
Introduction of BCP support for flood countermeasures for corporate disaster prevention

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schedule

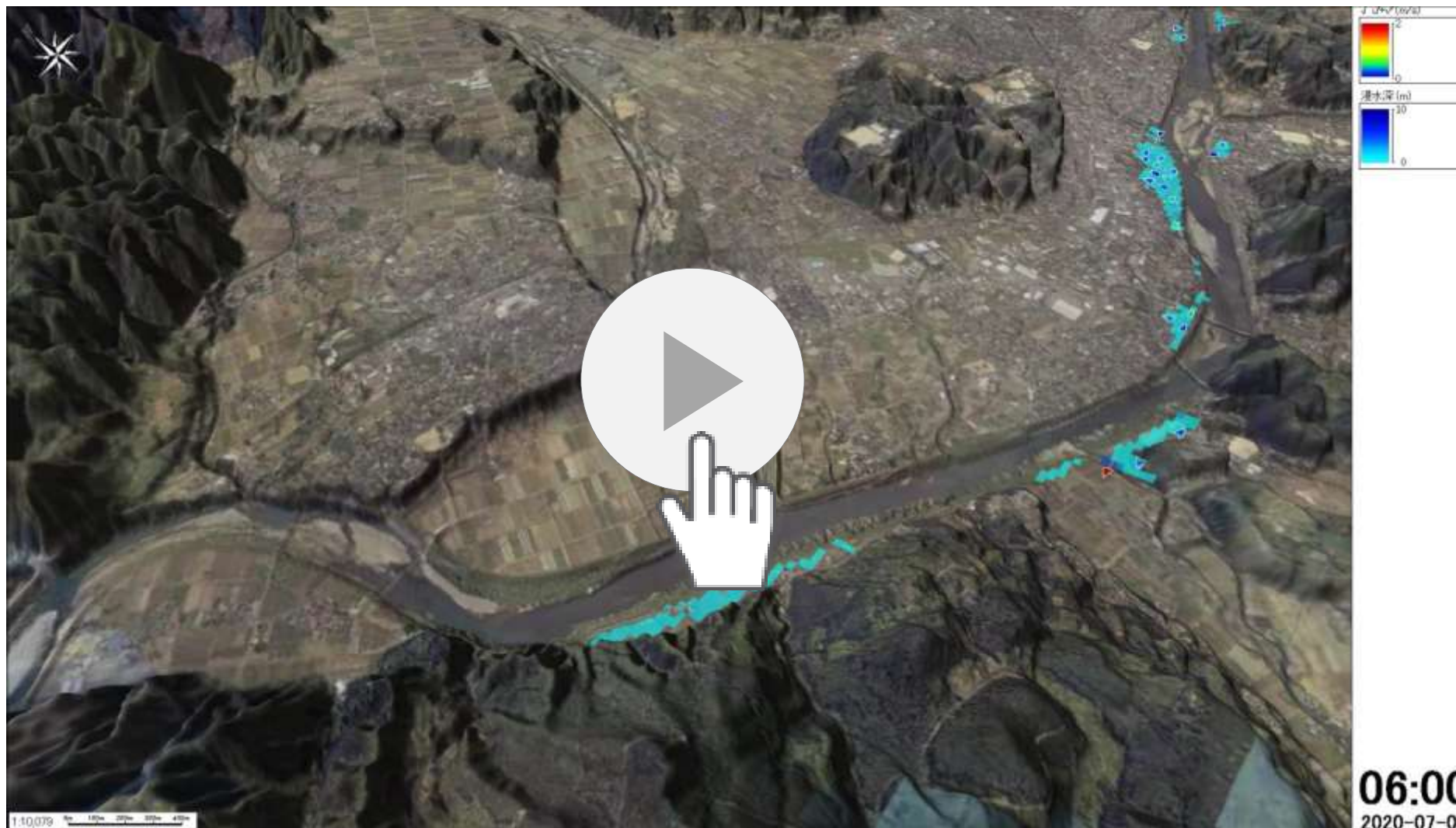
time	course	substance
10:00 -	1	Utilization of DioVISTA in the field of construction consulting
11:00 -	2	Utilization of Dam Dashboard in the Dam Sector
13:00 -	3	Utilization of DioVISTA in the field of non-life insurance
14:00 -	4	Utilization of DioVISTA in the field of disaster prevention administration
15:00 -	5	<p>Introduction of BCP support for flood countermeasures for corporate disaster prevention</p> <p>In order to become a company that can withstand flood damage, we will introduce a BCP support service for flood countermeasures that supports the formulation of BCPs based on detailed simulations and the bridge with the government.</p>
16:00 -	6	DioVISTA Flood – technology & use case

1. What is flood simulation?
2. Introduction of flood risk analysis serviceChanges

- Major changes in society
 - Climate change, intensification of flood damage
 - Changes in the awareness of governments, companies, and citizens regarding disaster prevention and mitigation
 - are required to respond to flood risks by business partners who want to respond to their own flood risks to continue their business

What is Flood Simulation?

