International Fisheries Conflict Risks:
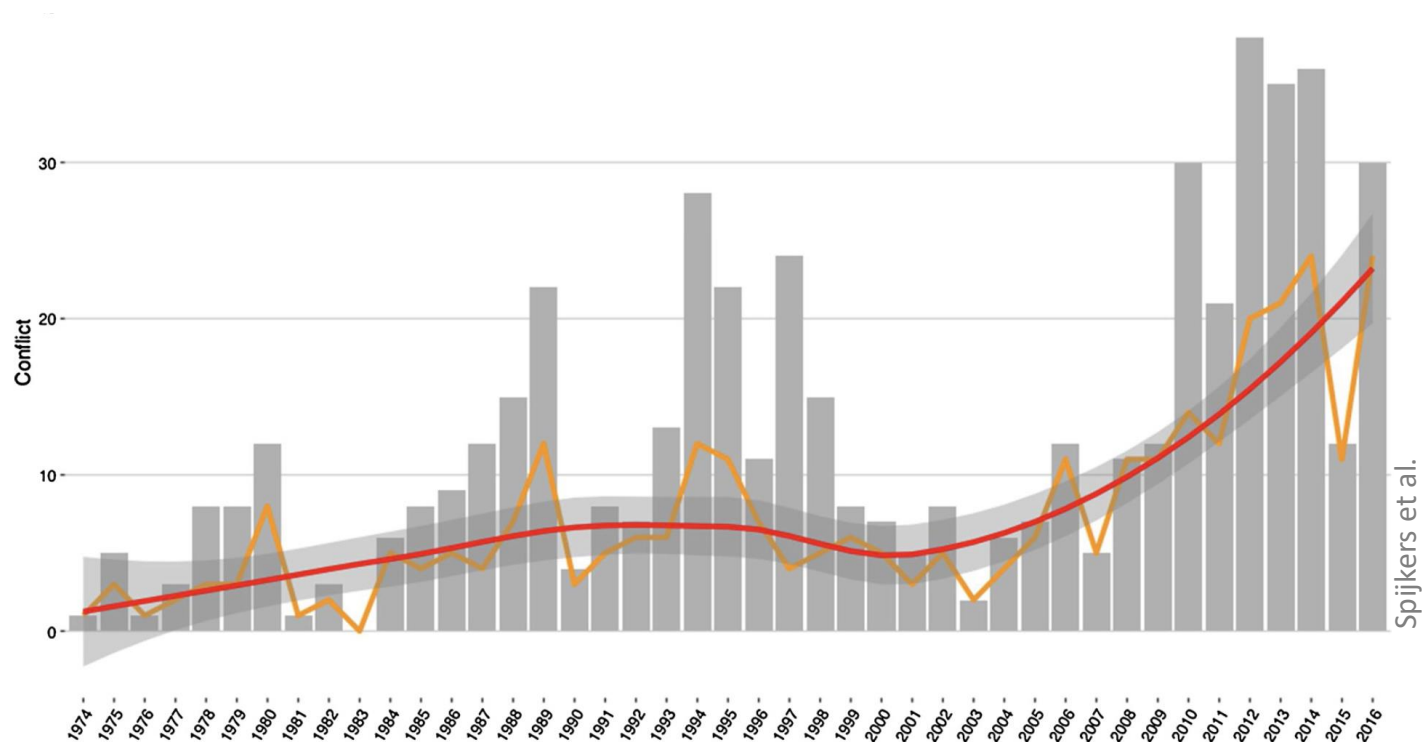# Spatial Competition and Enduring Rivalries Perspectives

Keiko Nomura

PhD candidate in Geography

nomurak@oregonstate.edu

International fisheries conflicts are rising

Spijkers et al.

'Unacceptable': Japan Slams Russia's Position On Fishing Near Kuril Islands
Last Updated: 30th January, 2023 16:11 IST

June 19, 2018
Climatic conflict: Is the Mackerel War a model for future trade disputes?

China Chases Indonesia's Fishing Fleets, Staking Claim to Sea's Riches

Arctic Politics and the EU-Norway Fishing Dispute

Challenges from Chinese distant water fishing fleets in Africa

It's Not Too Late to Head Off Conflict Over Ocean Fisheries
Johan Bergenas, Sarah Glaser   Dec 21, 2022

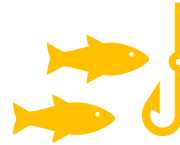UK dismays EU by siding with Norway, Russia in NEAFC dispute

2

Fisheries conflicts can have
social, economic, environmental, and geopolitical implications

Verbal disagreement

Port closures

Fishing / trade bans

Physical violence

Military involvement

Intensity

Challenge: Drivers of fisheries conflicts are diverse

~

Prevention + mediation remains difficult

- Shifting fish stocks
- Environmental conditions
- Resource abundance/scarcity
- Shared target species
- Overfishing
- Illegal, unreported, and unregulated fishing
- Territory issues
- Competition over space
- Species value
- Level of economic + food security reliance
- Historical relations between parties
- Power differences
- Fisheries management

Opportunity:
Use the drivers of fisheries conflicts to study risk

~

What do these factors tell us about the likelihood of conflict?

🐟	Shifting fish stocks
🌊	Environmental conditions
👪	Resource abundance/scarcity
🚢	Shared target species
🐟	Overfishing
🎣	Illegal, unreported, and unregulated fishing
🧭	Territory issues
⚛	Competition over space
🪙	Species value
💰	Level of economic + food security reliance
⚔	Historical relations between parties
👑	Power differences
📙	Fisheries management

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What do these factors tell us about the likelihood of conflict?

Shifting fish stocks

Environmental conditions

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Shared target species

Overfishing

Illegal, unreported, and unregulated fishing

Territory issues

⭐ Competition over space

Species value

Level of economic + food security reliance

⭐ Historical relations between parties

Power differences

Fisheries management

What can these factors tell us about international fisheries conflict risk?

Spatial Competition
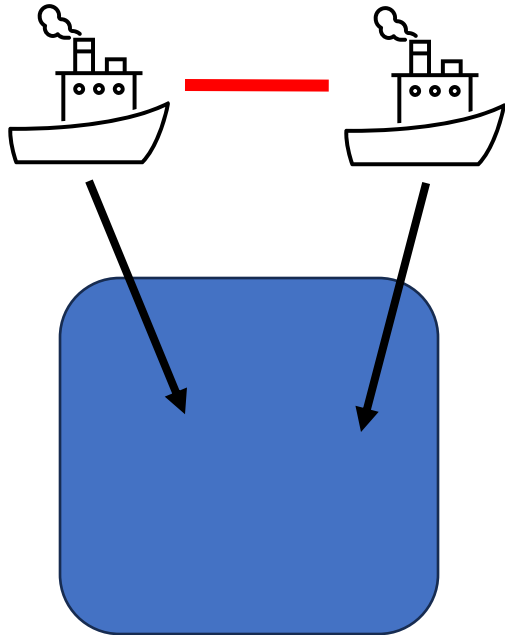
Countries sharing fishing space on the ocean may drive a higher risk of conflict

Enduring Rivalries
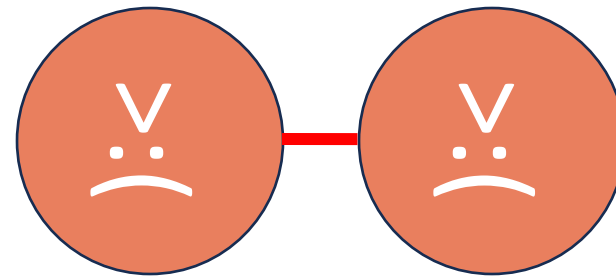
Countries with a history of repeated disputes may be more prone to future conflict

What can
spatial competition and **enduring rivalries**
reveal about the risk landscape of
international fisheries conflicts?

Which regions and **countries**
may be at risk of conflict?
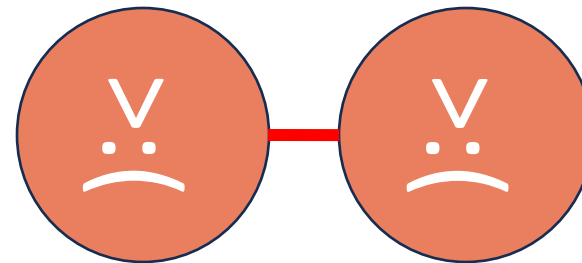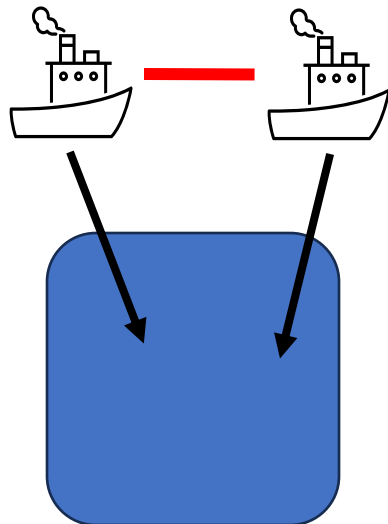
Study focus: Pacific Ocean longline fleets

