

Climate Security in Oceania



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Agenda

- Executive Summary (Caleb Ray)
- Discussion of the Four Reports
 - Mapping Vulnerability (Christopher Matos, Caleb Ray)
 - Disaster Risk Reduction (Harshal Zalke)
 - Migration (Aaron Wolfson, Andrew Robison)
 - Politics, Security, and Climate Landscape (Charlotte Gorman, Grace Frazor)

Context

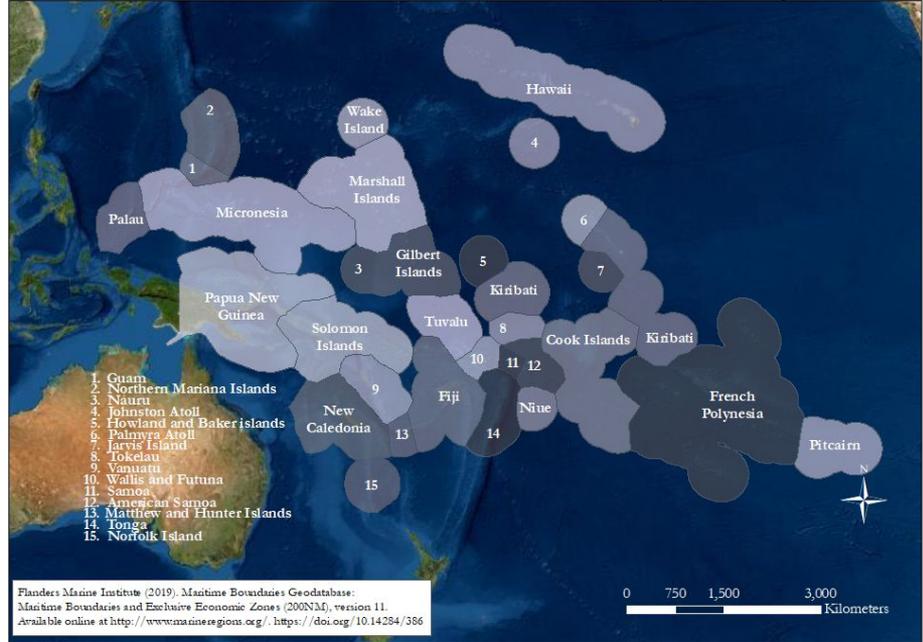
Limited definition of Oceania

- 20 small islands polities
- 2-3 million inhabitants
- ~1300 islands
- Excludes New Zealand, Australia, and Papua New Guinea

Relative Scale

- Land area = Indiana
- Exclusive economic zones = North America

Exclusive Economic Zones in Oceania by Territory



Relevance



Research Question

What climate security risks exist, what is the current state of disaster preparedness, and how can the US, through USINDOPACOM and the CFE-DM, act to address climate vulnerability in Oceania?

Increasing strategic importance

Highly vulnerable to climate change

Four Subject Matter Reports



1. Mapping Vulnerability
2. Disaster Risk Reduction
3. Migration
4. Politics, Security, and Climate Landscape

Commonalities



1. Increasing Vulnerability to Climate Change
 - a. Increasing geographic hazards = more exposure
 - b. More exposure + limited capacity = pervasive disasters
2. Inherent Regional Challenges
 - a. Regional size, scope and population
 - b. Incomplete and conflicting data sets
 - c. Unique island risk profiles
3. Complex, Compound Vulnerability
 - a. Exact causal mechanisms difficult to identify
 - b. Likely to become more complex