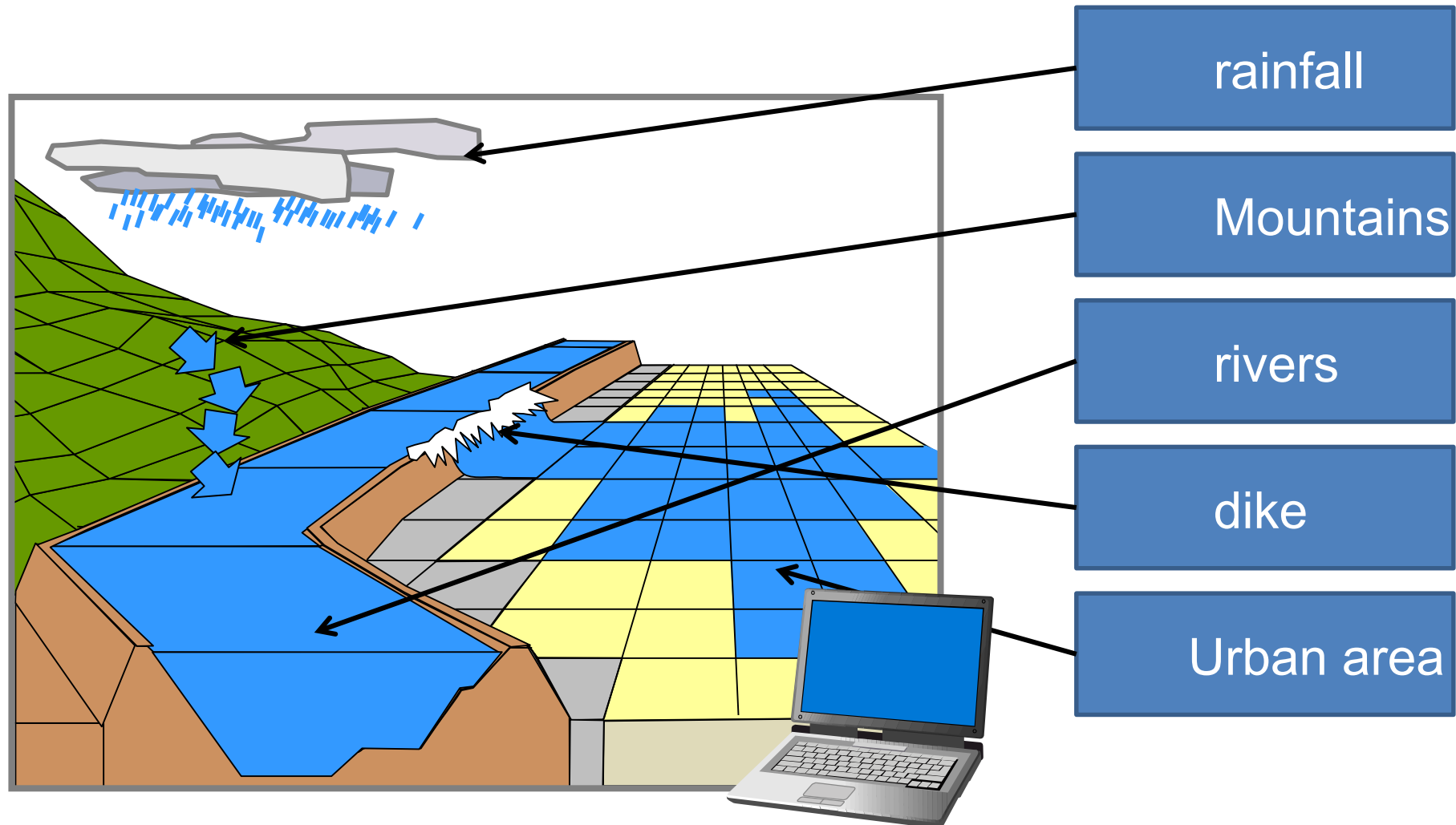
Image of flood simulation



Calculation results by DioVISTA/Flood (video)⁴

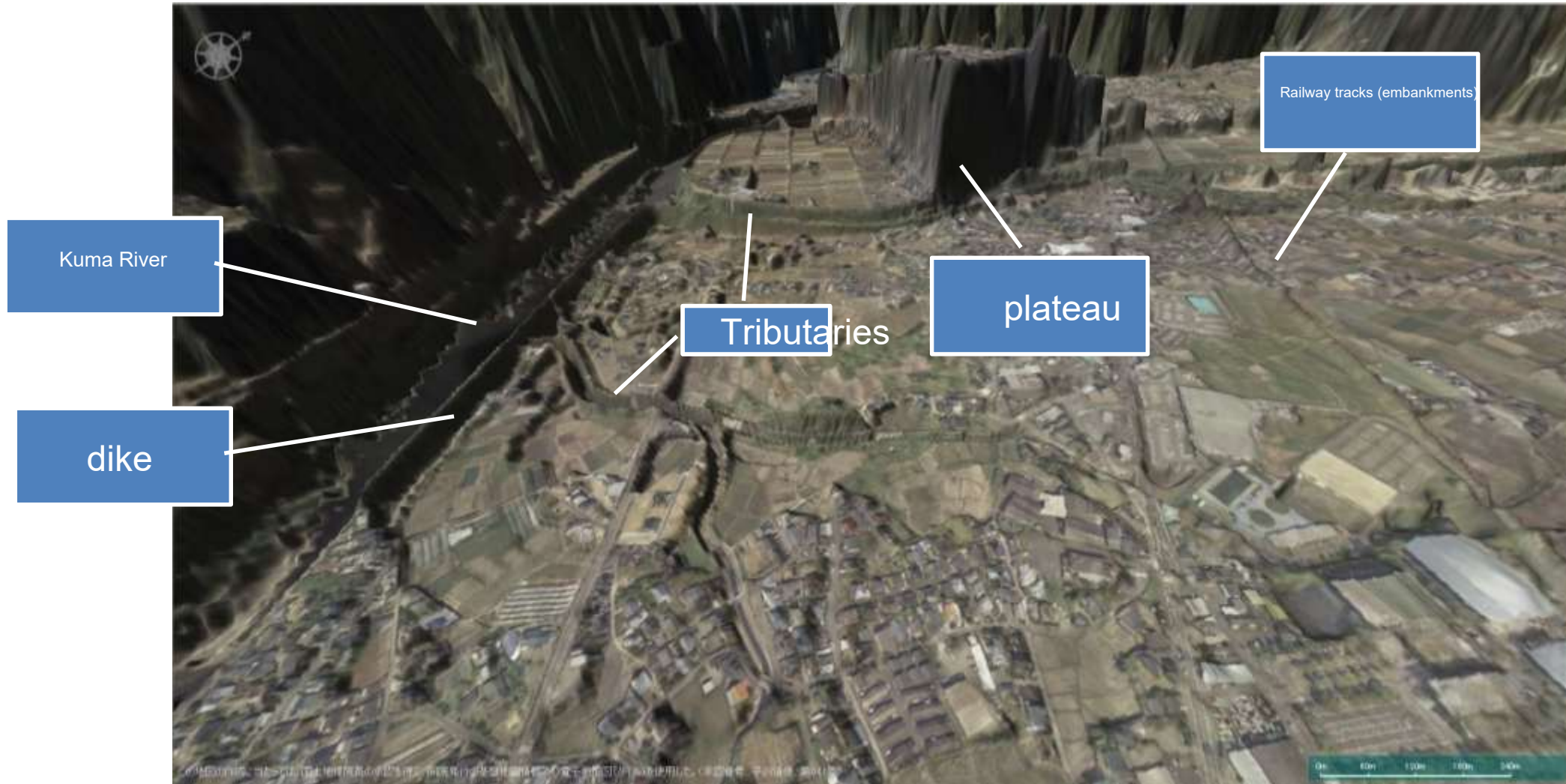
How the simulation works

Computer reproduction of water flow in mountains, rivers, and urban areas



Utilize high-precision terrain data

The accuracy of terrain data determines the accuracy of the simulation



