

Disaster Risk Reduction (DRR)

Risk Management Team

ICHARM



United Nations
Educational, Scientific and
Cultural Organization



International Centre for Water
Hazard and Risk Management
under the auspices of UNESCO

ユネスコ後援 水災害・リスク
マネジメント国際センター



Public Works Research Institute,
National Research and Development
Agency, Japan

国立研究開発法人
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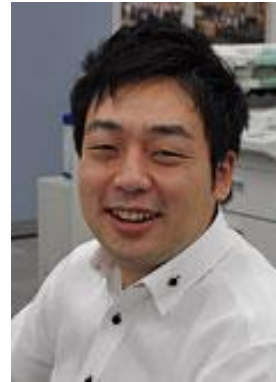
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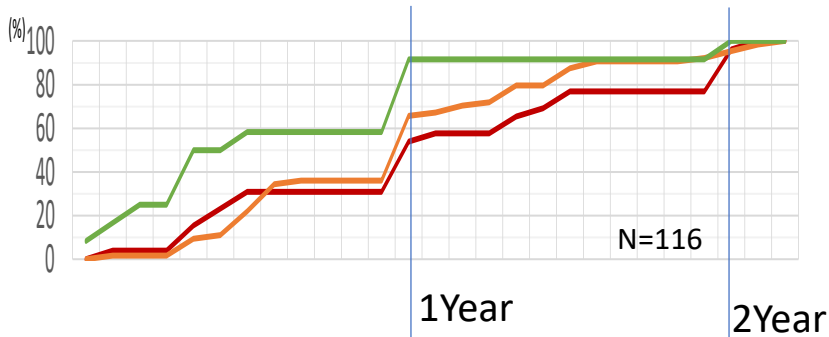
Research
Specialist

Disaster Impact Analysis and Risk Assessment

1. Disaster Impact Analysis (災害影響分析)

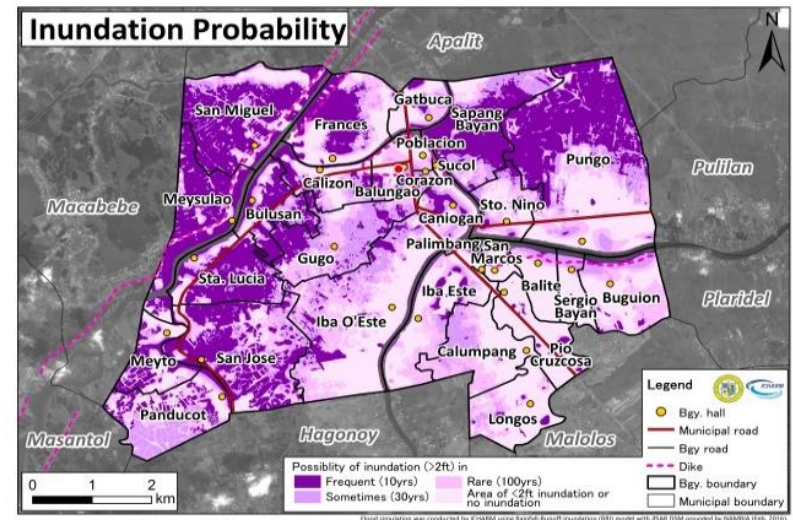
- Analysis using statistical data
- Interview/Questionnaire Survey

