

MEOPAR Salish Sea Research and Climate Change in Marine BC

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Outline

1 MEOPAR

- Salish Sea Model
- Coastal Hazard Vulnerability Indicators
- Sea-level Rise Case Study

2 Climate Change in Marine BC

- Temperature
- Sea Level
- Glaciers
- Changing River Flows
- Salinity
- Precipitation
- Winds

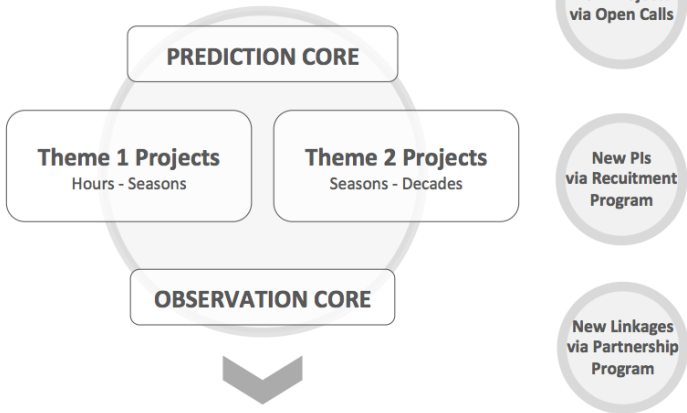
What is MEOPAR?



- Marine Environmental Observation Prediction and Response Network
- An NSERC Network of Centres of Excellence (NCE)
- 5 years renewable multiple times
- Based at Dalhousie, led by Doug Wallace
- Strong Social Science component
- Emphasis on producing useful products for Stakeholders

MEOPAR Structure

RESEARCH PROGRAM: ORGANIZATION



Project 1.2 A Network of Fixed Coastal Observing and Forecast Systems

Two fixed systems: Halifax Harbour and Strait of Georgia. In Strait of Georgia:

- Ocean Model (Allen)
- Community vulnerability (Chang)
- Impact of sea-level rise on Vancouver (Chang)
- Oil Spill Impacts due to Ship Collisions (Pelot)

Strait of Georgia/Salish Sea

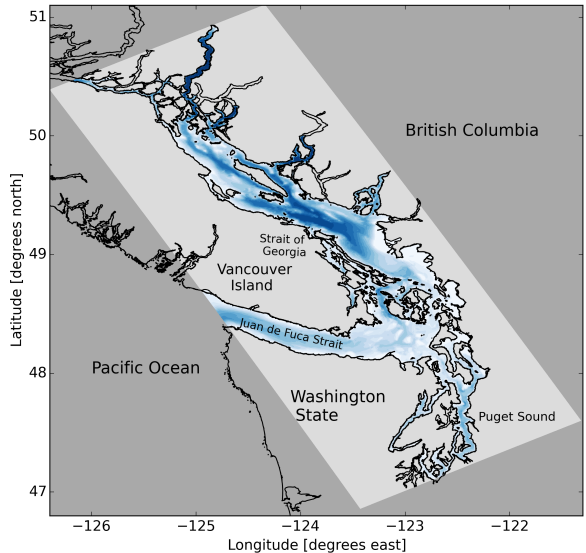


NASA

Configure and Evaluate a Coupled Biological-Chemical-Physical
Model of the Strait of Georgia for Prediction and Nowcasts

Modelling

- 1 Configure the model
- 2 Evaluate the model
(make sure its getting close to the right answer)
- 3 Run daily: hindcast of last 24 hours, forecast of next 24 hours
- 4 Share results publicly



Quantities We Simulate

Configured and Evaluated

- Sea surface height (storm surge)