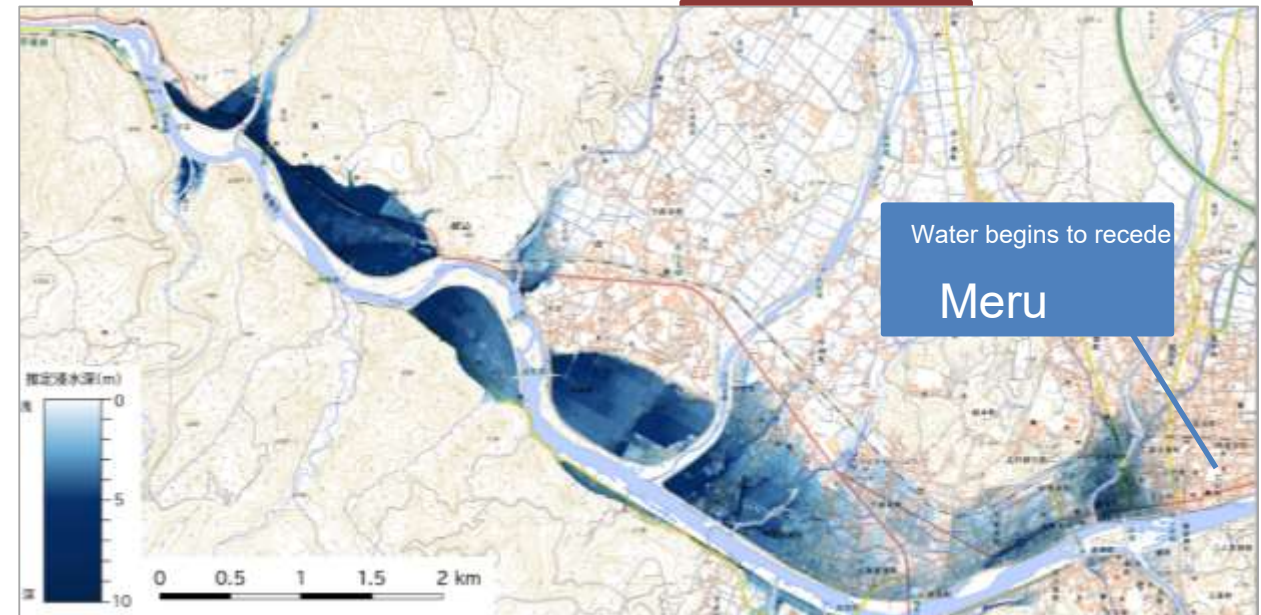
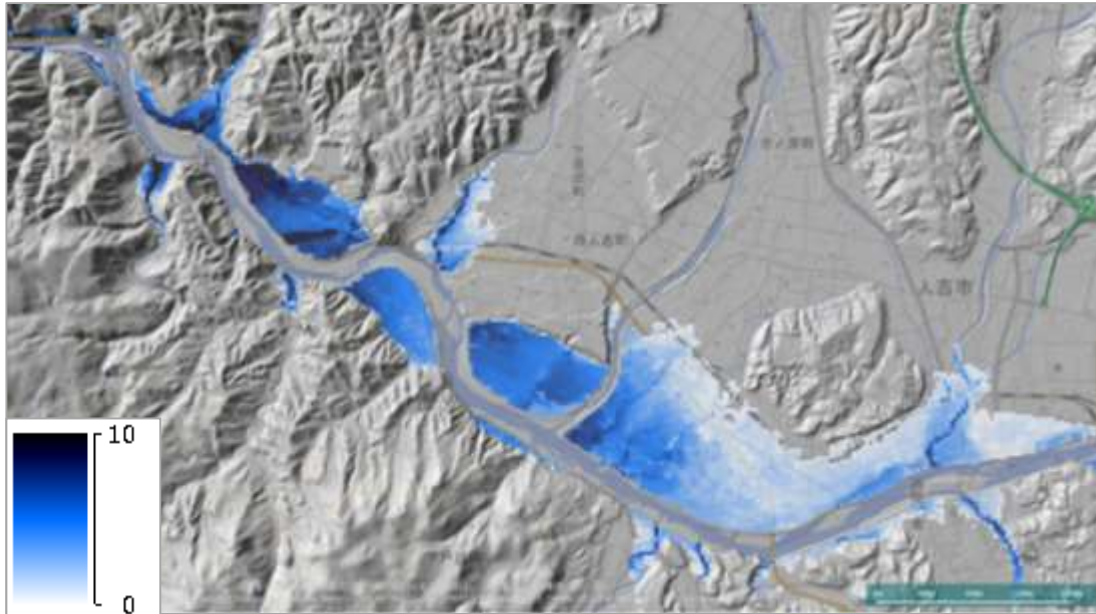
Fine terrain such as embankments can be seen⁶

Simulation accuracy

When set up properly, simulations are highly accurate

A) Simulation results (maximum flood range)

B) Flood estimation map of the Geospatial Information Authority of Japan (prepared from information until 3 p.m. on July 4)