<Percentage of livelihood restoration in Joso City after Kinu River Flood>



2. Disaster Risk Assessment (災害リスク評価)

- Risk Assessment based on flood simulation



Sharing results
with local
municipality
officers

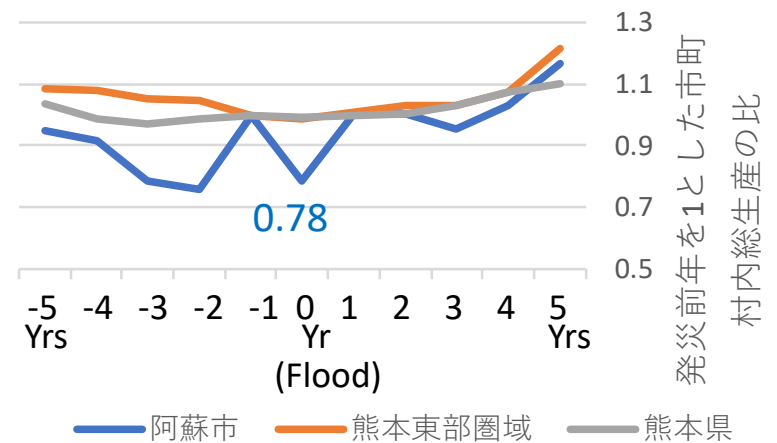
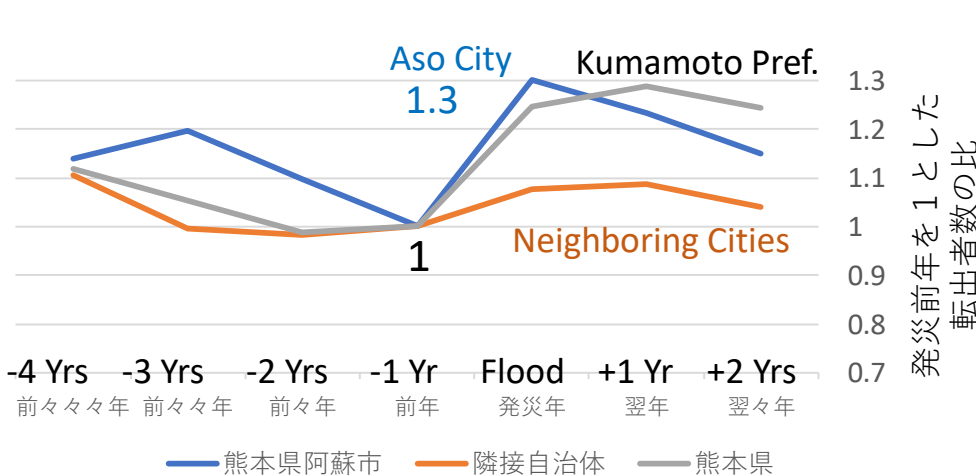


1. Disaster Impact Analysis (statistical approach)

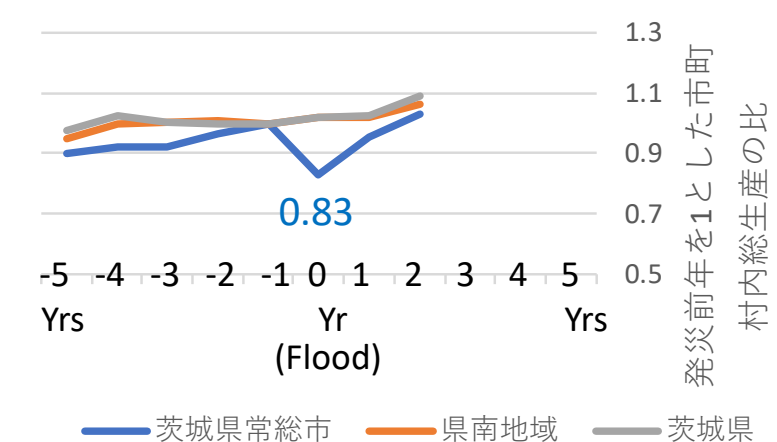
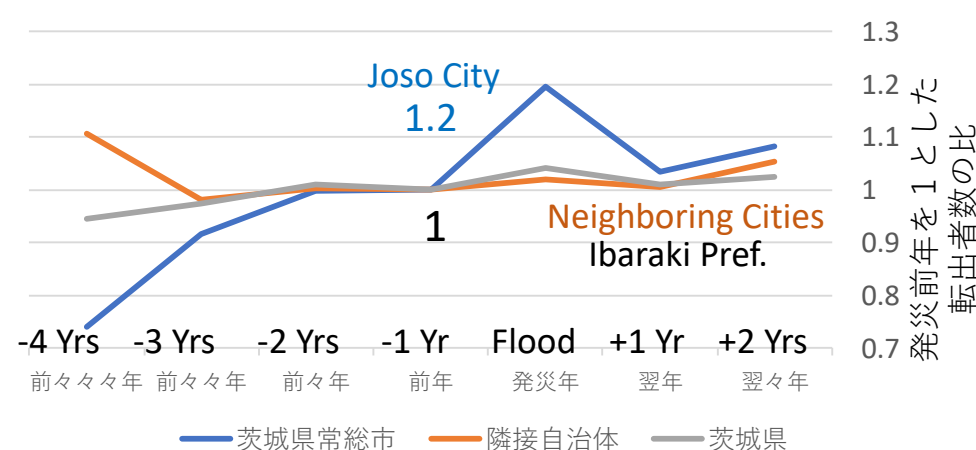
2. Population migration from affected municipalities (被災市町村からの転出者)