Configured and some Evaluation

- Temperature, Salinity of Water
- Currents at all depths
- Object trajectories

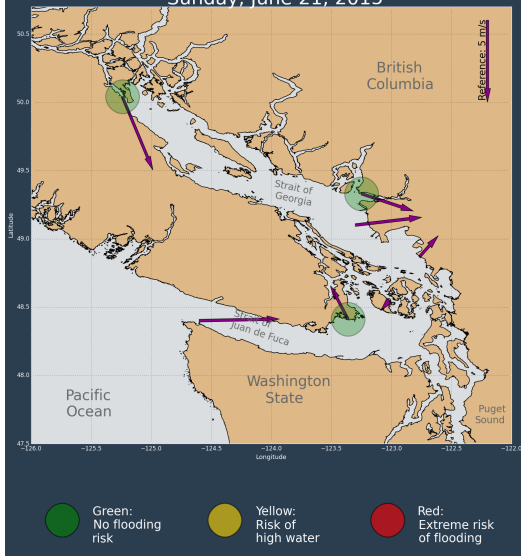
Next

- Nutrients
- Carbon and pH
- Phytoplankton
- Zooplankton

Status

- Run daily: Since Autumn 2014:
 - Preliminary Forecast for Tomorrow by 7 am PST
 - Nowcast for Today by 12 noon PST
 - Forecast for Tomorrow by 2 pm PST
- Share:
 - Storm Surge Portal and Storm Surge Page
 - Preliminary Results for Other Fields

Marine and Atmospheric Conditions Sunday, June 21, 2015



Salish Sea NEMO Model Daily Results

June

Sea Surface Height & Weather

Preliminary Forecast	1	2	3	4	5	6	7	8	9	10	11	12	13	18	19	20	21		
Forecast	1	2	3	4	5	6	7	8	9	10	11	12	17	18	19	20			
Nowcast	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Tracers & Currents

Nowcast	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
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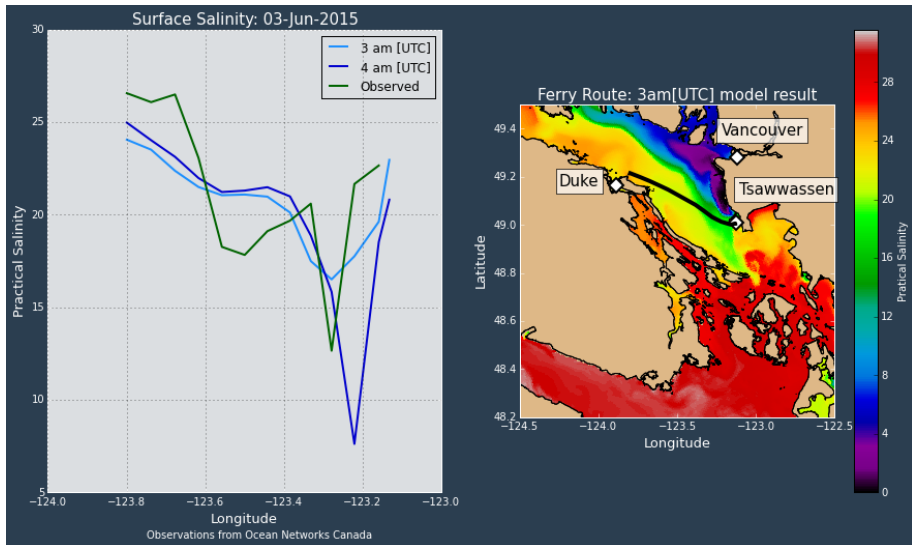
Surface Salinity

Log files from the model run automation system and forcing data monitoring plots can be found on the [nowcast monitoring information](#) page.

[Source](#) [Back to top](#)

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 Last updated on Jun 20, 2015.
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Example Results