Broad Recommendations



Information Collection

Development Assistance, Training, and Planning

Diplomatic Engagement

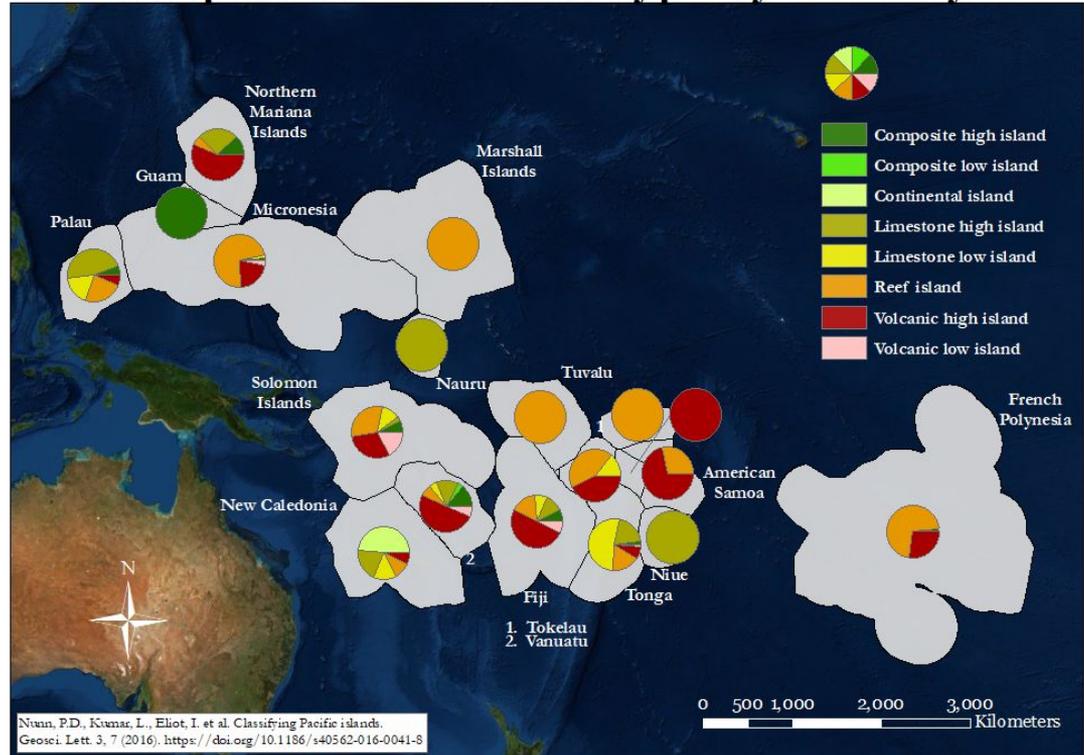
Mapping: Geology



Key Geological Profiles and Threats

- High/Low Islands
- Volcanic
- Limestone
- Reef
- Composite Islands
- Island erosion dynamics

Proportion of Island Type by Country



Mapping



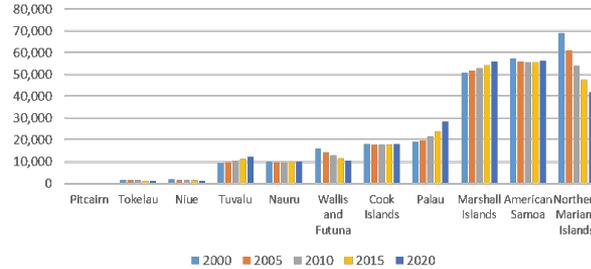
Coastal Flooding Model

- Digital elevation for coastal topography
- 1 meter sea level rise

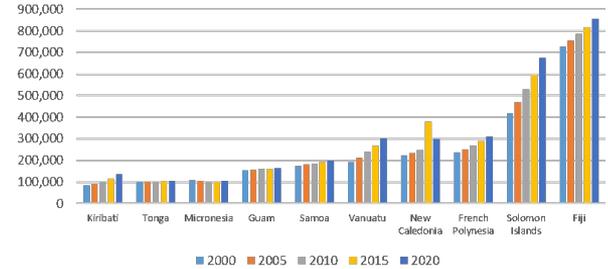
Population Vulnerability to Flooding in 2020

- Gridded population data from NASA SEDAC
- 484,000 live within a one-meter elevation rise