- Diverse international fleets – domestic, offshore, distant water

- Economically valuable fisheries – highly migratory tuna or tuna-like species

- Regional fisheries management – across jurisdictions + actors

Frawley et al. 2022
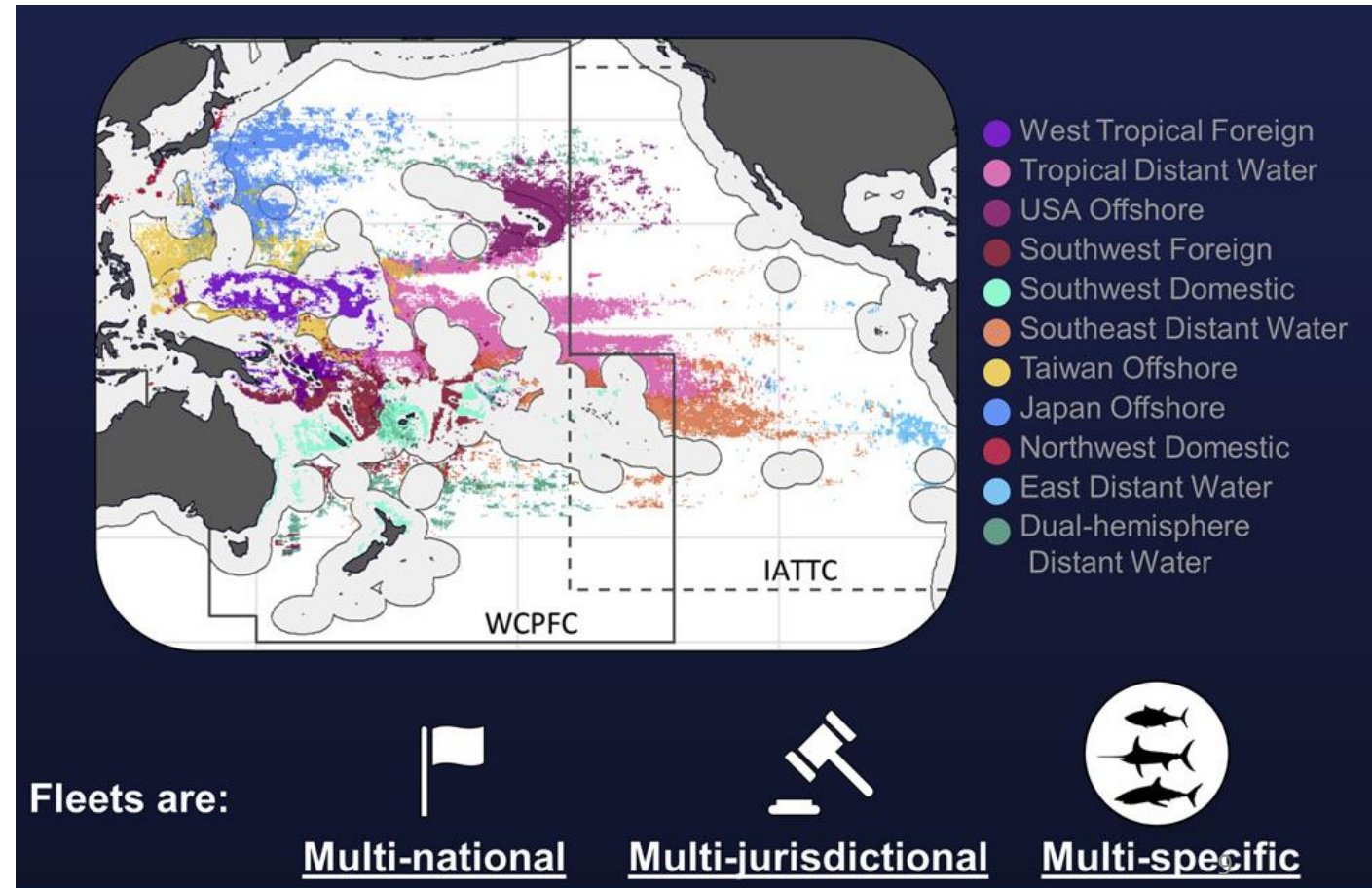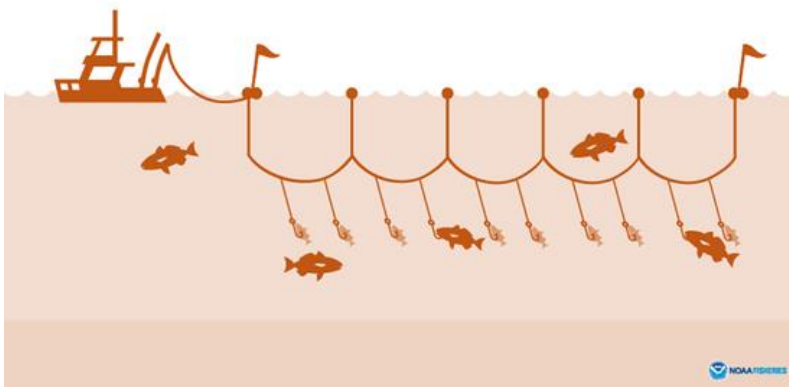
Methods

Methods: Game Plan
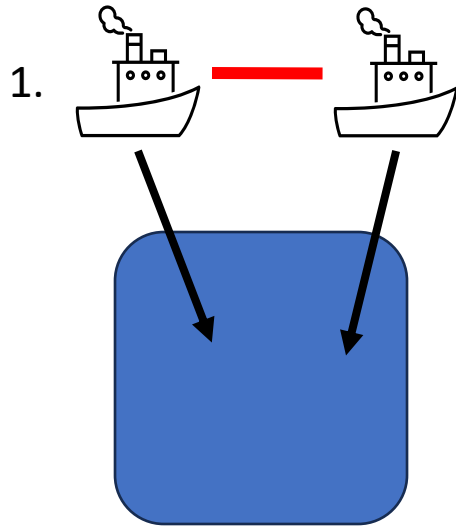
1. Assess **spatial competition** with fishing vessel tracking data

1.

Methods: Game Plan

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2. Assess **enduring rivalries** with historical conflict data

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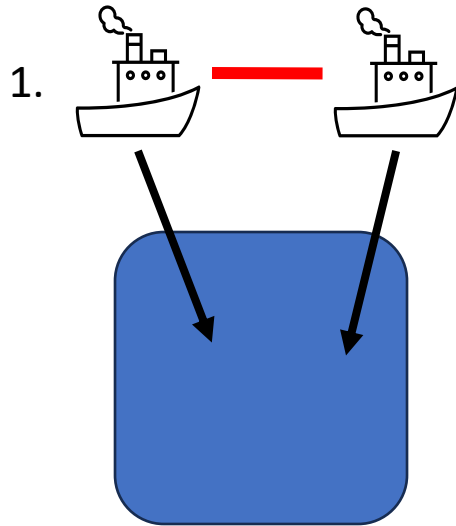
2.
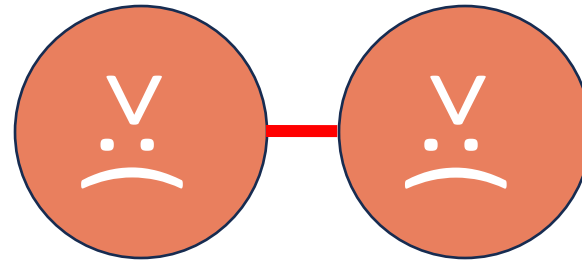
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3. Combine the two to identify "high-risk" regions and actors

Methods: Game Plan

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1. 2. 3.

+ =
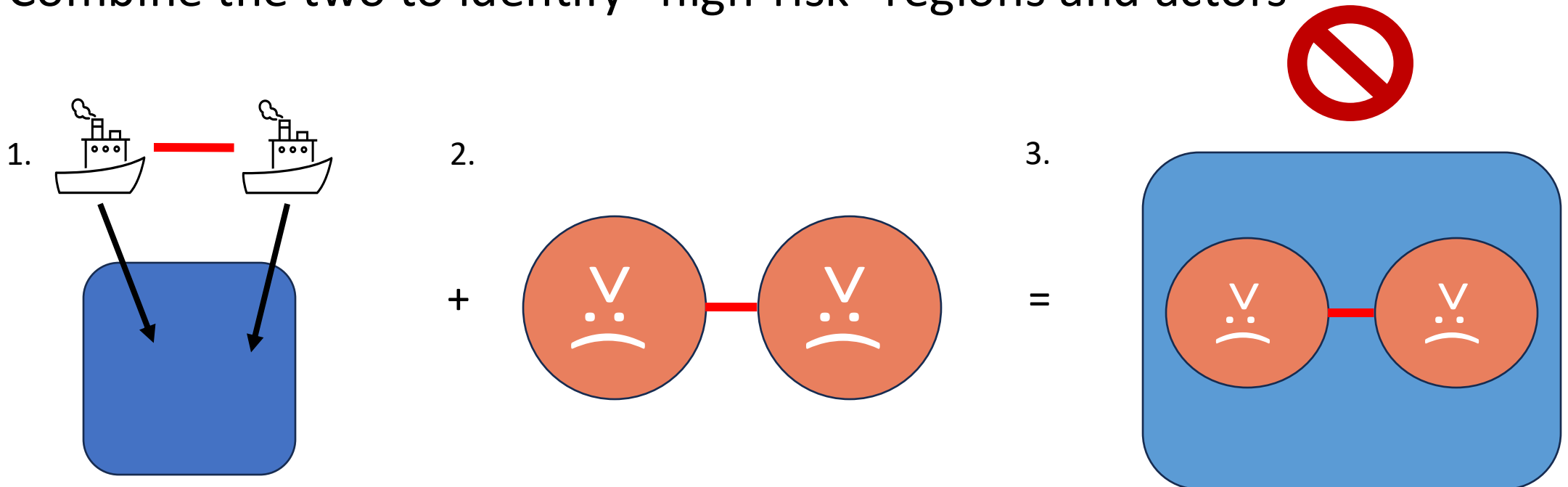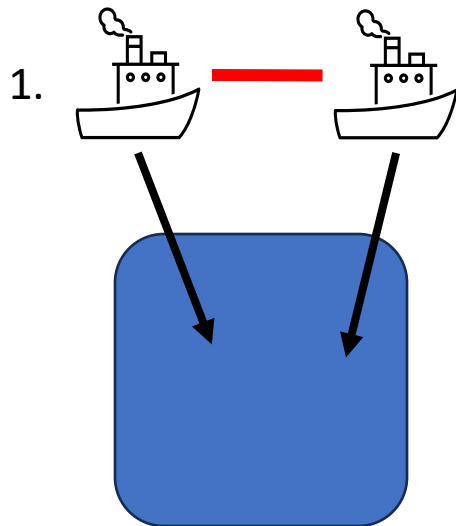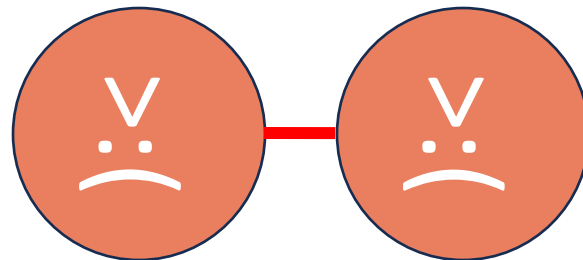
Where are these "bad roommates"? *(maps!)*

Who are they? *(networks!)*
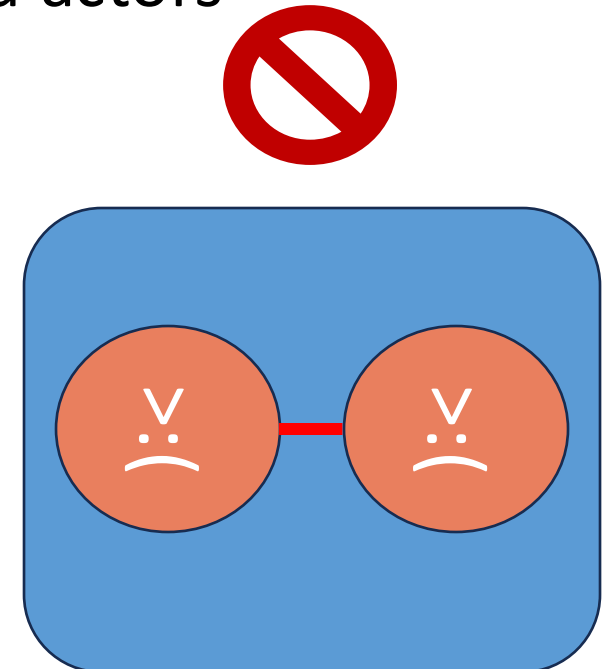
Methods: Spatial Competition

- Fishing vessel tracking data
  - Vessel ID, flag country, location, time, fishing effort (hours), gear type

