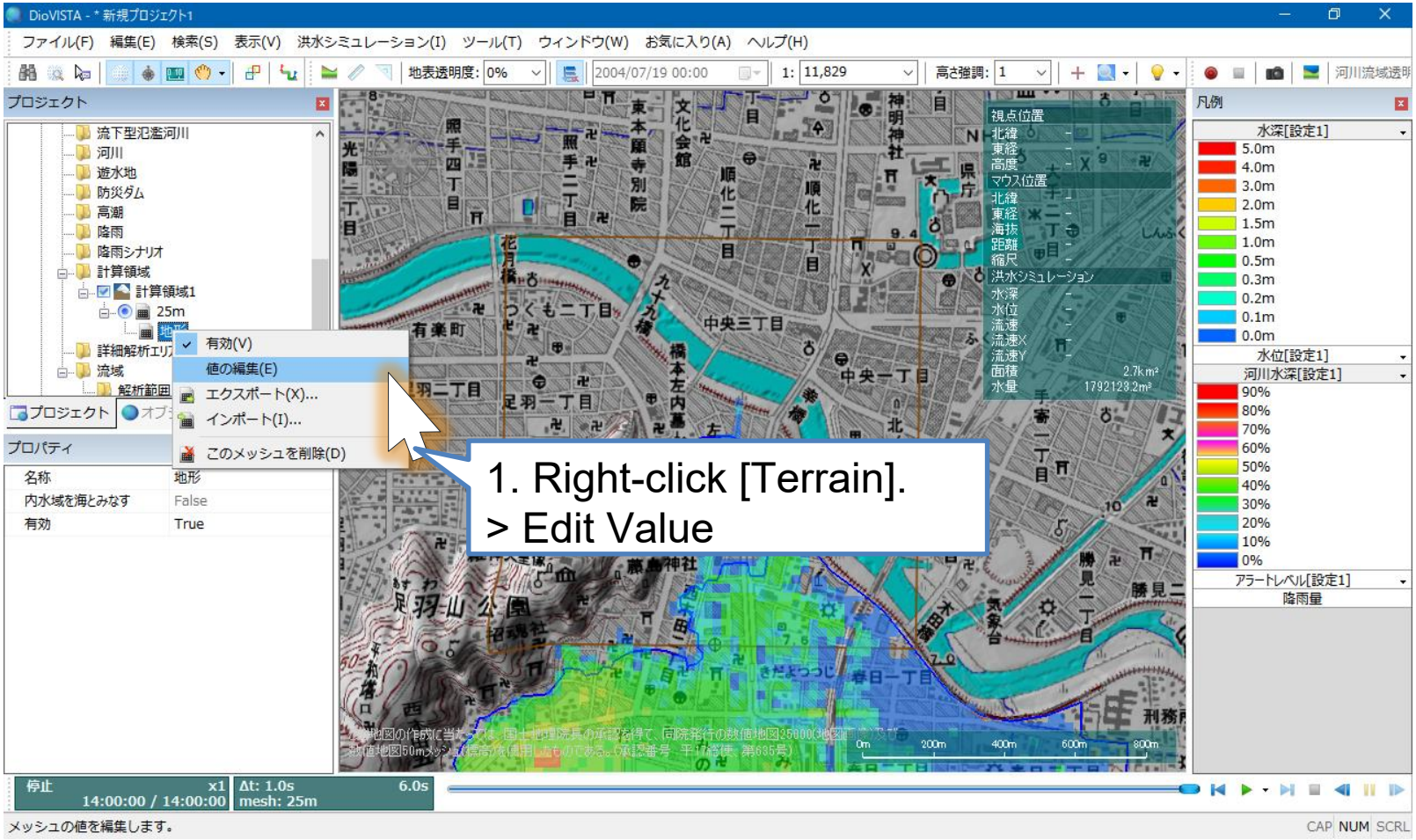
Edit ground clearance (4)

HITACHI
Inspire the Next



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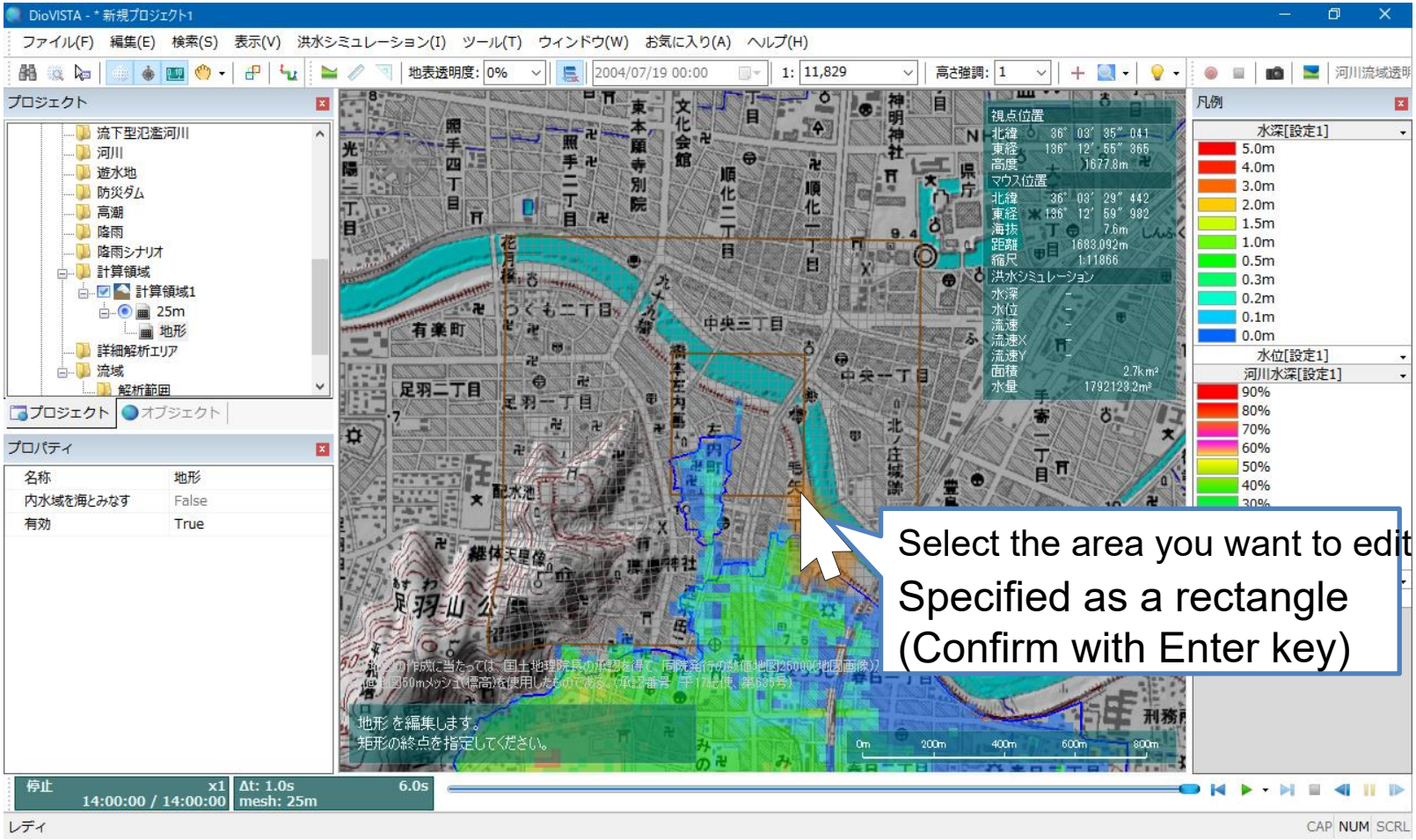
Edit ground clearance (5)

HITACHI
Inspire the Next



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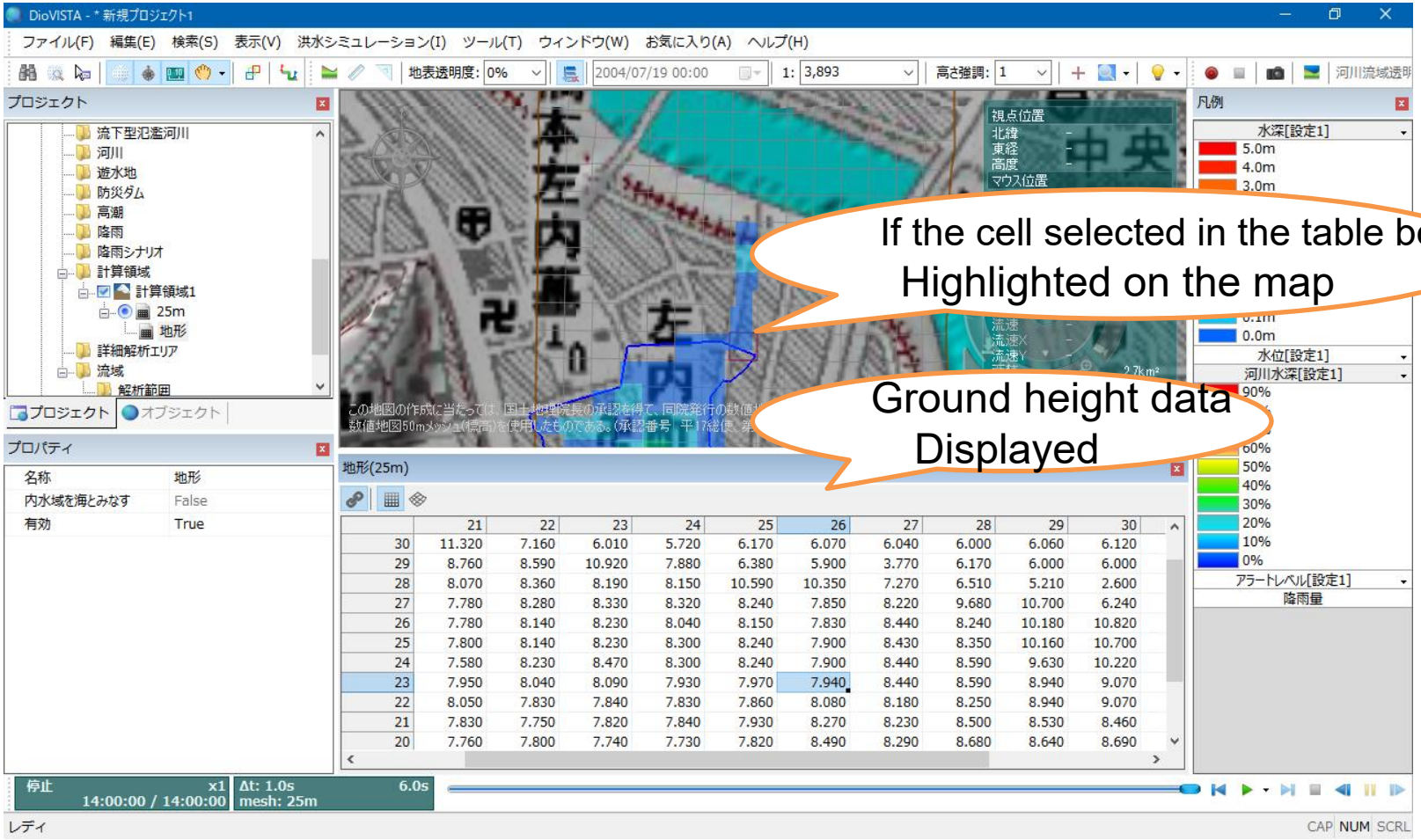
Edit ground clearance (6)

HITACHI
Inspire the Next



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practice

HITACHI
Inspire the Next

1. Launch and map operation
2. Getting used to the operation: Recreating the 2004 Fukui flood
3. Practice: Analysis of the Tsurumi River
   - Capture river channel data
   - Setting levee breaking conditions
   - 25m mesh flood calculation
   - Creation of envelope diagrams
   - Preparation of deliverables in accordance with the guidelines

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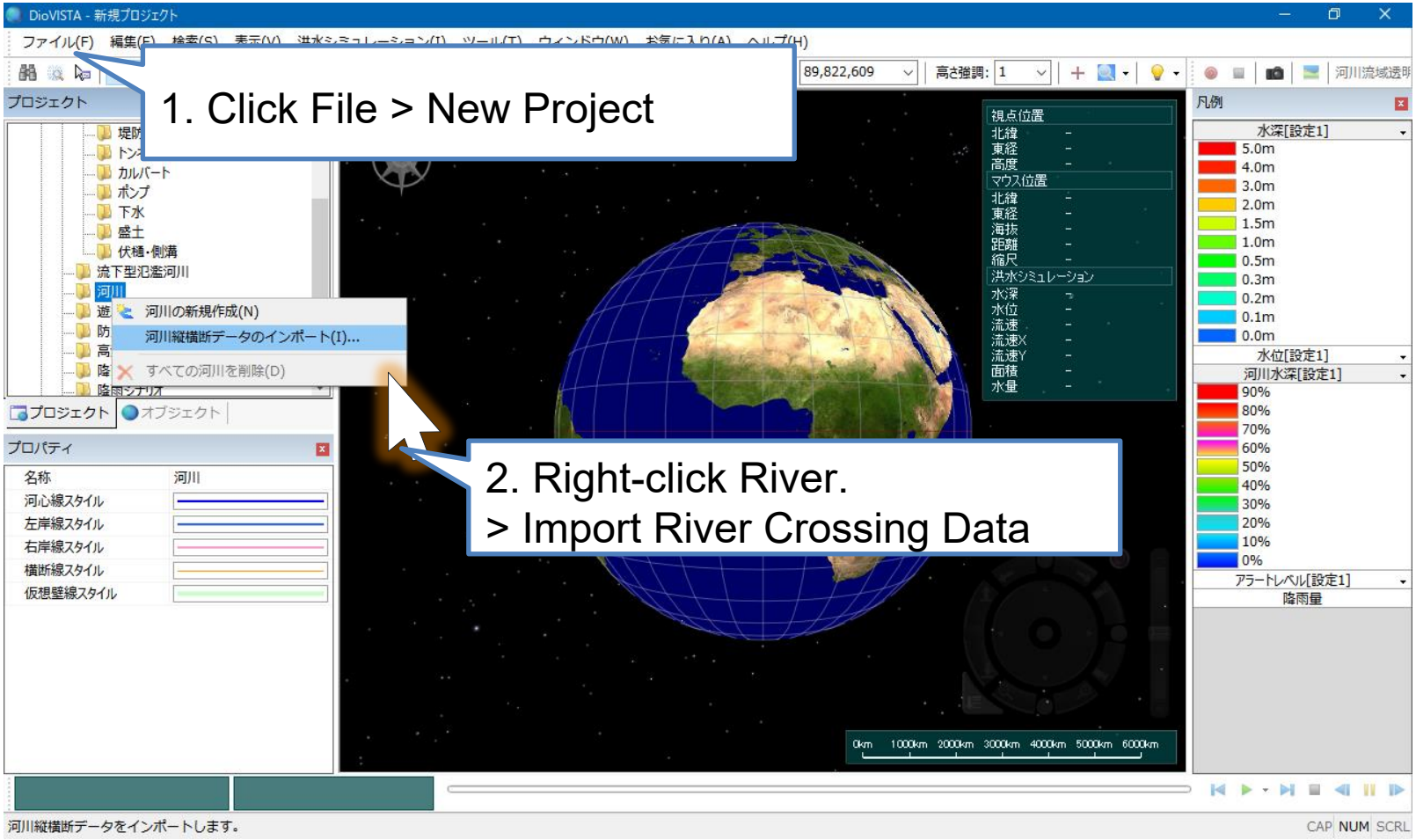
Ingest river data (1)

HITACHI
Inspire the Next



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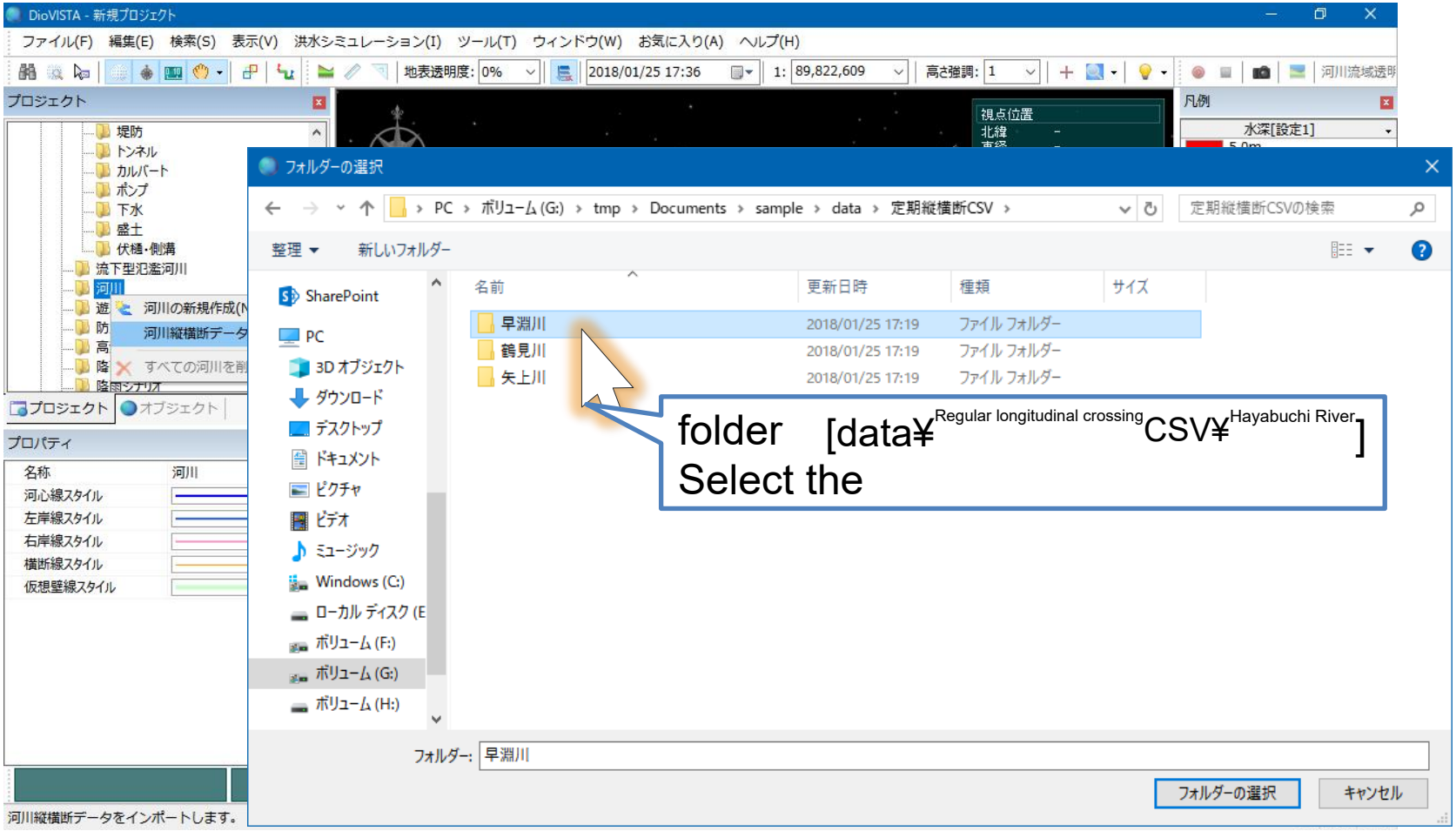
Ingest river data (2)

HITACHI
Inspire the Next



It supports cross-section data and distance marker data that conform to the "Guidelines for Creating Periodic River Crossing Data".

http://www.mlit.go.jp/river/shishin_guideline/kasen/gis/pdf_docs/juoudan/guideline0805.pdf

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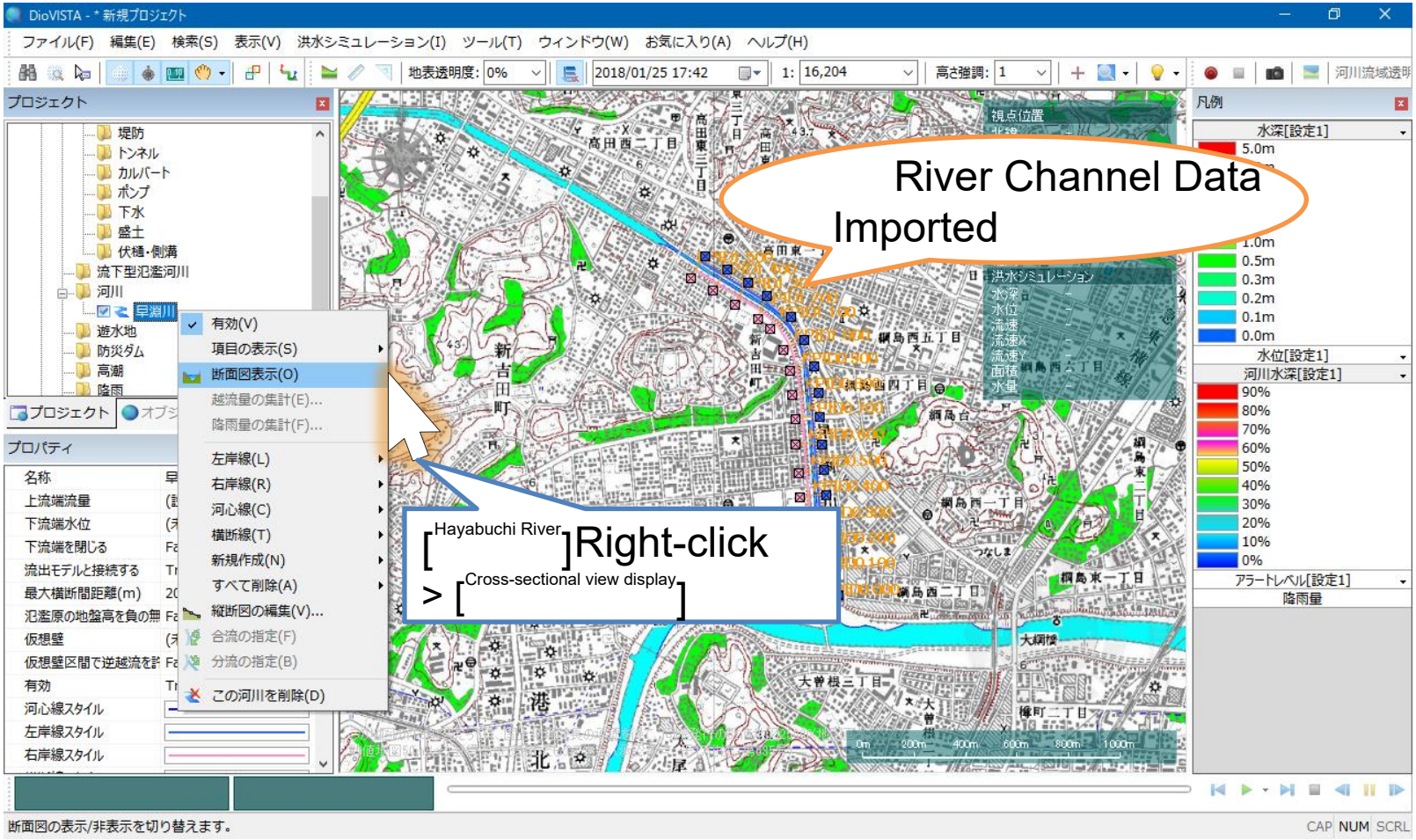
Ingest river data (3)