2. Gross Regional Product of affected municipalities (被災市町村の地域総生産)

Aso City by Northern Kyusyu Rain (2012) / 平成24年九州北部豪雨での阿蘇市



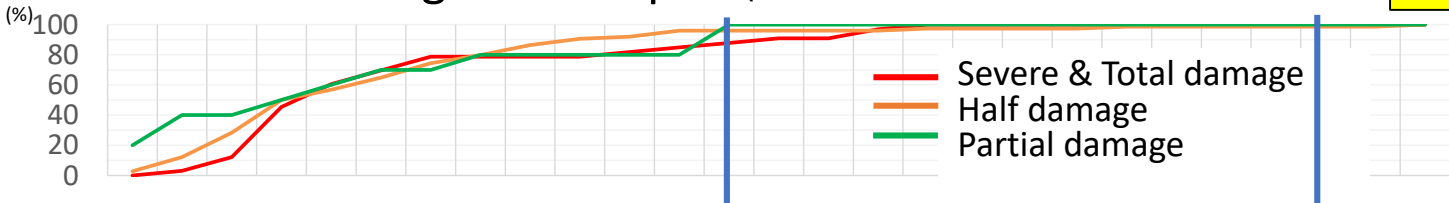
Joso City by Torrential rain in Kanto & Tohoku (2015) / 平成27年関東東北豪雨での常総市



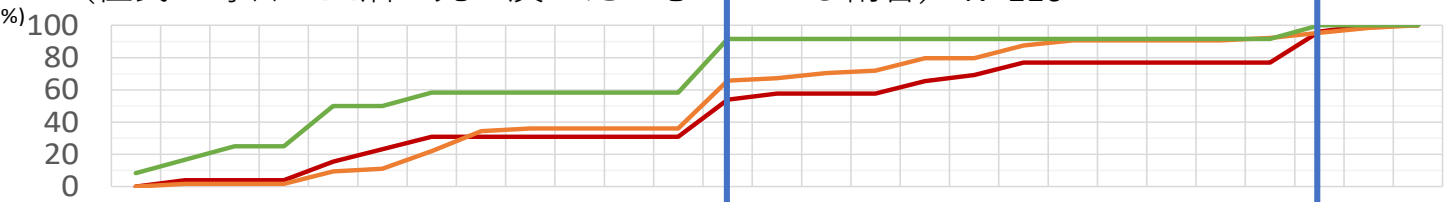
1. Disaster Impact Analysis (Interview survey in Joso City, Japan)

90% & 50% Resilience

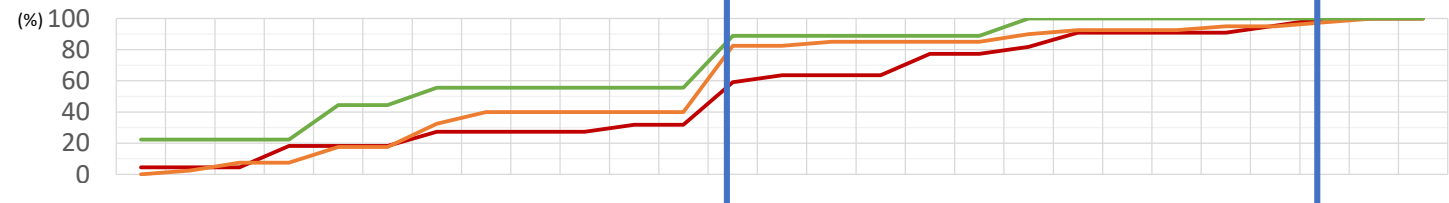
■ Ratio of finishing house repair (住家の補修を完了した割合) N=130



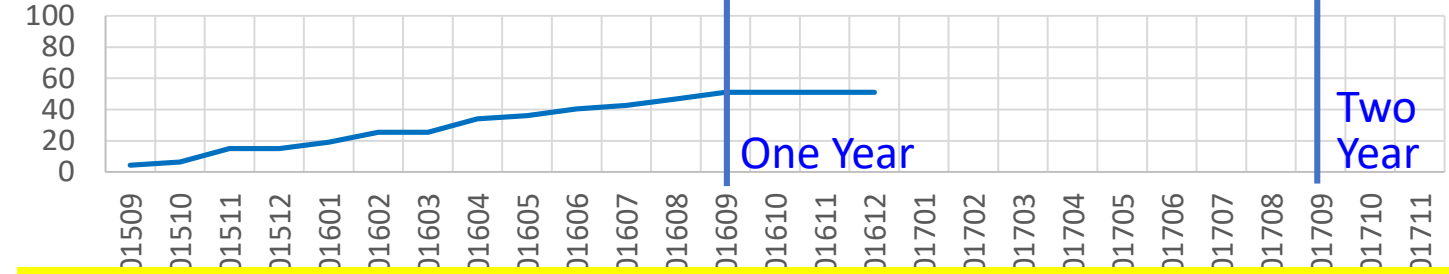
■ Ratio of residents' feeling that life returned to its original status (住民が毎日の生活が元に戻ったと思っている割合) N=116