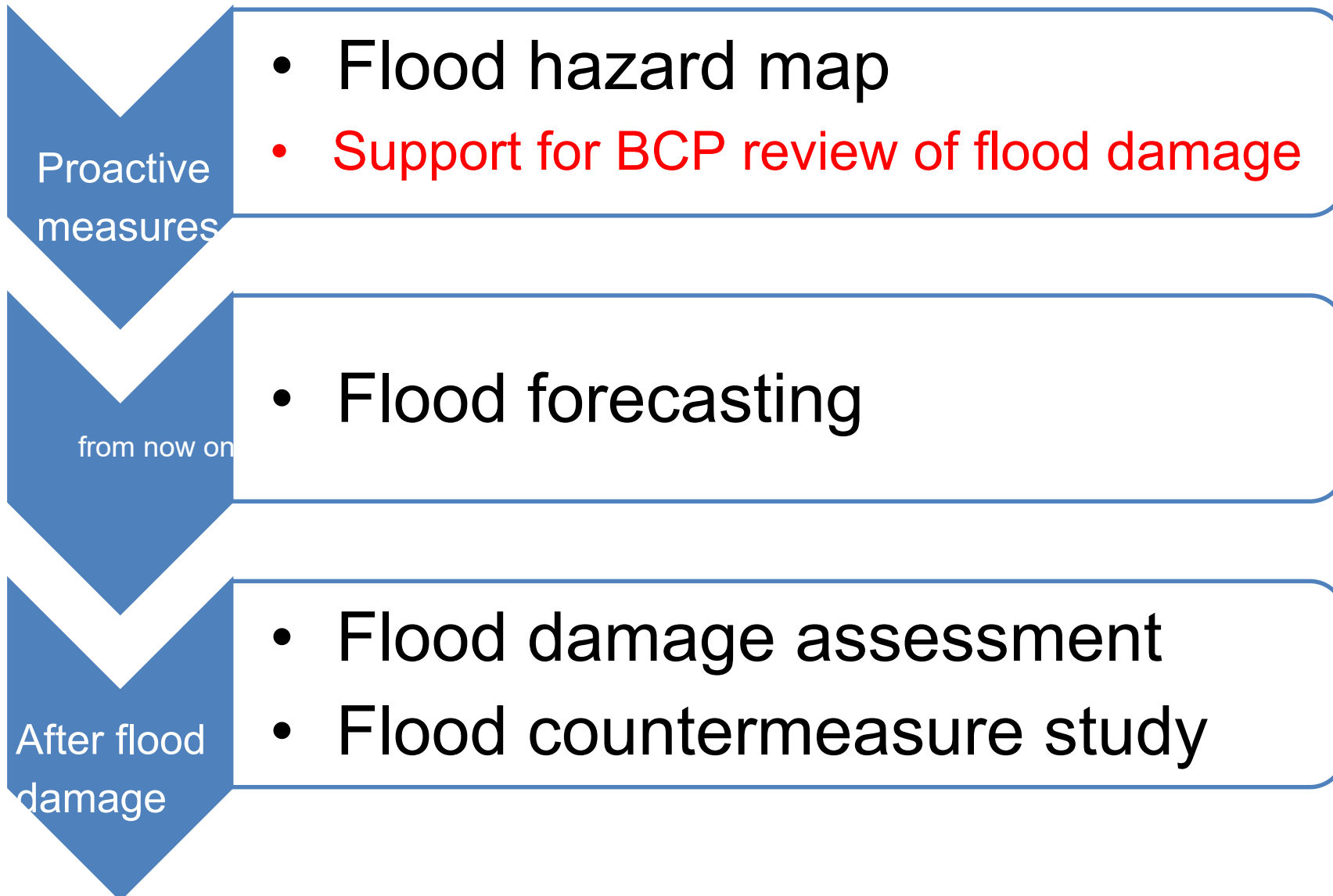


The flood range
matches well

(a) Simulation results using flood simulation software DioVISTA/Flood

(b) , 2735, 20207420
Revised year 2020 Estimated inundation due to heavy rain from the day Kuma River Basin Kuma River year moon sun When created

When to use simulation



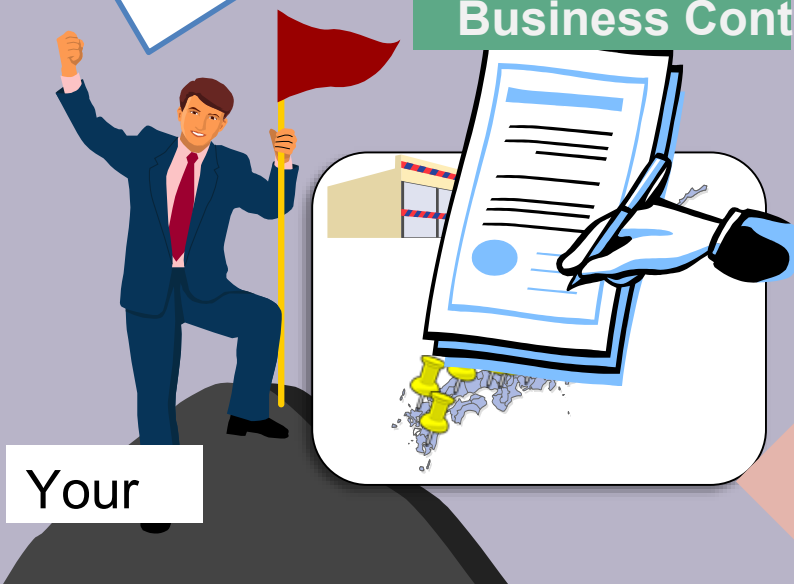
1. What is flood simulation?

2. Introduction of flood risk analysis service

Service Overview

- Dangerous locations/stores have been identified
- Appropriate risk mitigation measures clarified
- We were able to dispel customers' concerns about the risk of flood damage.

Business Continuity Plan

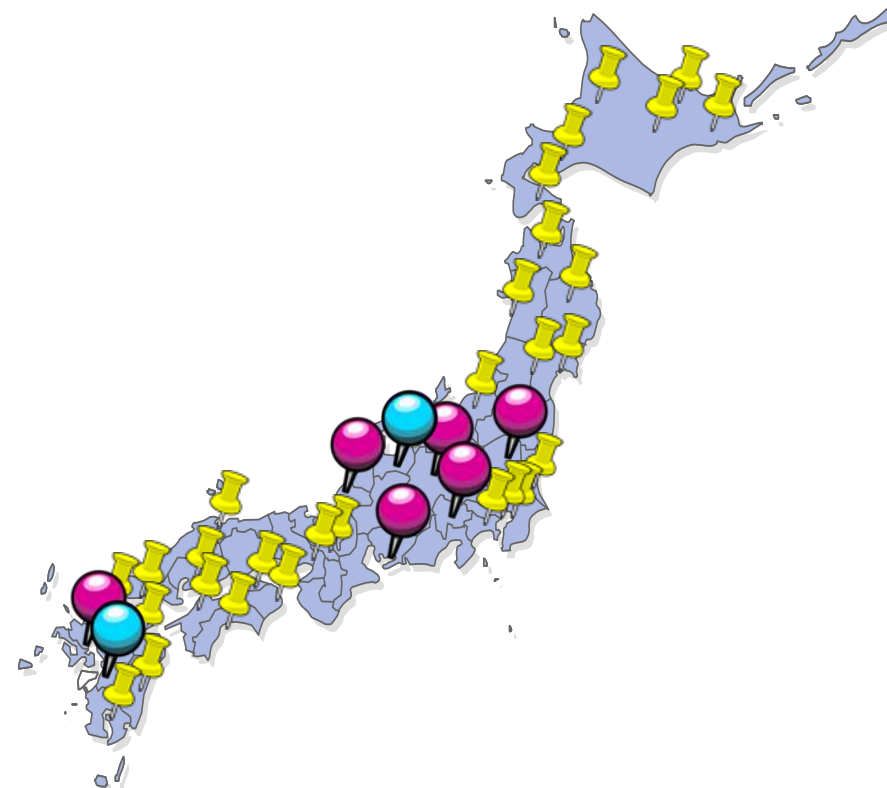
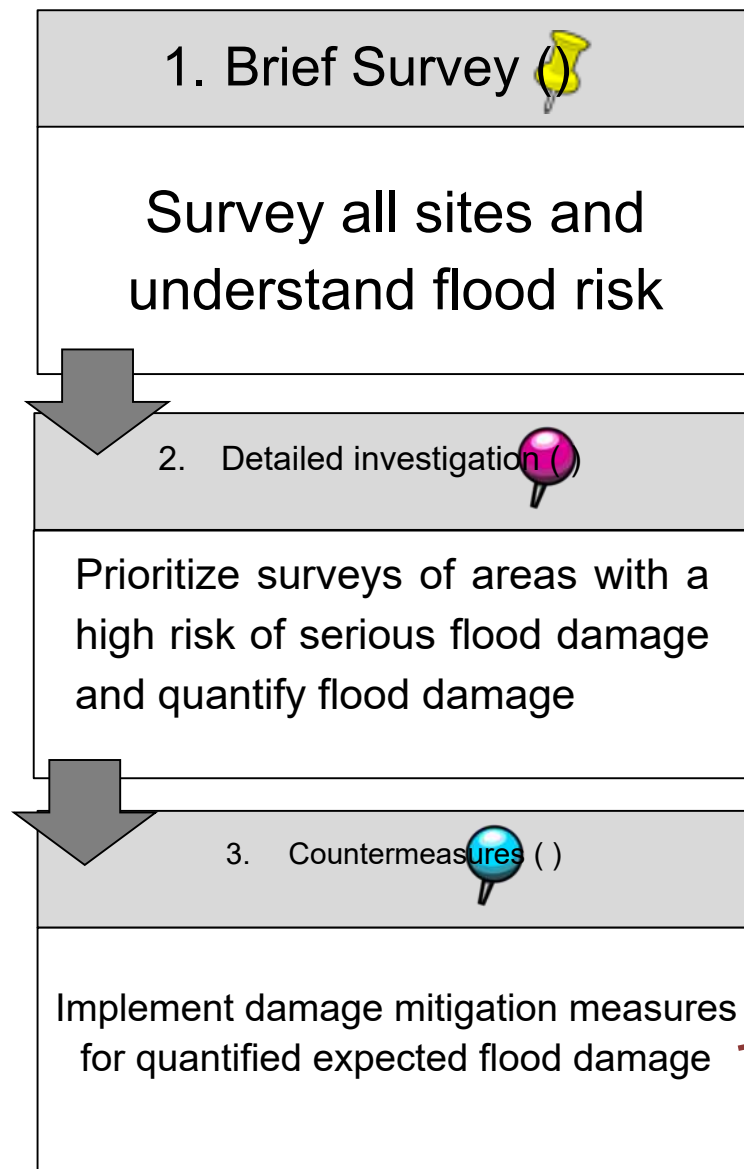