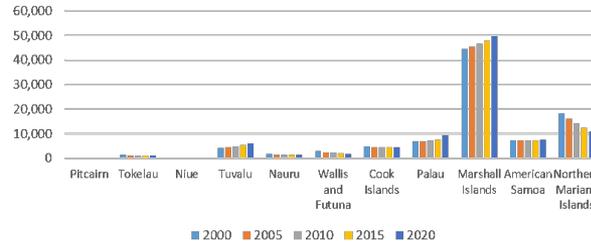
Total Population for Countries < 100,000



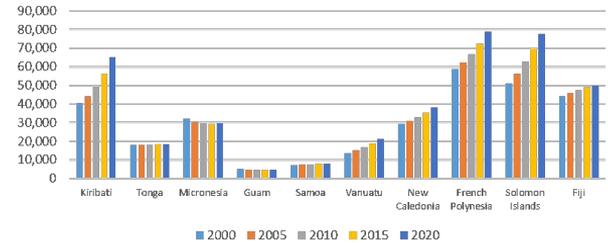
Total Population for Countries > 100,000



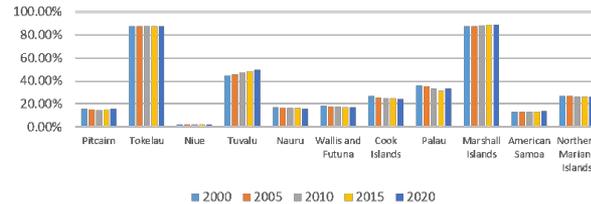
Estimated Population Exposed to 1-meter Sea Level Rise



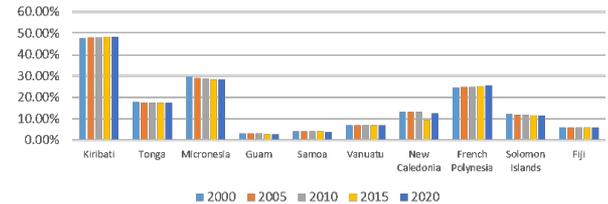
Estimated Population Exposed to 1-meter Sea Level Rise



Estimated Percentage of Country Exposed to 1-meter Sea Level Rise



Estimated Percentage of Country Exposed to 1-meter Sea Level Rise



Mapping



Infrastructure Vulnerability to Coastal Flooding

- Same coastal flooding model
- Limited infrastructure datasets
- Nearly all nations lose infrastructure
- Disproportionate impact on islands within nations

Infrastructure Vulnerability on Selected Islands

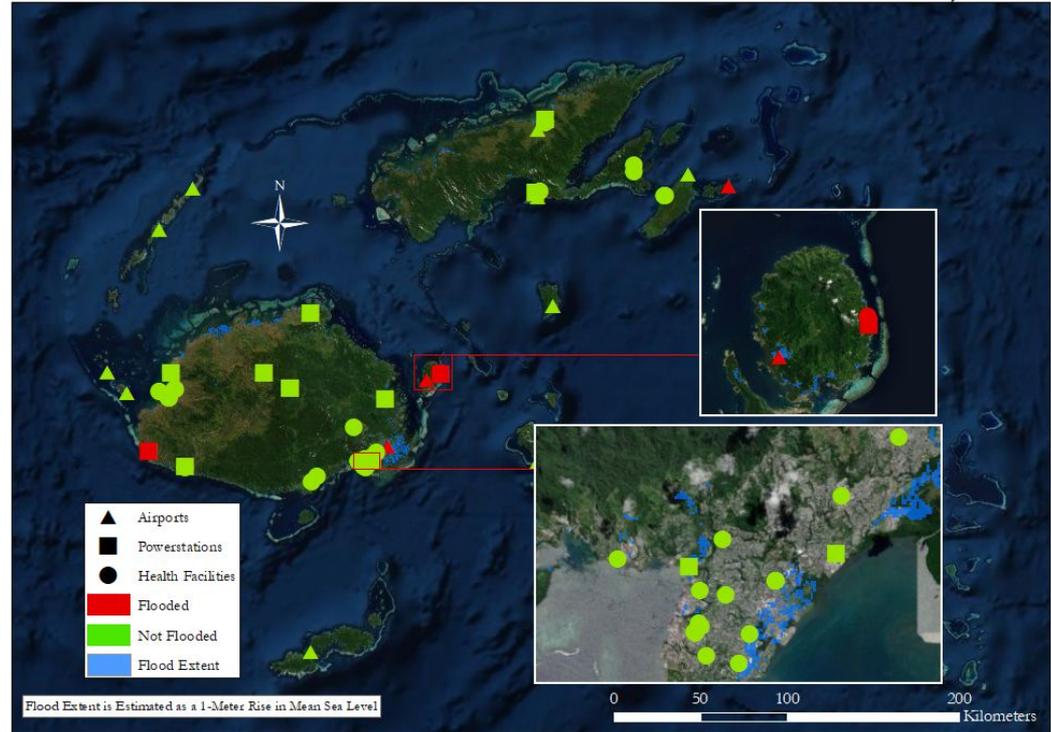
Country	Number of Airports	Airports Affected	Number of Health Sites	Health Sites Affected	Number of Power Plants	Power Plants Affected
Fiji	19	3 (16%)	34	1 (3%)	17	2 (12%)
Solomon Islands	25	7 (28%)	6	2 (33%)	4	0 (0%)
Tuvalu	1	0 (0%)	1	0 (0%)	1	0 (0%)
Tonga	6	0 (0%)	9	2 (22%)	8	0 (0%)