■ Ratio of residents' feeling that community returned to its original status (住民が地域活動が元に戻ったと思っている割合) N=82



■ Ratio of enterprises which achieved 100% recovery of revenue (売上が100%に戻った事業所の割合) N=47



	90%	50%
Severe	14M	5M
Half	10M	4M
Partial	13M	4M
Severe	25M	13M
Half	20M	13M
Partial	13M	5M
Severe	20M	13M
Half	19M	13M
Partial	18M	7M
Not achieved as of our survey in autumn, 2016.		

90% Resilience ⇒ Repair: 1 year, Residents' feeling: 1-2 year, Business: more than 1 year

Case study in Calumpit Municipality in Pampanga River Basin in the Philippines

1. Understand Current status

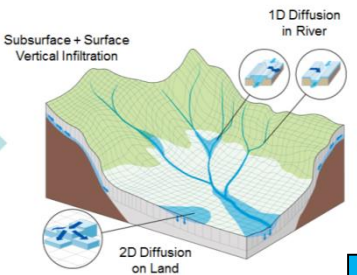


Interview Survey



Field Survey

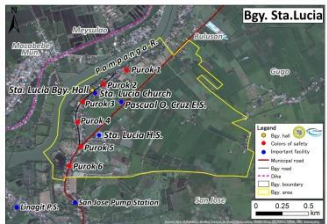
2. Identify Risk (with National and Provincial govt.)



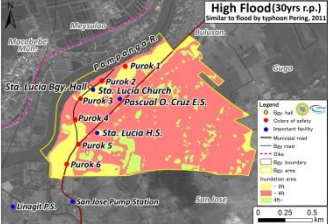
Subsurface + Surface Vertical Infiltration

1D Diffusion in River

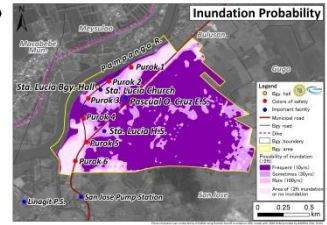
2D Diffusion on Land




Resource Map



Inundation Map (30 Years)



Inundation Probability Map



Inundation Water Chart


Cases of Safety	Flood Case	Case 1		Case 2		Case 3		Case 4		Case 5		Case 6	
		1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Point 1	Ordinary Flood (100-year period)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High Flood (30-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Extreme Flood (10-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Point 2	Ordinary Flood (100-year period)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High Flood (30-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Extreme Flood (10-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barangay 1st	Ordinary Flood (100-year period)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High Flood (30-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Extreme Flood (10-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barangay 2nd	Ordinary Flood (100-year period)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High Flood (30-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Extreme Flood (10-yr flood)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3. Analyze Flood Impact




Workshop at Communities (July, 2015)

5 & 6. Develop and Share the Plan



Final Workshop at Municipality (Feb, 2016)



Example of Community Contingency Plan

4. Develop Response Strategy at Communities



Workshop at Communities (Jan, 2016)



Proposal of Strategy



Development of E-learning materials for learning “Evidence-based Contingency Planning” under UNESCO WADiRe-Africa project (Water related disaster reduction platform to enhance resilience to climate change in West Africa)



English

Flood Mapping and Contingency Planning

French

Cartographie des crues et plan de contingence



Miho OHARA

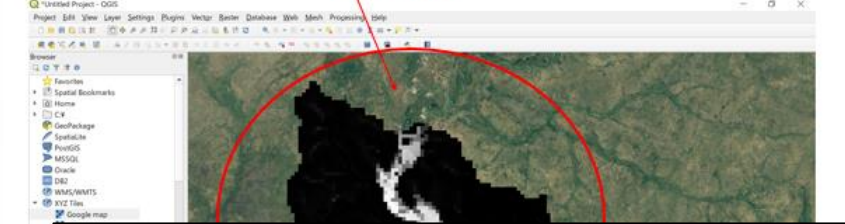
Centre international pour la gestion des risques liés à l'eau (ICHARM)
Institut de recherche sur les travaux publics (PWRI)
Tsukuba, Japon