HITACHI
Inspire the Next



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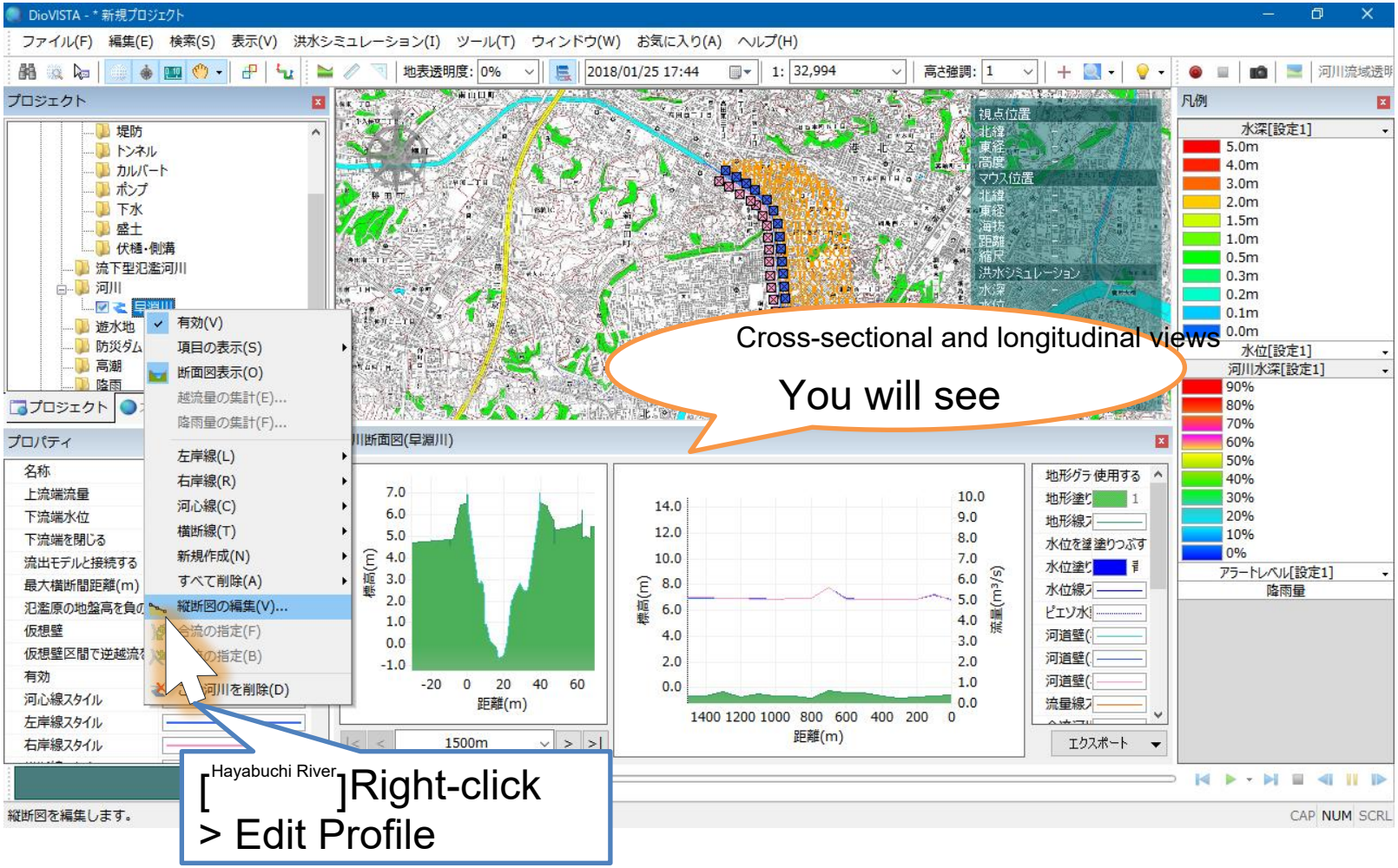
Ingest river data (4)

HITACHI
Inspire the Next



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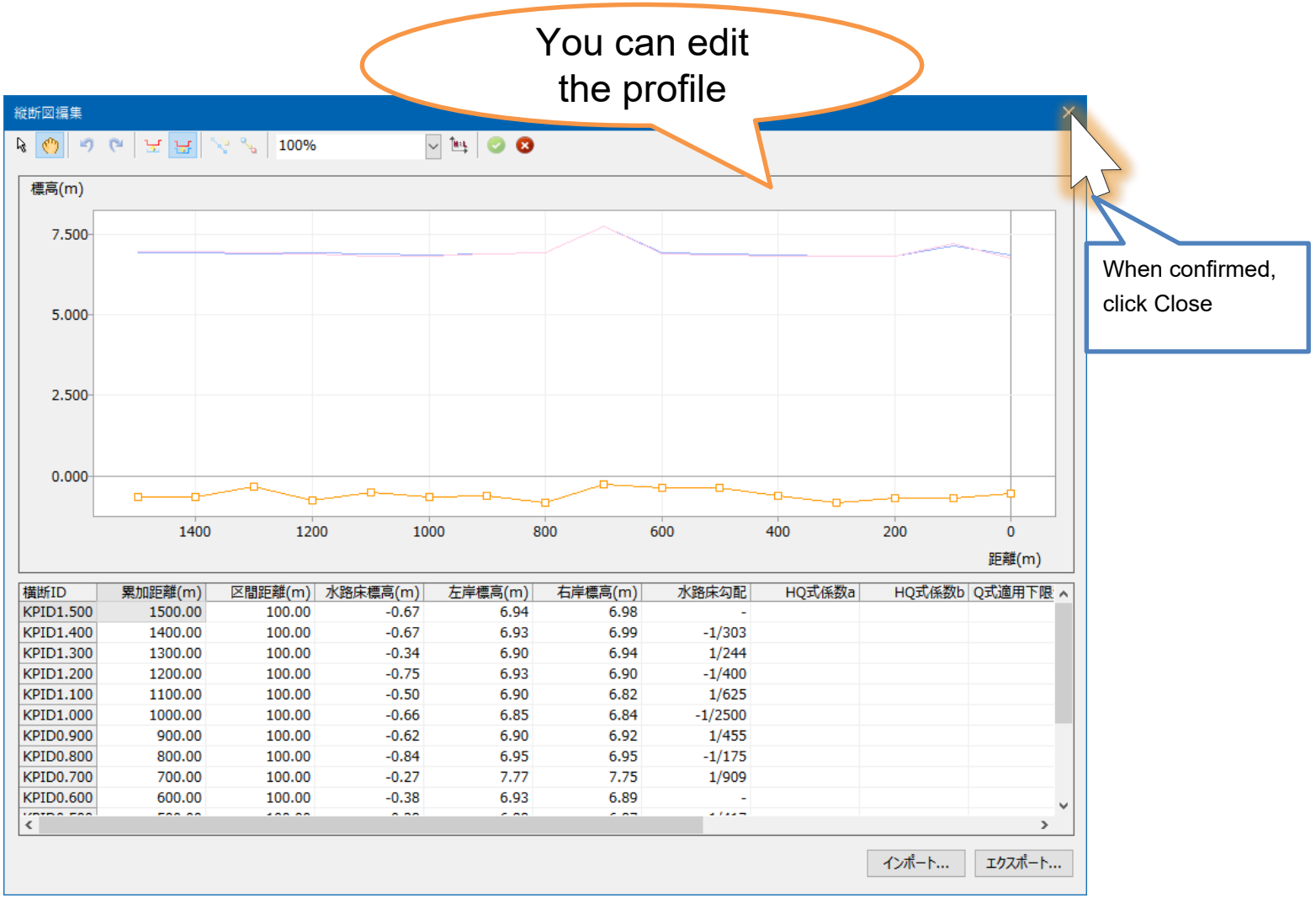
Edit river data (1)

HITACHI
Inspire the Next



横断ID	累加距離(m)	区間距離(m)	水路床標高(m)	左岸標高(m)	右岸標高(m)	水路床勾配	HQ式係数a	HQ式係数b	Q式適用下限
KPID1.500	1500.00	100.00	-0.67	6.94	6.98	-			
KPID1.400	1400.00	100.00	-0.67	6.93	6.99	-1/303			
KPID1.300	1300.00	100.00	-0.34	6.90	6.94	1/244			
KPID1.200	1200.00	100.00	-0.75	6.93	6.90	-1/400			
KPID1.100	1100.00	100.00	-0.50	6.90	6.82	1/625			
KPID1.000	1000.00	100.00	-0.66	6.85	6.84	-1/2500			
KPID0.900	900.00	100.00	-0.62	6.90	6.92	1/455			
KPID0.800	800.00	100.00	-0.84	6.95	6.95	-1/175			
KPID0.700	700.00	100.00	-0.27	7.77	7.75	1/909			
KPID0.600	600.00	100.00	-0.38	6.93	6.89	-			

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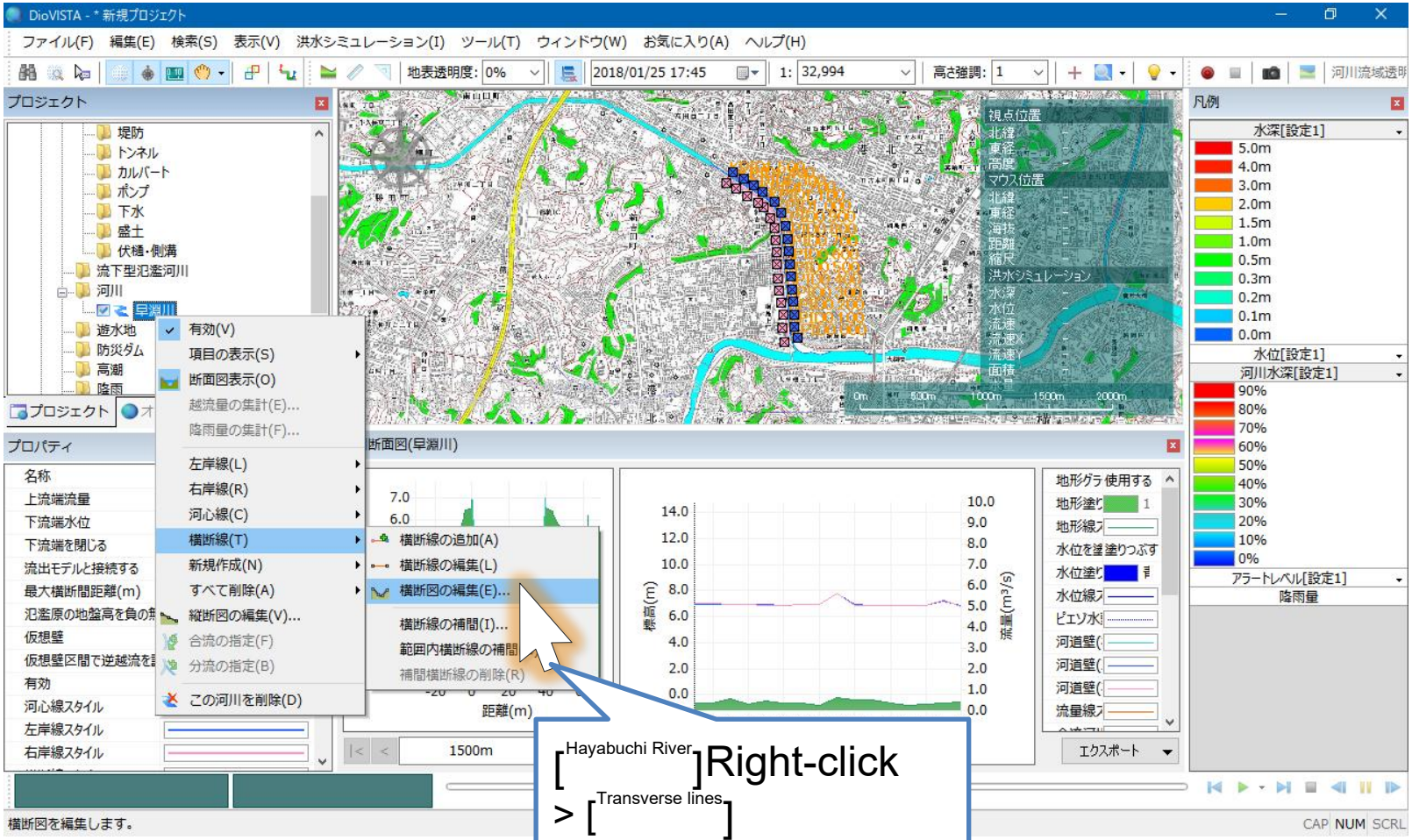
Edit river data (2)

HITACHI
Inspire the Next



[Hayabuchi River] Right-click
> [Transverse lines]
> Edit Cross-Section

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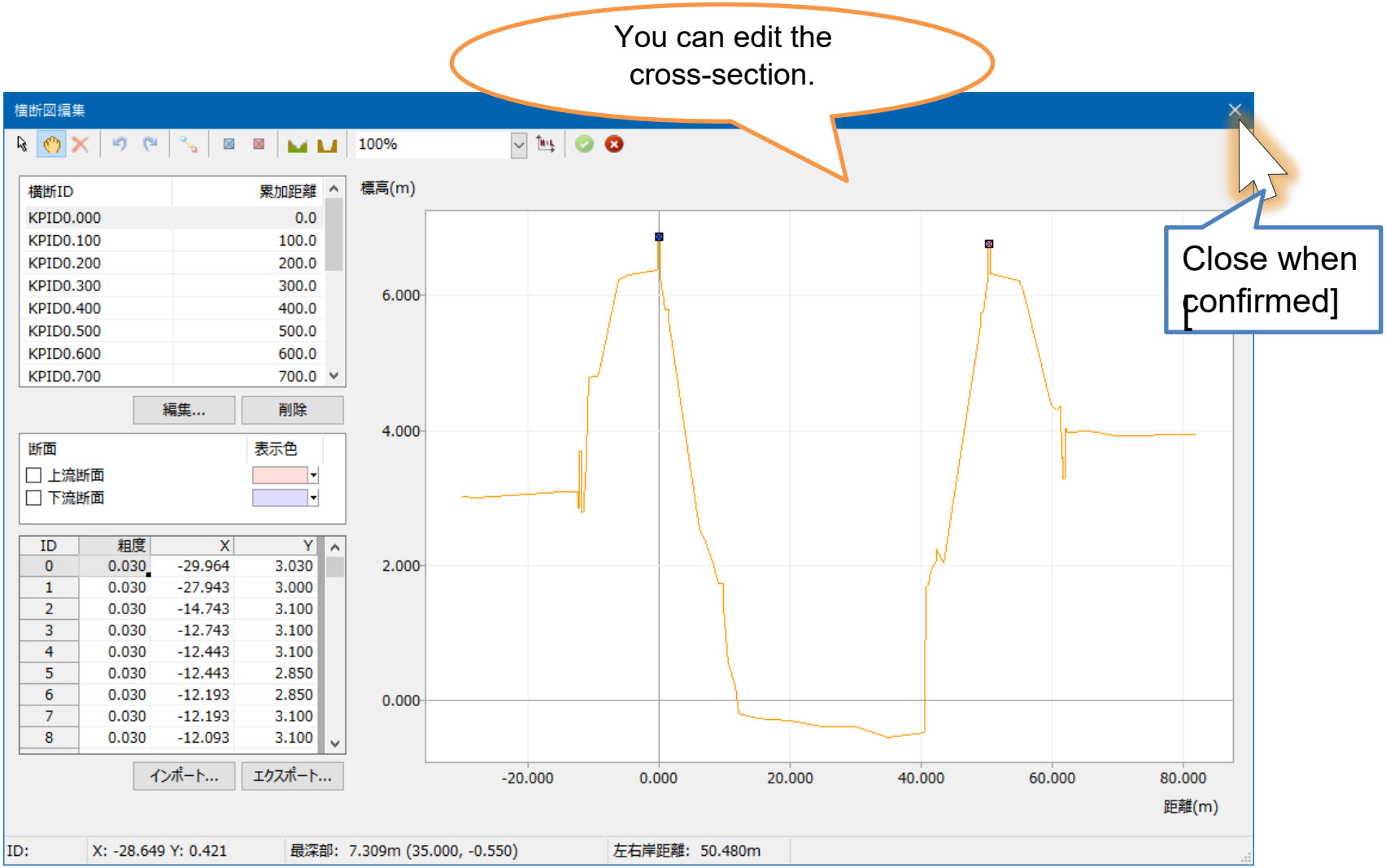
Edit river data (3)

HITACHI
Inspire the Next



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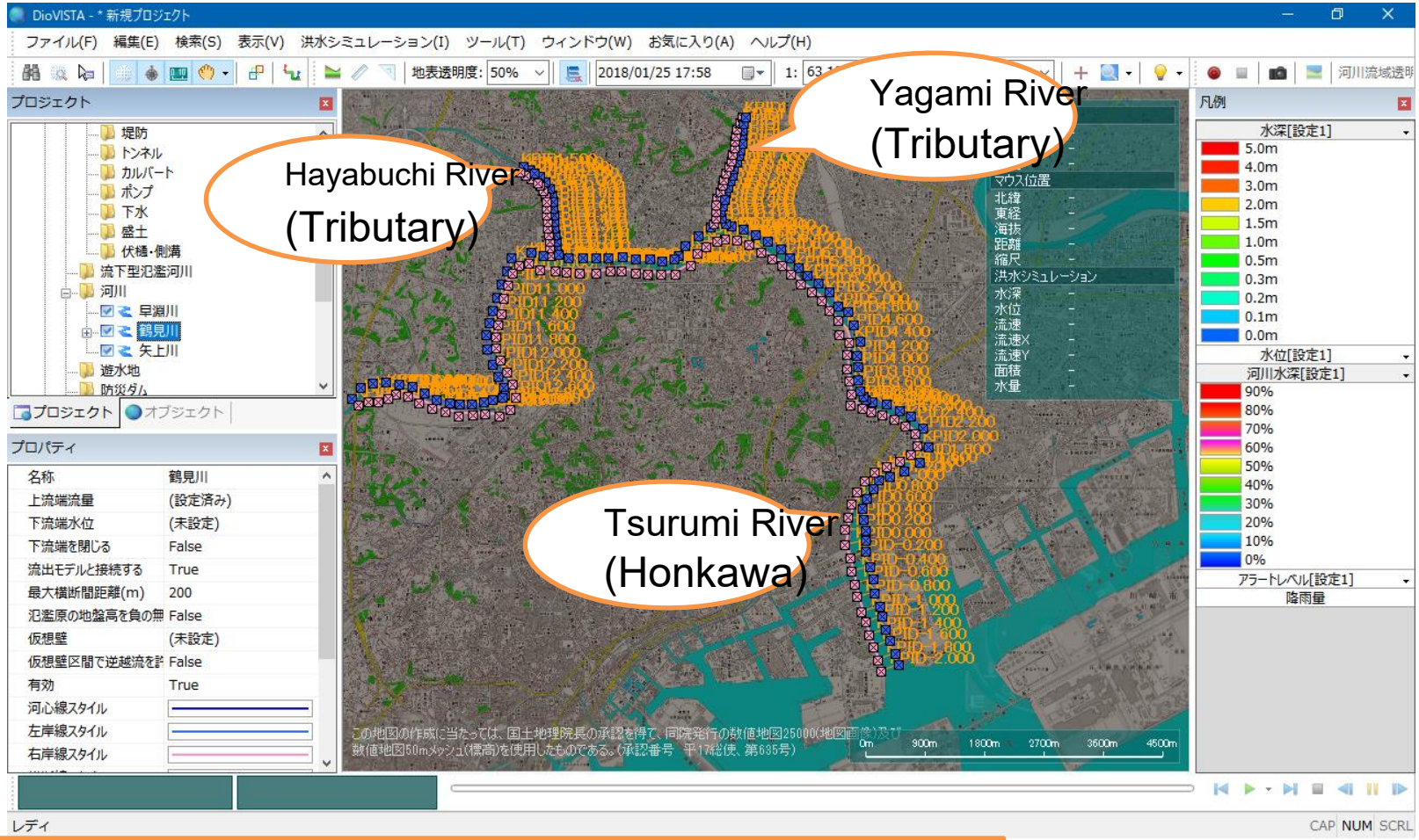
Ingest river data

HITACHI
Inspire the Next



In the same way, the Tsurumi River and Yagami River are incorporated.