salishsea.eos.ubc.ca



Coastal Hazard Vulnerability Indicators



MEOPAR

MARINE ENVIRONMENTAL OBSERVATION
PREDICTION & RESPONSE NETWORK

Coastal Hazard Vulnerability Indicators

ASM Breakout Session

PI: Dr. Stephanie E. Chang

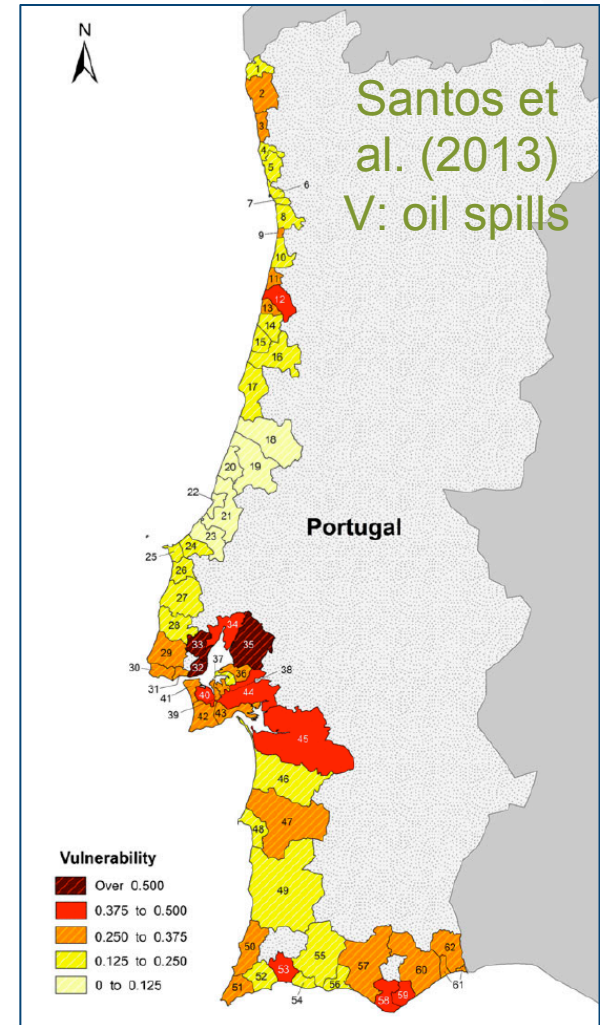
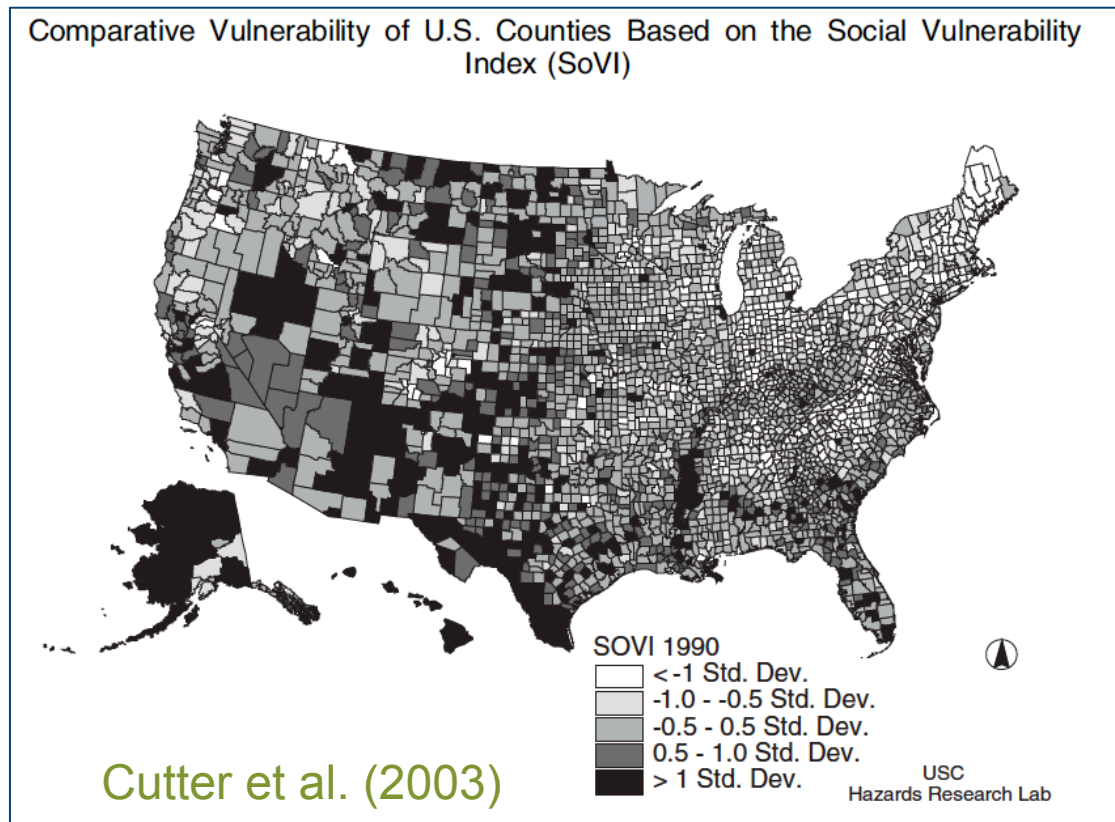


with: G. Oulahan*, J. Yip*, T. Conger, R. Chaster, C. Carter, M. Marteleira

Traditional Vulnerability Indicators

Q: Which places are **most** vulnerable?