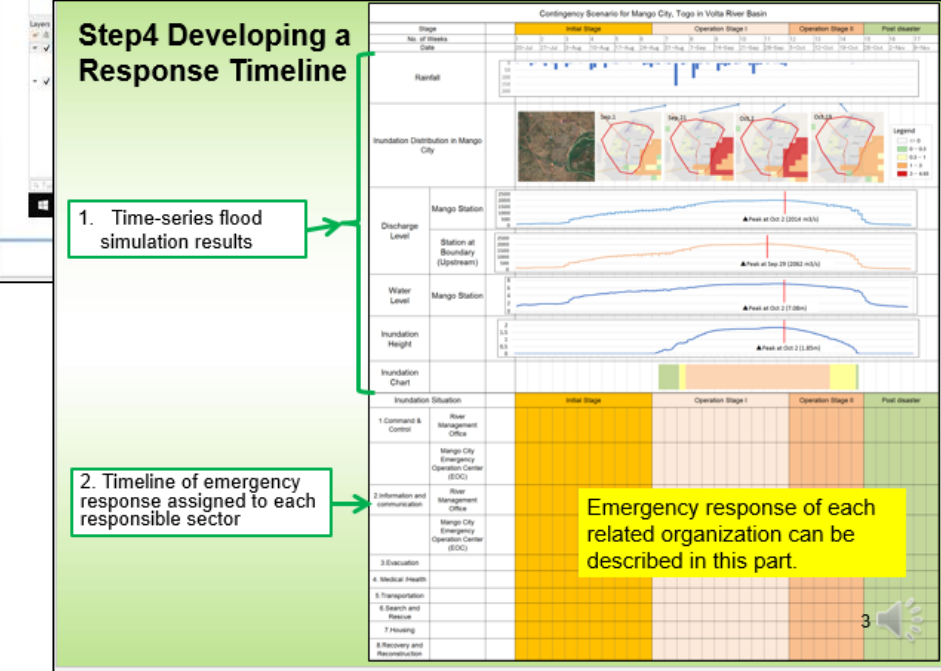
5. Add inundation calculation results as a new layer on the project file

-Now, you can see that a new layer “HSMAX1970” appears on google map.



Step4 Developing a Response Timeline

1. Time-series flood simulation results
2. Timeline of emergency response assigned to each responsible sector



Emergency response of each related organization can be described in this part.

2. Disaster Risk Assessment and Contingency Planning

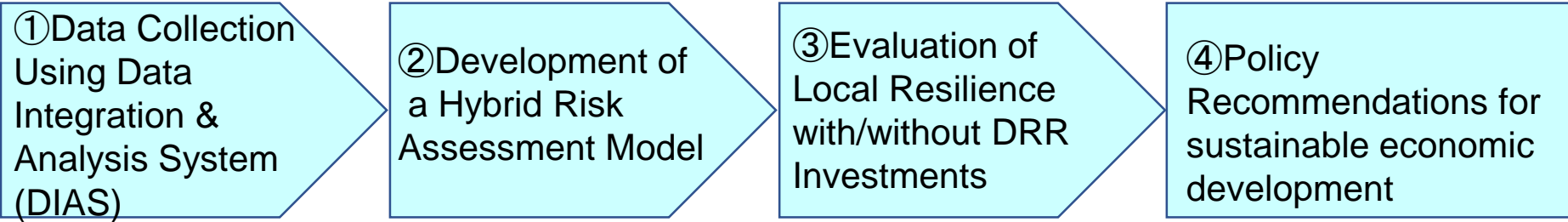
リスク評価と災害
対応計画づくり

The Project for Development of Hybrid Water-Related
Disaster Risk Assessment Technology for
Sustainable Local Economic Development Policy in the
Philippines

気候変動下での持続的な地域経済発展への政策立案の
ためのハイブリッド型水災害リスク評価の活用

SATREPS
Science and Technology Research Partnership
for Sustainable Development Program

JST・JICAによる地球規模
課題対応国際科学技術
協力プログラム



Current Status: Started as JST Project in April, 2020 in Japan
Will start as JICA Project in the Philippines in June 2021