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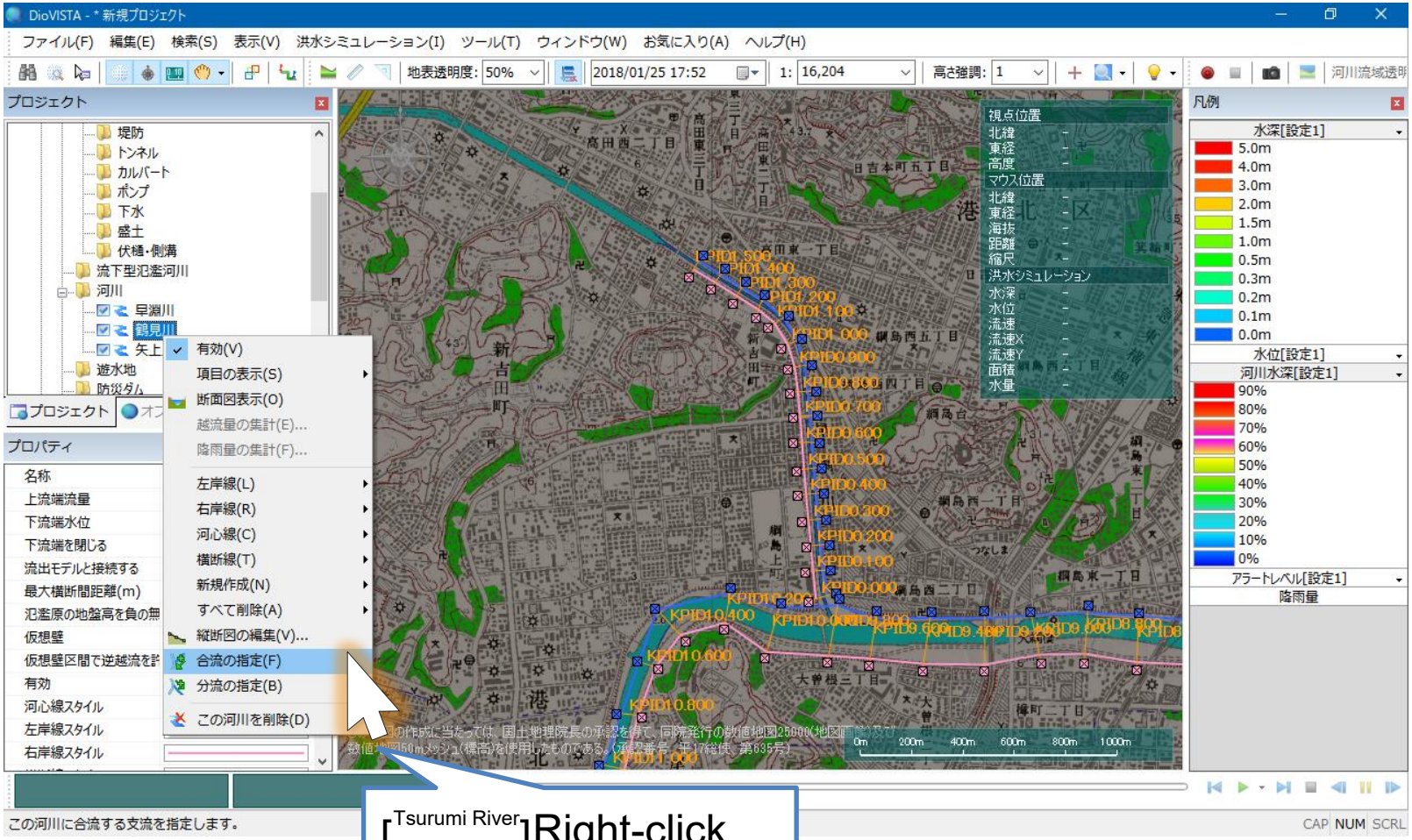
Setting up river confluences (1)

HITACHI
Inspire the Next



[Tsurumi River] Right-click > Confluence settings]

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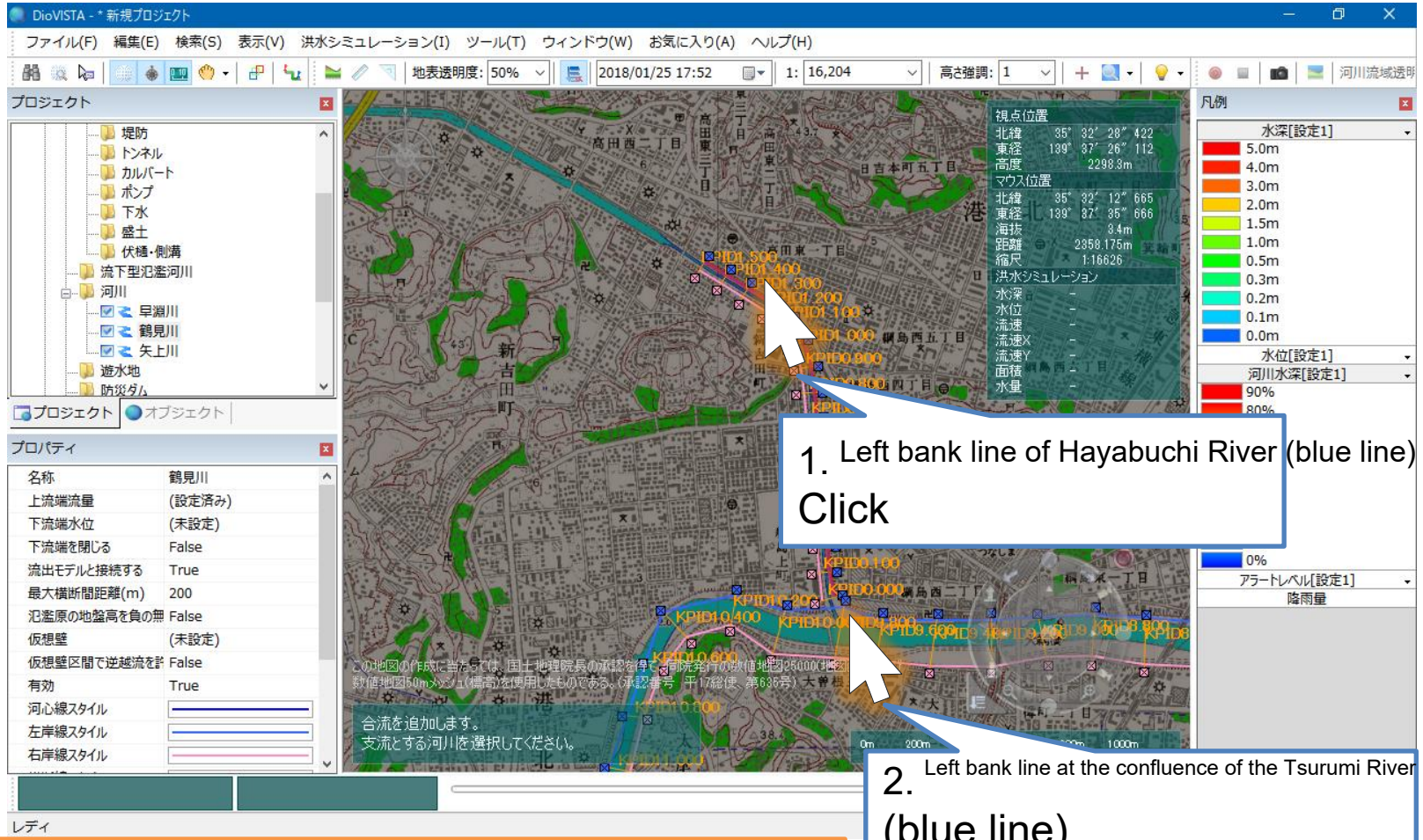
Setting up river confluences (2)

HITACHI
Inspire the Next



1. Left bank line of Hayabuchi River (blue line)
Click

2. Left bank line at the confluence of the Tsurumi River
(blue line)
(Confirm with Enter key)

Since the Hayabuchi River flows in from the left bank of the Tsurumi River, it connects the left bank of the Hayabuchi River with the left bank of the Tsurumi River.

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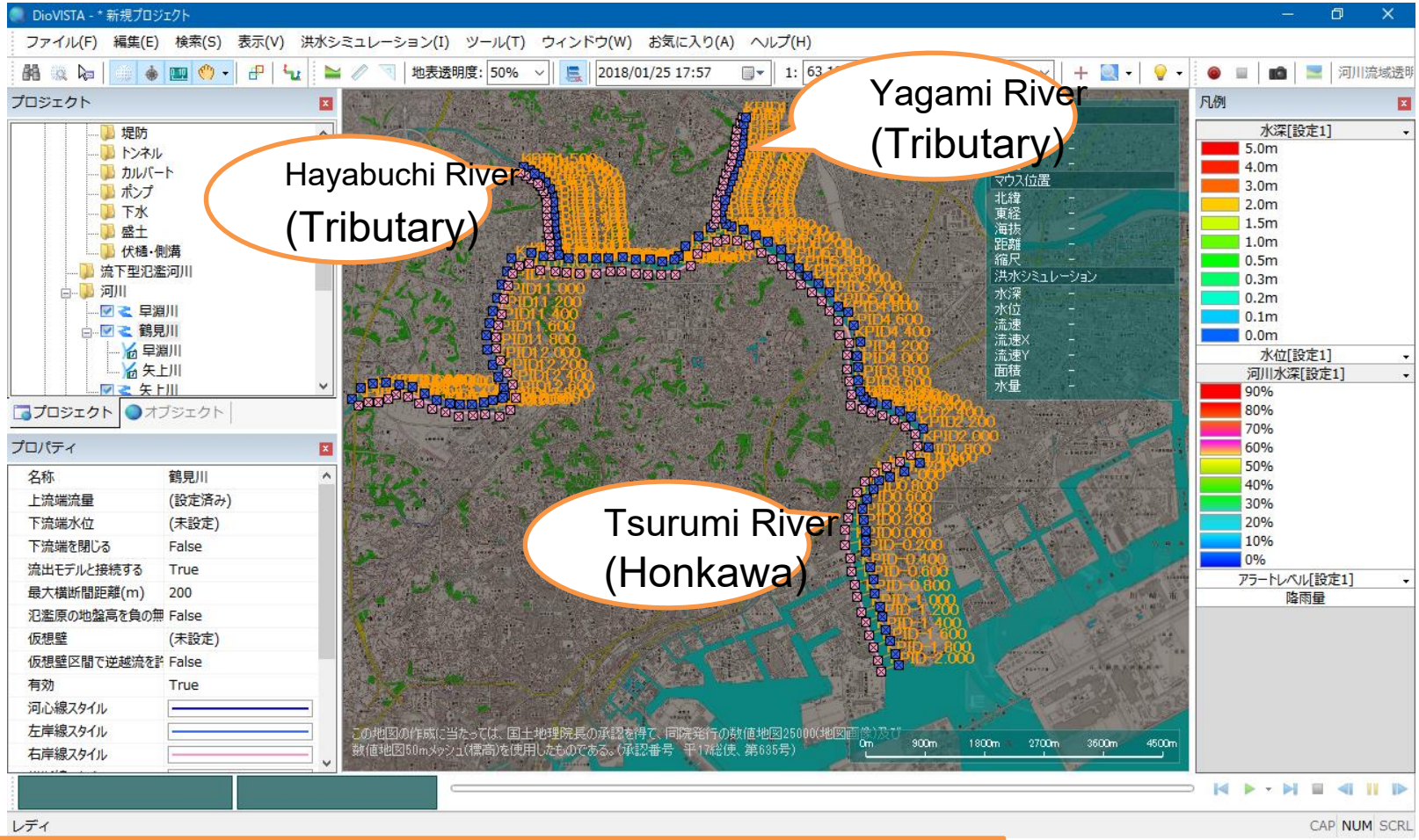
Setting up river confluences (3)

HITACHI
Inspire the Next



In the same way, the Tsurumi River and the Yagami River are merged.

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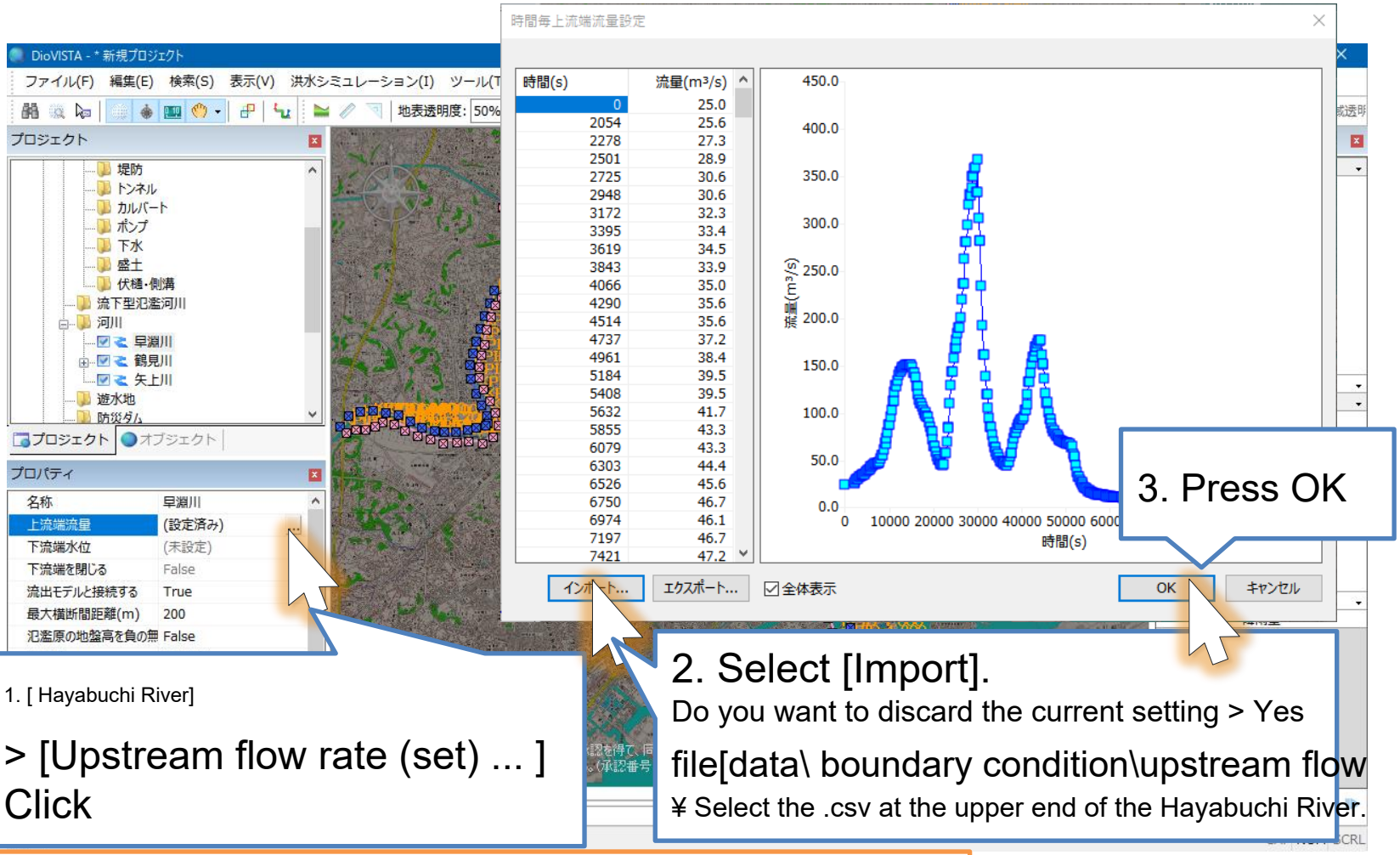
Setting the Upstream Flow Rate



A similar procedure is used to specify the upstream flow rate of the Tsurumi and Yagami rivers.

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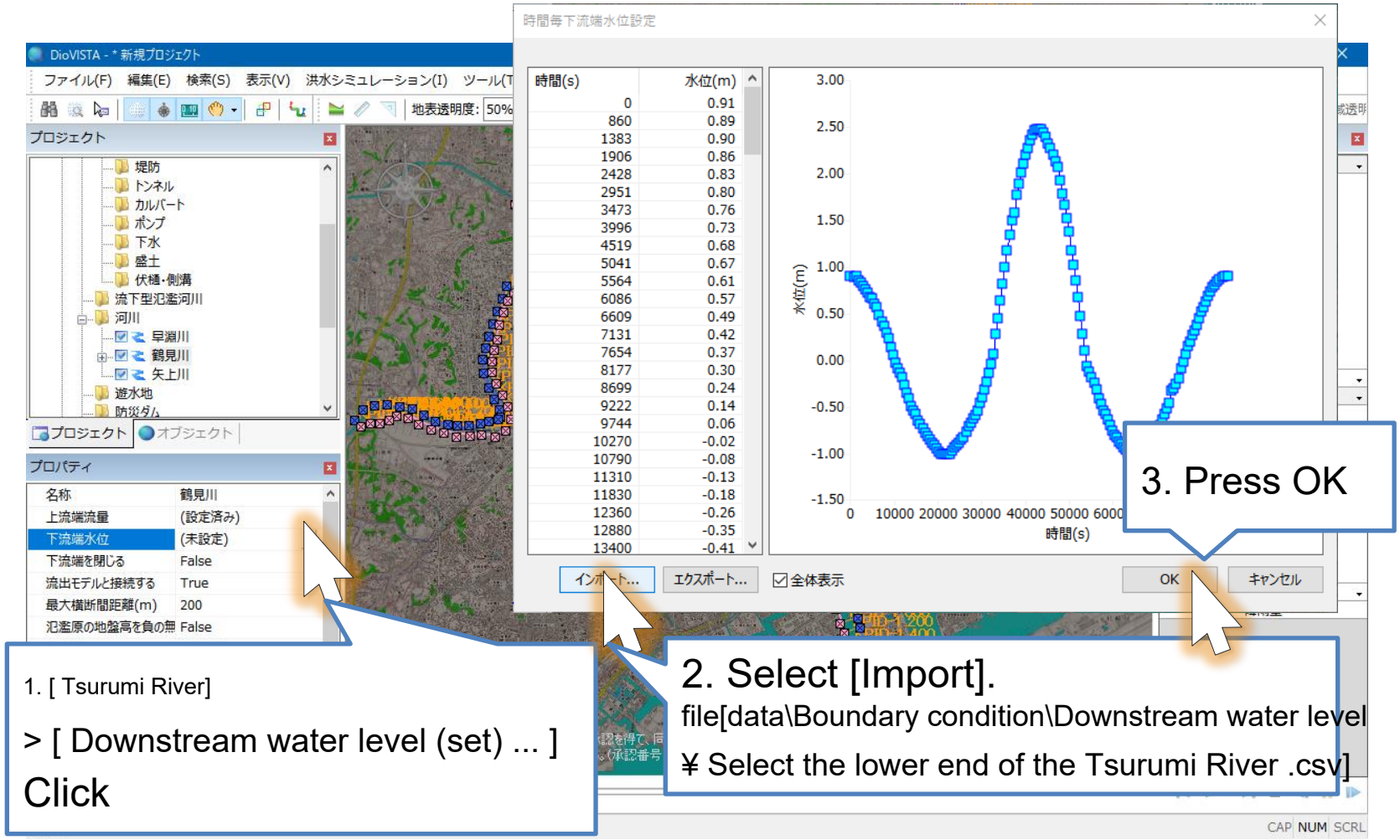
Setting the Downstream Water Level



1. [Tsurumi River]

> [Downstream water level (set) ...]

Click

2. Select [Import].

file[data\Boundary condition\Downstream water level ¥ Select the lower end of the Tsurumi River .csv]

3. Press OK

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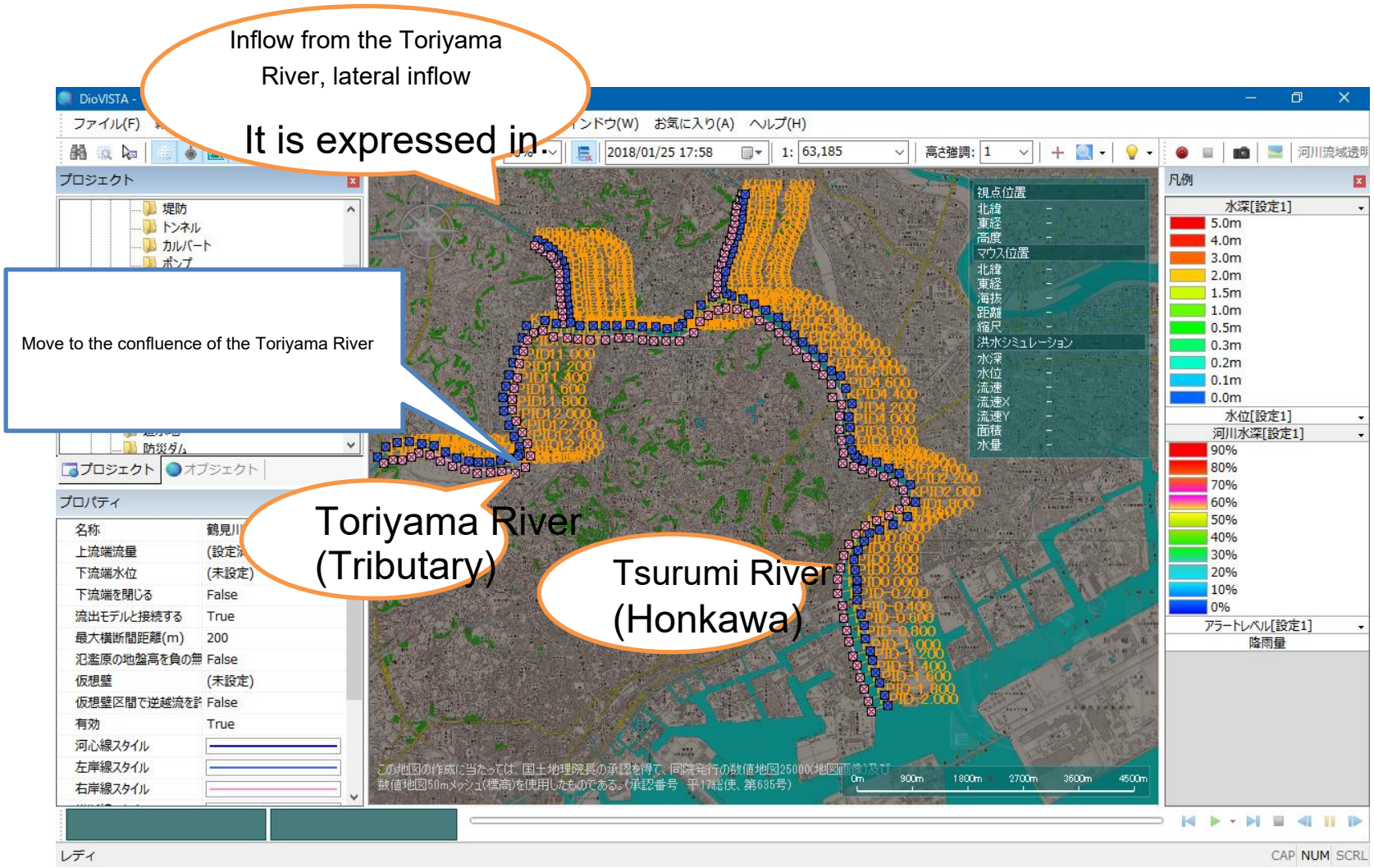
Setting the lateral inflow amount (1)