- Scale choices
  - Temporal: 2016-2020
  - Spatial: 1 x 1 latitude by longitude degree cells; fishing only active if above the mean
  - Actors: fishing effort aggregated at the country-level
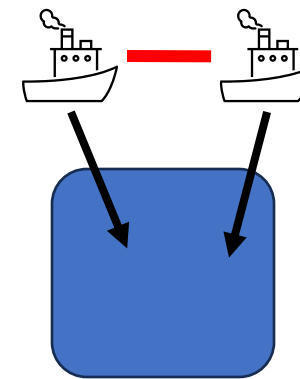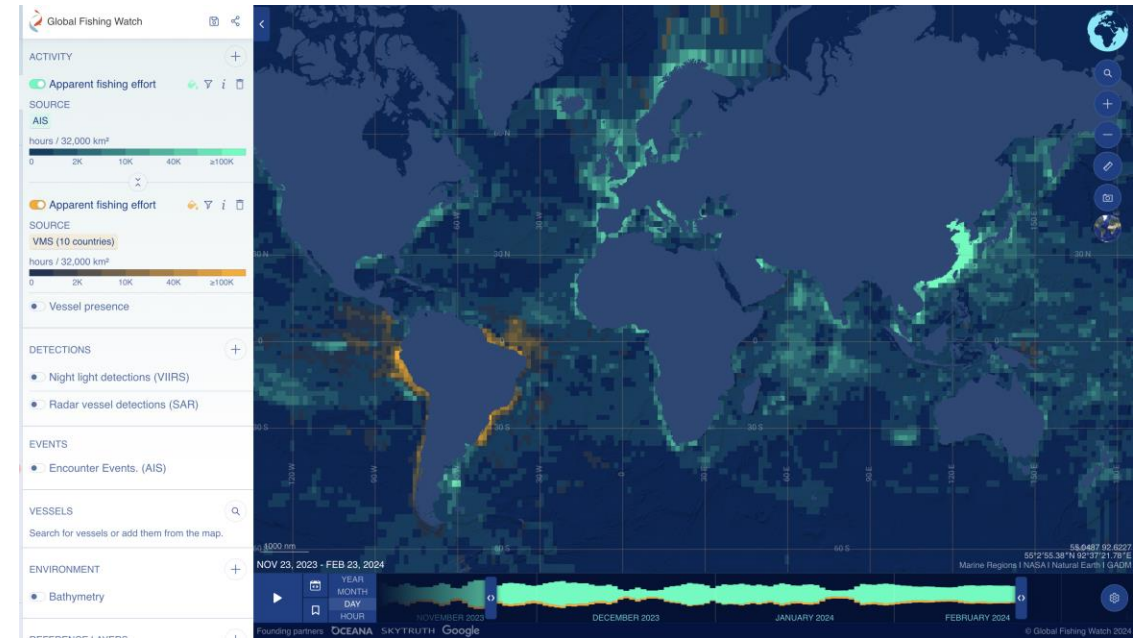
Spatial interactions
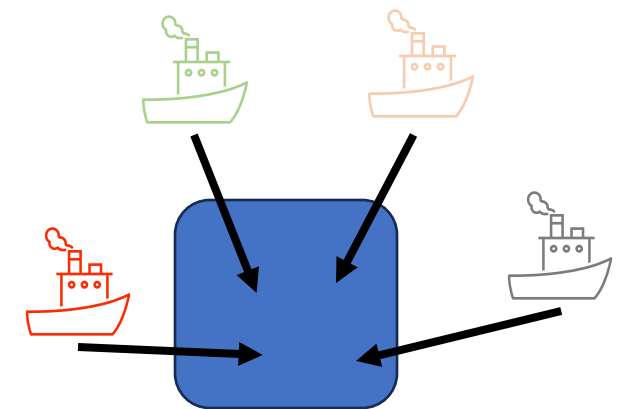
International community diversity

15

Methods: Spatial Competition

Spatial interactions

Overlapping Fishing Grounds: China and Taiwan

Nation
- China
- Taiwan
- Shared
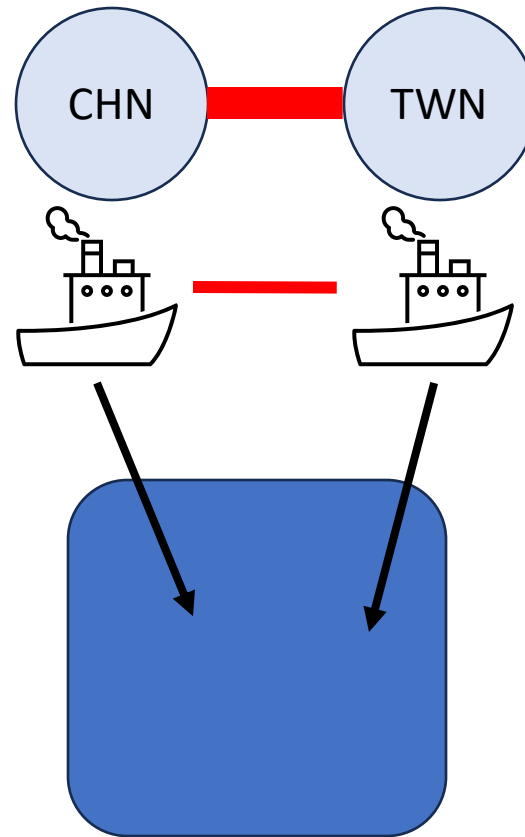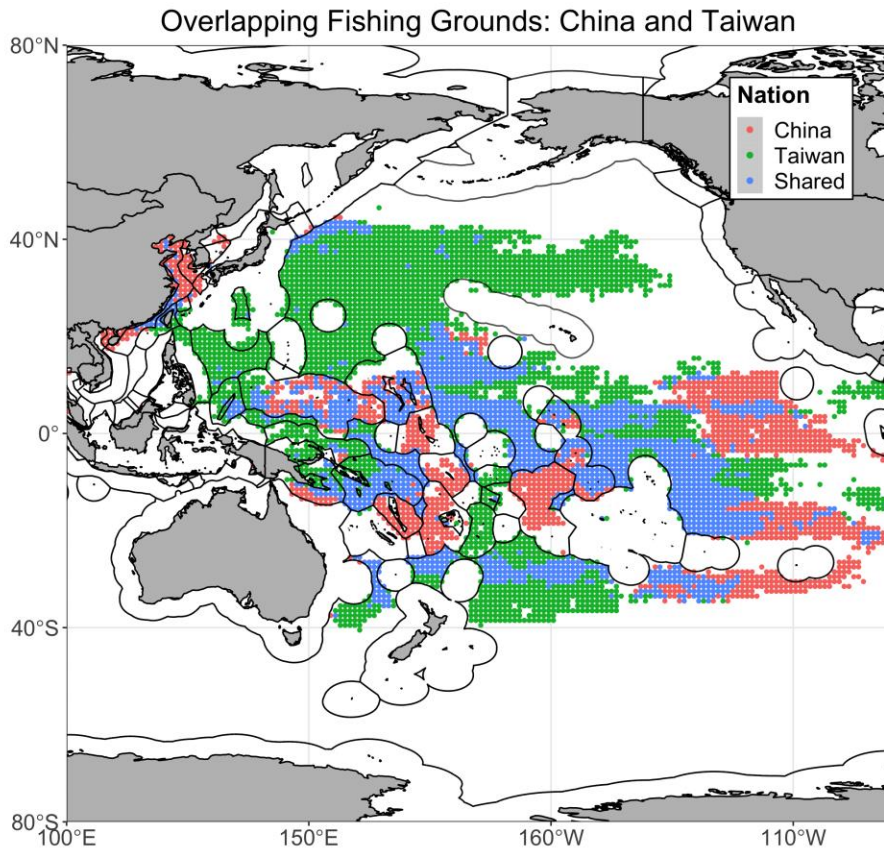
Network layout
Nodes: countries
Edges: area of overlap

