

# **CCGL9065: Our Responses to Climate Change | HK2100**

**Week 8 Ocean, Decolonized**

# Logistics and Housekeeping

## Reflective Writing and Individual Submissions

- Grades for W1-W4 reflective writings are now available on Moodle
  - Window of clarification opens from today and onwards
  - Questions and queries directed @Jianing (slack/email)
  - Missing submissions: proof-of-submission to be included.
- Final Exhibition of Individual Submissions
  - Interactive deck of personal reflection/collage/YouTube video link (20/20/20)
  - Submission due in-class during last session aka **Apr. 24th**
  - Last make-up opportunity for *Participation*

**“critical state of the oceans and the intersection of marine science, colonial legacies, and indigenous knowledge”**



**71 % Earth Surface Covered  
83 % CO<sub>2</sub> Circulated  
30 % CO<sub>2</sub> Absorbed  
90 % GHG Heat Trapped**

# Ocean's Plight

## Understandings

- **Regulating the Climate**
  - Ocean as climate regulator
  - Absorbing solar radiation
  - Carbon Sequestration
  - Vulnerability to overexploitation
- **Biodiversity Loss**
  - Plastic pollution
  - Coral reef degradation
  - Decline in marine biodiversity
  - Consequences of global ecosystems



William W. Rossiter / WWF

**Coral reefs** protect coastlines from storms and erosion, provide jobs for local communities, and offer opportunities for recreation. Over **0.5 Billion people** depend on reefs for food, income and protection. (NOAA)

Losing the coral reefs is not only losing coastal line/development and the job opportunity, it will be an **economic disaster**.

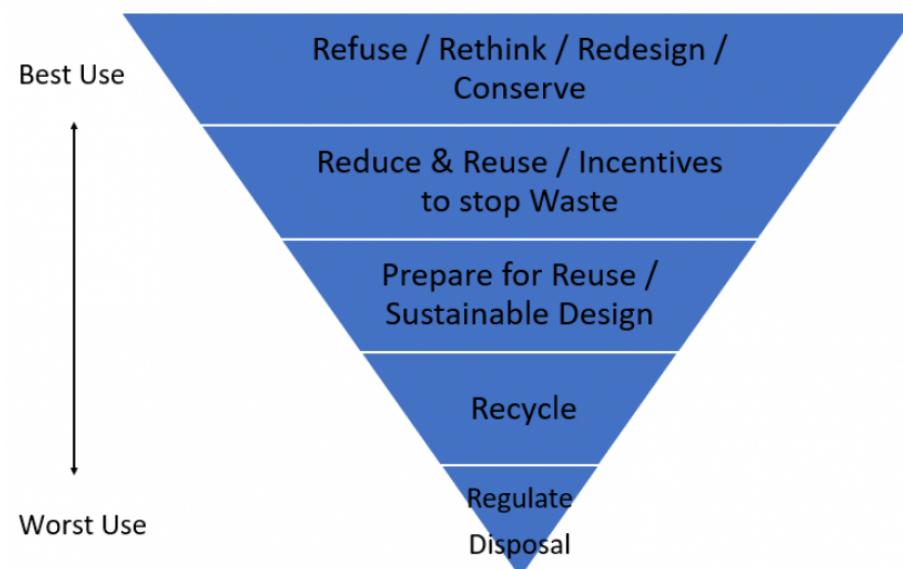


# Anthropogenic Plastic

## Pollution through production/ disposal

- Synthetic organic polymer made from petroleum
- Over 400 million tons produced each year
- Sources:
  - stormwater runoff, sewer overflows, littering, inadequate waste disposal and management, industrial activities, tyre abrasion, construction and illegal dumping
- Breaks down to microplastics under UV light ( $\leq 5\text{mm}$  in length)
  - Can be ingested/aggregated/ accumulated in bodies (found in human blood)
  - Possible biomagnification
- Degrades slowly (hundreds to thousands years)

SHORELINE PLASTICS	SEA SURFACE PLASTICS	PLASTICS IN MARINE ORGANISMS
SEAFLOOR / SEDIMENT PLASTICS	WATER COLUMN PLASTICS	
		<i>Adapted from The Mediterranean: Mare Plasticum</i>



Plastic pollution threatens ocean health, the health of marine species, food safety and quality, human health, coastal tourism, and contributes to climate change.