HITACHI
Inspire the Next



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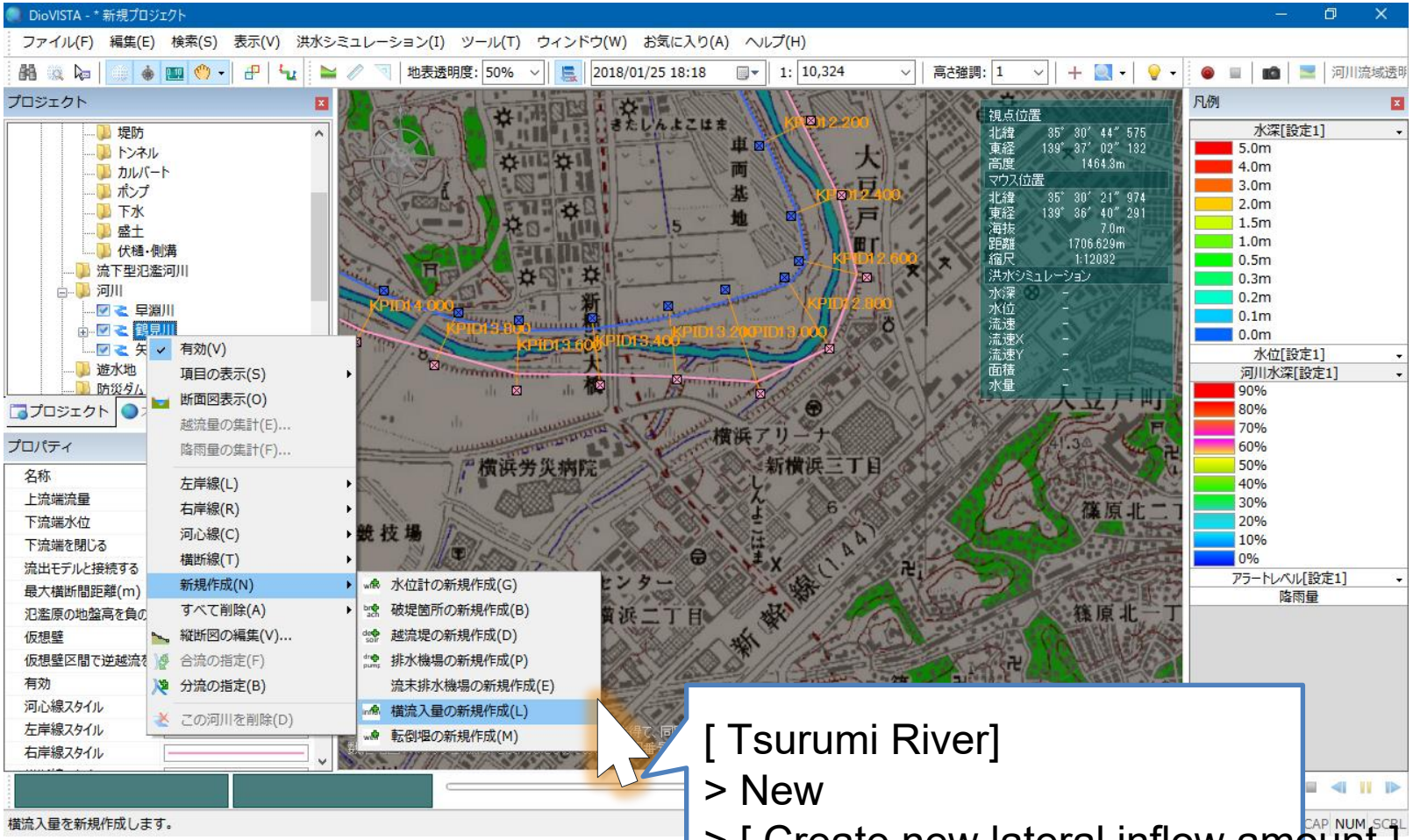
Setting the lateral inflow amount (2)

HITACHI
Inspire the Next



[Tsurumi River]
> New
> [Create new lateral inflow amount]

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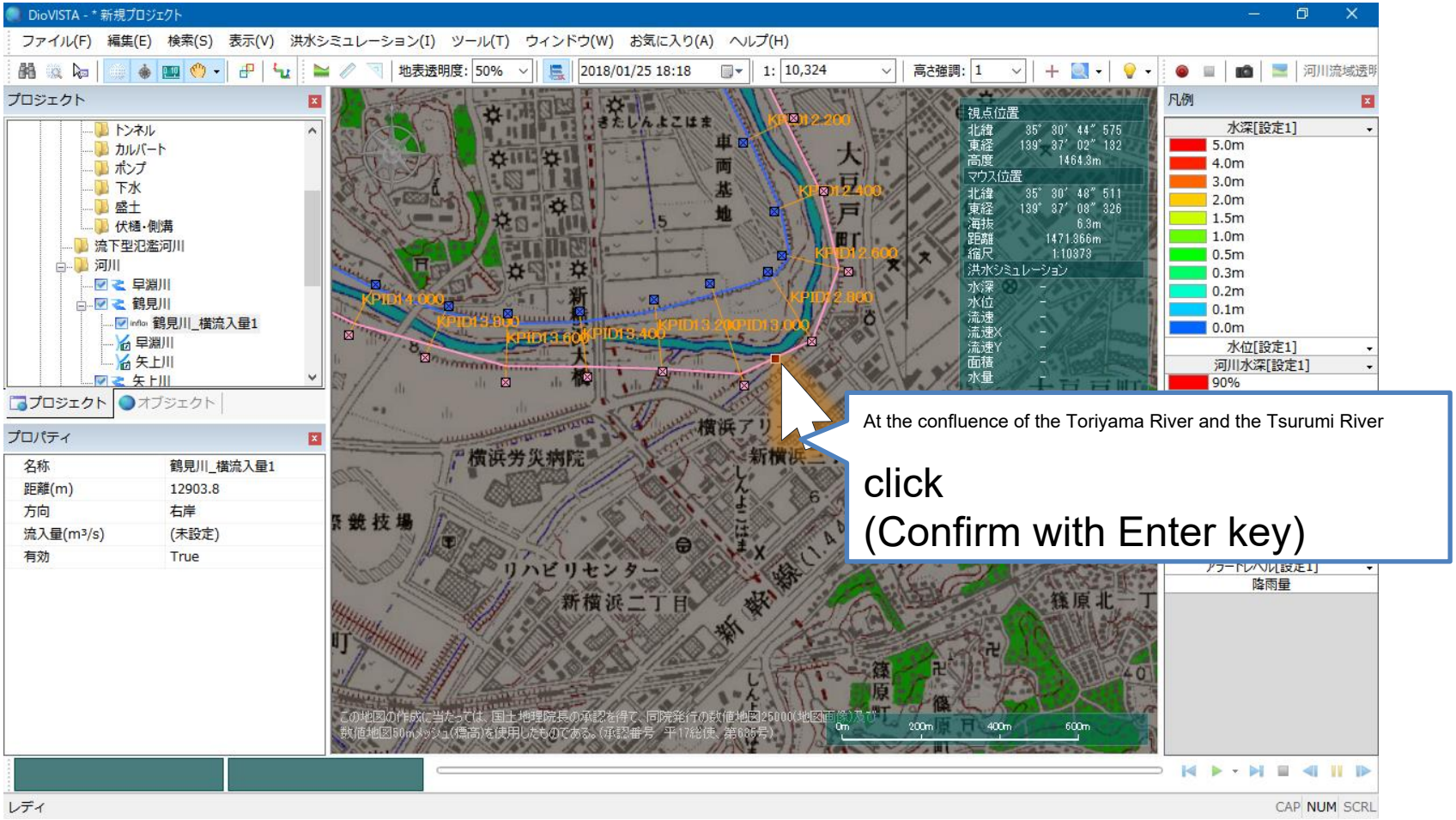
Setting the lateral inflow amount (3)

HITACHI
Inspire the Next



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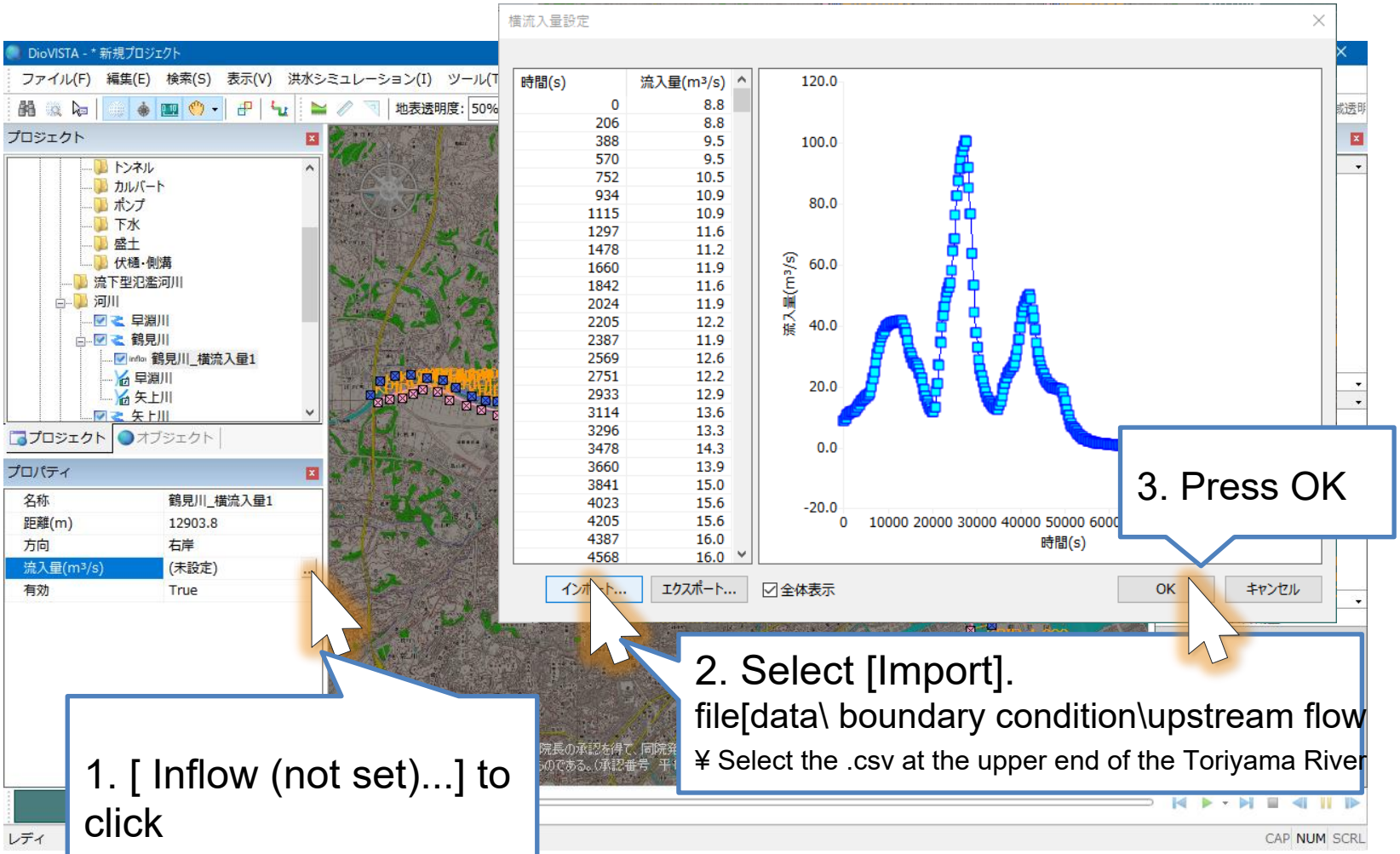
Setting the lateral inflow amount (4)

HITACHI
Inspire the Next



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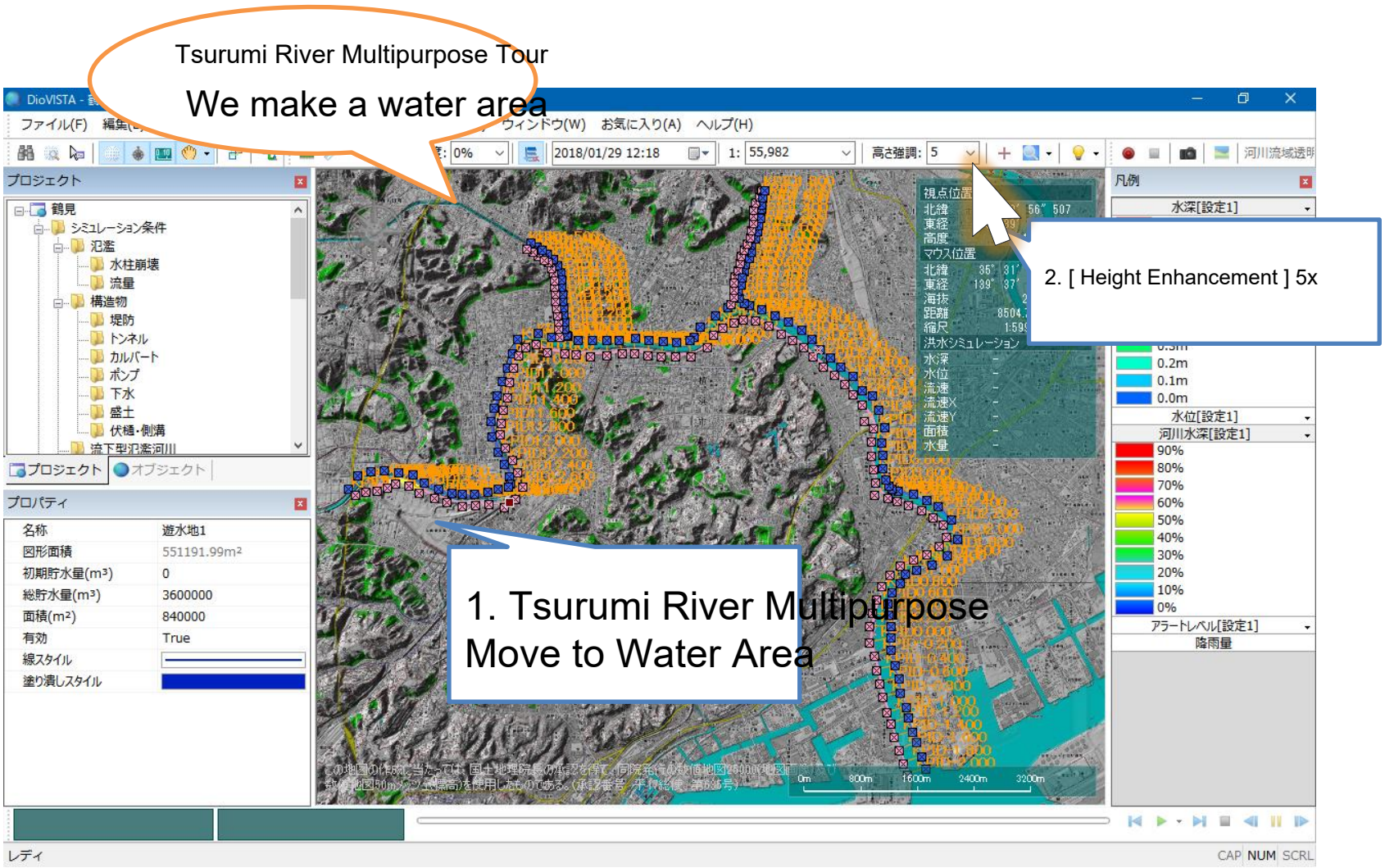
Setting up a drainage basin (1)

HITACHI
Inspire the Next



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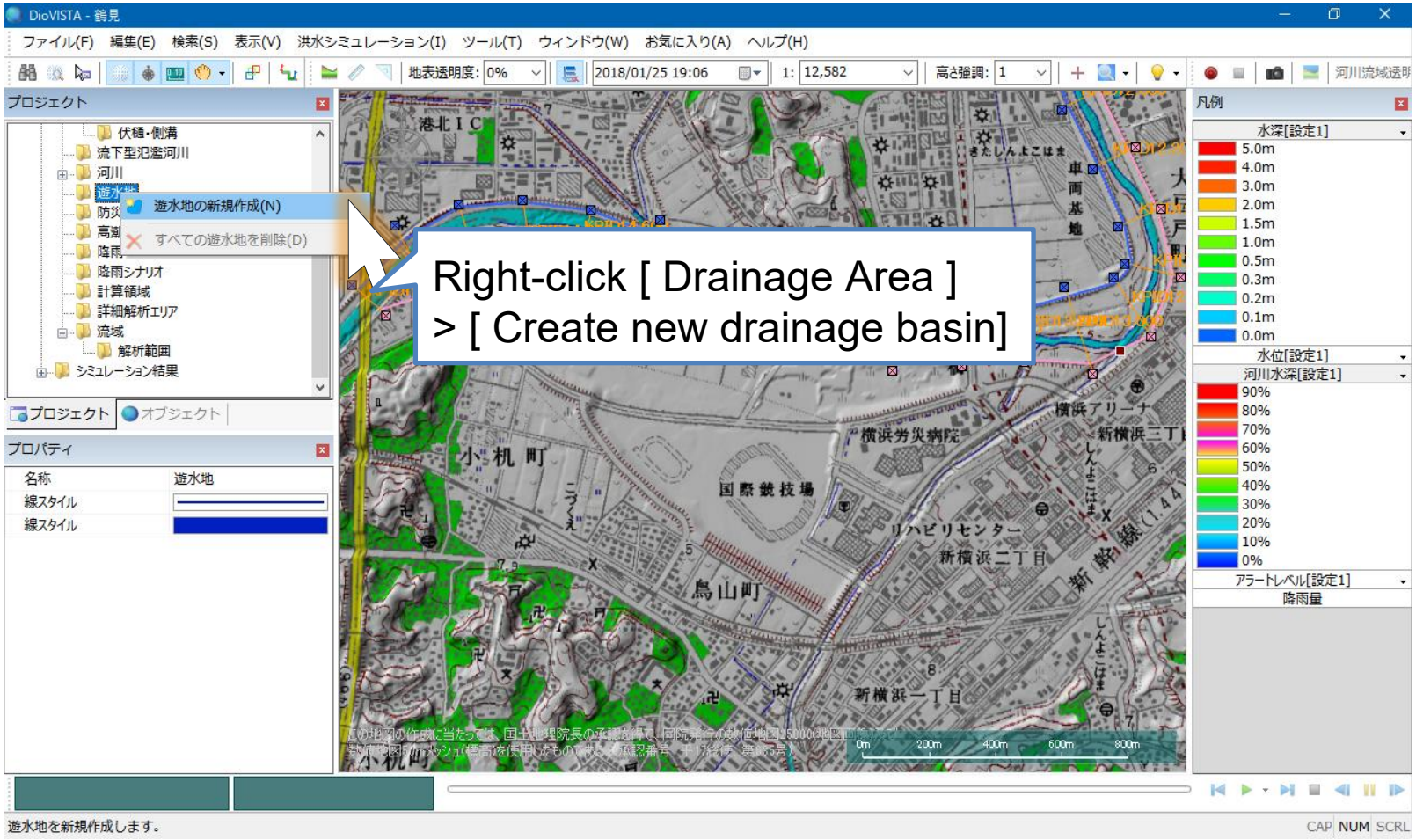
Setting up a drainage basin (2)

HITACHI
Inspire the Next



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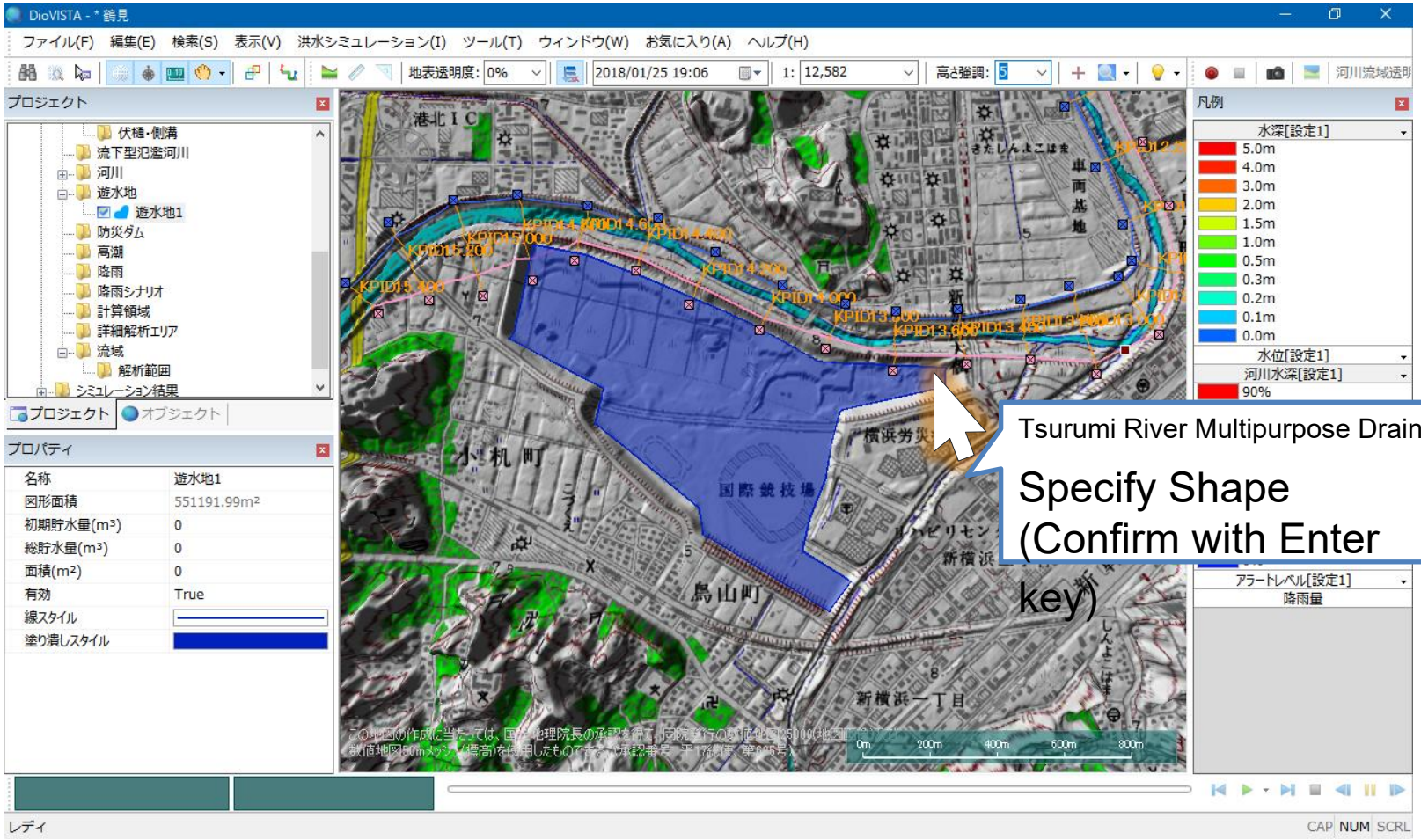
Setting up a drainage basin (3)