Methods: Spatial Competition

Spatial interactions

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CHN — TWN
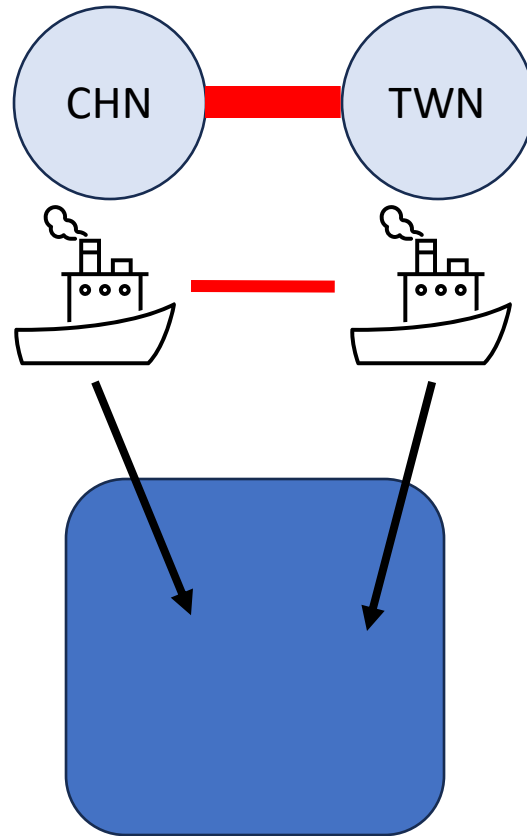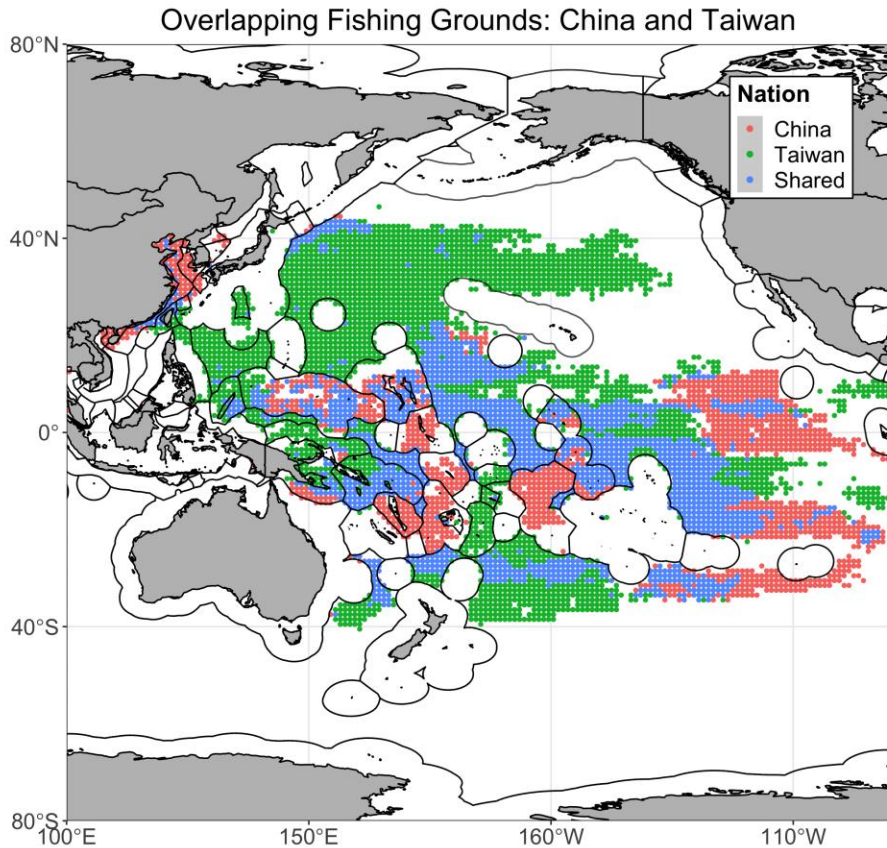
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International community diversity
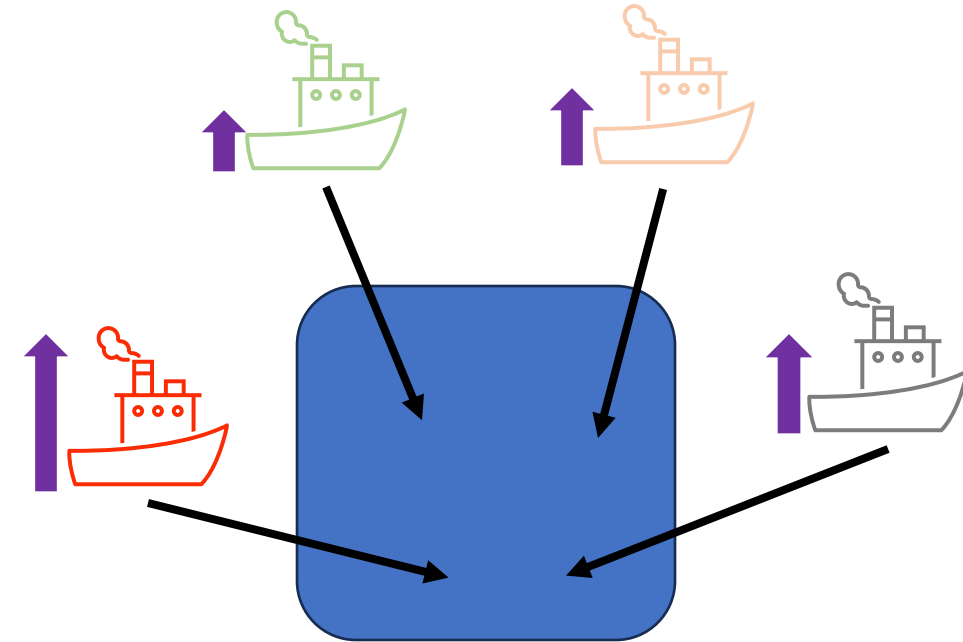
Shannon's Diversity Index
Richness: # of vessel flags
Abundance: # of fishing hours

Methods: Enduring Rivalries

International Fishery Conflict Database: Country actors, fisheries species, intensity

Spijkers et al.

Global patterns of fisheries conflict: Forty years of data

Jessica Spijkers[a,b,*], Gerald Singh[c], Robert Blasiak[b,d], Tiffany H. Morrison[a], Philippe Le Billon[e], Henrik Österblom[b]
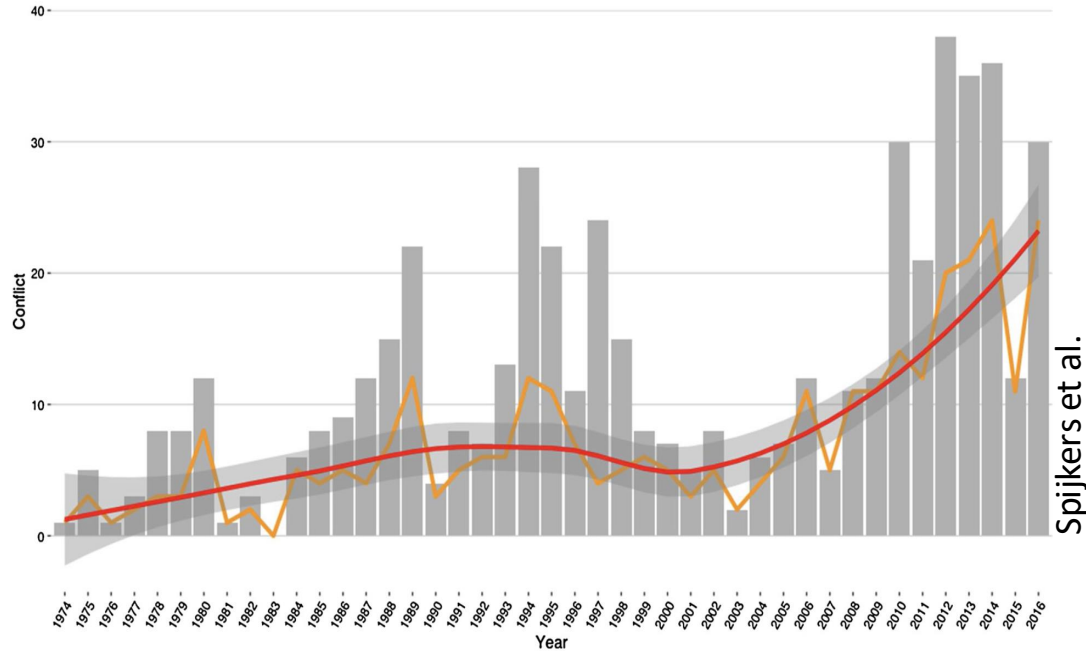
U.S. And Canadian Lobstermen At Odds Over Lucrative Waters In Gulf Of Maine
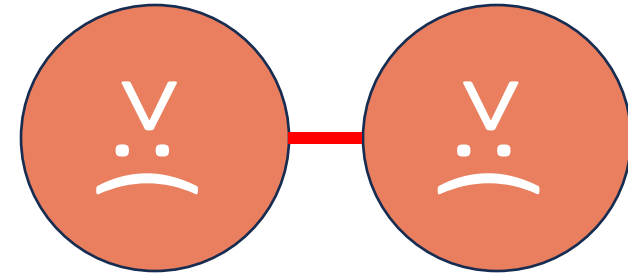
Network layout:
Nodes: countries
Edges: frequency or intensity of past conflicts

Methods: High-Risk Actors and Regions

- Select country pairs that both (1) compete for space and (2) have a history of conflict

- Create a high-risk network to look at actor relationships

- Map their shared spatial distributions to look at regions
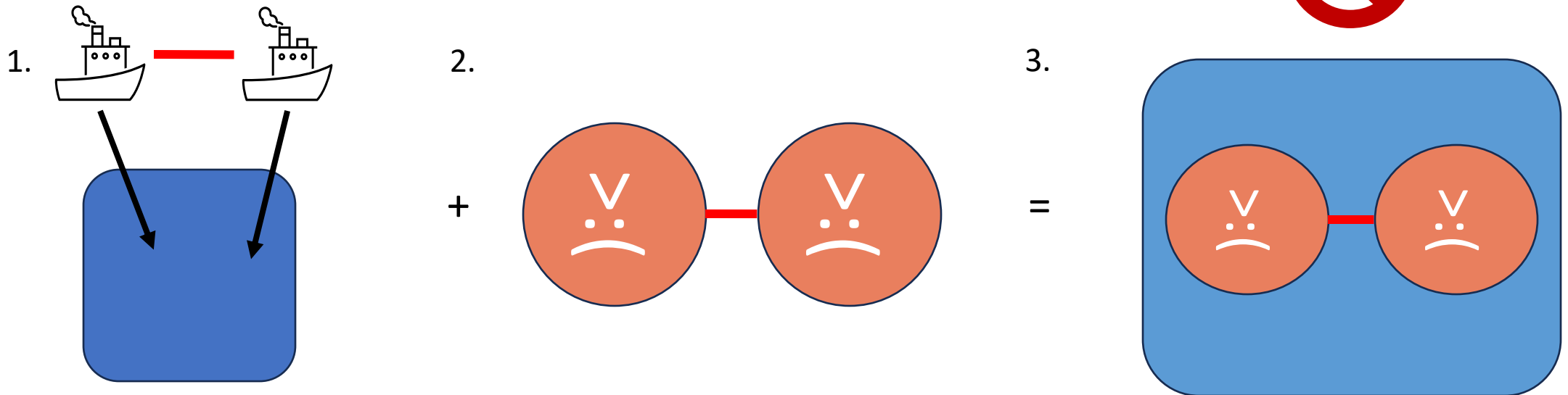
Results