Non-life insurance companies that were able to provide appropriate risk countermeasures based on flood risk analysis

cooperation

Hitachi Power was able to provide results that satisfied customers

How to Efficiently Proceed with Flood Risk Countermeasures



Concept of priority of countermeasures

- Damage to the company becomes a social problem
- Hazardous effluent spills, explosions of hazardous materials, etc.

Image of simple survey results HITACHI Inspire the Next

Purpose: Grasp the risk of flood damage at all sites

List of ratings of < facilities >

base	address	evaluation
Factory A	Nagano City	Height (2m)
Factory B	Niigata City Kofu City	Low
Factory C	Yokohama City Maebashi	
Factory D	City Mito City Chiba City	
Factory E	Utsunomiya City Saitama	
Factory F	City Nagoya City Fukui	
Factory G	City Toyama City Tsu City	
Factory I	Gifu City	Height (2m)
Factory J		Height (0.5m) High (0.5m)
Factory K		High (0.5m) High (0.5m)
Factory L		High (0.5m) Height (0.5m)
Factory M		
Factory N		

< Detailed Investigation Priority Ranking >

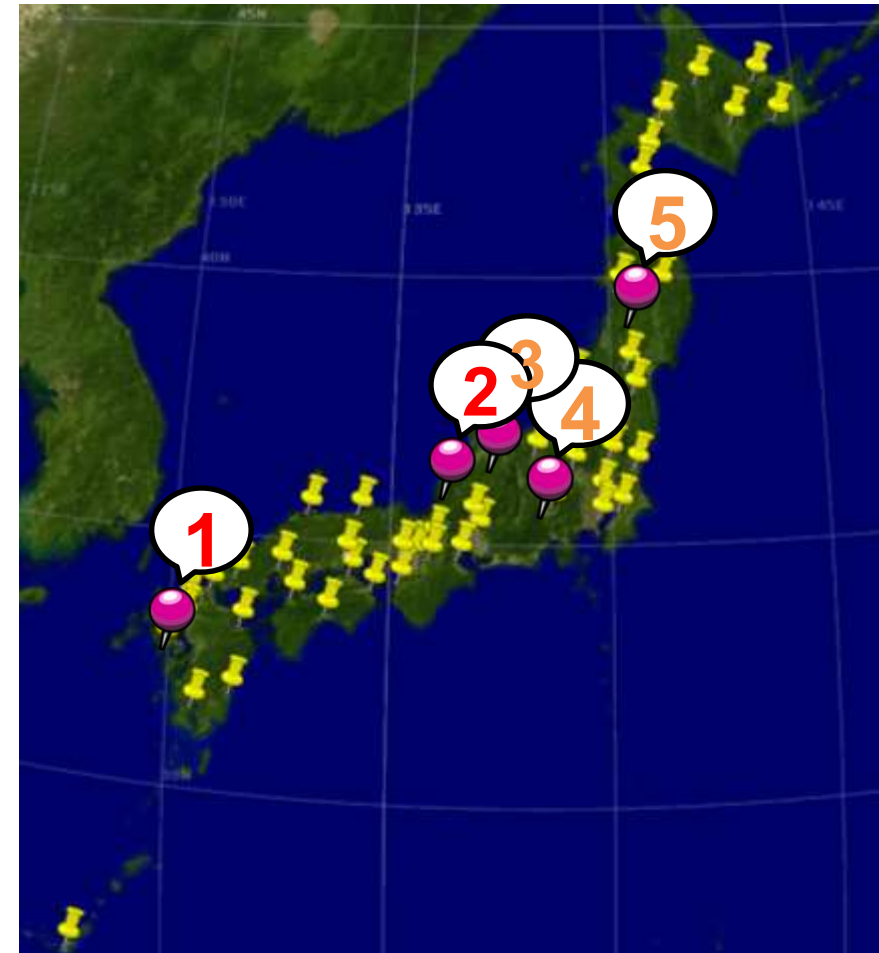
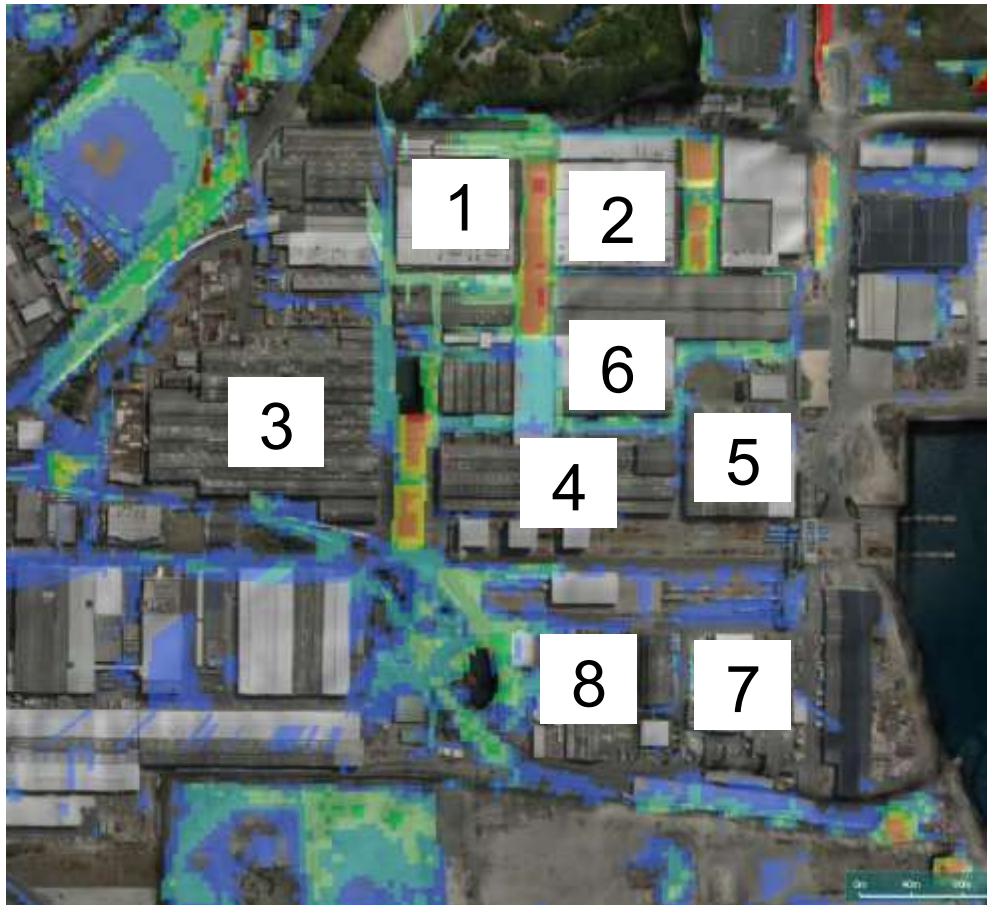