HITACHI
Inspire the Next



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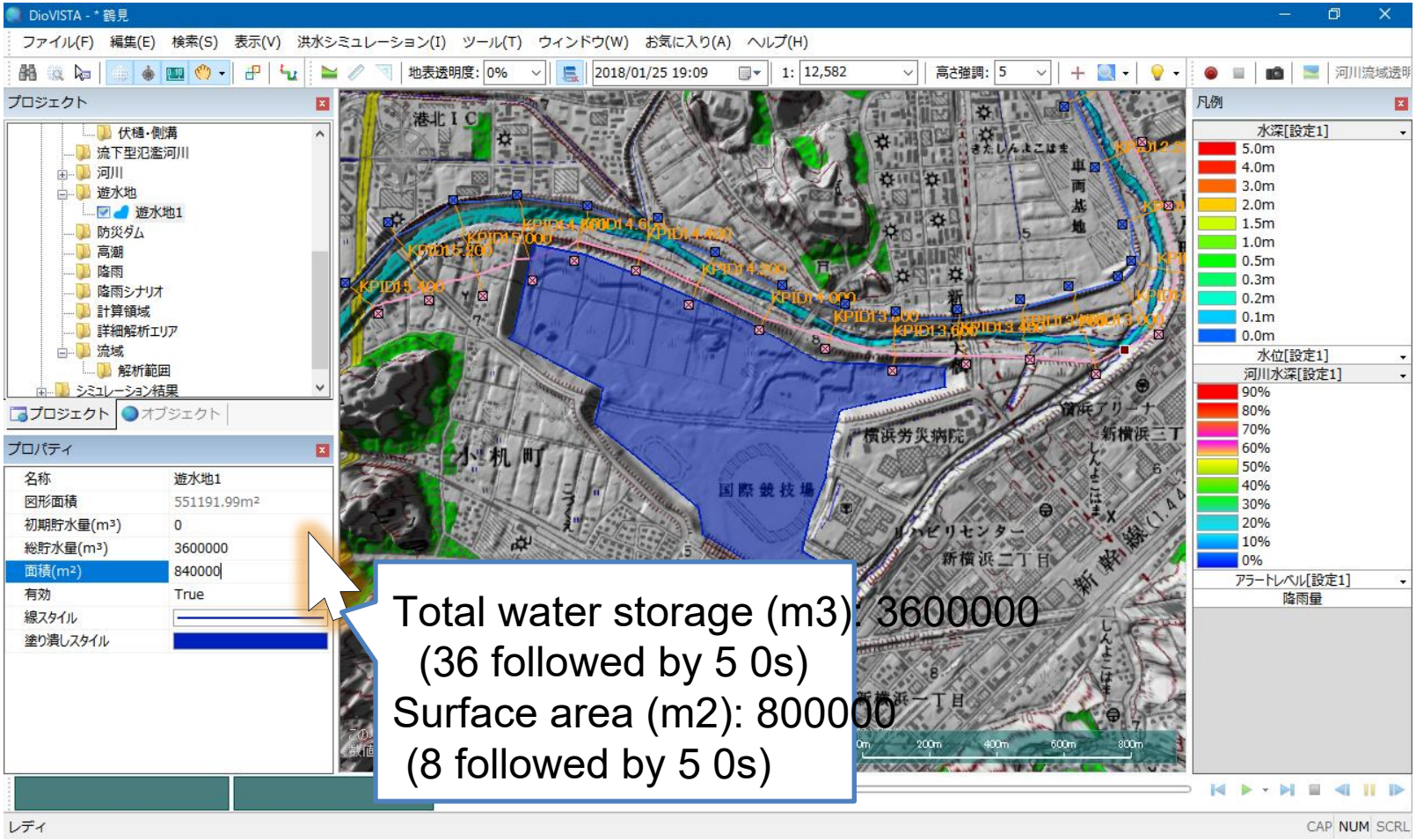
Setting up a drainage basin (4)

HITACHI
Inspire the Next



Total water storage (m3): 3600000
(36 followed by 5 0s)
Surface area (m2): 800000
(8 followed by 5 0s)

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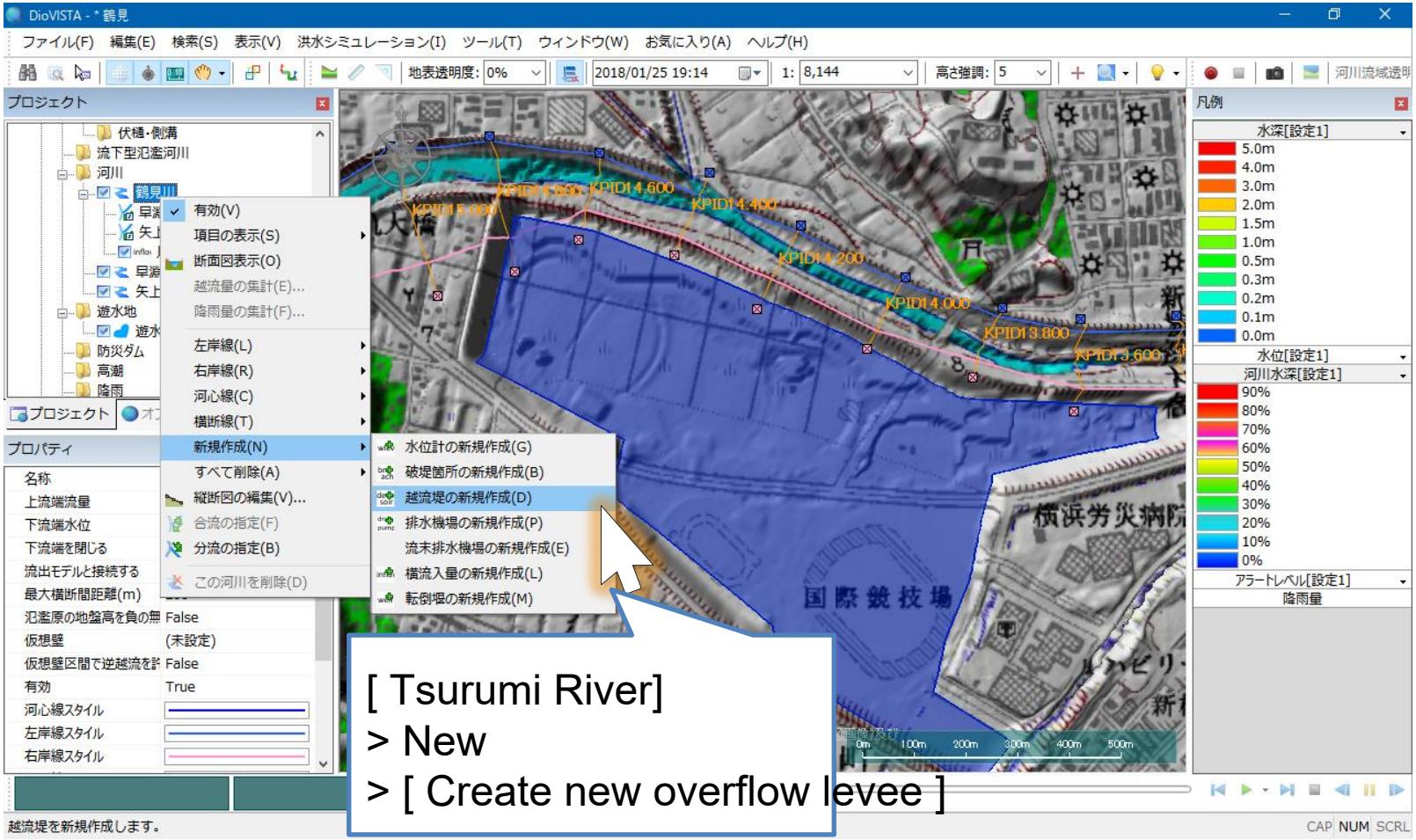
Setting up a drainage basin (5)

HITACHI
Inspire the Next



[Tsurumi River]
> New
> [Create new overflow levee]

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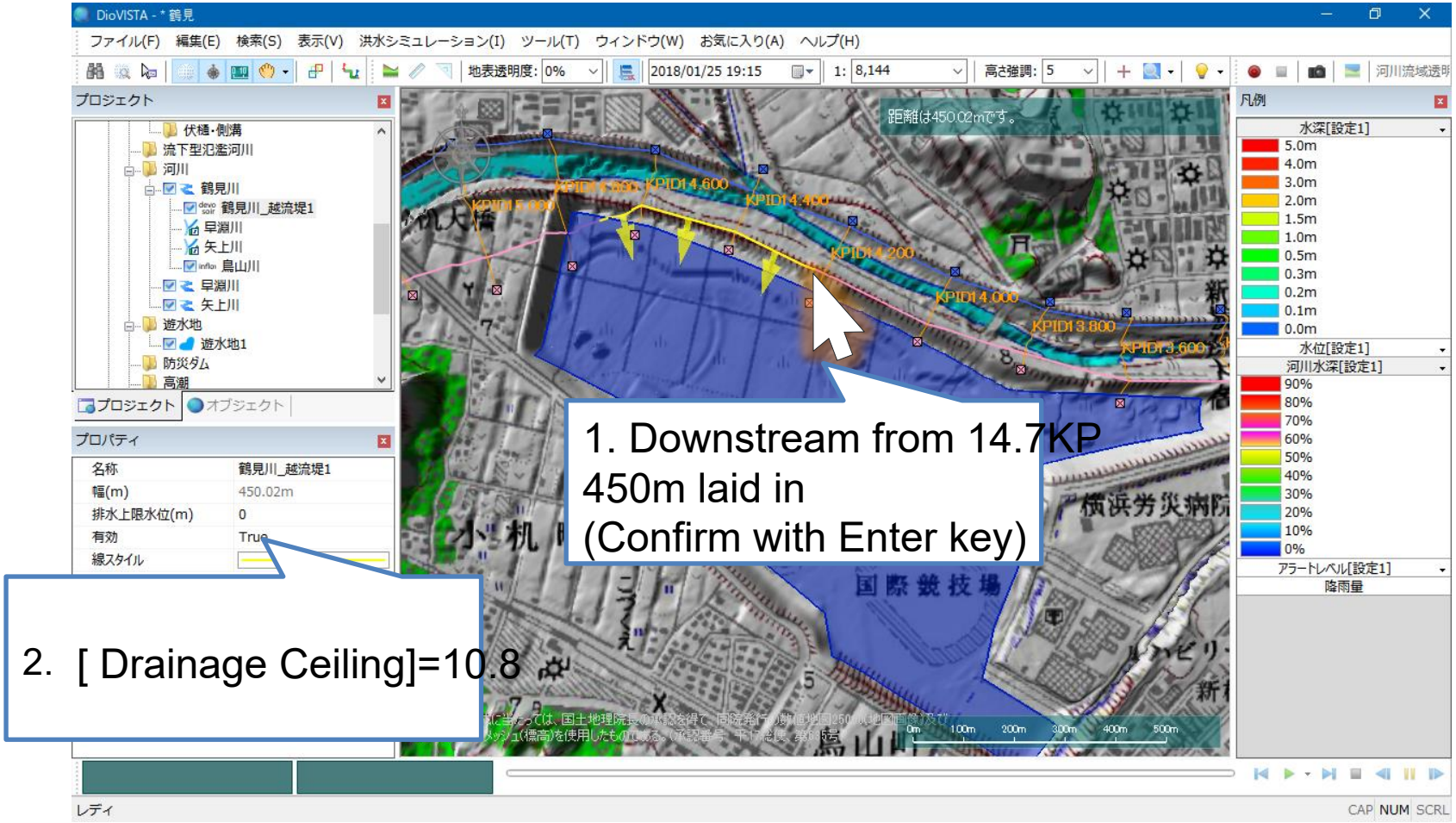
Setting up a drainage basin (6)

HITACHI
Inspire the Next



1. Downstream from 14.7KP 450m laid in (Confirm with Enter key)

2. [Drainage Ceiling]=10.8

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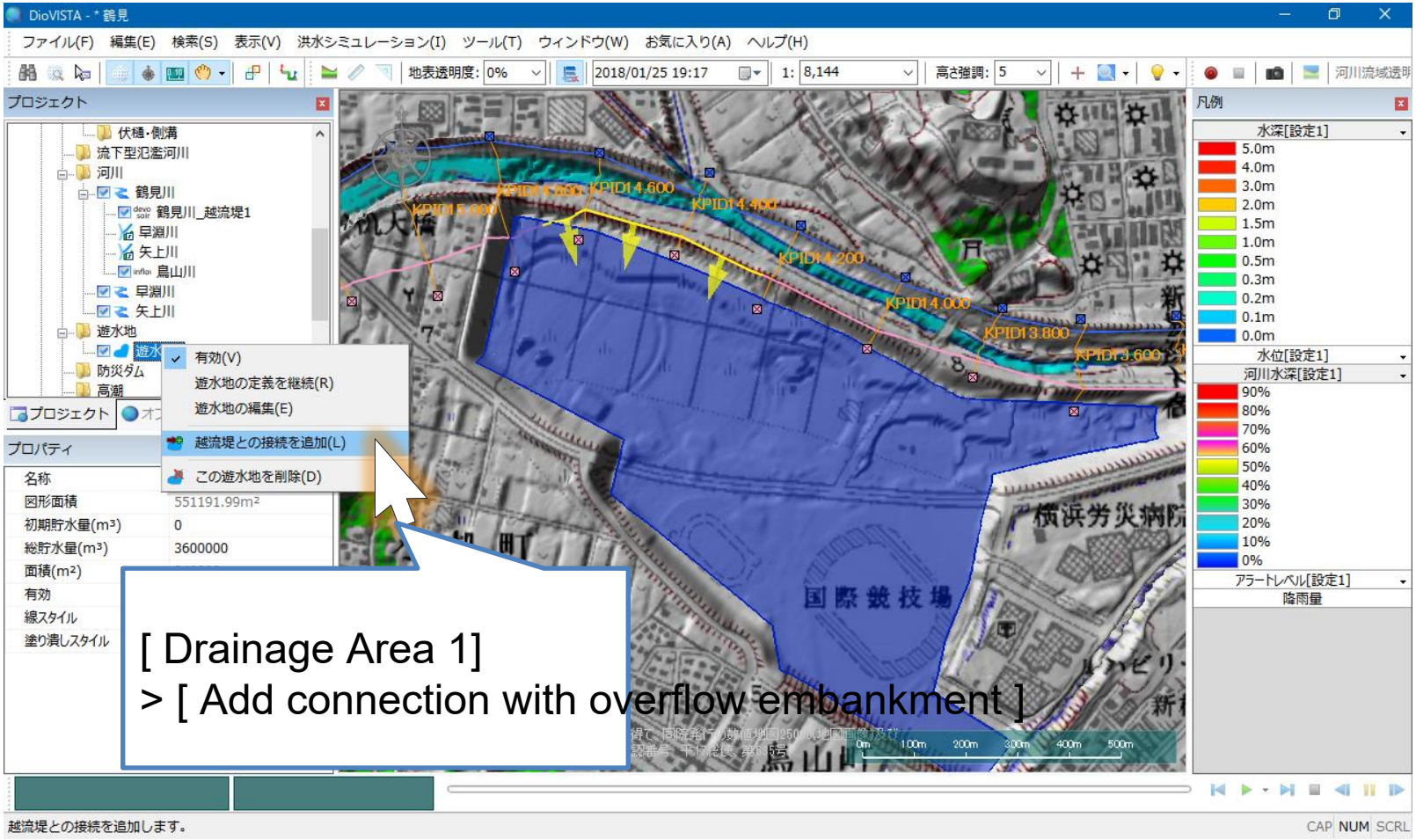
Setting up a drainage basin (7)

HITACHI
Inspire the Next



[Drainage Area 1]
> [Add connection with overflow embankment]

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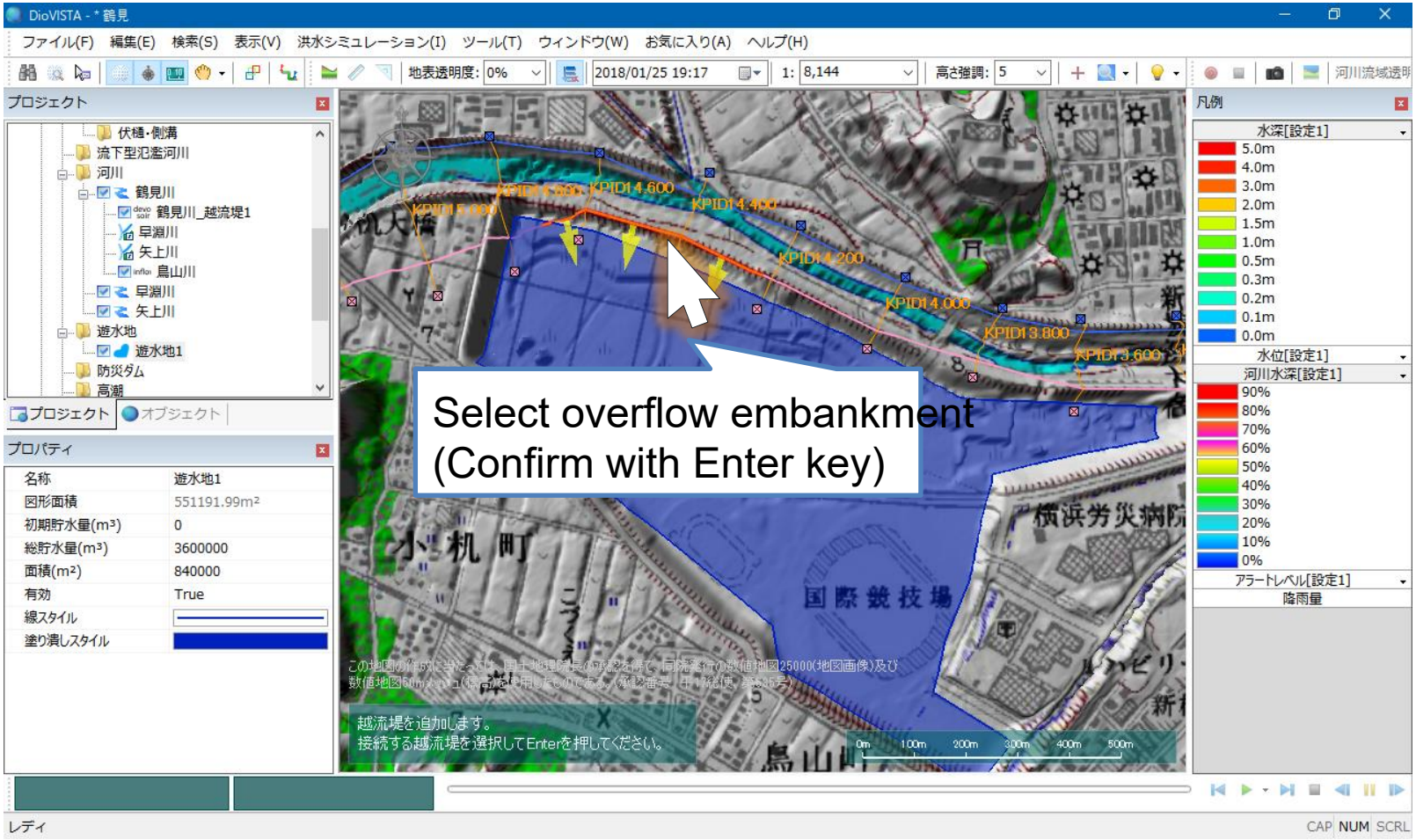
Setting up a drainage basin (8)

HITACHI
Inspire the Next



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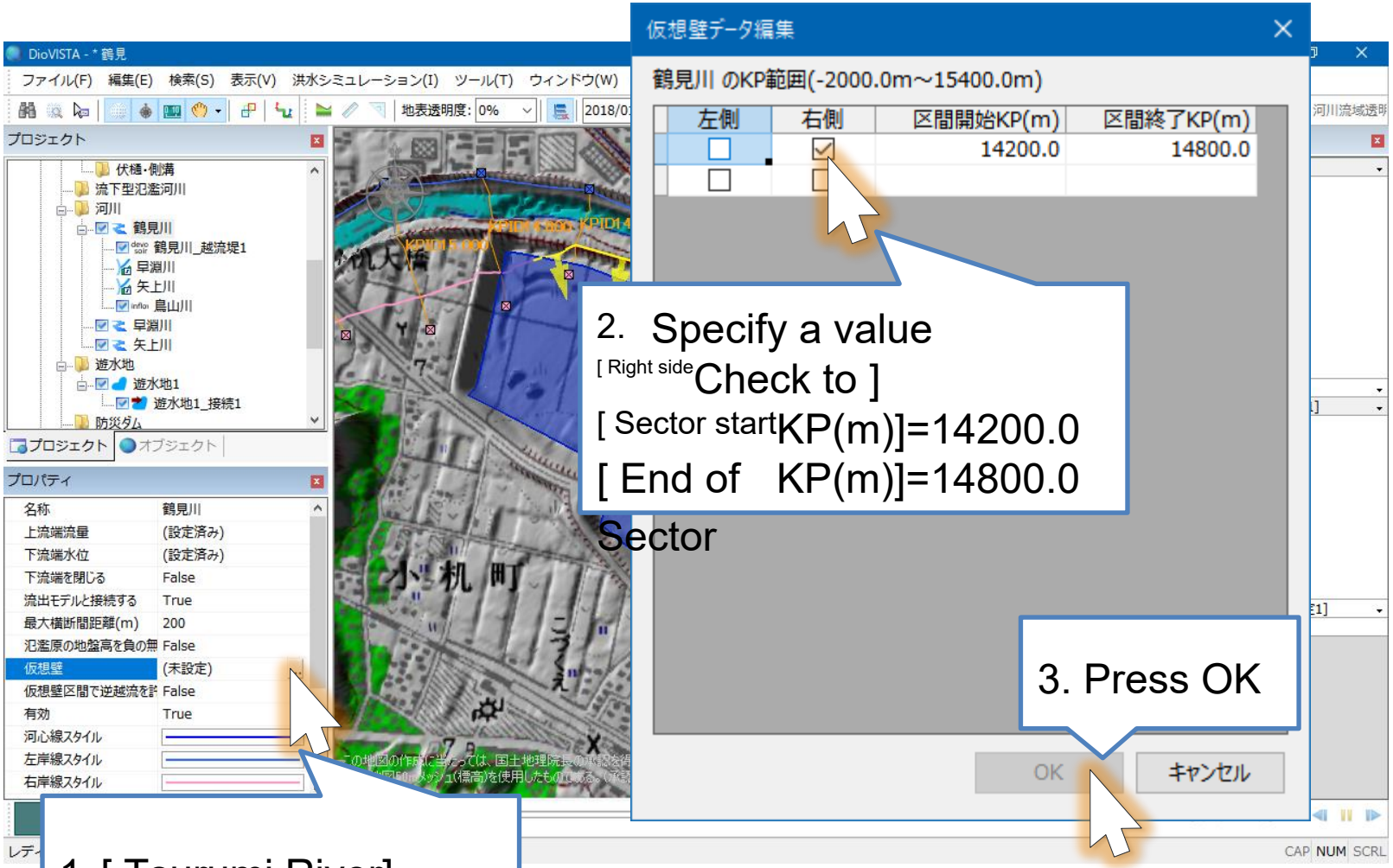
Setting up a drainage basin (9)