Longline fishing activities

33 countries engage in longline fleets, but there are dominant players

Tropical region has the highest activity

Legend: North, South, Tropical
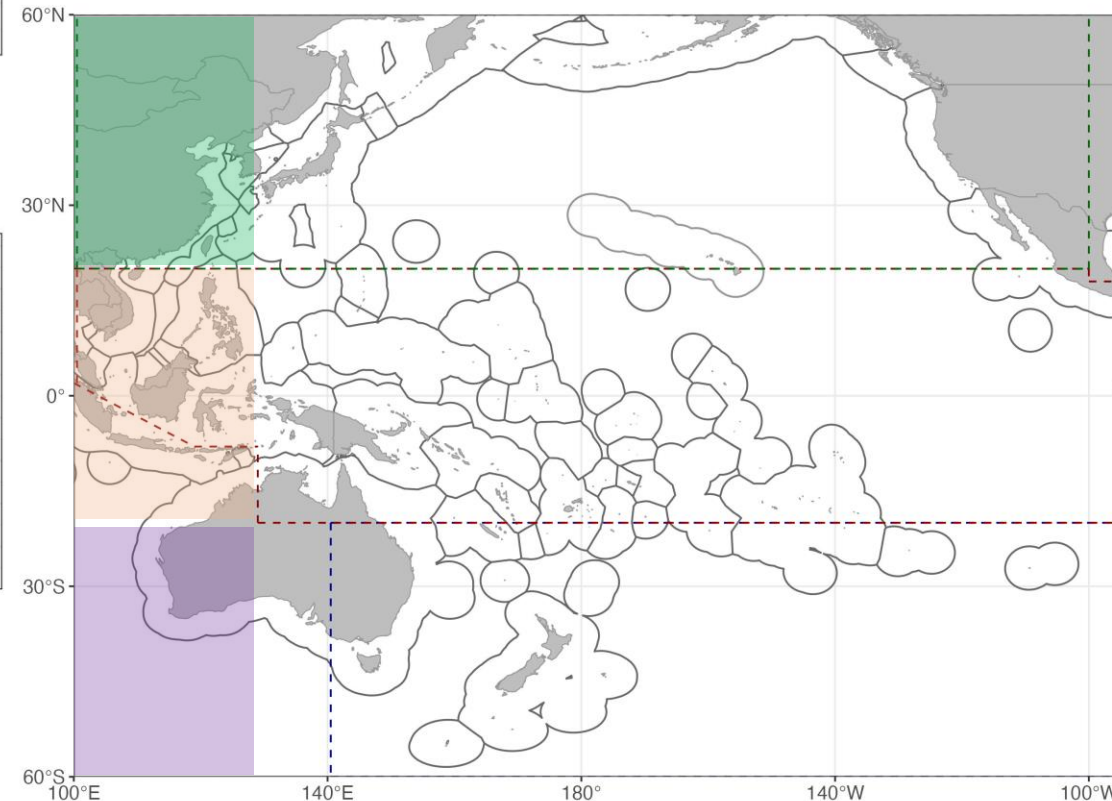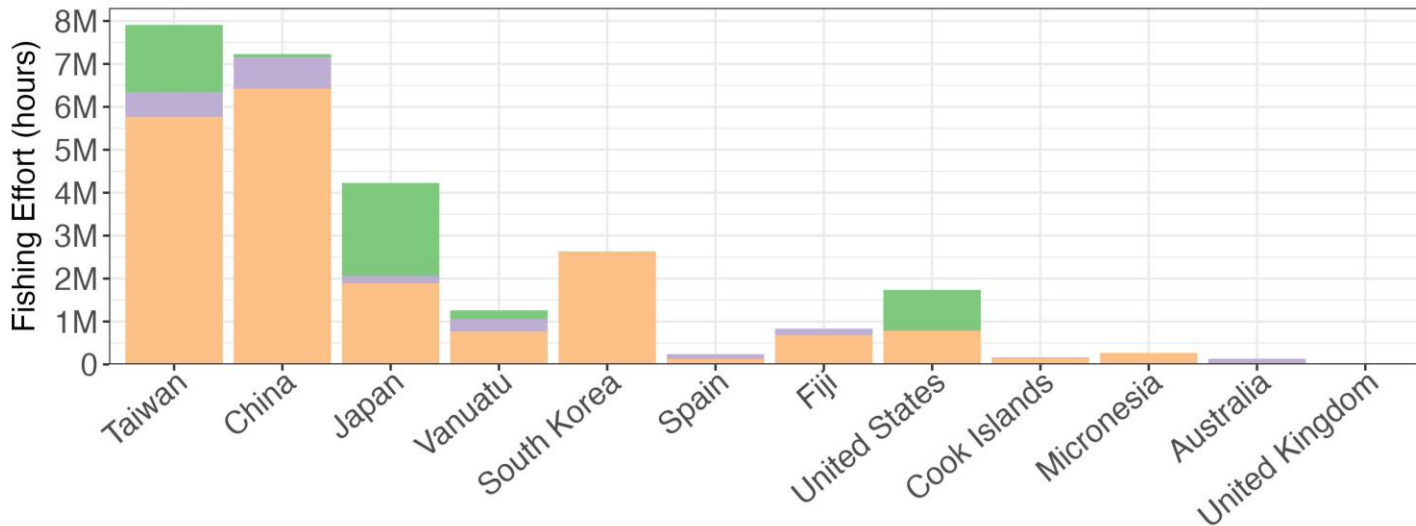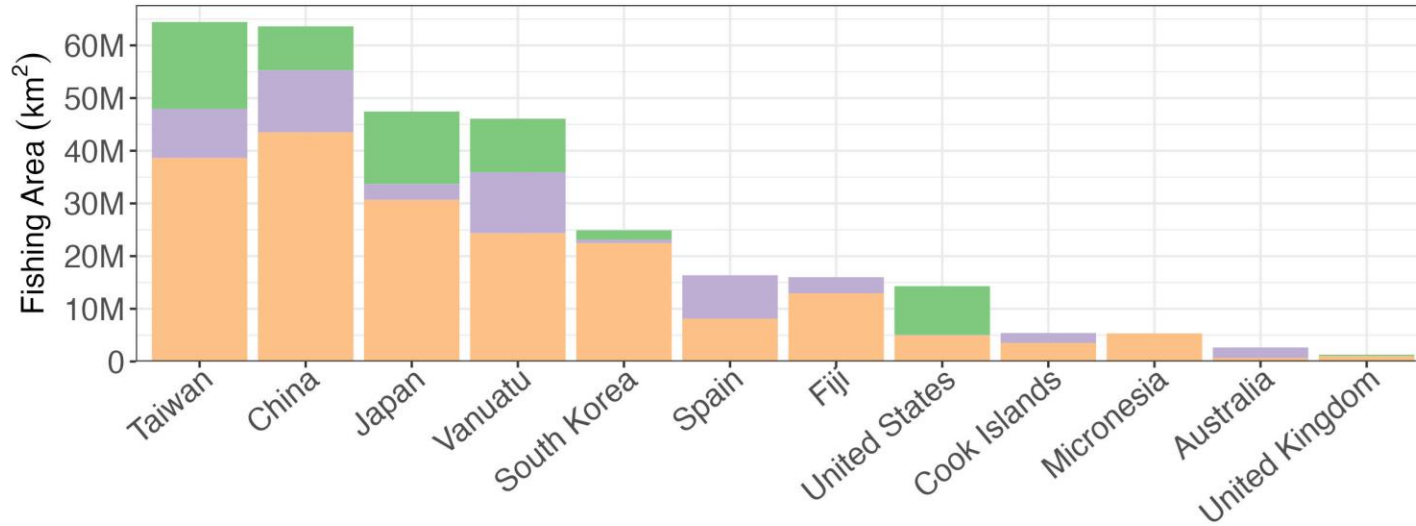
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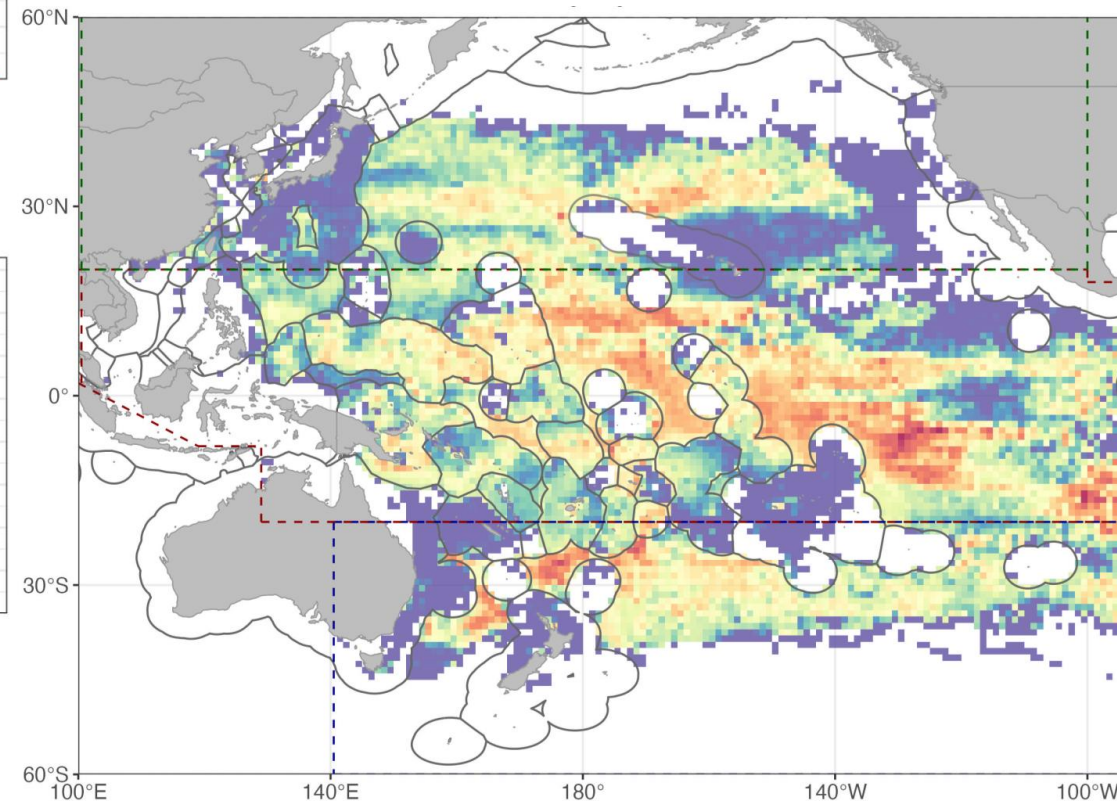