Image of detailed survey results

Purpose: To study flood countermeasures

<Evaluation of facilities >

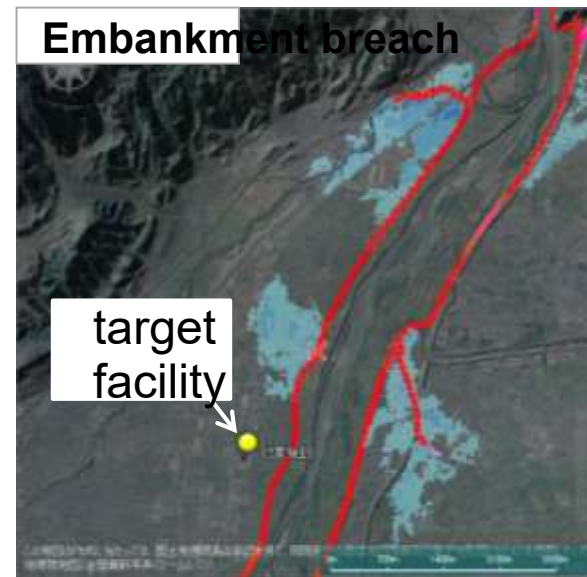
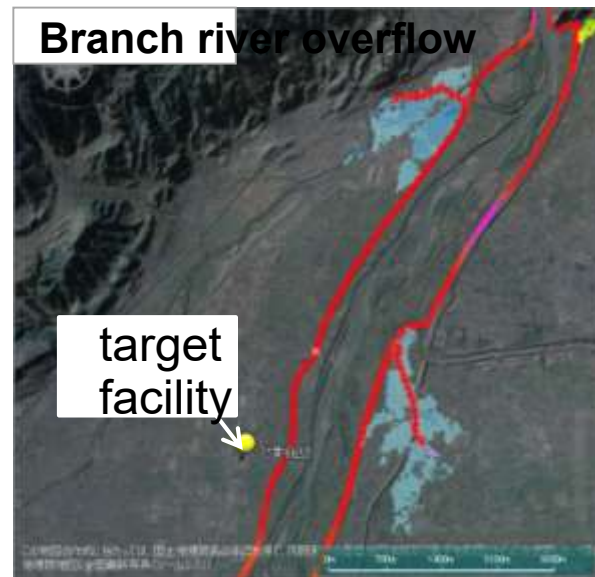
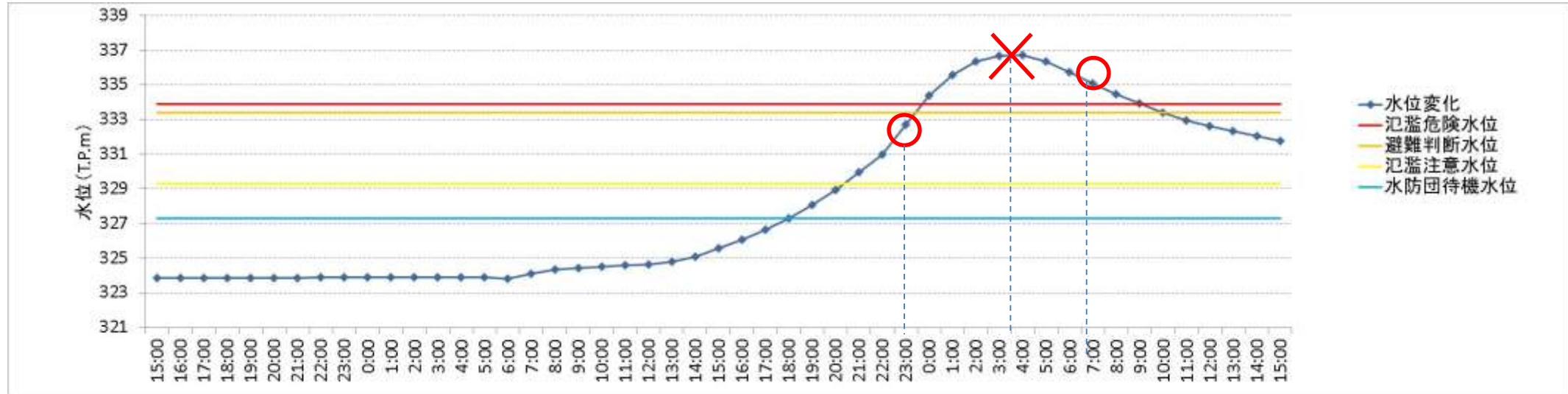


<flood risk for each building>

No	Building name	Immersion depth	[m] GL[m]
1	A A	0.5~0.9	0
2	B B	0.5~0.9	1.1
3	C C	0.2~0.6	-
4	Wastewater treatment building	0.1~0.4	0.7
5	Substation building	0.1~0.4	0.2
6	Special Experiment Building	0.4~0.7	0.4
7	Parking	0.1~0.3 0.2~0.6	-
8	Warehouses		0