HITACHI
Inspire the Next



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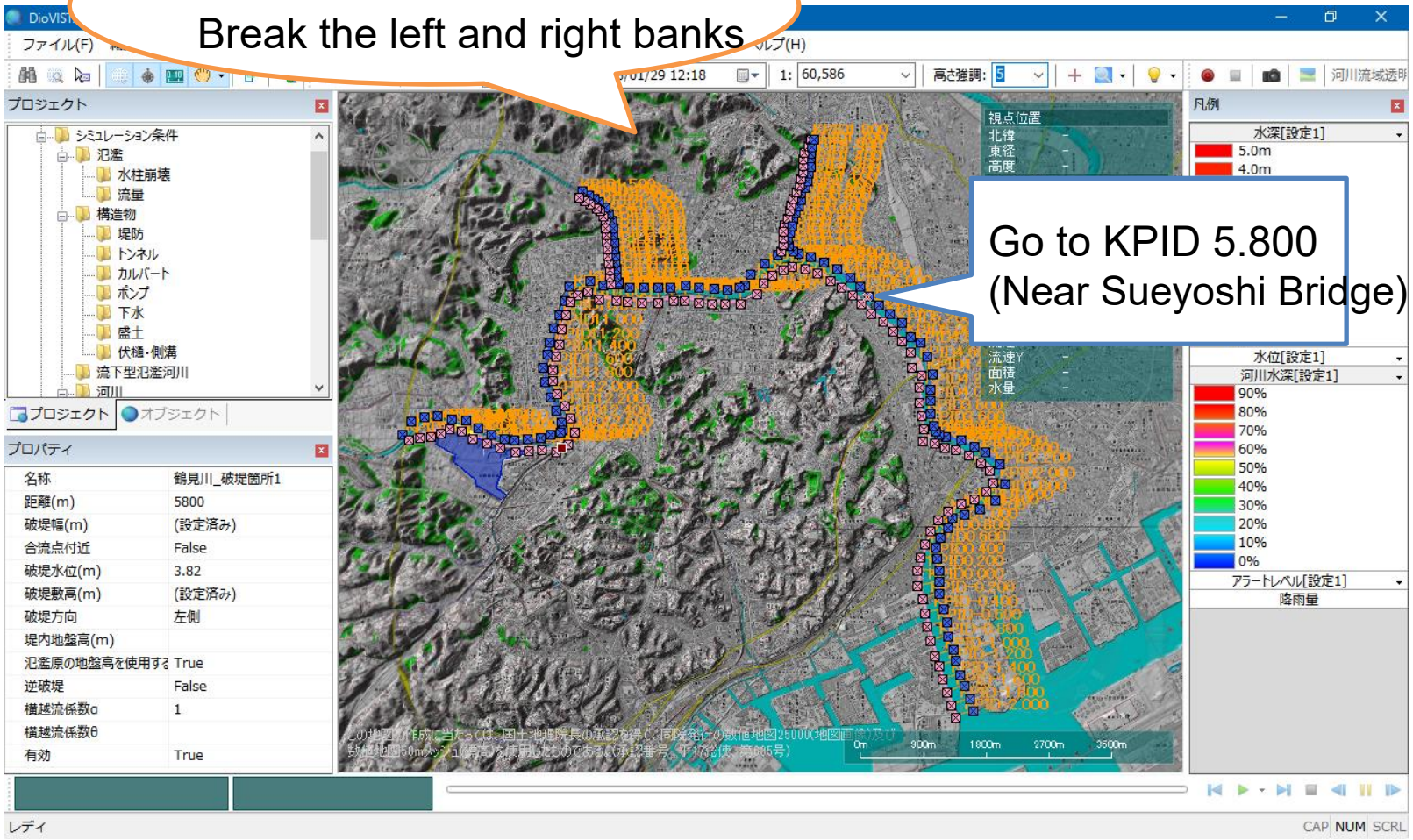
Specify the breakage point (1)

HITACHI
Inspire the Next

5.8KP (Sueyoshibashi Reference Point)

Break the left and right banks



Go to KPID 5.800
(Near Sueyoshi Bridge)

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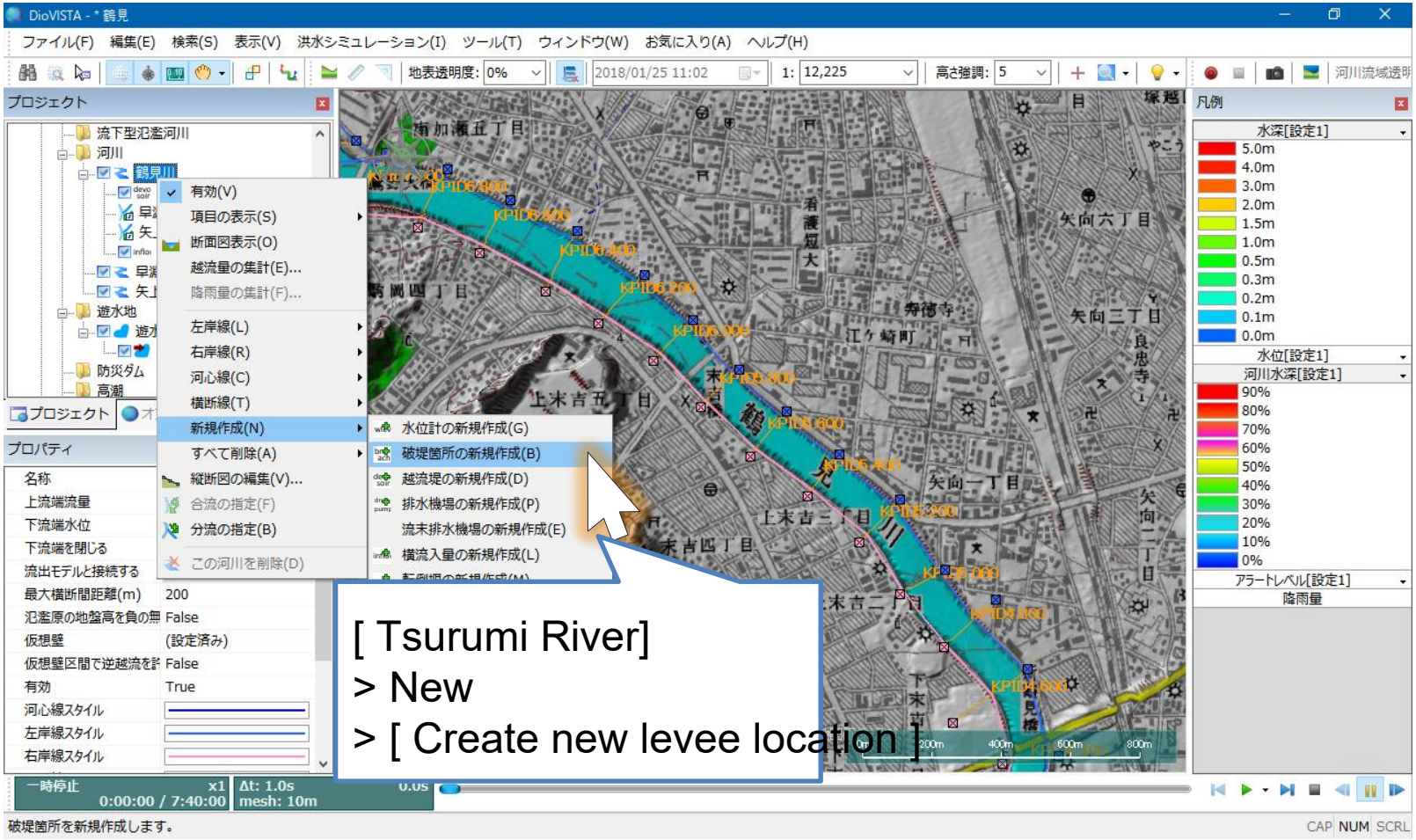
Specify the breakage point (2)

HITACHI
Inspire the Next



[Tsurumi River]
> New
> [Create new levee location]

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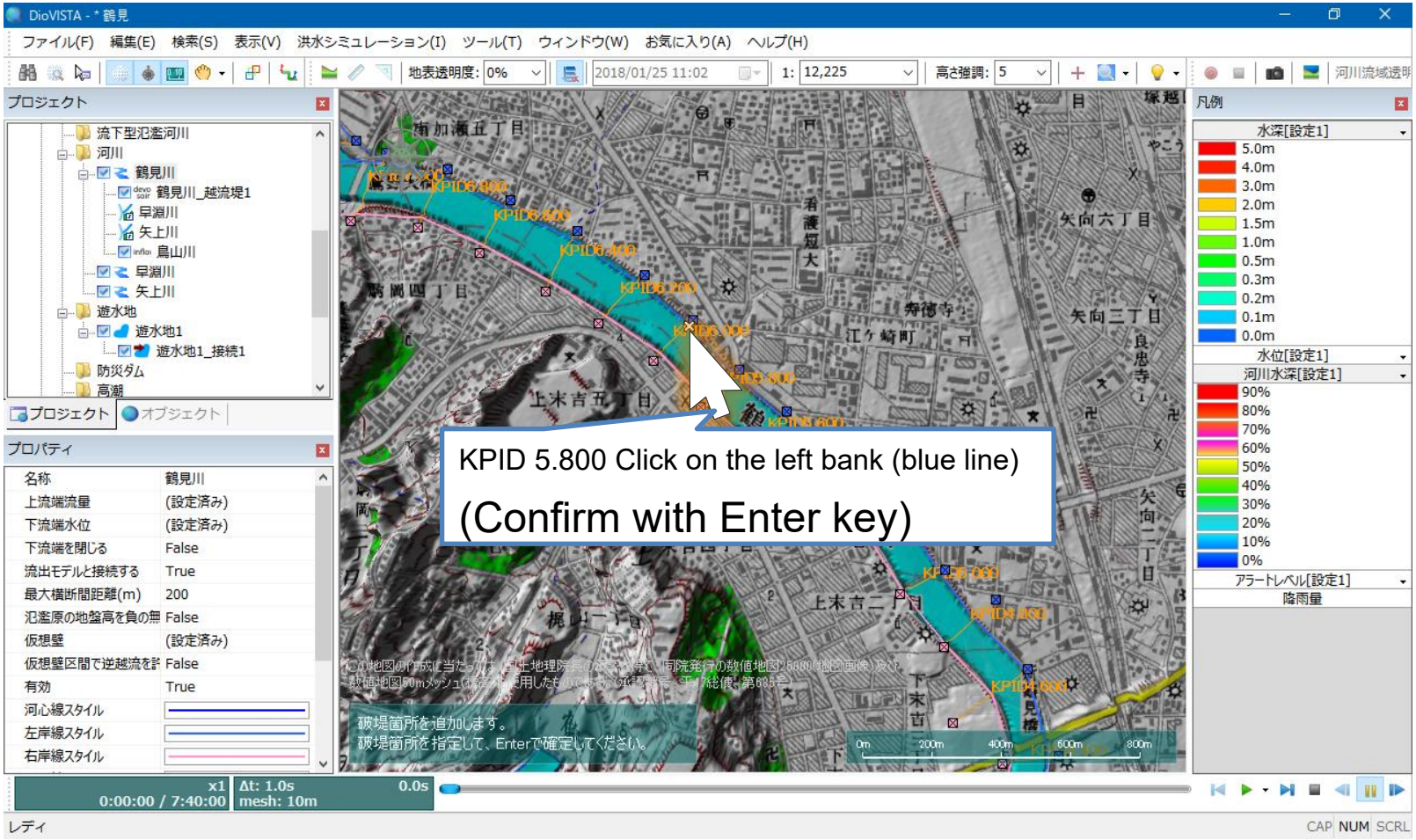
Specify the breakage point (3)

HITACHI
Inspire the Next



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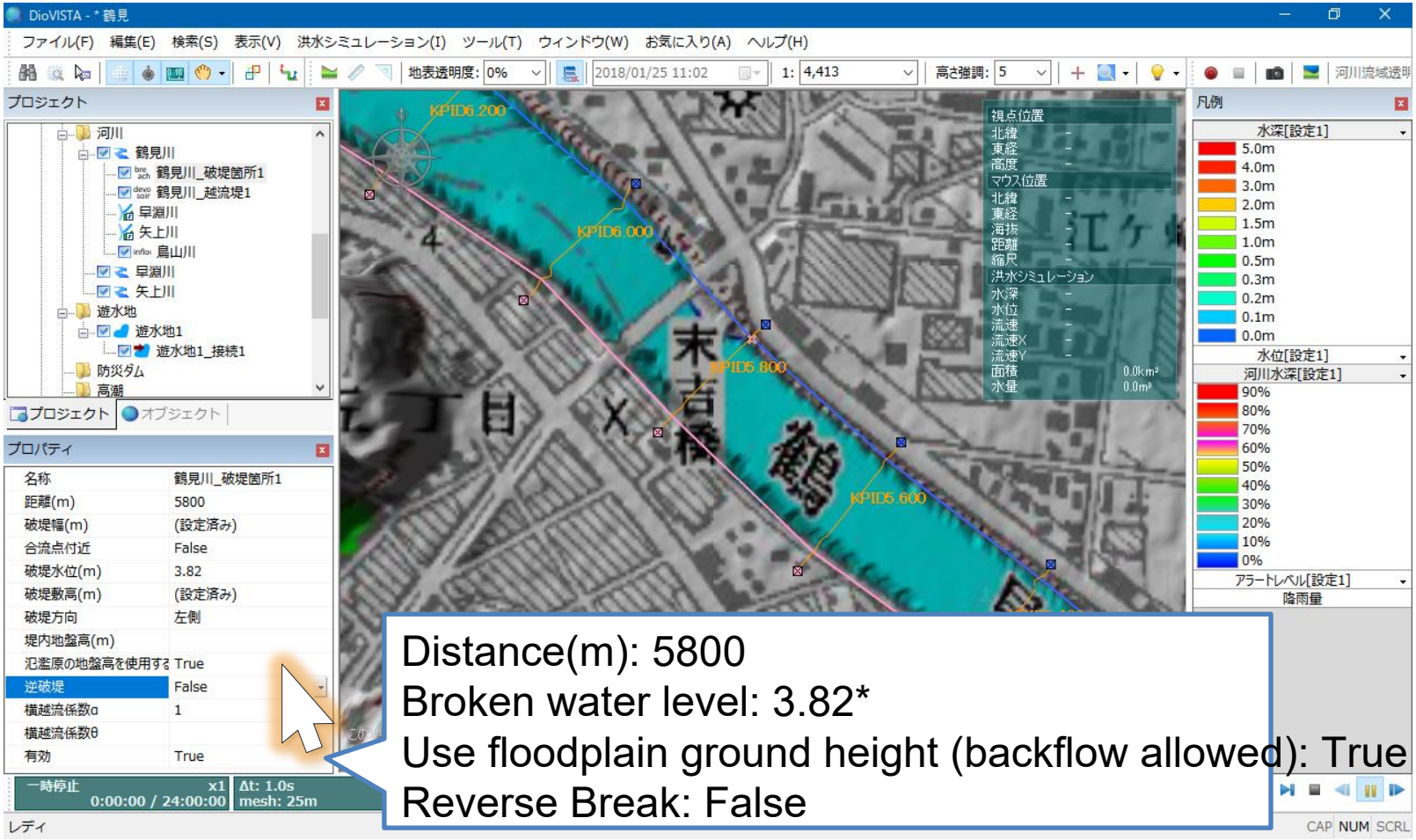
Specify the breakage point (4)

HITACHI
Inspire the Next



Distance(m): 5800
Broken water level: 3.82*
Use floodplain ground height (backflow allowed): True
Reverse Break: False

* For Right bank: 3.79

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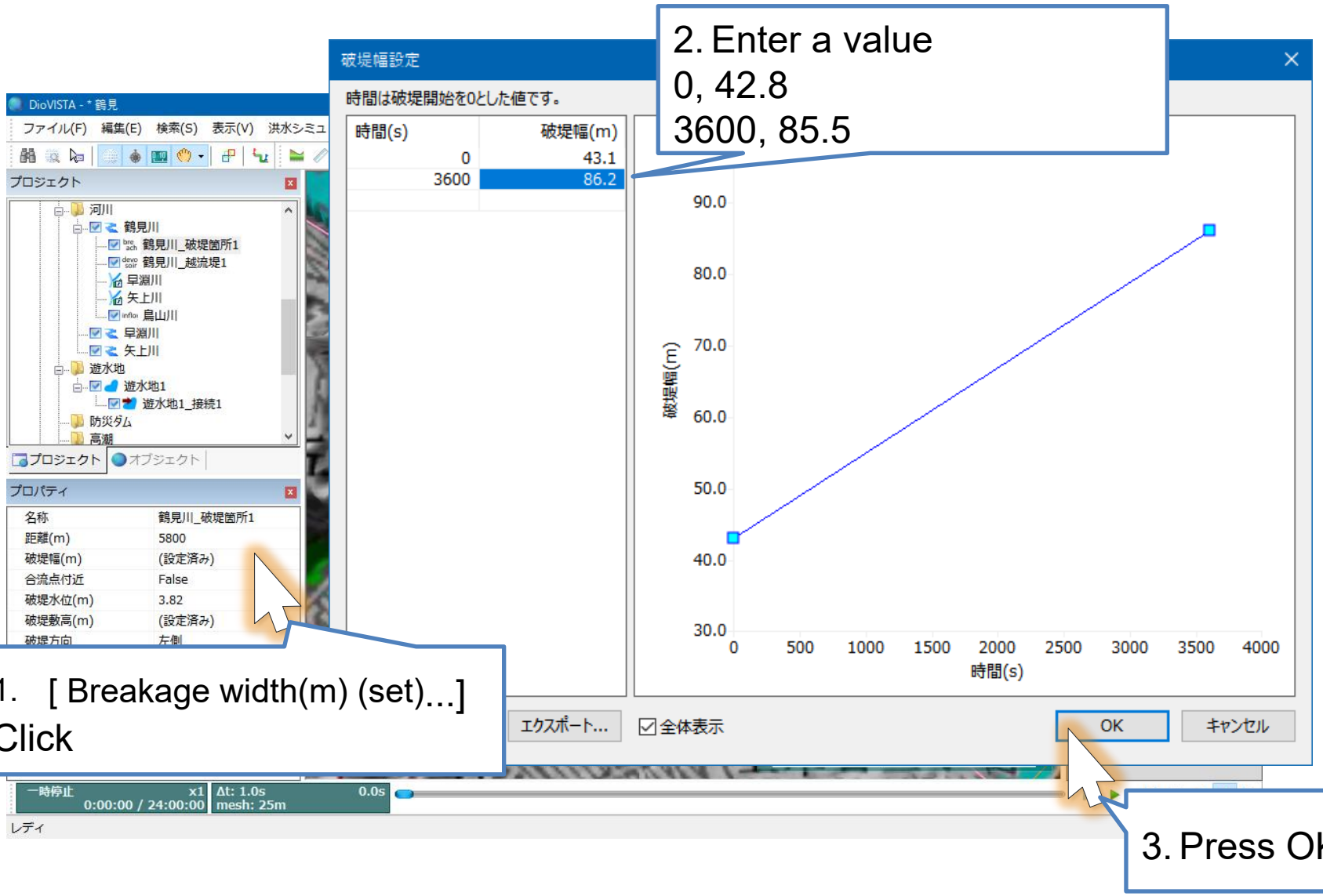
Specify the breakage point (5)



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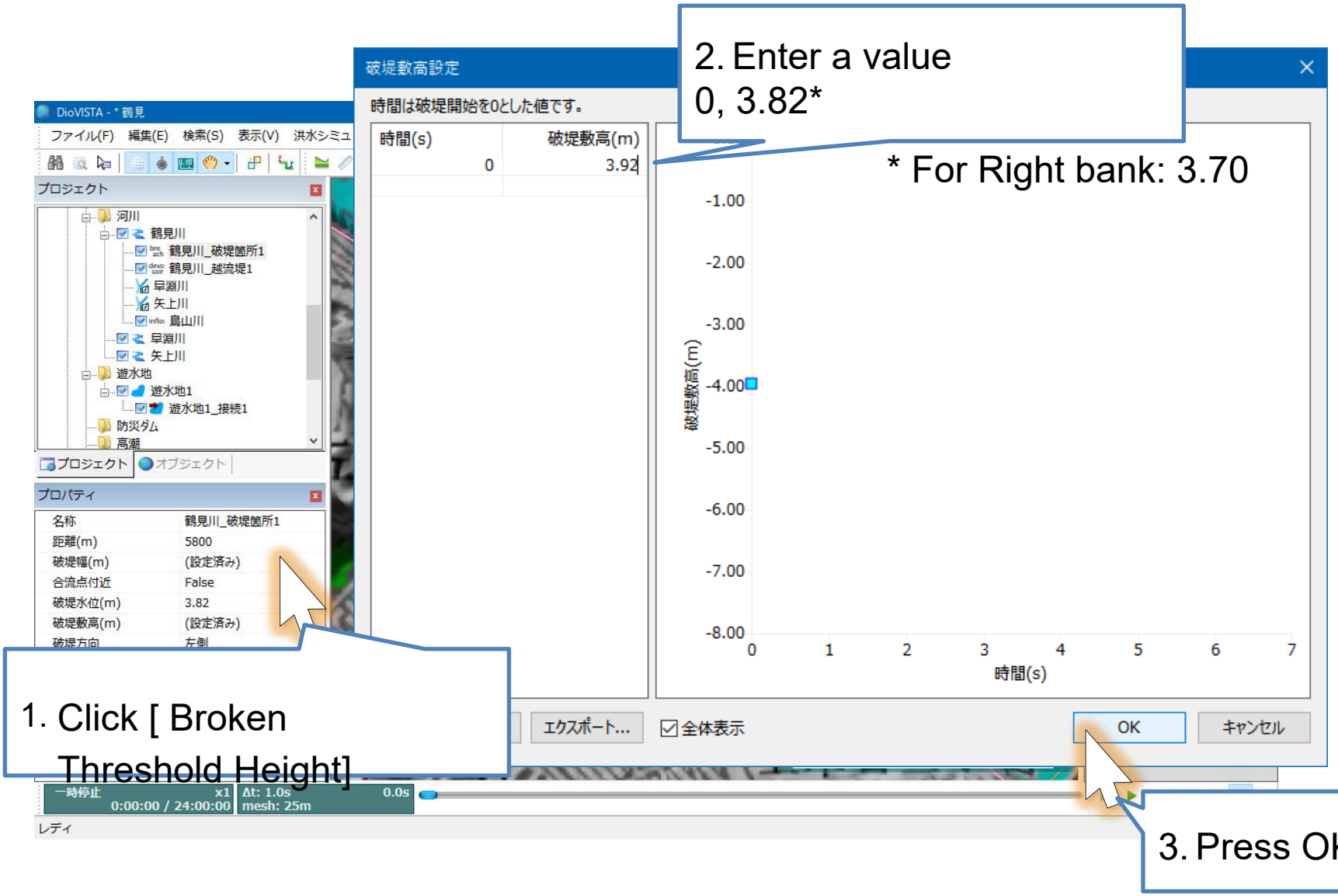
Specify the breakage point (6)