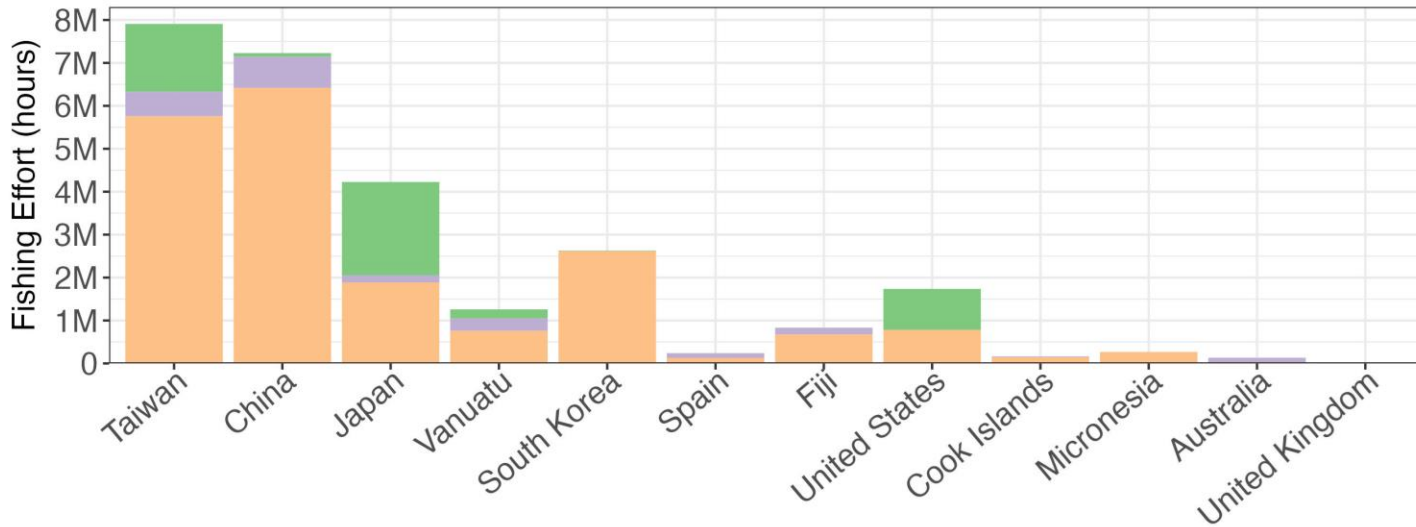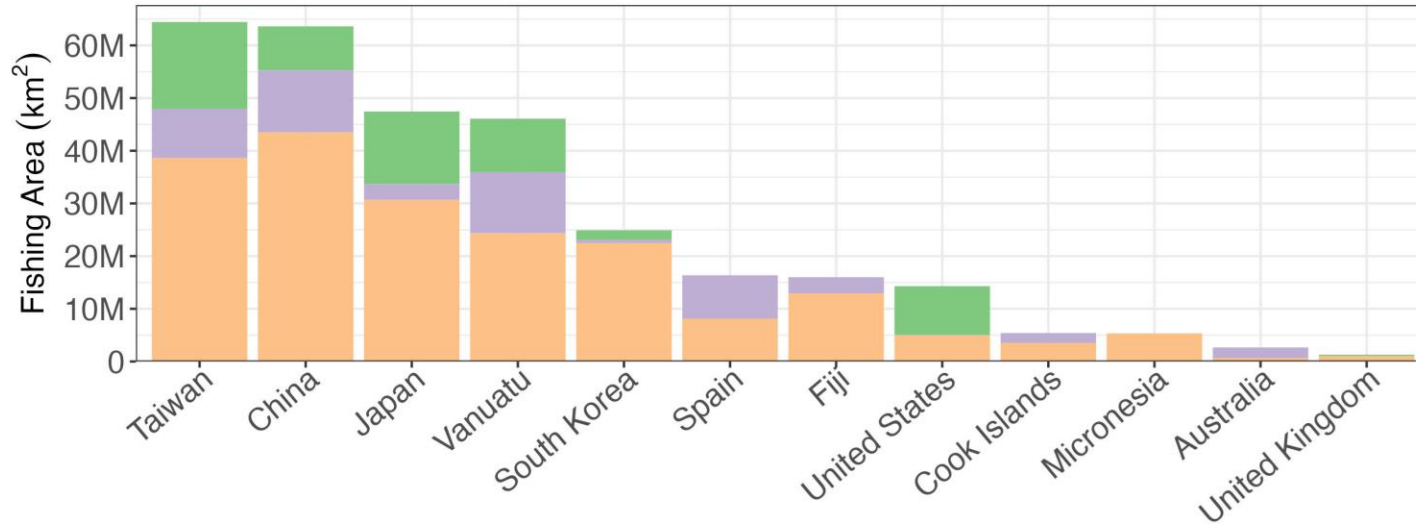
High diversity:
tropical Pacific and
areas beyond national jurisdiction
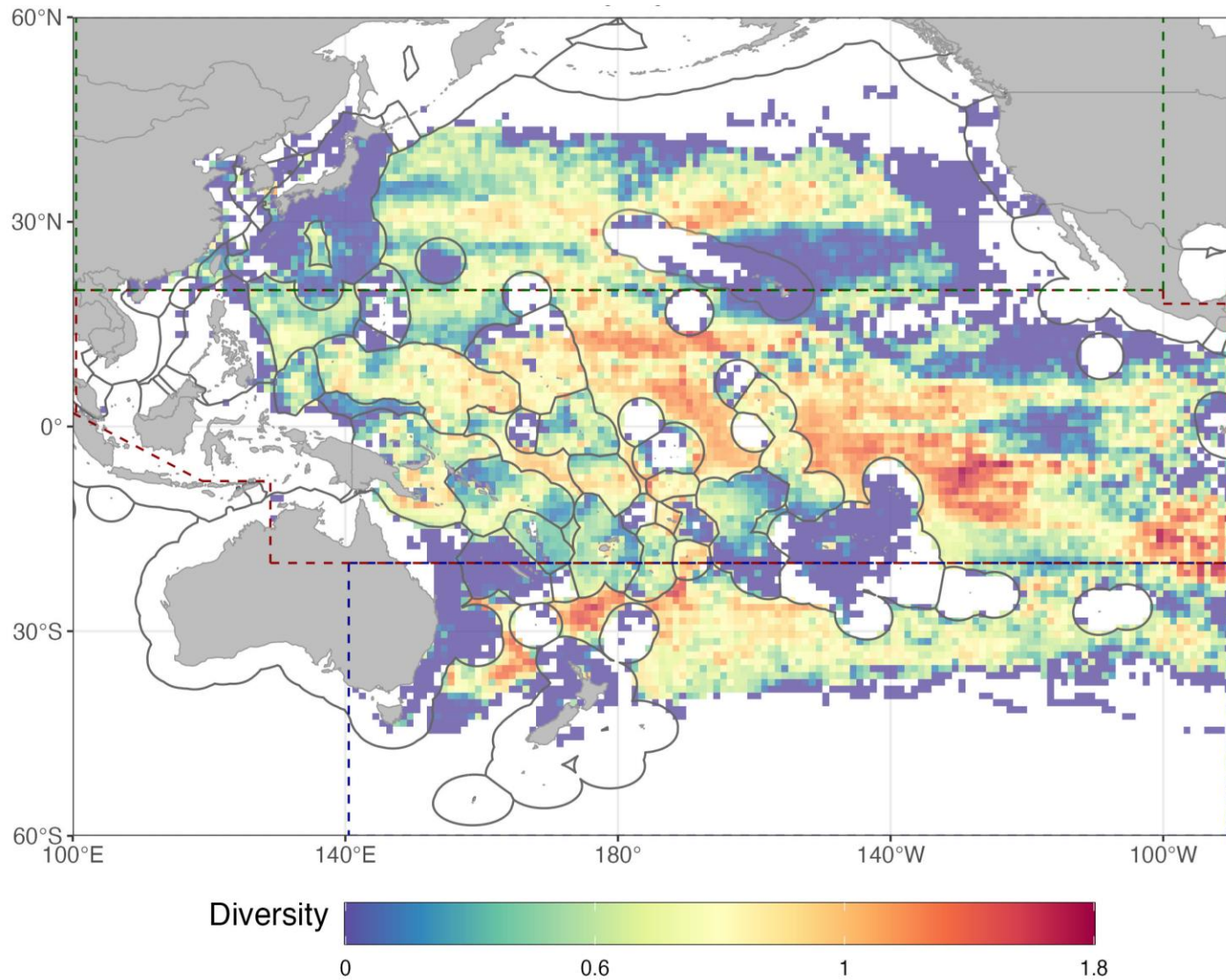
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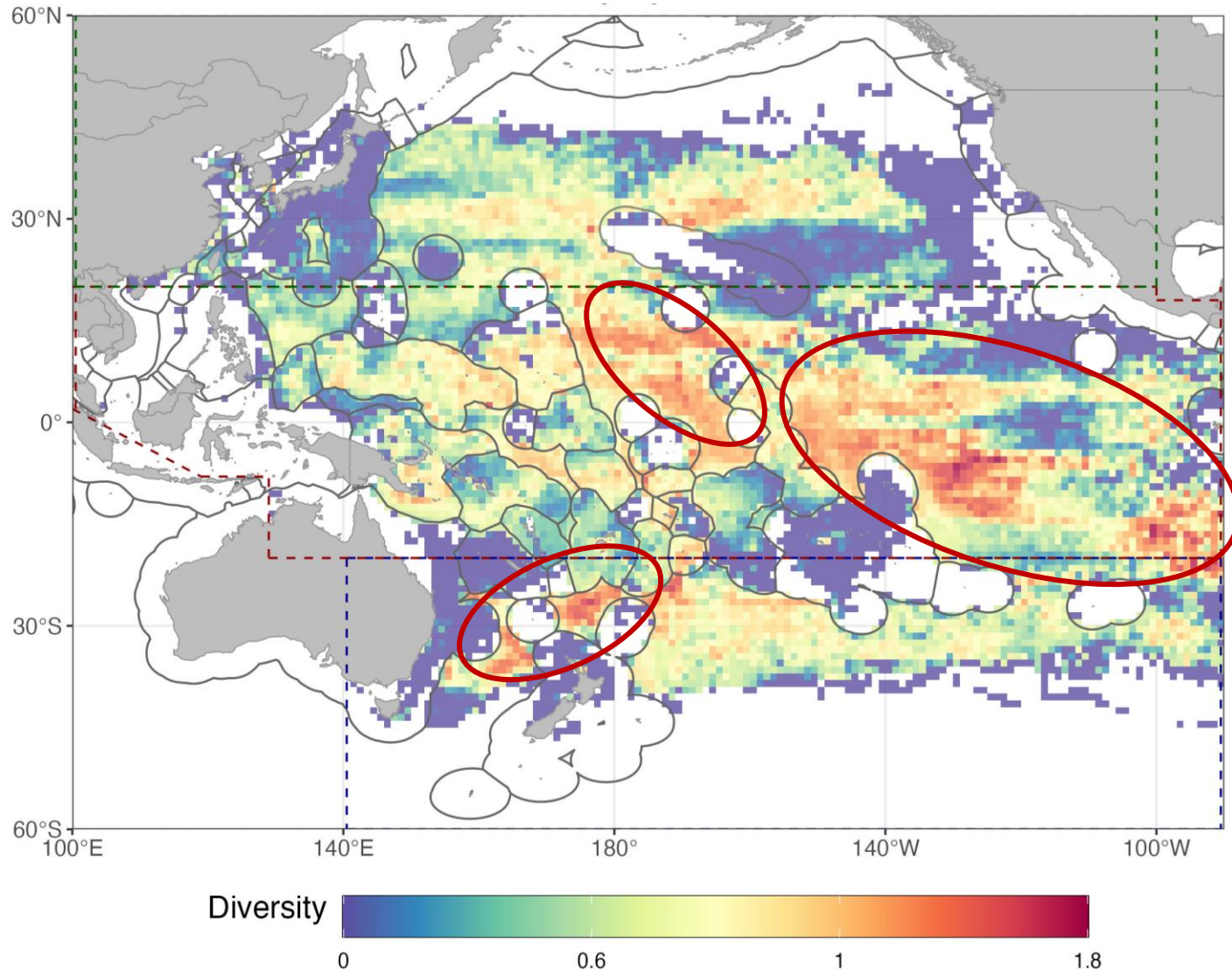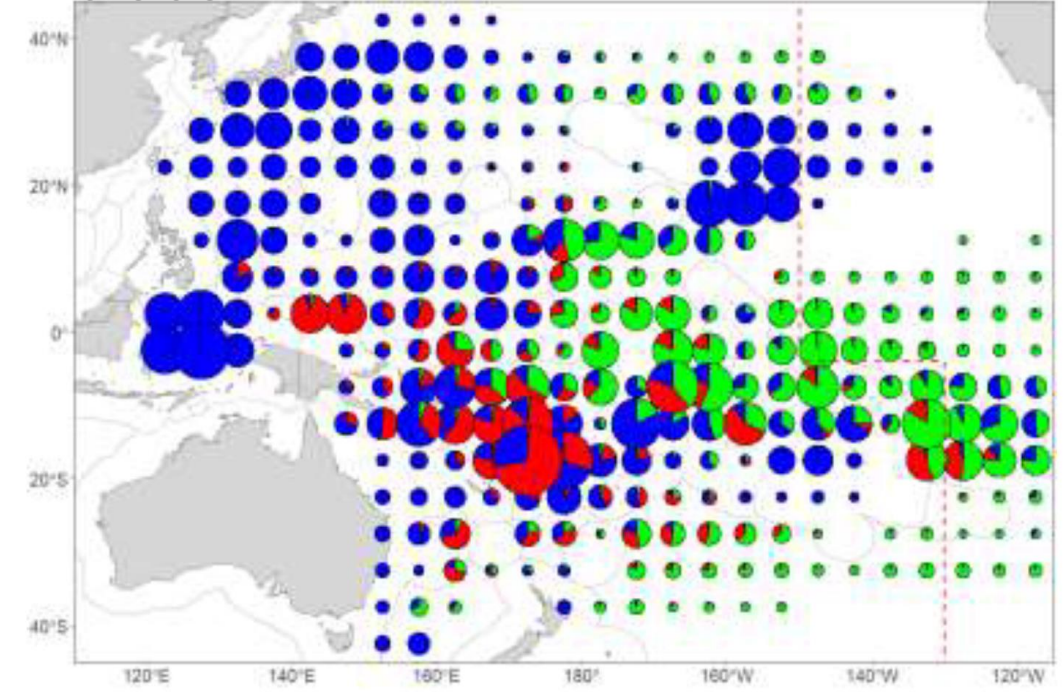
Figure 5.4.1 Distribution of longline effort (100s of hooks) by fleet, 2017–2022