Mapping



Infrastructure Vulnerability

Infrastructure Less than 1-meter Above Mean Sea Level: Fiji



Mapping

Future Research

- Informal Settlements
- Remote Sensing
- Salt Water Intrusion
- Data, data, data, data



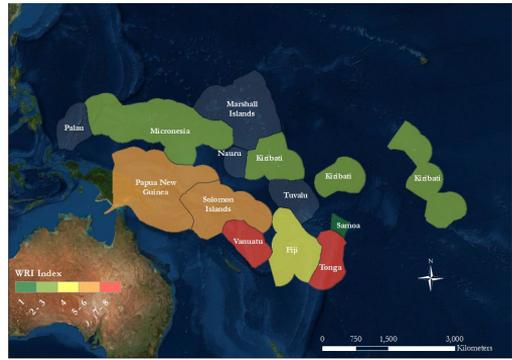
Source: UN Habitat, "Fiji – Informal Settlement Situation Analysis | Advisory Center for Affordable Housing ACASH," accessed May 8, 2020, <https://center4affordablehousing.org/topics/fiji-informal-settlement-situation-analysis-4/>.

Disaster Risk Reduction

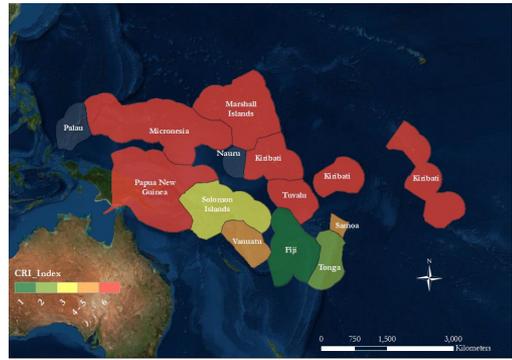


Difference in indices

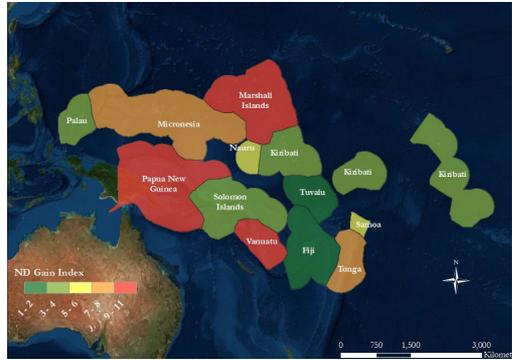
World Risk Index (WRI)