Q: Which places are **similarly** vulnerable?



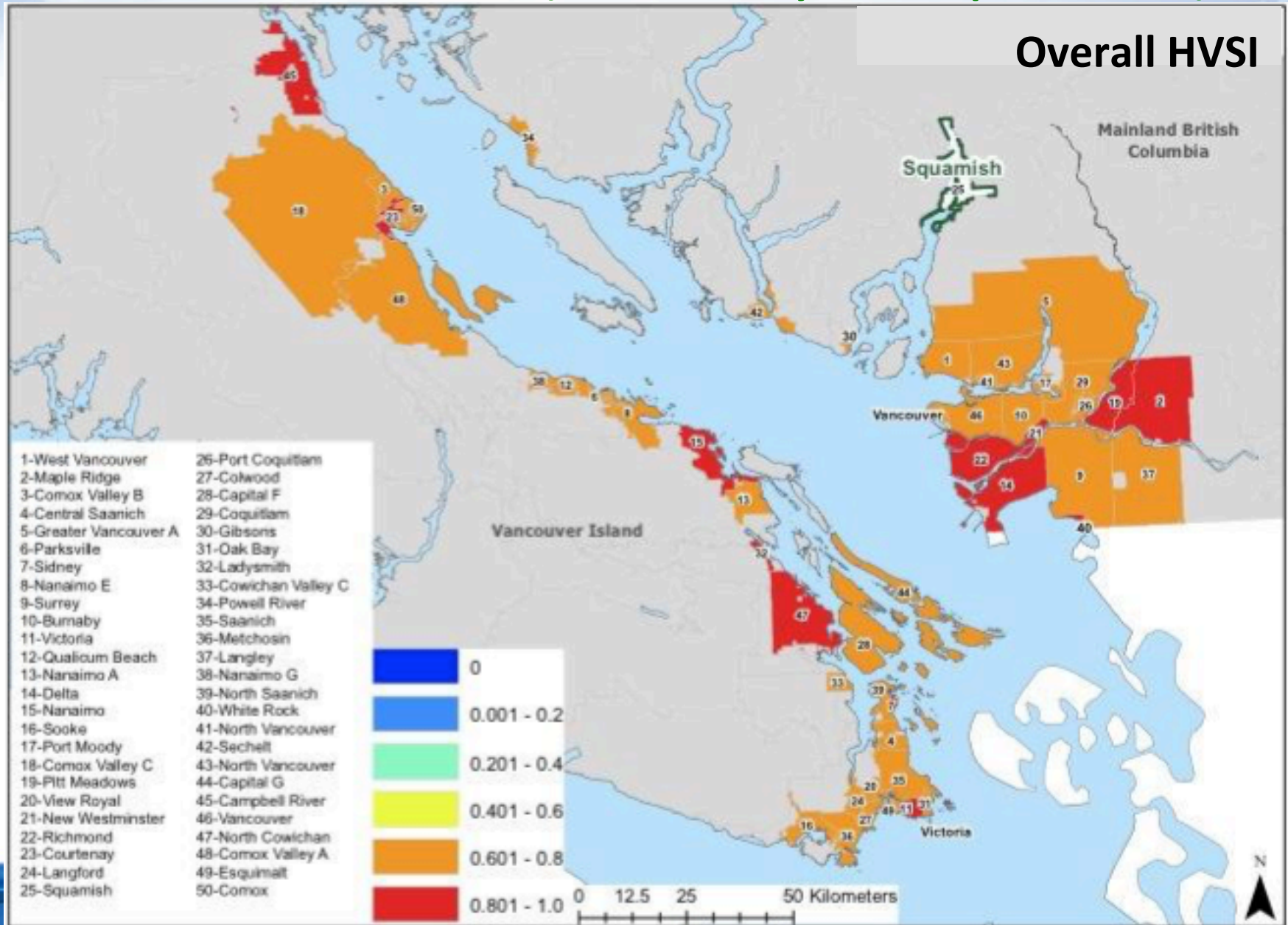
Indicators

Examples of risk indicators, by CAPITAL and Dimension

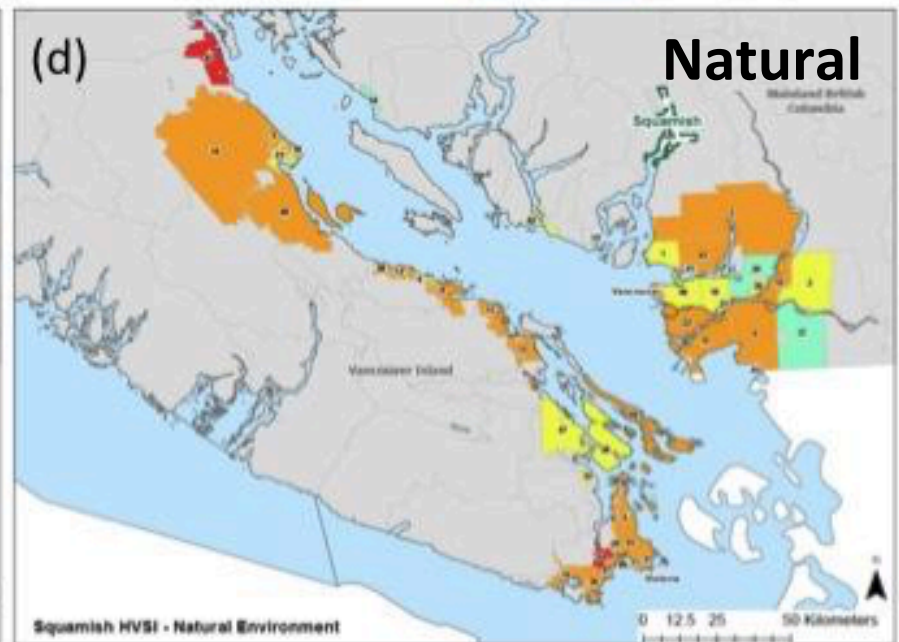
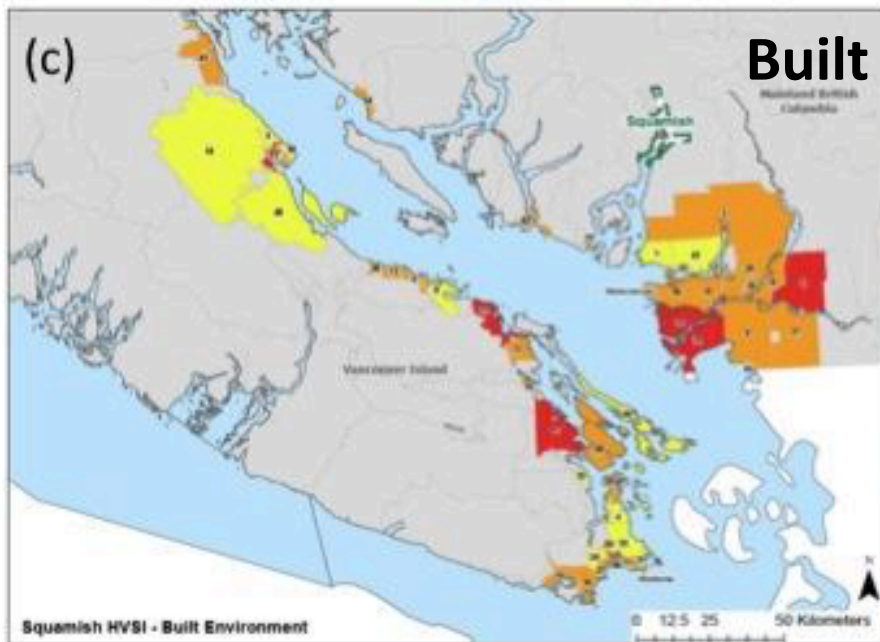
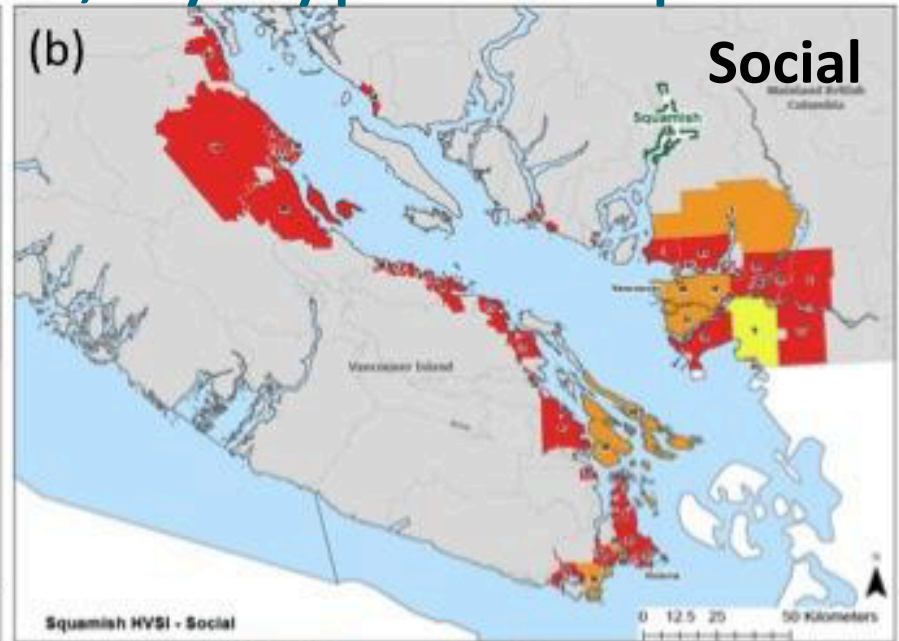