Distant-water fleets (green), foreign-offshore fleets (red) and domestic fleets (blue)

High diversity:
tropical Pacific and
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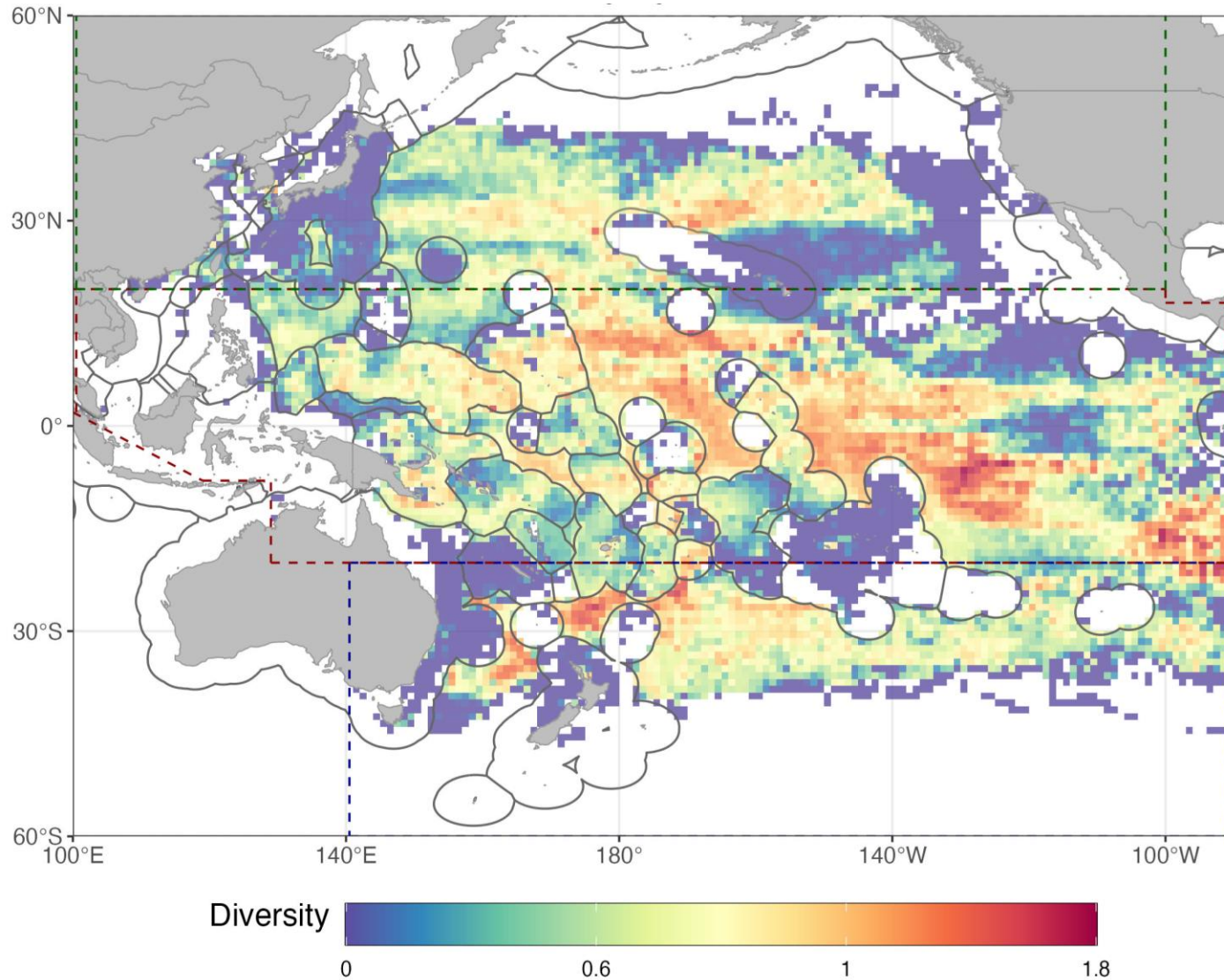
Moderate diversity:
governed national waters and high seas pockets,
reflecting regional access agreements
Parties to the Nauru Agreement / Vessel Day Scheme + Forum Fisheries Agency / Tokelau Arrangement
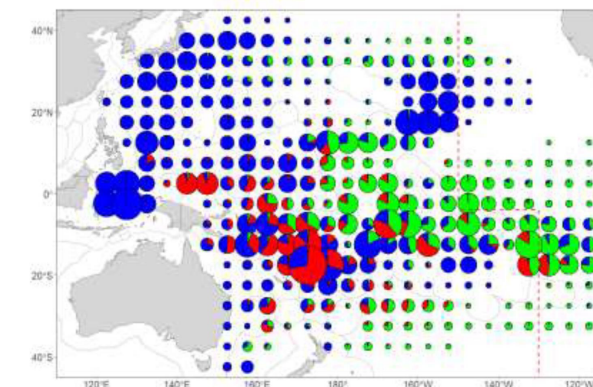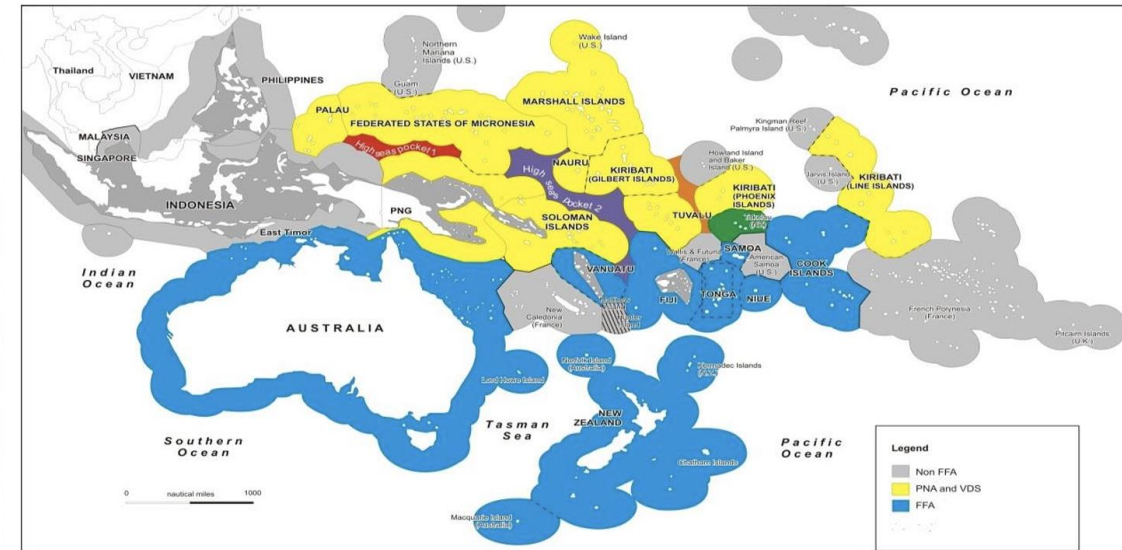
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Diversity

0   0.6   1   1.8

Who are the high-risk actors?
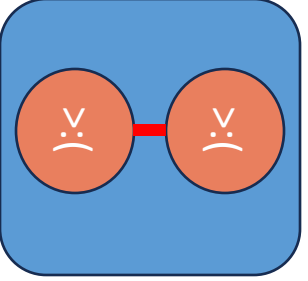
Risk score =
shared fishing space x
average conflict intensity

High-Risk Country Dyads	
Dyad	Risk Score
Japan-Taiwan	5,624
Japan-China	5,590
China-South Korea	5,215
China-Taiwan	4,003
South Korea-Japan	2,230
South Korea-Taiwan	2,126
United States-Vanuatu	1,160
United States-Taiwan	964
Japan-Micronesia	619