## ***Plastic Is Turning the Ocean Into a Minefield***



**This week: Story-telling  
with ONE image/punchline.**

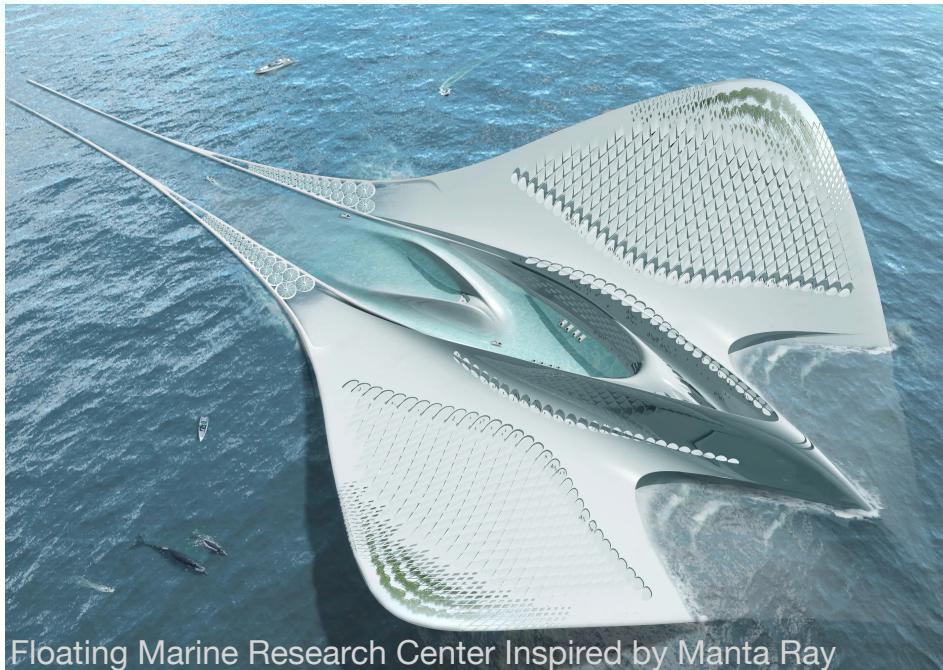
# Status-quo & Issues with Marine Research

## Why studying and protecting the ocean is particularly difficult

- High costs & tech demands
  - Natural challenges from natural, observation-based scientific research
    - Research output dominated by G7 Countries (Canada, France, Germany, Italy, Japan, United Kingdom, USA)
    - China rose up post 2010 following USA
    - Extractive model
- **Colonial Legacies Unkept**
  - Less-resourced waters perpetuate colonial dynamics
  - Scientific approaches often viewed as more superior and civilized than indigenous ones



Jeodo Ocean Research Station

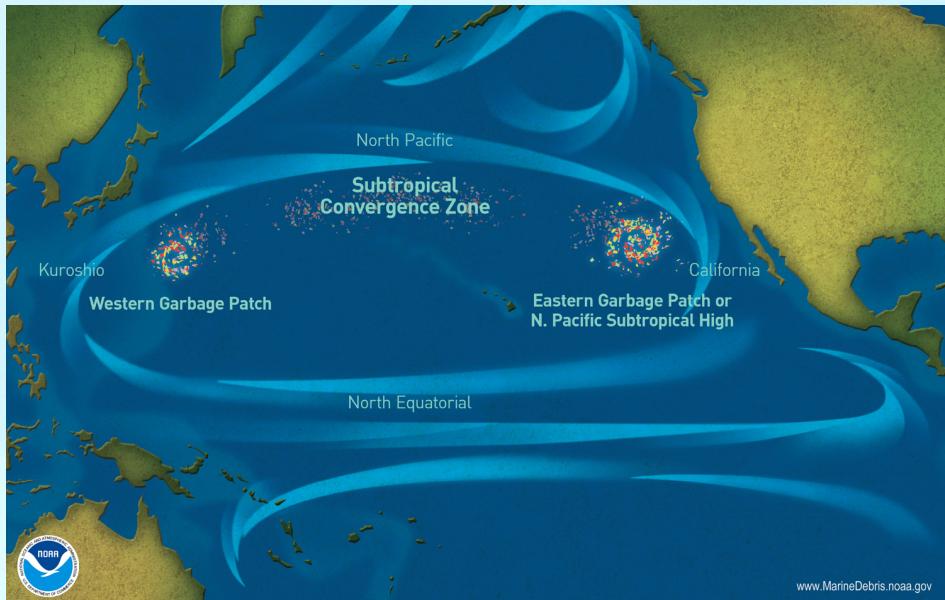


Floating Marine Research Center Inspired by Manta Ray

Rendering: Jacques Rougerie Architecture

# The Great Pacific Garbage Patch

- World's largest collection of floating trash
  - “Larger than Texas”
  - Filled with floating plastic debris (94% microplastics, abandoned fish gear)
  - 46% of the patch (in tonnage) is from fishing nets
  - **Consumer plastics not the no.1 culprit**
  - Sea of plastic that will not grow smaller.



# Rethinking and restructuring the way marine research is conducted

- Historical Context and Colonial Legacies
  - ocean exploration and science, especially in less financially-resourced regions **focus on extracting resources or data,**
  - often **without fair compensation or involvement** of local communities.
- Marginalization of Indigenous Knowledge
  - Indigenous peoples have a deep understanding of marine environments developed over millennia.
  - Often overlooked or undervalued by mainstream marine science.
- How to Decolonize Ocean Science?
  - Inclusive Research Collaborations
  - Benefit Sharing
  - Integrating Knowledge Systems
  - Policy and Governance
  - Education and Capacity Building

## Rethinking and restructuring the way marine research is conducted: Examples

- Community-Based Monitoring:
  - In the Arctic, Inuit communities have been involved in **monitoring sea ice changes**, combining traditional knowledge with scientific methods to track climate change impacts.
- Co-Managed Marine Protected Areas:
  - In places like the Pacific Islands, marine protected areas are **co-managed by indigenous communities** and governments, blending traditional conservation practices with scientific research.
- Coral Reef Restoration:
  - In regions like the Caribbean, **local and indigenous practices** in managing fisheries and protecting marine habitats are integrated into coral reef restoration projects.