Image of detailed survey results

< time series evaluation >



Features of the detailed survey service

forte	substance	Purpose
science	Scientific flood simulation	Quantify the expected flood risk based on field surveys
dialogue	Dialogue with administrative agencies (national governments, prefectures, cities)	Convey that the business site is highly interested in flood countermeasures and understand the requests of the business site
tradition	Survey of local lore and old maps	For all parties involved to deeply understand the risk of flood damage (it is easy to think that a major disaster will not occur)

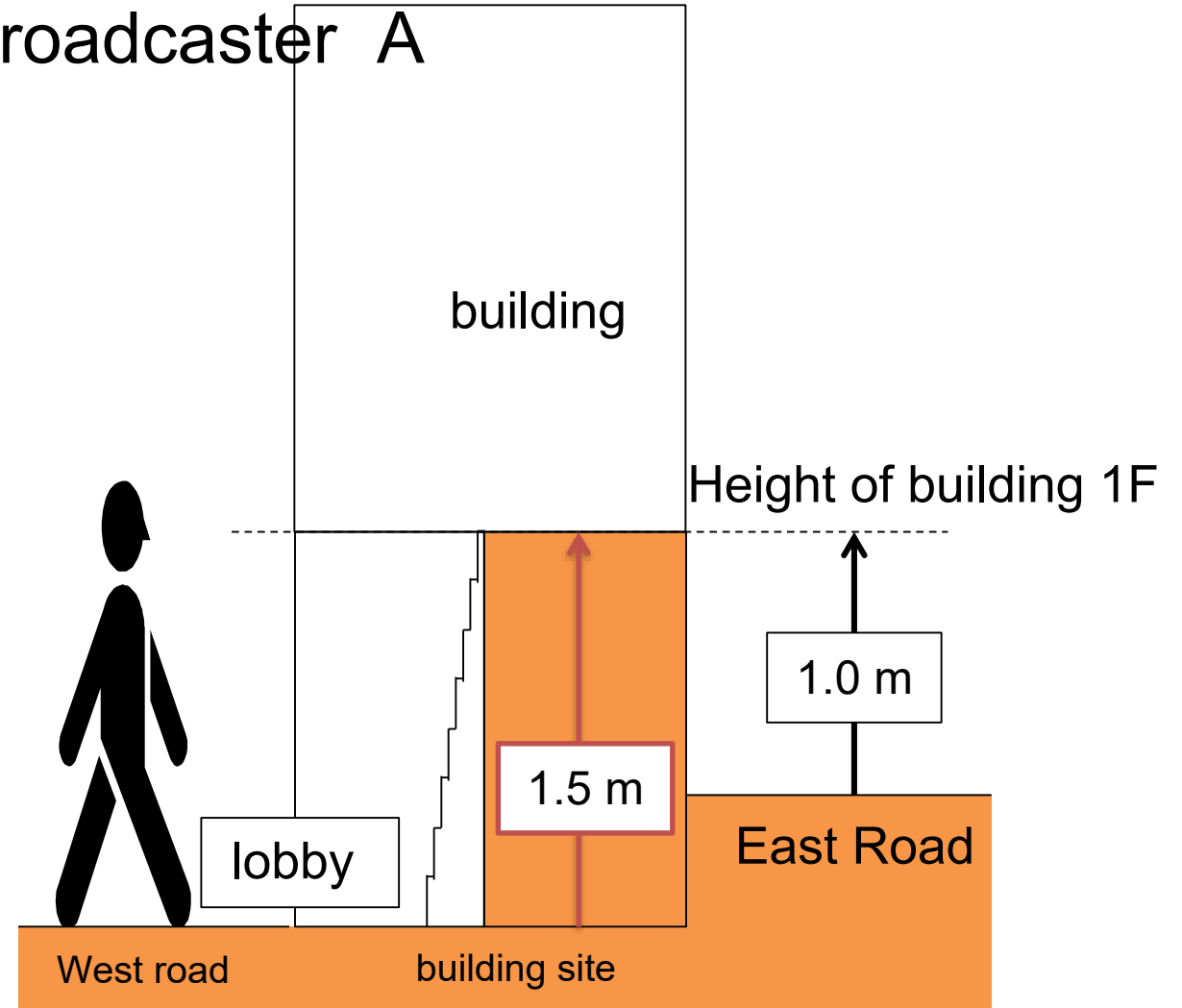
<Example dialogue> Identify levees that will be damaged by business sites if they fail, communicate that business sites pay special attention to those levees, share their importance, etc.

< traditional example> there are cases where land that was once a riverbed, river nakasu, or retained water area was improved and turned into a factory.

Examples of corporate flood countermeasures

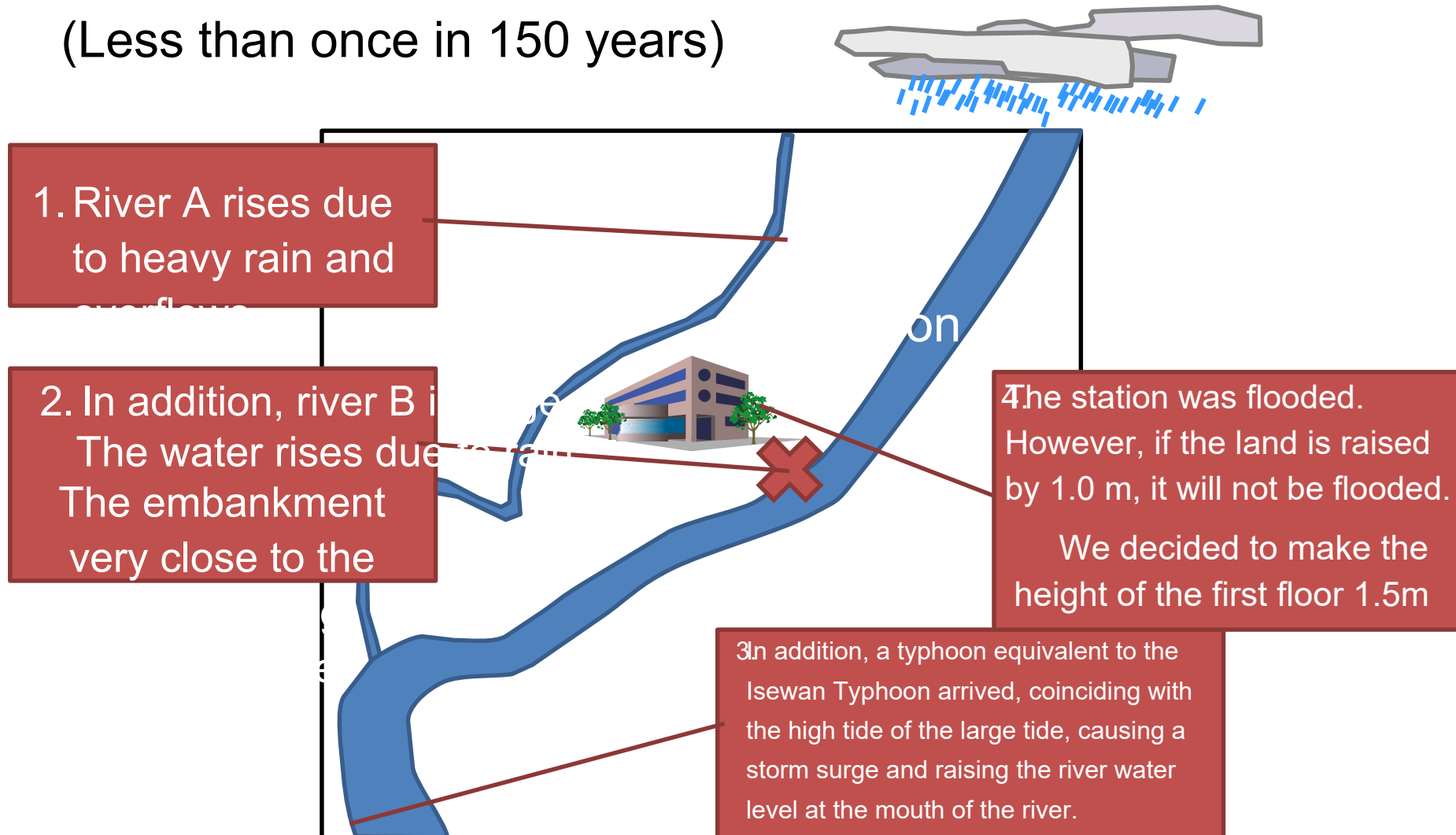
- Example of a new building at Broadcaster A
- According to the city's flood hazard map, the site of the new building is expected to be flooded by 1.0 to 2.0 meters.
- The first floor of the new building was designed 1.5 m higher than the road to allow broadcasting operations to continue in the event of flooding.