| High-Risk Countries	
Name	Frequency
Japan	12
United States	12
China	7
Taiwan	7
South Korea	7
Kiribati	5
New Zealand	5
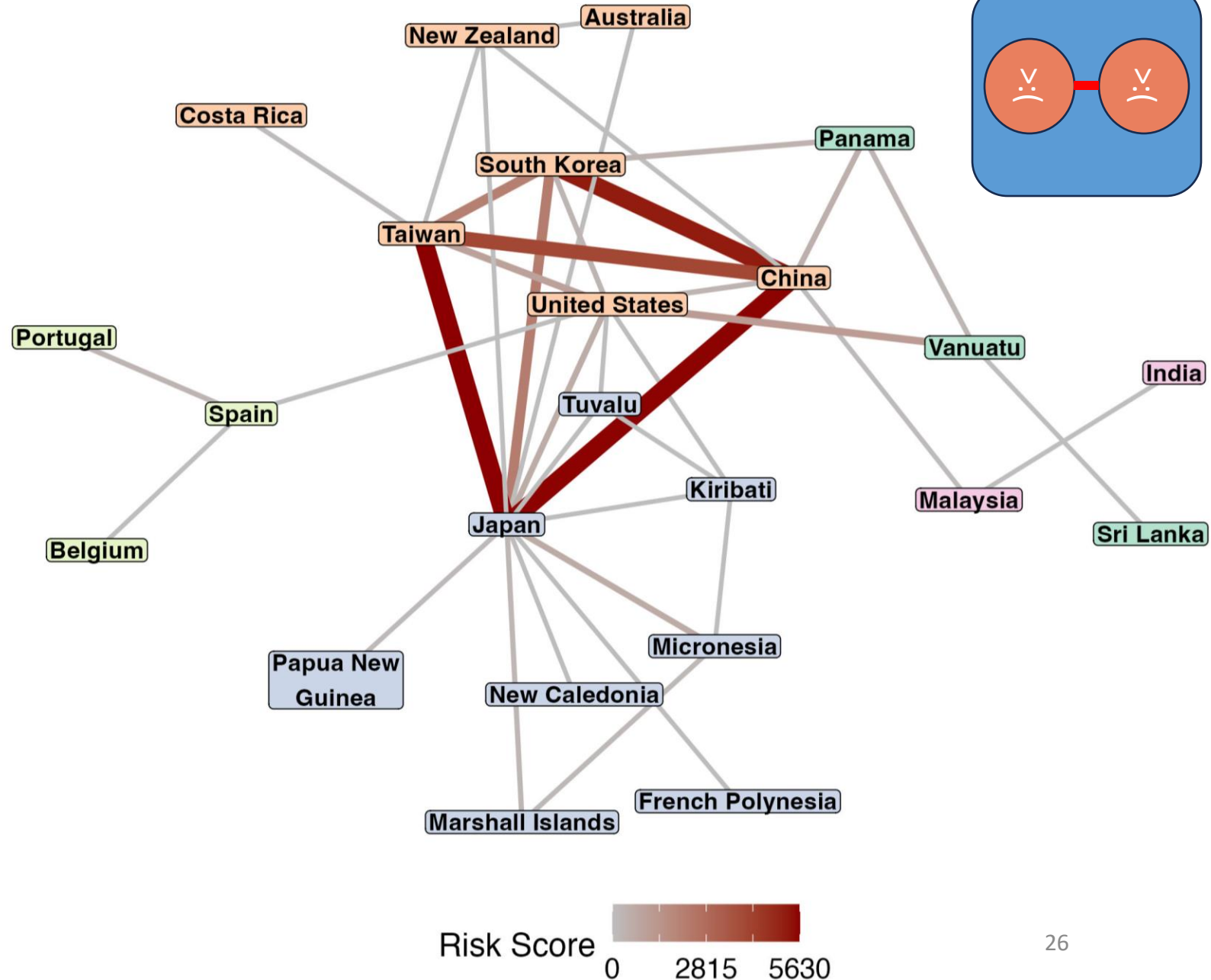
Where are the high-risk regions?

- Again, tropical Pacific and areas beyond national jurisdiction have highest values

- Competition may be more organized where there are established international access agreements

- Potentially more spatial competition + enduring rivalries where there is DWF and offshore fishing presence

Overlapping Fishing Distributions Between High-Risk Dyads
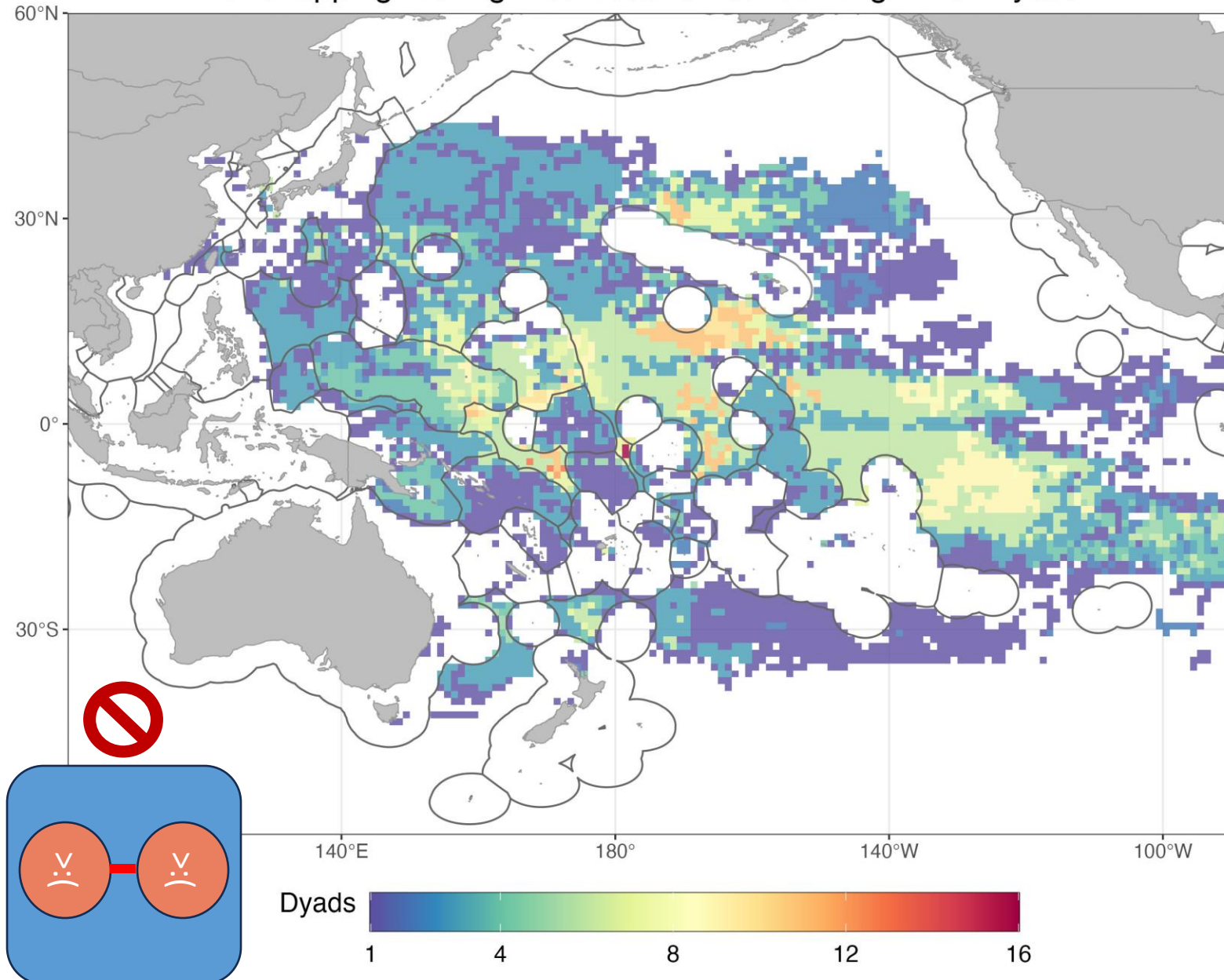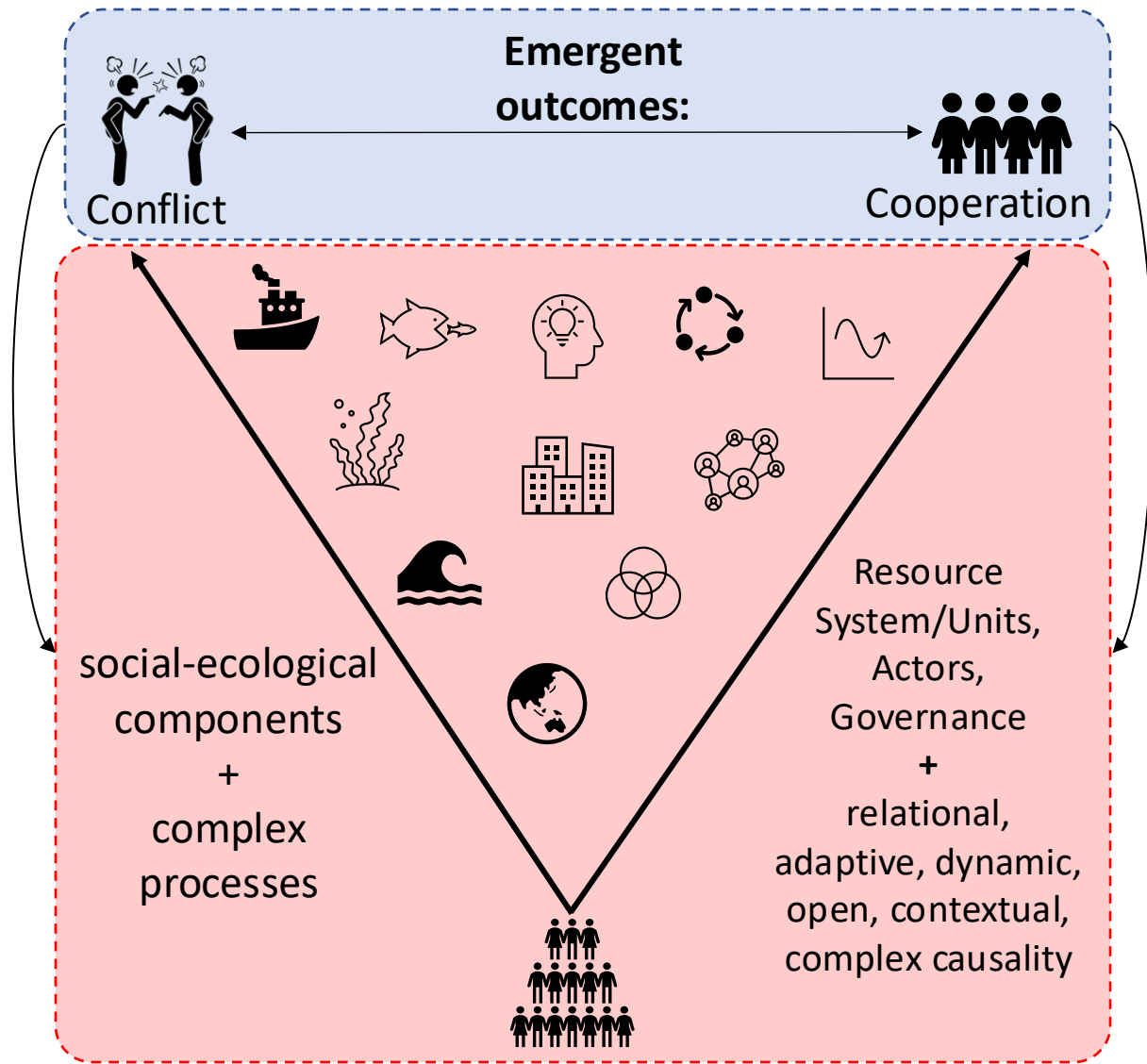
Takeaways

Spatial and historical data can provide insight about fisheries conflict risks

- High-risk geographic regions emerge across varying jurisdictions, namely areas of the tropical high seas
- Regional fisheries agreements may mediate/deter conflicts

Future work

UPDATE WITH RECENT DATA

TEMPORAL PATTERNS OF COMPETITION

GEAR INTERACTIONS

(E.G., LONGLINE AND PURSE SEINE)

CASE STUDIES

Acknowledgements

Thank you!

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keikonom.com

Paper:

References

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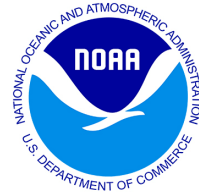
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