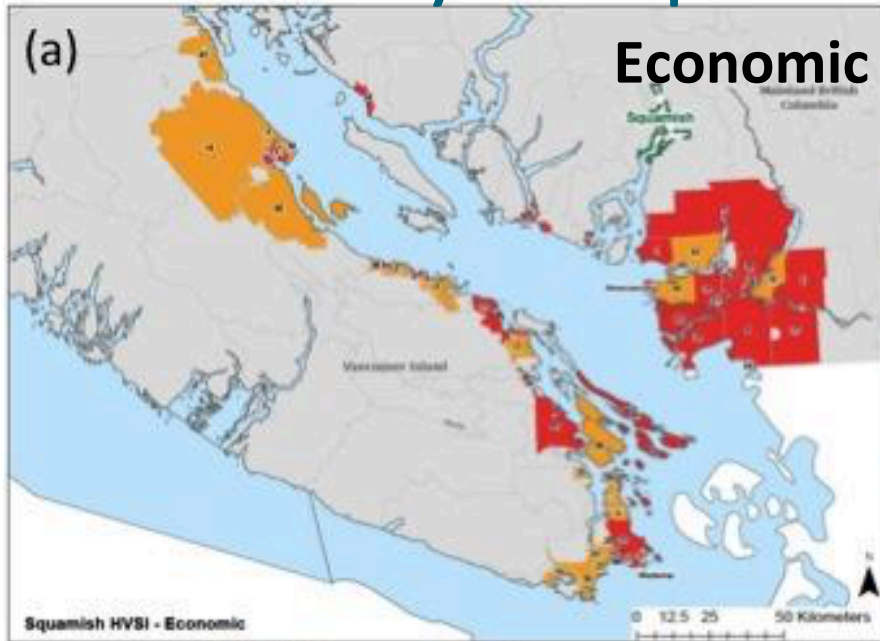
Dimension	ECONOMIC	SOCIAL	BUILT	NATURAL
Size	No. businesses	Population	\$ value of built environment	Coastline length
Spatial structure	% commuting outside	% pop. coastal	Commercial ctr on coast Y/N	Type of flood hazard
Composition	% employed in primary sector	% >65 yrs. old living alone	Structural flood protection Y/N	Landform
Participation	% unemployed	% cannot speak English/French	No. transport connections	Protected areas Y/N
Change	% change in no. businesses	% moved in within last 5 yrs	% residences pre-1960	SLR projection

Initial Results (similarity to Squamish)