HITACHI
Inspire the Next



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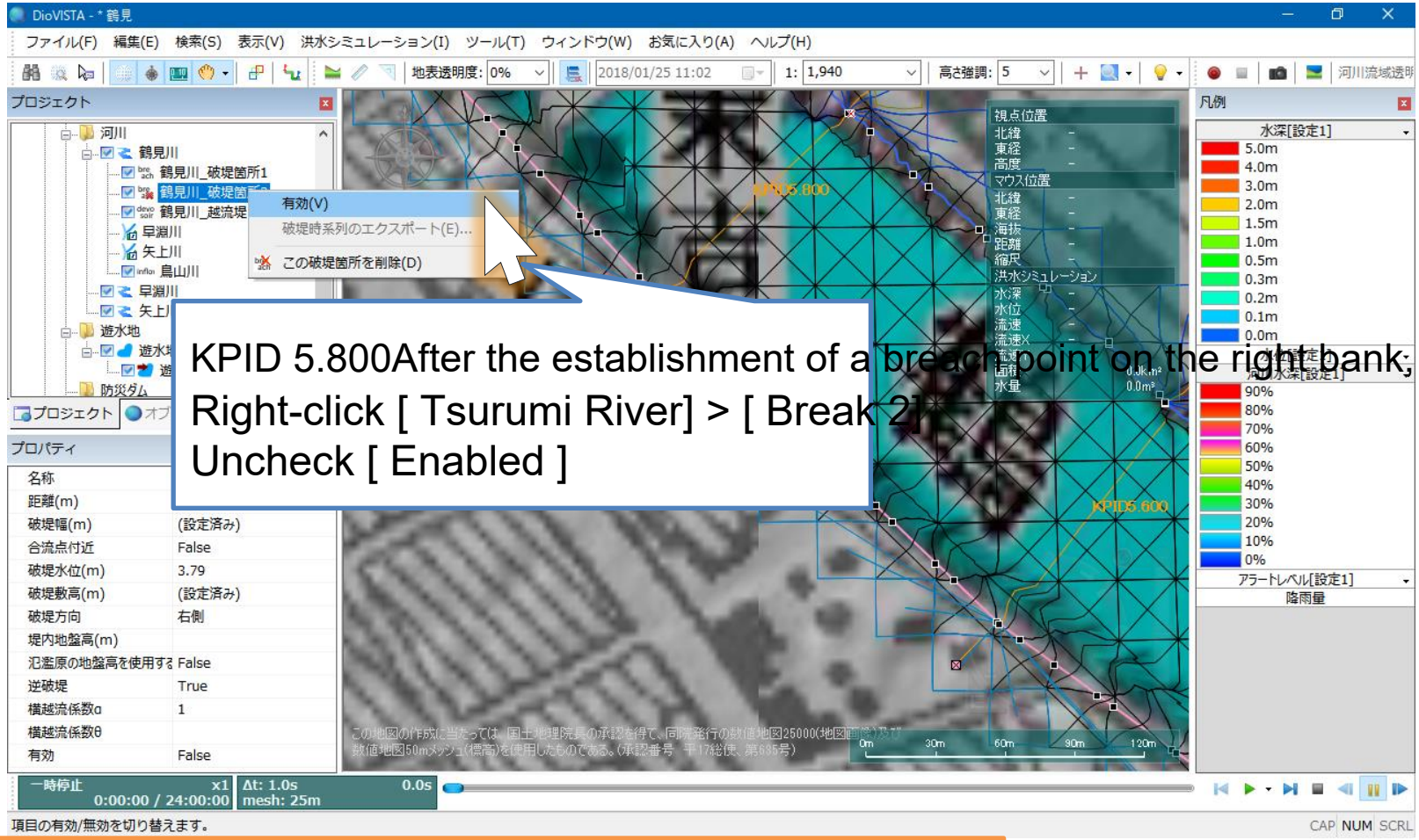
Specify the breakage point (7)

HITACHI
Inspire the Next



KPID 5.800After the establishment of a breach point on the right bank,
Right-click [Tsurumi River] > [Break 2]
Uncheck [Enabled]

In a similar procedure, set the breakage point on the right bank with KPID 5.800. However, the breach point on the right bank is disabled.

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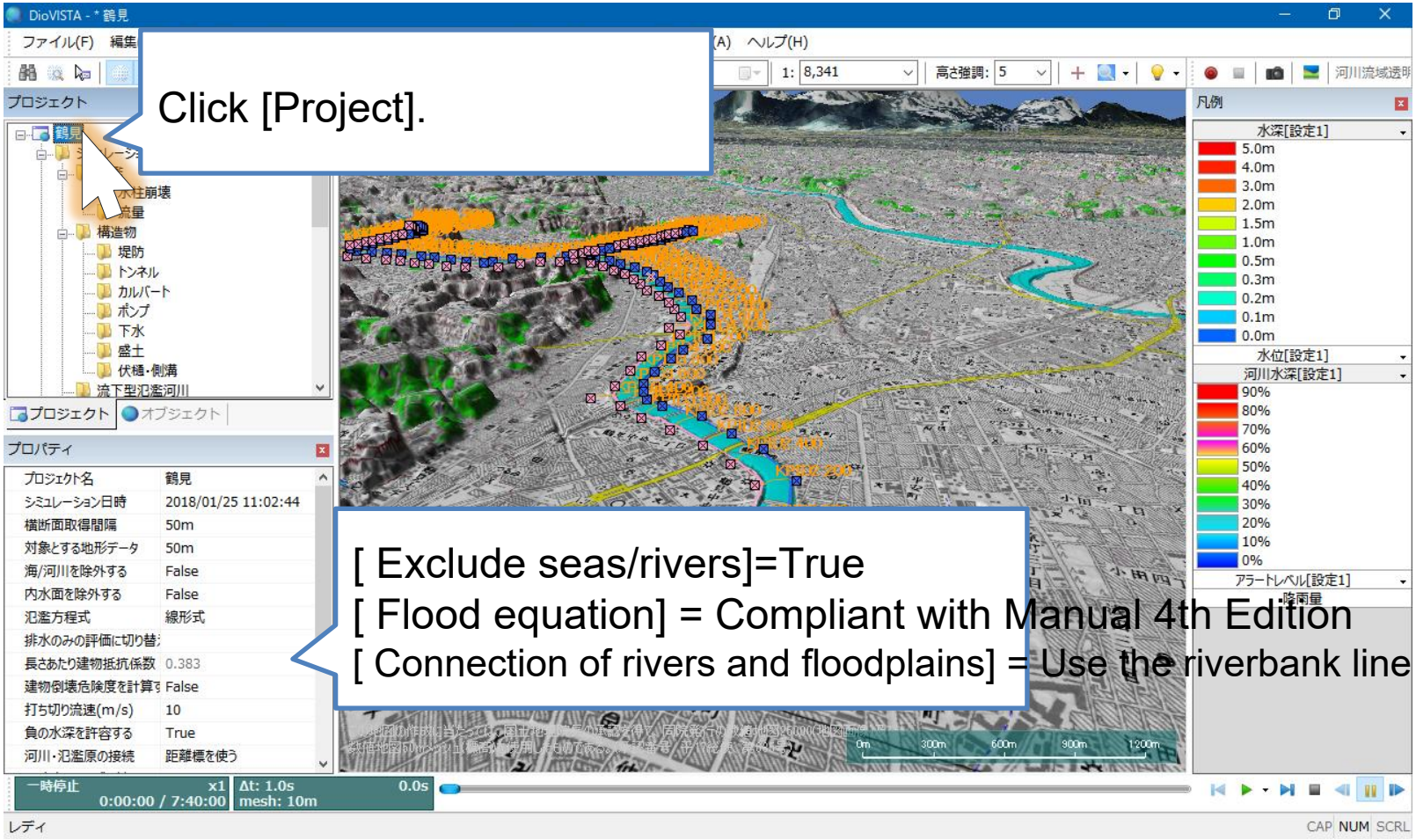
Setting up the project

HITACHI
Inspire the Next



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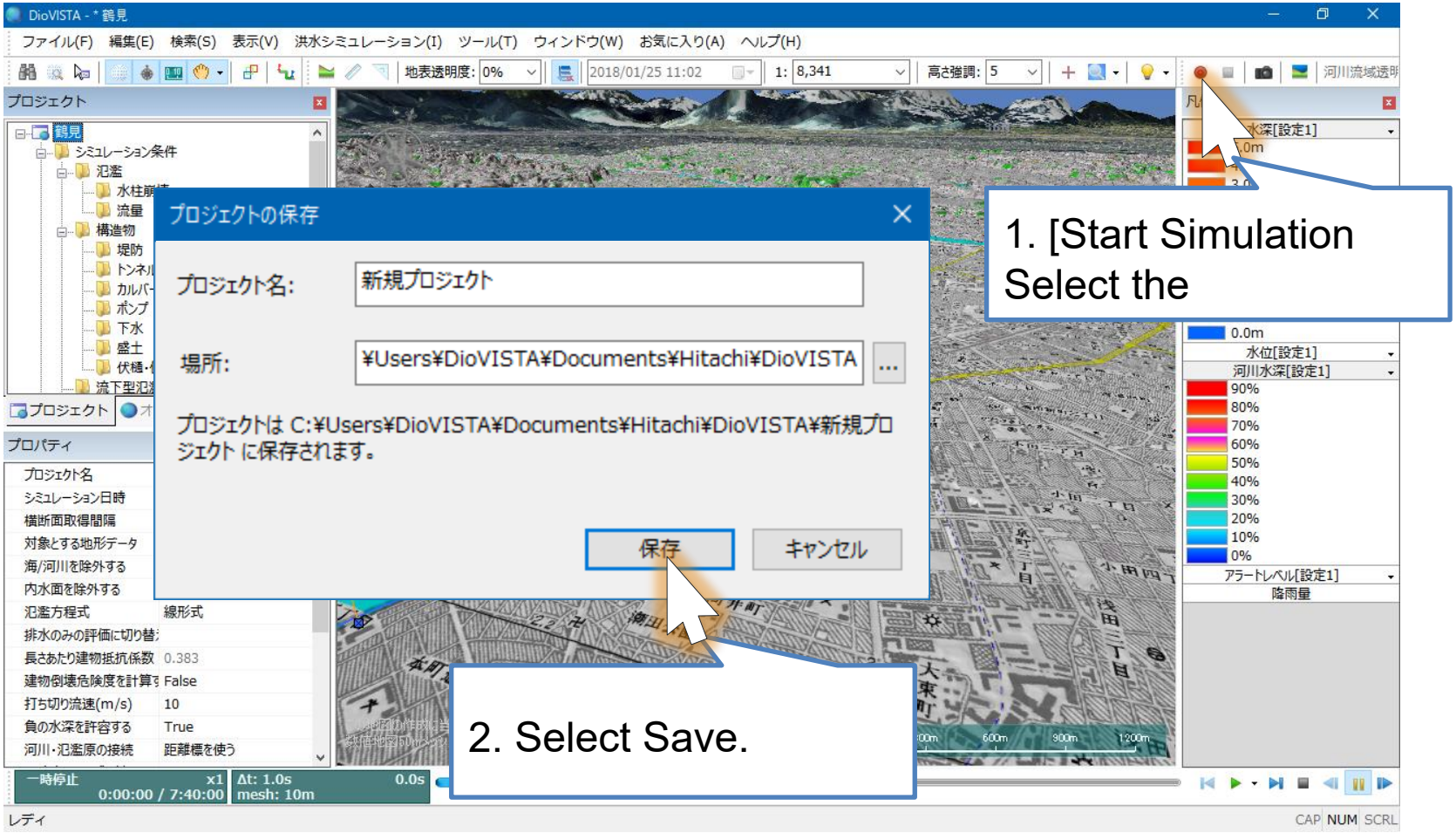
Flood analysis (1)

HITACHI
Inspire the Next



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Conduct flood analysis

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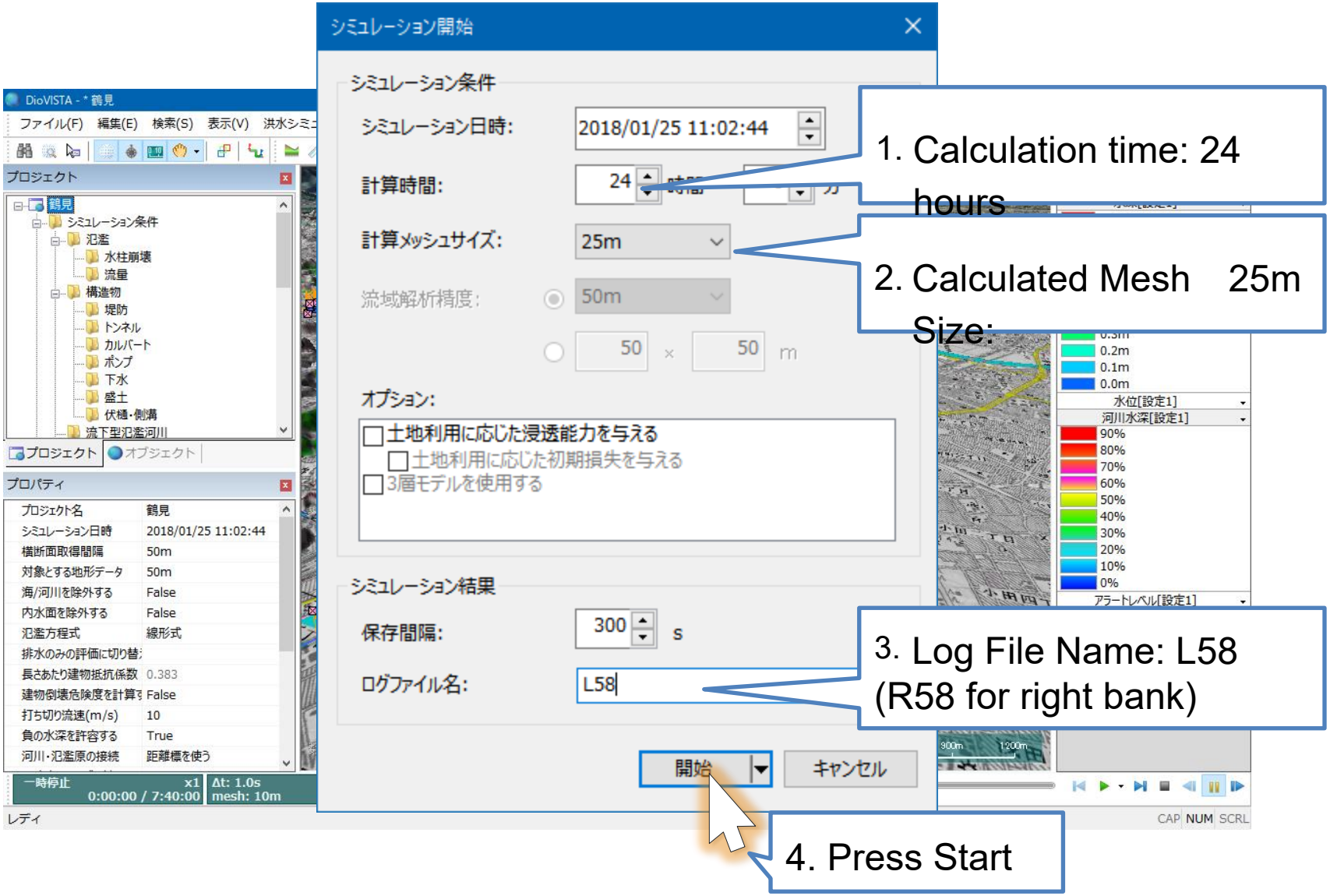

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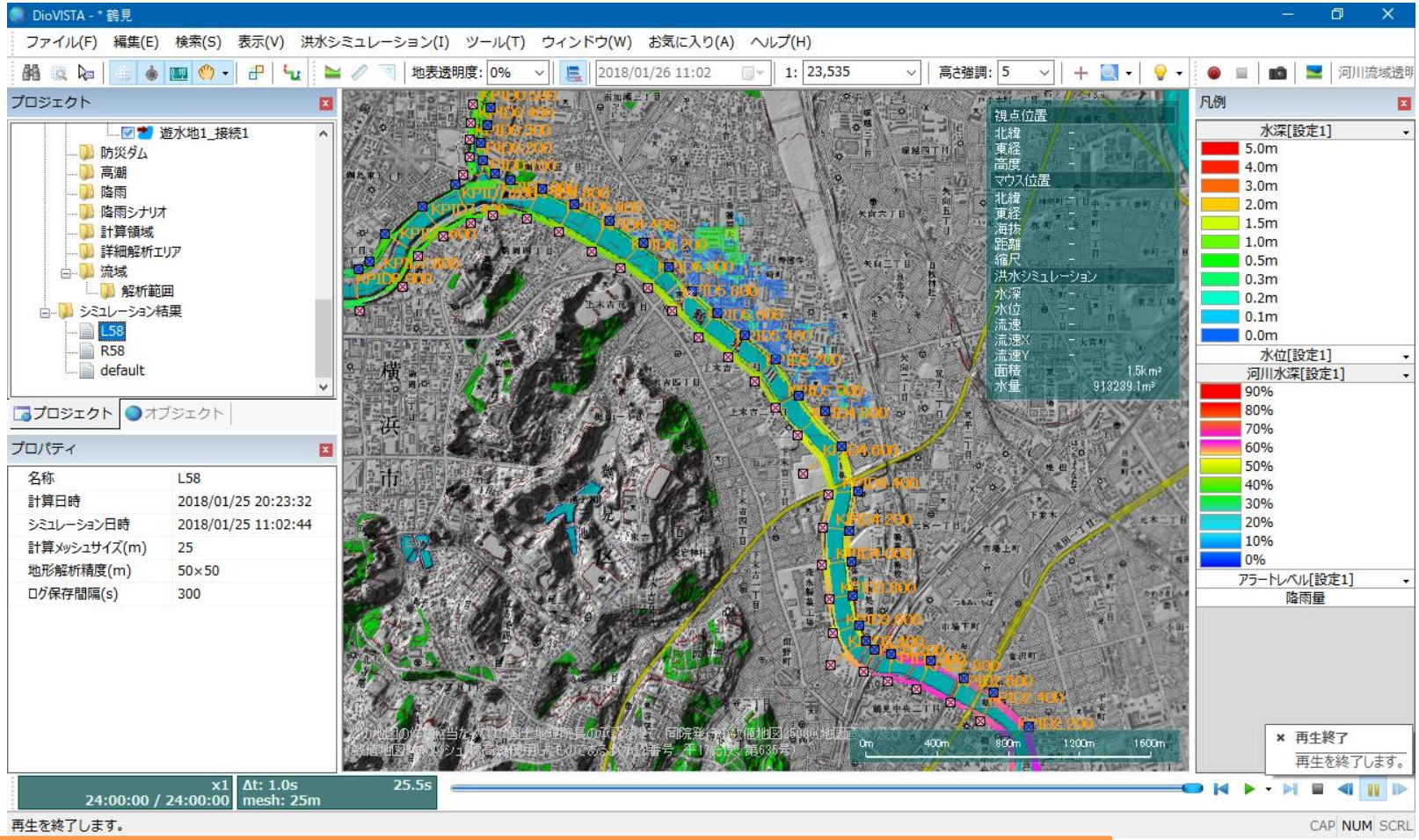
Calculation result (left bank)



In the same way, a flood analysis will be performed on the breach point of the right bank of KPID 5.800. However, KPID 5.800 disables the left bank breach point.

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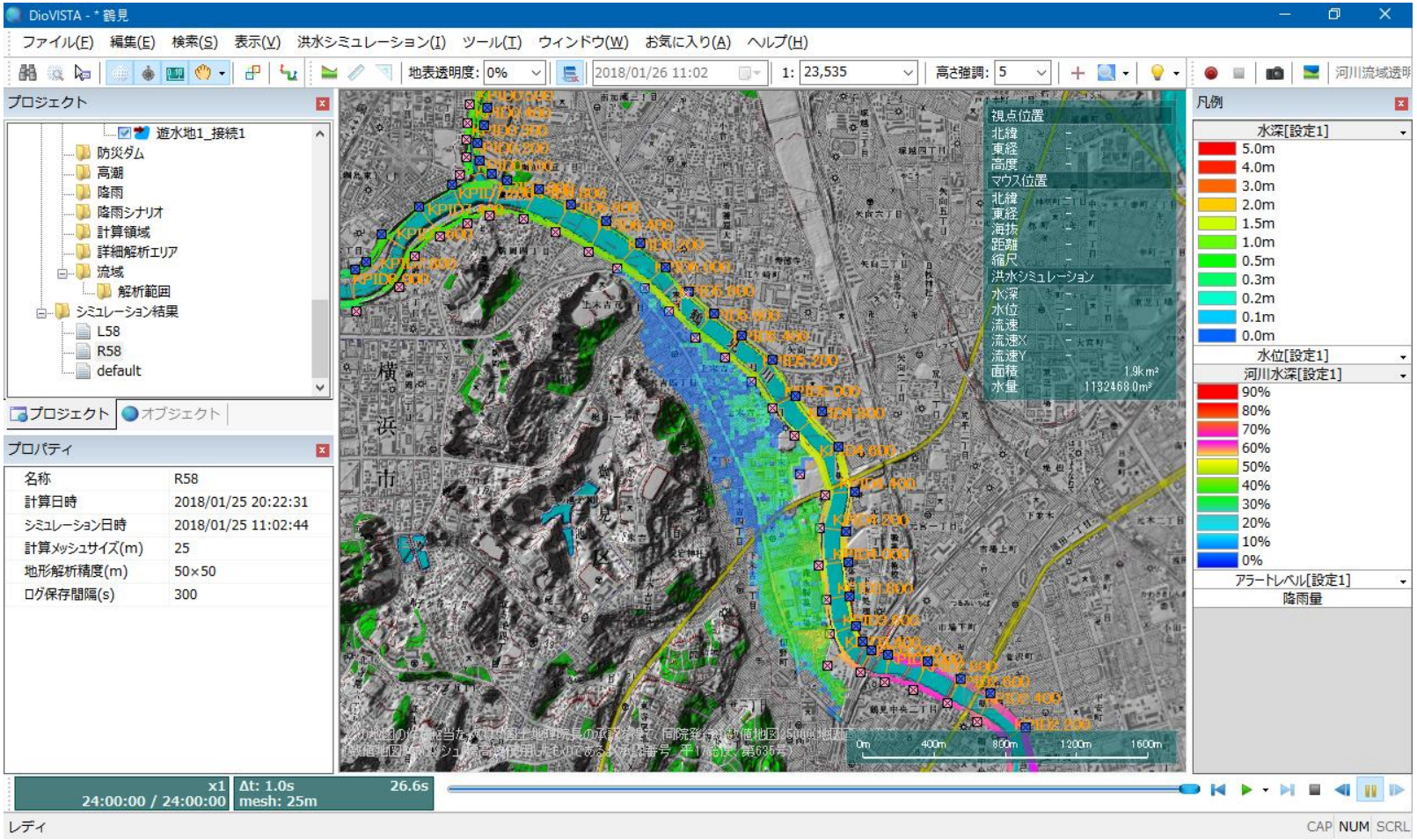
Calculation result (right bank)



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Preparation of envelope diagrams (1)