How did we decide?



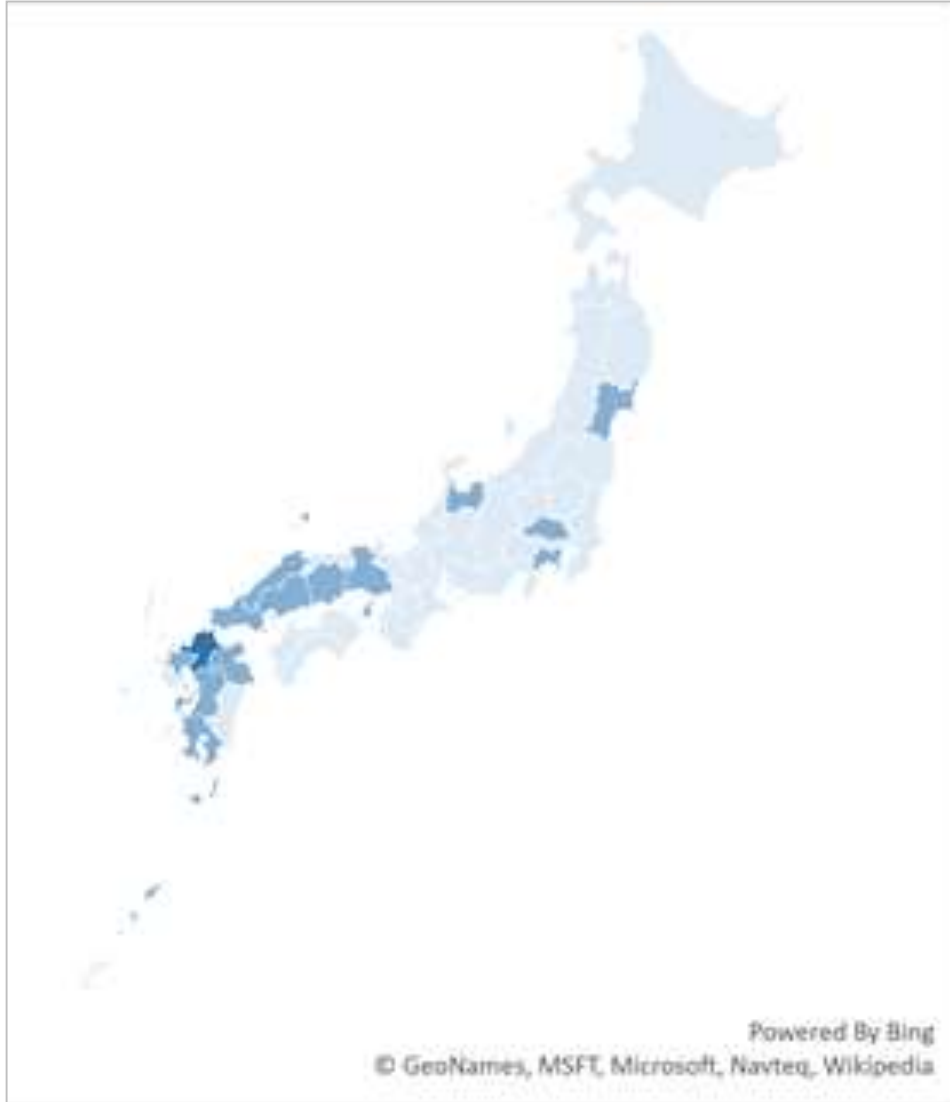
Scenario

We did our own simulation.
(Less than once in 150 years)



Service Achievements

Many of the locations are in the Kyushu and Chugoku regions.

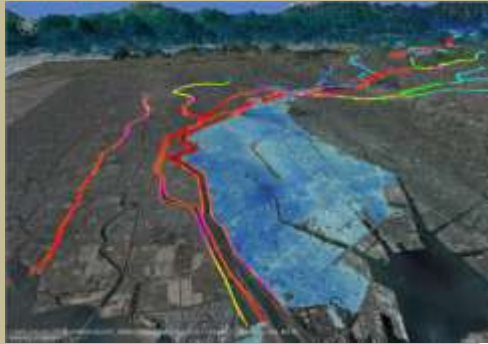


year	customer	place
2013	SS	Kagoshima
2013	NN	Kumamoto
2013	SS	Kanagawa
2015	SS	Miyagi
2015	NN	Saga
2016	NN	Toyama
2016	KK	Hyogo
2018	SS	Oita
2018	NN	Shimane
2018	NN	Okayama
2018	NN	Fukuoka
2019	TT	Yamaguchi
2019	NN	Saitama
2019	NN	Hiroshima
2019	NN	Fukuoka

【 Future 】 Flood Risk Information Provision Platform

Hitachi
Inspire the Next

River flood risk



Inland flood risk



User



Assessing flood damage risks in advance

- Detailed inundation depth and temporal changes can be grasped by flood damage simulation.
- Support consideration of flood countermeasures by analyzing and providing flood damage risks
- Implemented with three approaches : "Science", "Dialogue", and "Tradition"
- Examples of flood countermeasures by broadcasters
- In the future, we will build a foundation for providing flood risk information and aim to further support flood risk countermeasures.