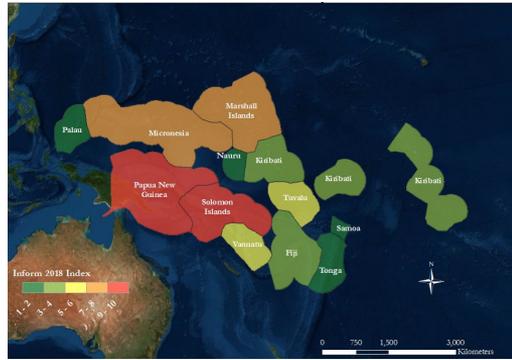
Global Climate Risk Index (CRI)



ND Gain



INFORM



Disaster Risk Reduction



Measuring Vulnerability

- **Measuring Hazard Exposure**

Using exposure metrics from WRI, ND Gain, CRI, and INFORM, we rate the hazard exposure of a country on a scale of High, Medium, and Low hazard exposure.

- **Measuring Population Exposure**

We derive the population exposure by analyzing the % population living off the coast and low elevation. We rate countries on a scale of High, Medium, and Low Population Exposure

- **Measuring Government Preparedness**

We assign government preparedness ratings to countries by studying their response to the following three questions: 1) Does the govt have a DRR strategy in place?; 2) Has the govt been proactively reporting on the Hyogo and Sendai frameworks?; and 3) Does the govt have an independent office under DRR?

Based upon the country's response to the above-mentioned questions, we rate countries on a scale of High, Medium, and Low Government Preparedness.

Disaster Risk Reduction



Country Vulnerability Assessment

Country	Natural Hazard Exposure	Population Exposure	Government Preparedness	Overall Vulnerability Score
Fiji	High	Medium	High	Medium
Kiribati	High	High	High	Medium
Marshall Islands	High	High	High	Medium
Micronesia	High	High	Low	High
Nauru	High	High	High	Medium
Palau	High	High	Medium	High
Samoa	Medium	Medium	Medium	Medium
Solomon Islands	High	Medium	Medium	Medium
Tonga	High	High	High	Medium
Tuvalu	High	High	Low	High
Vanuatu	High	Medium	Medium	Medium

Disaster Risk Reduction



Recommendations for Oceania Countries:

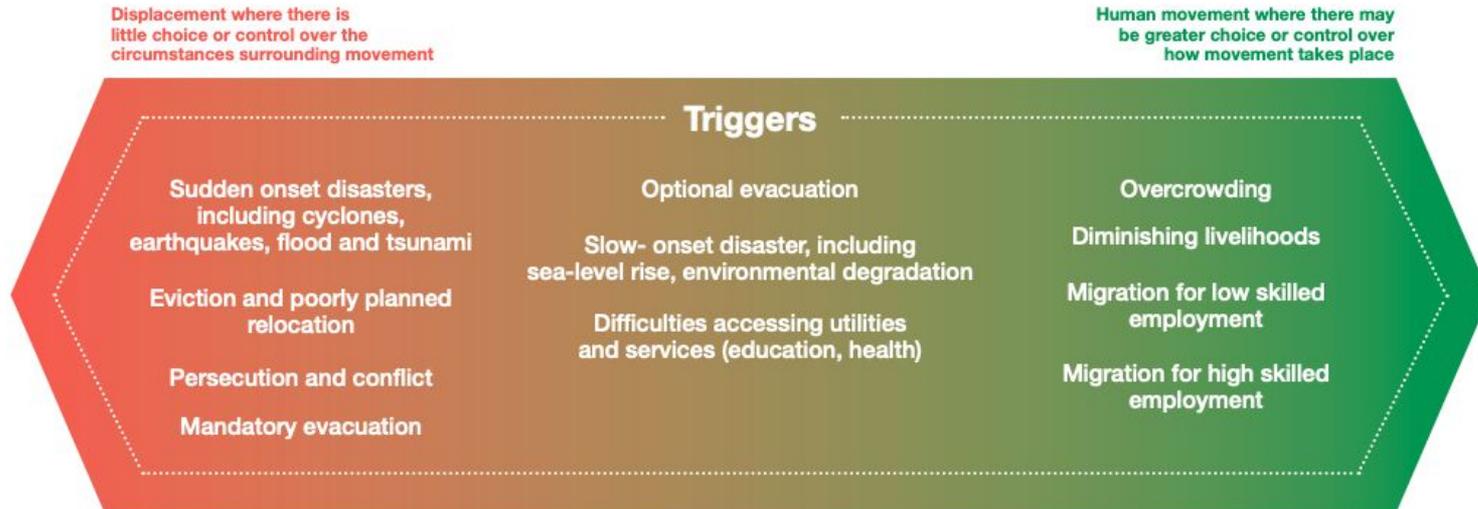
- Recognize distinction between slow-onset and swift-onset hazards.
- Invest in implementation, training, capacity building, and reporting.
- Develop clear and transparent fiduciary systems that track and report DRR and climate adaptation related activities.