# Overfishing in Hong Kong

## A Quick Case Study

- Historical Fishing Grounds:
  - Once rich, Hong Kong's surrounding waters have seen a significant decline in fish populations due to overfishing.
- Modern Pressures:
  - The rise in **commercial fishing practices**, coupled with **increased demand** from the city's populous, exacerbates the problem.
- Biodiversity Loss:
  - Key species have been depleted, affecting the marine ecosystem's balance and resilience.
  - Potential cuts to obvious traditional food options (fish balls)
- Indigenous Fishermen Knowledge:
  - Traditional Practices:
    - Local fishermen possess generational knowledge on sustainable fishing practices, seasonal cycles, and the behavior of local fish populations - unbeknownst to commercial fishing ops.
  - Observational Insights: Recognizing early signs of ecosystem changes or stress.

# Overfishing in Hong Kong

## Case Study Continues

- Connecting Indigenous Knowledge and Overfishing Solutions:
  - Collaborative Management
  - No-Take Zones
  - Seasonal Restrictions
  - Sustainable Techniques
- Challenges and Opportunities:
  - Regulatory Integration
    - integrating traditional practices within modern regulatory frameworks, policies should be on-the-ground realities.
  - Cultural and Knowledge Preservation
  - Community Involvement: local fishing communities involved in decision-making can foster stewardship and compliance with sustainable practices.

# On Decolonizing Ocean Science

## Embracing Perspectives: Role-Play Activity

- *What We Are Doing:*
  - Engaging in a **role-play activity** that simulates a debate around the theme of **Decolonizing Ocean Science** within the Hong Kong context.
  - You will assume roles advocating for “pro-climate-change” (**Pro-CC**) policies and anti-climate-change (**Anti-CC**) viewpoints, as well as various **stakeholder positions** (Local Fishermen, Marine Scientists, Policy Makers, Conservation NGOs or whatever you may see fit).
- *Why We Are Doing It:*
  - To **explore diverse perspectives** on complex issues that intersects ocean conservation, traditional knowledge, and modern science.
  - To understand the **implications** of policy decisions and scientific practices on different communities and the environment.
  - To foster **empathy** and **critical thinking** by stepping into the shoes of various stakeholders affected by these issues.

# On Decolonizing Ocean Science

## Embracing Perspectives: Role-Play Activity (Cont')

- How does these activities help:
  - They highlights the **nuances** in the climate change debate on decolonizing science—a key discussion in ensuring that marine conservation is inclusive, equitable, and effective.
  - Encouraging **informed discussions** on how traditional and scientific knowledge can complement each other in addressing pressing environmental challenges.
- Our Classroom Environment:
  - This is a **safe space** for exploration and discussion. There are **no wrong answers** here, only opportunities to learn and understand different viewpoints.
  - Respect and **open-mindedness** are our guiding principles. Every opinion shared is valued and contributes to our collective learning.
  - **Feedback** and **reflection** are encouraged. This is a chance to voice thoughts, ask questions, and grow from the experience.

# **Pro-Climate Change -> Progressive Actions to address Climate Change**

# Pro-Decolonization (Pro-CC)

## Talking Points

- **Urgent integration** of indigenous knowledge on par with scientific data for holistic ocean conservation.
- **Drastic policy reforms** recognizing indigenous rights and community leadership in marine resource management.
- **Adoption of inclusive research models** that disrupt traditional hierarchies and empower local communities.
- **Economic redistribution** to ensure equitable benefits from marine resources for indigenous and local communities.

**Anti-Climate Change -> Conservative  
Actions to address Climate Change**

# Anti-Decolonization (Pro-CC)

## Talking Points

- **Economic risks** associated with rapid policy shifts, emphasizing stability for marine-dependent industries.
- **Efficiency and scalability** concerns of traditional methods vs. scientific approaches.
- **Regulatory complexities** in reforming marine governance to incorporate indigenous rights.
- **Risk of over-romanticizing** indigenous practices, potentially sidelining scientifically proven conservation strategies.

# Other Group Cheatsheet

## Talking Points

- **Local Fishermen (Pro-CC):**
  - Advocate for *sustainable traditional fishing* and urgent policy changes based on *observed ecological shifts*.
- **Marine Scientists (Anti-CC):**
  - Emphasize *scientific rigor* and a balanced approach incorporating traditional knowledge without compromising standards.
- **Policy Makers (Pro-CC):**
  - Push for *bold legislative actions* for indigenous rights and innovative, equitable resource management policies.
- **Conservation NGOs (Anti-CC):**
  - Stress *pragmatic conservation strategies* and caution against diluting efforts with overly ambitious decolonization goals.