Overall HVSI



Similarity to Squamish, by Type of Capital



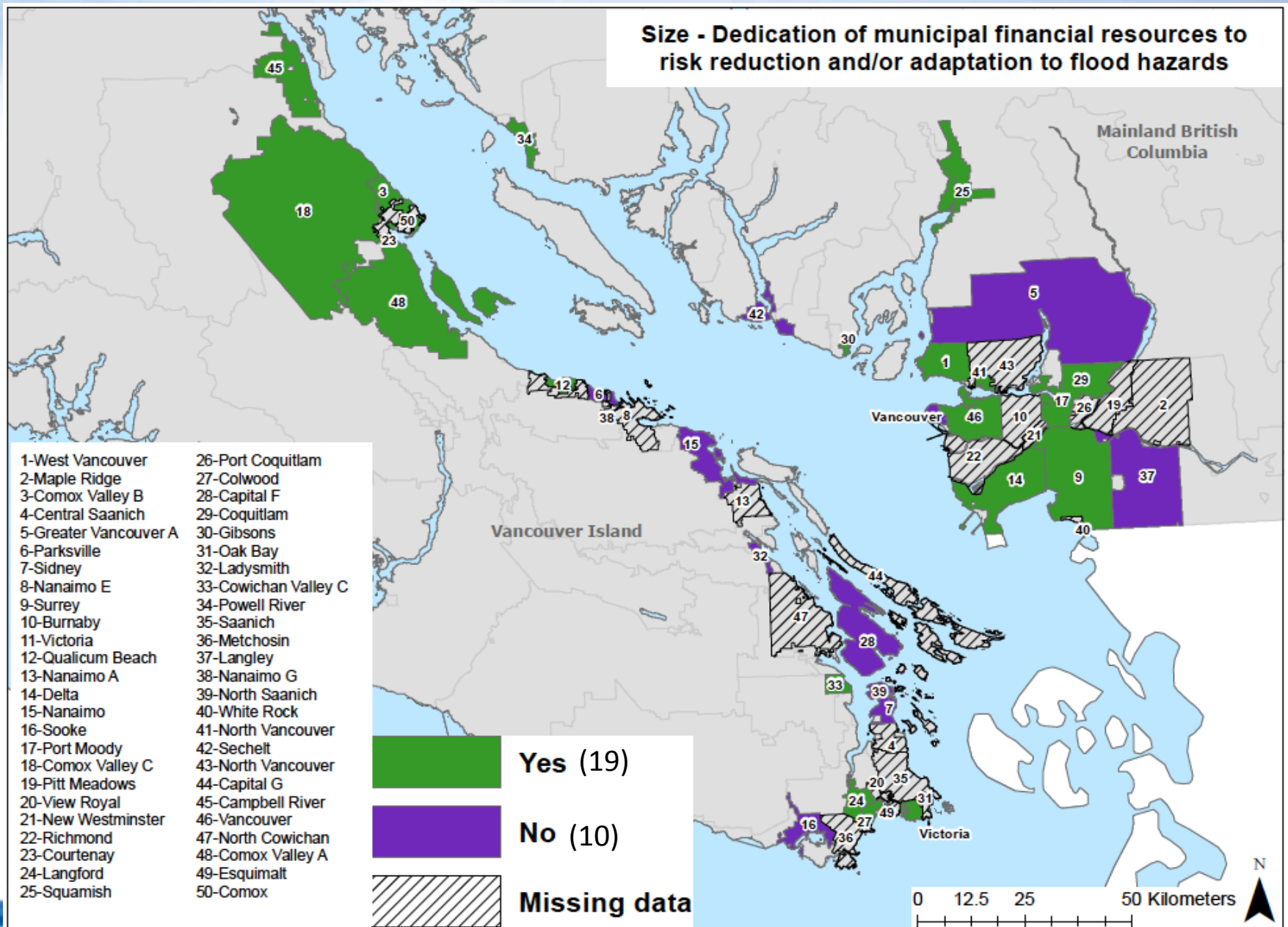
Next Steps

- Revise indicator framework & variables
 - Add institutional and hazard capitals
- Stakeholder engagement workshop
- Online platform
- Expand number of communities