Recommendations for Supporting Actors:

- Investigate the measurement systems of existing indices and be aware of their language inconsistencies, errors in reporting, and aggregation of natural and climate related hazards.
- Support country-specific training and capacity building exercises that move forward DRR and climate-related management policies.
- Support funding strategies that allow countries to improve the implementation of their policies.

Migration - Drivers of Displacement

Drivers of Displacement



Source: National Policy on Climate Change and Disaster-Induced Displacement, Republic of Vanuatu

Scope of Analysis



- Utilized the Oceania Group Report from the United Nations Trust Fund for Human Security (UN-TFHS) that labeled five island-nations as the primary recipients of UN aid for climate change in Oceania:
 - 1) Kiribati
 - 2) Republic of the Marshall Islands
 - 3) Tuvalu
 - 4) Vanuatu
 - 5) Fiji

Potential Host Countries



United States

- COFA → Micronesia, Marshall Islands, Palau,
- Territories → American Samoa, Guam, Northern Mariana Islands

Australia

- SWP → Kiribati, Samoa, Tuvalu, Tonga, Fiji, Vanuatu, Nauru, Solomon Islands

New Zealand

- Territory → Tokelau

France (and territories)

- Territories → French Polynesia, New Caledonia, Wallis & Futuna

Migration - Recommendations



1. Play a more active role in supporting Pacific island governments
2. Increase diplomatic engagement in Oceania to address the consequences of migration beyond financial and military support
3. Include specific funding in Compacts of Free Association for climate change mitigation and adaptation to prevent migration
4. Support key allies, including Australia and New Zealand, to manage challenges to habitability in Oceania.
5. Facilitate increased research on migration drivers and consequences in Oceania.

The Political, Security, and Climate Landscape in Oceania



Research Question

What are the geostrategic complexities, risks, and opportunities regarding climate security issues in Oceania?