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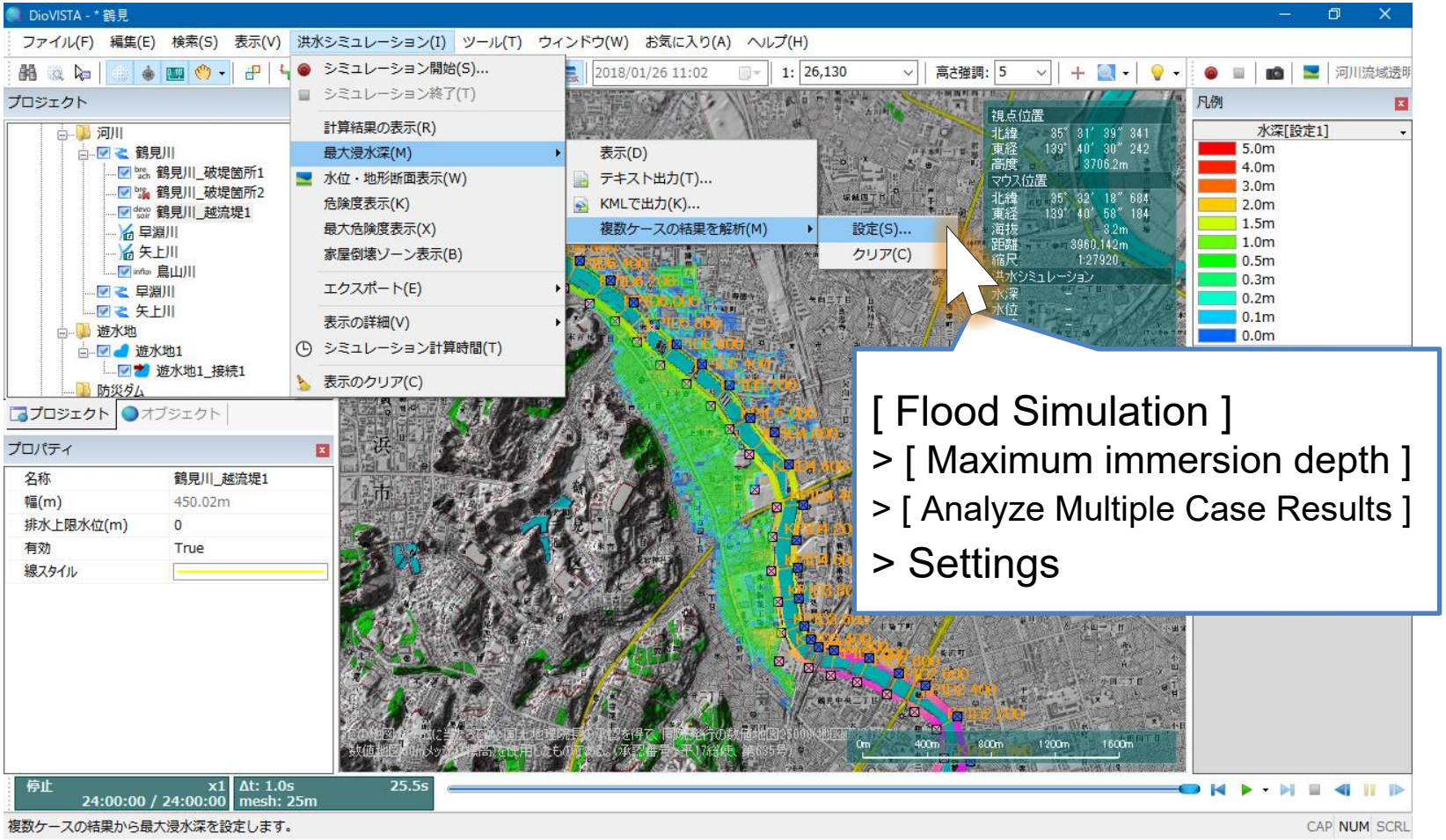

[Flood Simulation]
> [Maximum immersion depth]
> [Analyze Multiple Case Results]
> Settings

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Preparation of envelope diagrams (2)

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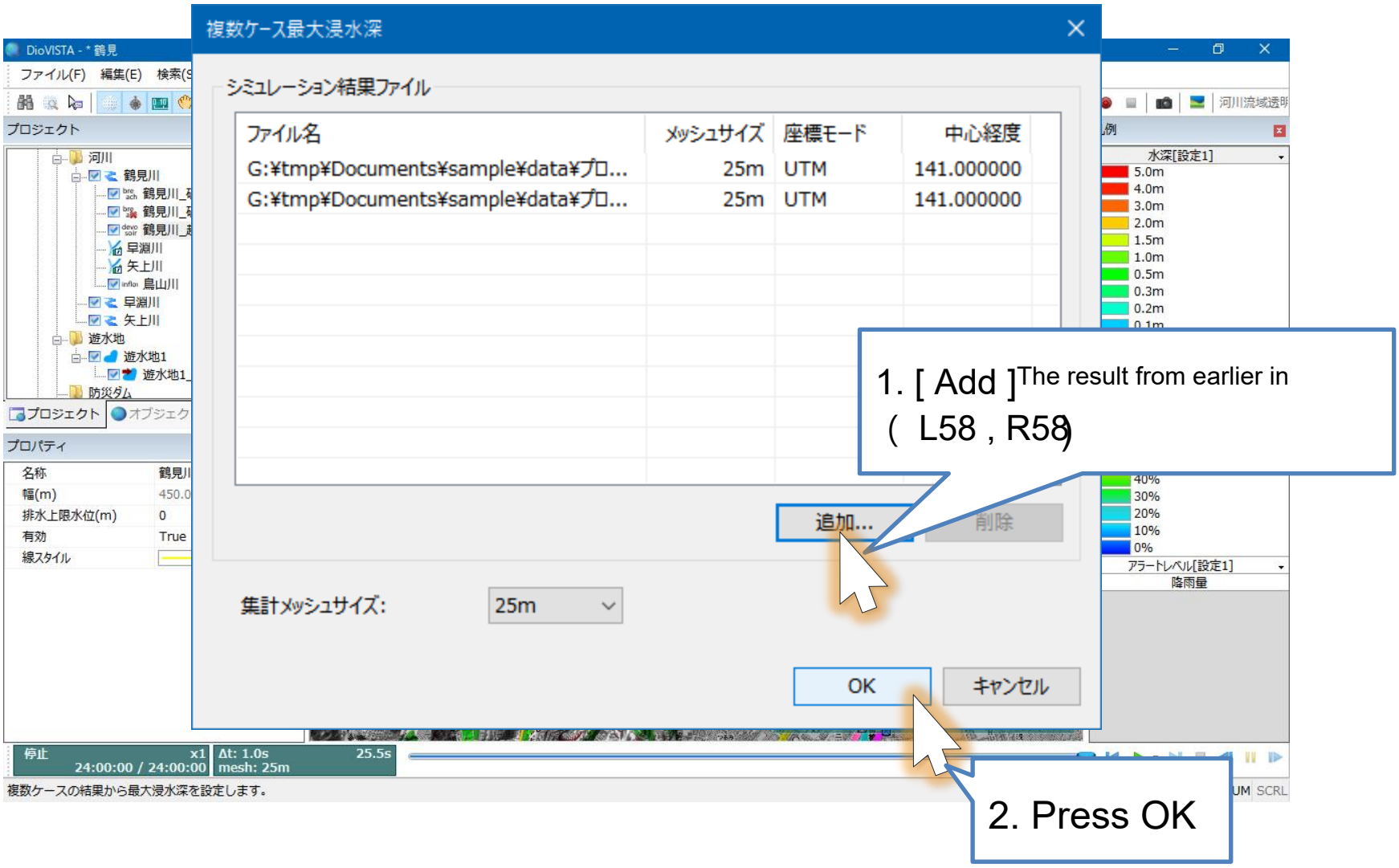

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Preparation of envelope diagrams (3)

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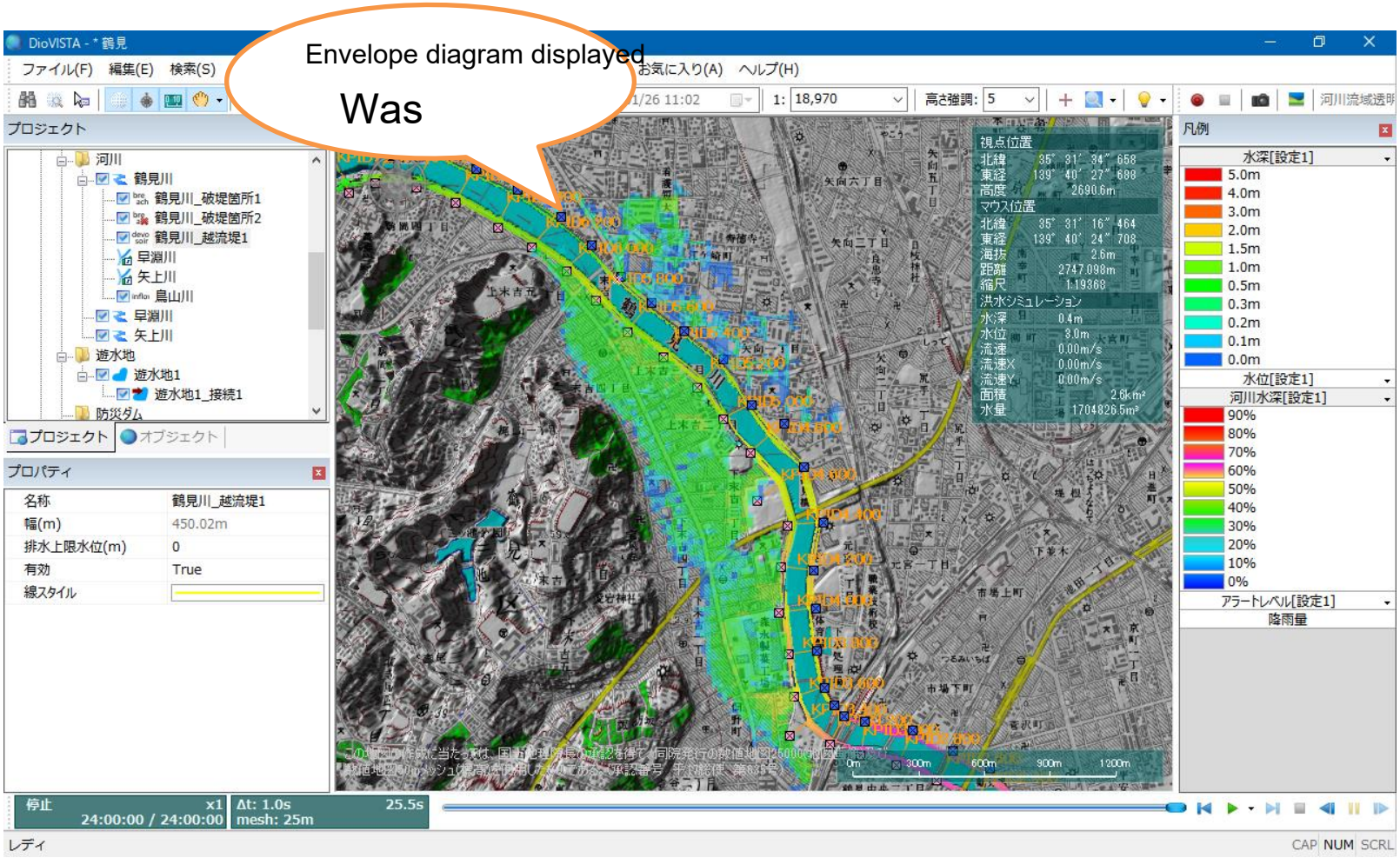
Inspire the Next



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Preparation of deliverables (1)

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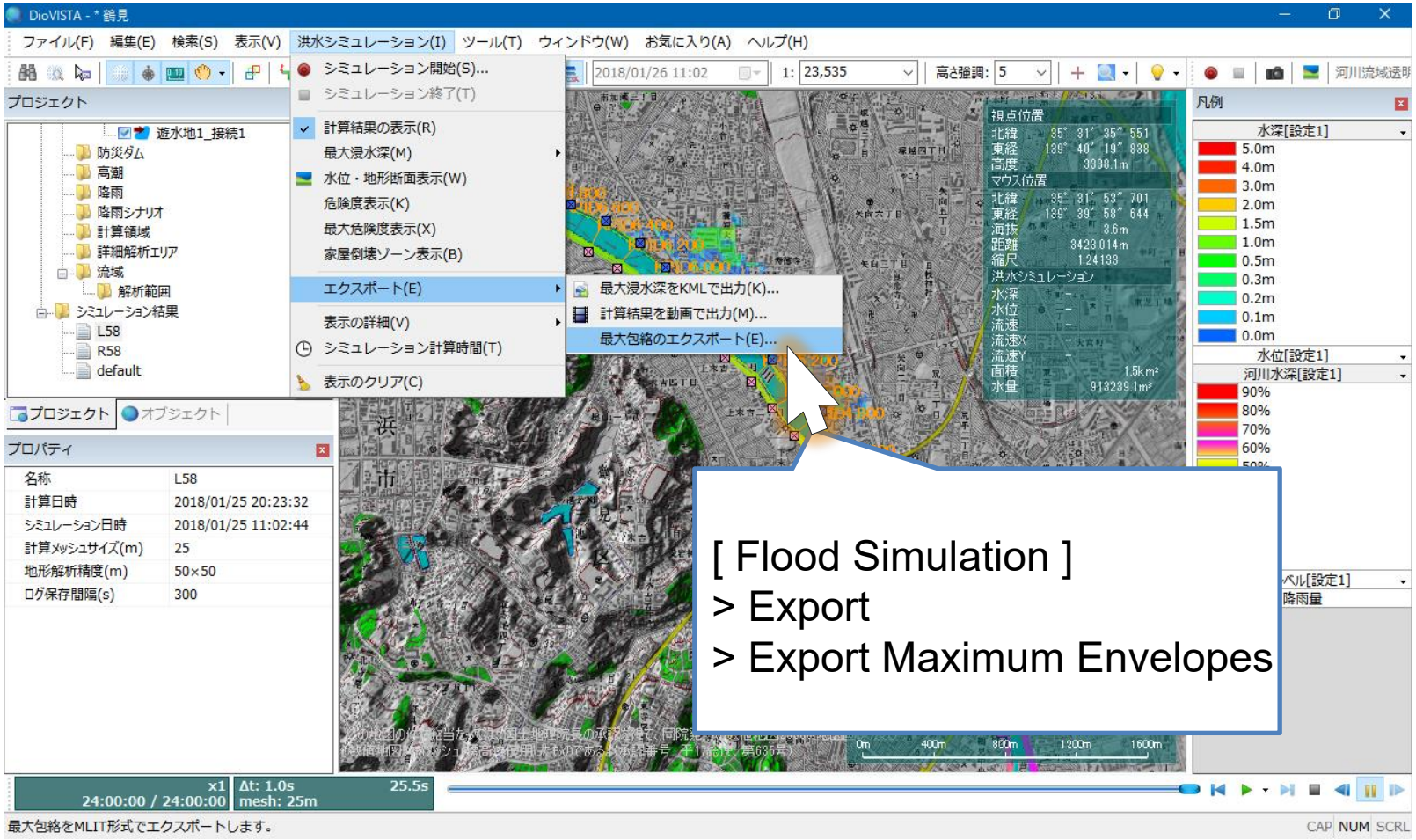
Inspire the Next



[Flood Simulation]
> Export
> Export Maximum Envelopes

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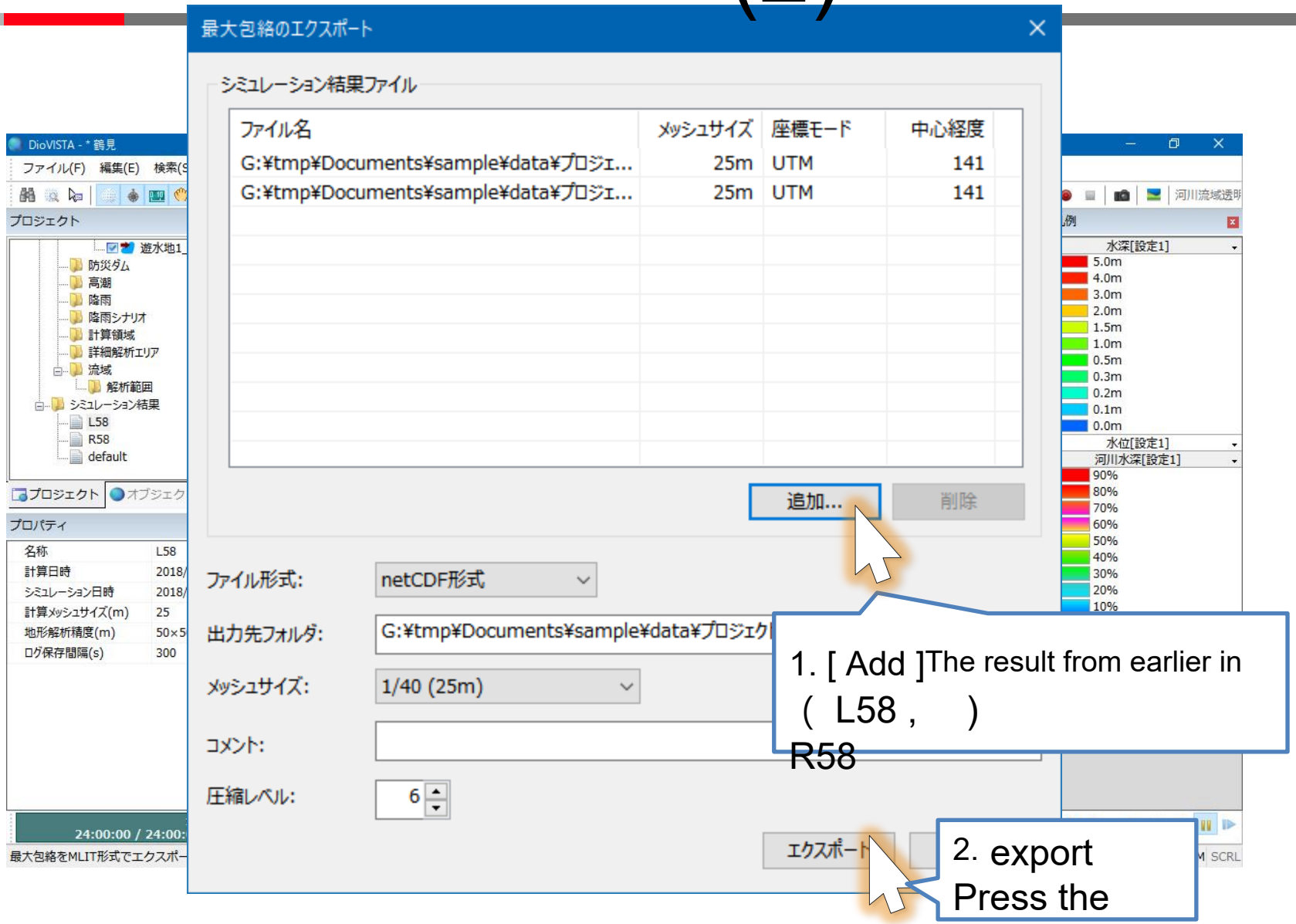
Preparation of deliverables (2)



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Review your deliverables

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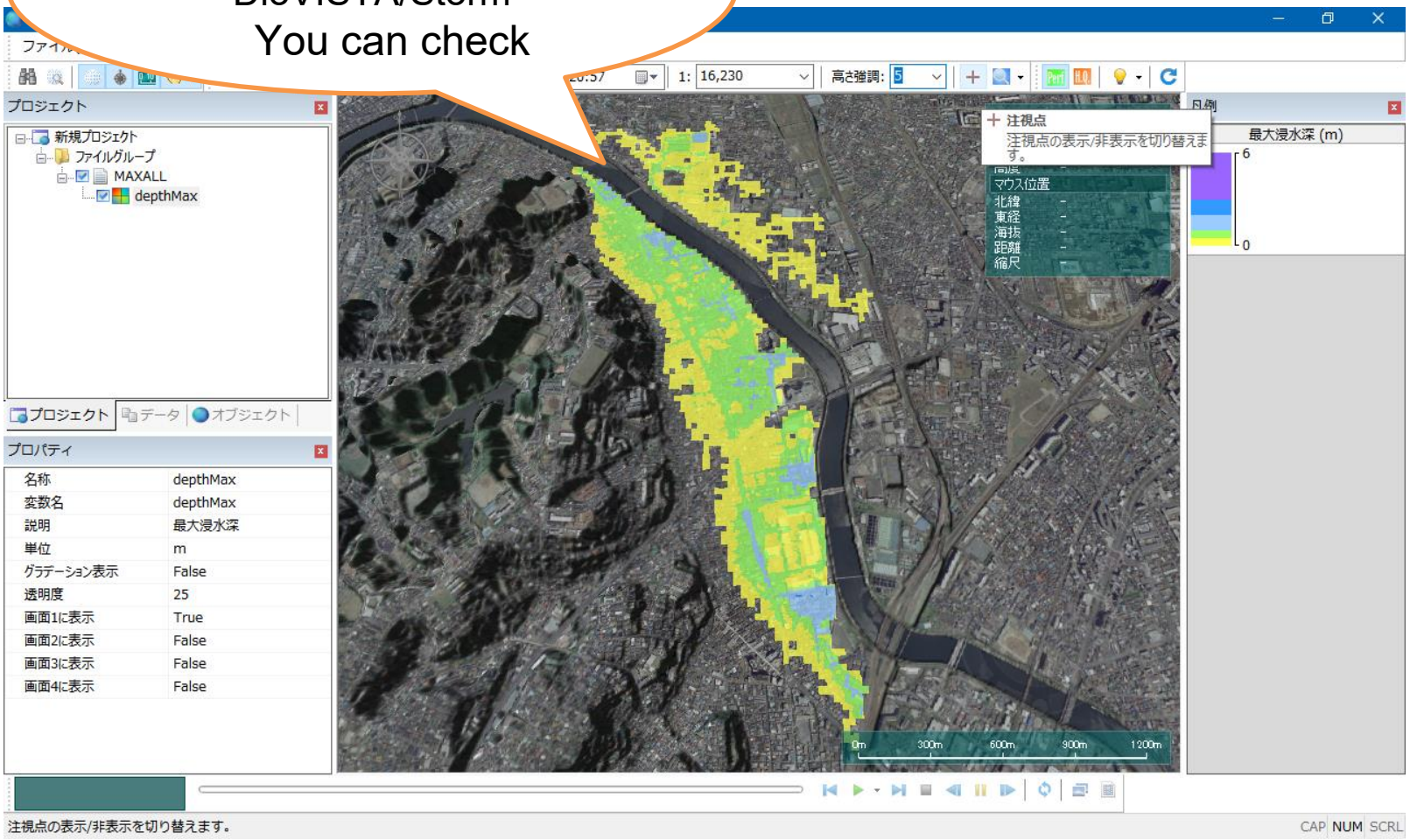
Create NetCDF file in
DioVISTA/Storm
You can check



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