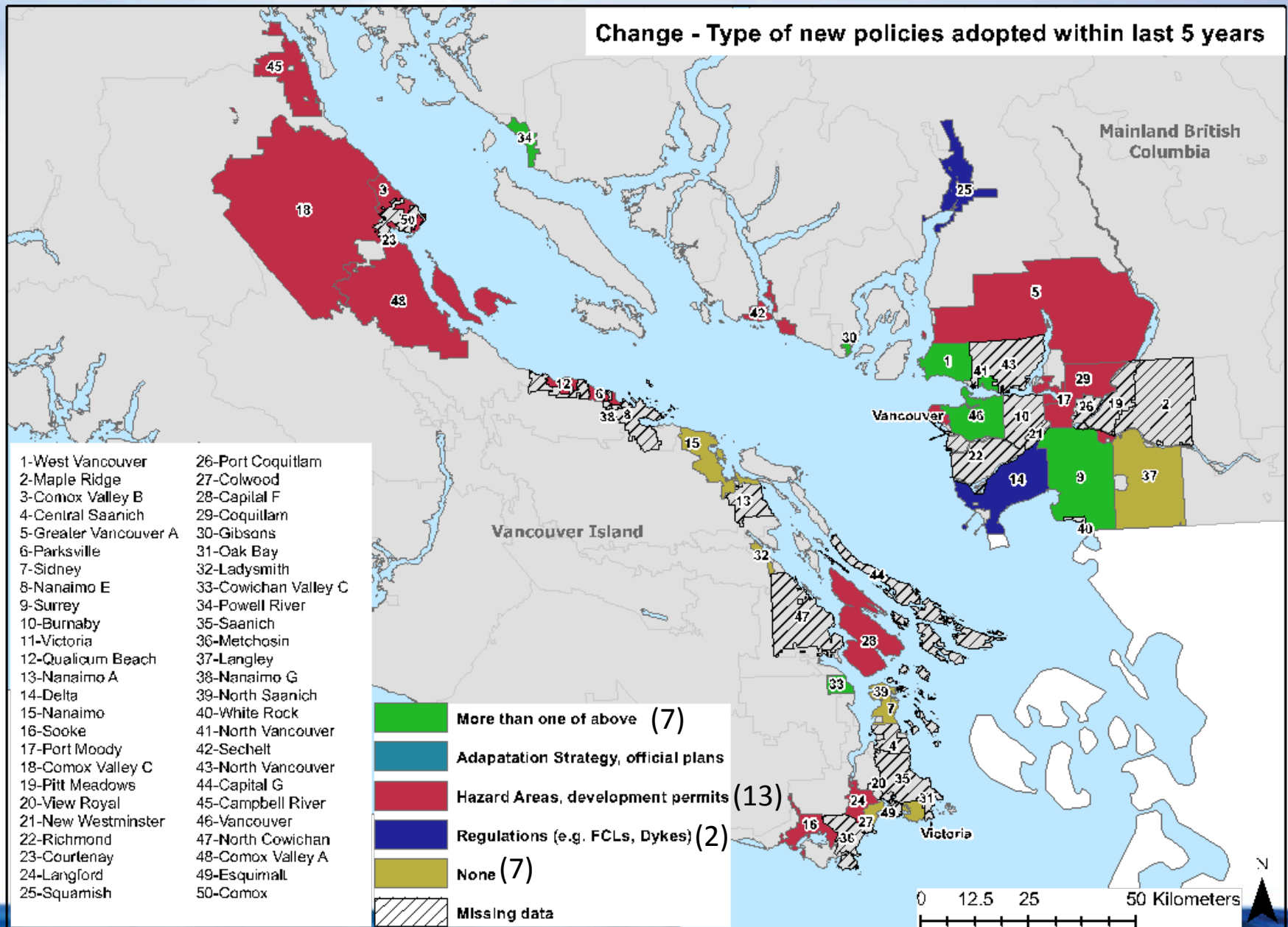


Institutional Indicators

Size - Dedication of municipal financial resources to risk reduction and/or adaptation to flood hazards



Change - Type of new policies adopted within last 5 years



2015 Strait of Georgia Marine Hazards Workshop



Objectives

- Stakeholder feedback
- Showcase research from different project groups
- Facilitate network and connections

Who was involved?



World Cafe