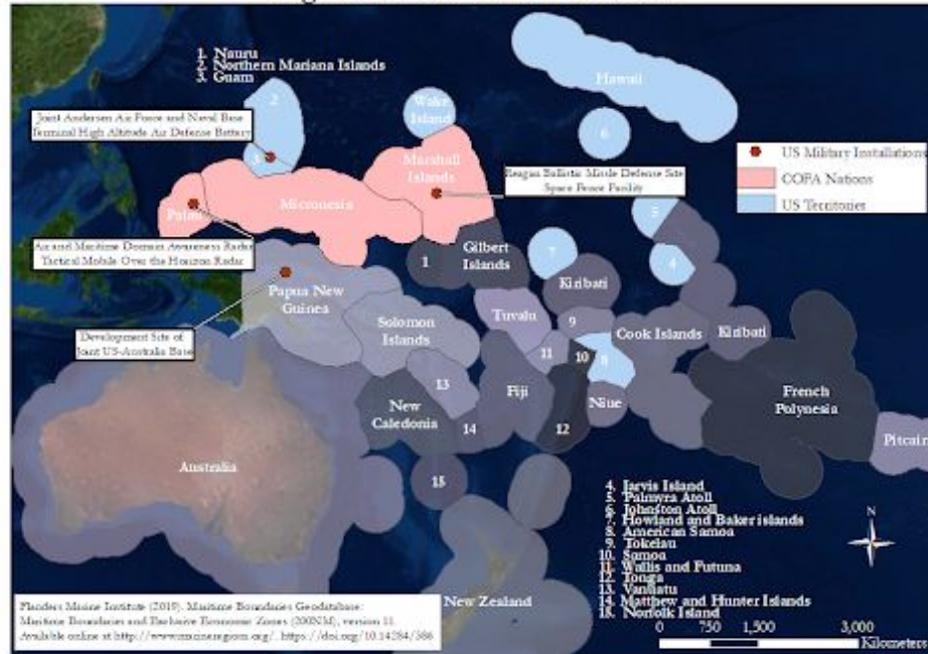
Stakeholder Analysis

United States, Oceania, China, Australia, New Zealand, France, Japan

Strategic Landscape

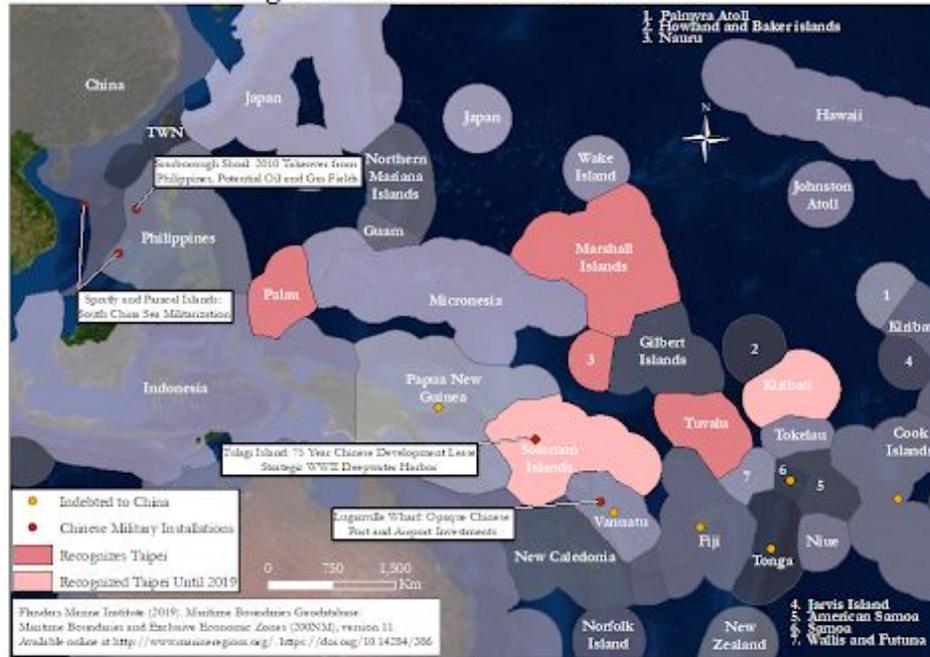


Figure 1: US Assets in Oceania



Strategic Landscape

Figure 3: Chinese Assets in Oceania



Overview of US Government Recommendations

- Early Warning and Risk Reduction
 - Support the FRANZ Agreement with U.S. scientific assets and capabilities
- Economic Investment
 - US Development Finance Corporation and USAID funds should support sustainable infrastructure and development projects that address climate resilience and disaster preparedness
- Diplomatic Engagement
 - Renew the 20-year Compacts of Free Association with Federal States of Micronesia and the Republic of the Marshall Islands that are set to expire in 2023, and Palau in 2024.
- Defense Interests
 - Invest in protection of US assets, support Multinational Planning Assistance Team operations, develop Oceania-specific Pacific Pathways Army programs
- Climate Leadership
 - Work alongside the Pacific Islands Forum to support climate change agenda

Recommendations



Information Collection

- Remote sensing to create complete comprehensive data sets
- Ground-truthing to ensure accuracy of remote data

Development Assistance, Training, and Planning

- Capacity building and planning through existing allies and partners
- Technical assistance and scientific guidance through USAID, USGS, and more

Diplomatic Engagement

- Reaffirm existing alliances with emphasis on mitigation and adaptation
- State Department Strategic Dialogue with Pacific Islands Forum