

# **Coastal Environmental Justice**

**Course # (Credits)**

**University/Marine Laboratory**

Class Dates:

Class Hours:

Office Hours:

Prerequisites:

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## **PRELIMINARIES**

### **Description**

This course will examine the tenets of Environmental Justice (EJ) with particular focus on coastal communities around the world. We will start with an orientation to the history of the field of Environmental Justice, including the work of Dr. Robert Bullard. We will define coastal communities, drawing upon case studies around the world. What are the characteristics of living on the coast that make coastal EJ unique? Why is it important to study? During this first week we will touch on many of the traditional EJ concerns, including pollution, resource loss, and restricted access to information and representation.

From this introduction, we will spend a week focused on climate change. We know that climate change will affect every coastal community around the world. But how does climate change manifest in nearshore waters and along the coast? What do we know about future conditions? Who will be affected, and when? How does climate change intersect with traditional EJ concerns? Not every climate change impact will be negative, and it will be important as a class to maintain an objective approach to learning what we can about the future. Are there coastal communities that stand to benefit from climate change?

In week three, we'll discuss various steps that are being taken to counter the emerging crises we have studied. Drawing from solutions being discussed across the policy spectrum, from forced relocation to paying reparations, we will have an opportunity to inhabit different characters in a role-playing exercise. From there, you will have an opportunity to develop your own answers to the issues raised in the class.

By the end of the class, you will know the basic principles and history of EJ, be able to describe the issues faced by coastal residents, understand how climate change affects both nearshore habitats and waterfront communities, and have investigated and presented a way forward to the rest of the class.

## **Purpose**

The purpose of this course is to help students understand the urgency of the policy issues at hand, and provide them with the knowledge, tools, and contacts required for effective engagement.

## **Objectives**

The course is designed to provide students with a framework for thinking about the intersection of environmental justice and coastal communities against the backdrop of climate change. There are multiple examples to draw from, and we will make use of international resources when they add to the conversation. However, there are rich ecological and sociological experiences to draw from in New England, so a portion of our class will be devoted to exploring the local species and history through the lens of coastal environmental justice.

By the end of the class, students will know the basic principles and history of EJ, be able to describe the issues faced by coastal residents, understand how climate change affects both nearshore habitats and waterfront communities, and have investigated and presented a way forward.

The class has the following specific academic and professional learning outcomes. At the conclusion of the course, students will be able to:

### ***Academic Skills***

- 1) Conduct a literature review and synthesize the findings orally or in writing;
- 2) Recognize false arguments and refute them (exercise critical thinking);
- 3) Identify the most significant ecological threats to nearshore marine species and habitats and explain why they are significant in the context of EJ;
- 4) Describe how sea level rise (SLR) is calculated and projected into the future (where the measurements come from, how projections are calculated);
- 5) Articulate the systemic, historical forces that have led to social inequities along the coast, and
- 6) Propose a viable solution to a coastal EJ issue.

### ***Professional Development***

- 1) Collaborate successfully with peers within the structure of various classroom exercises through a participatory classroom and respectful group learning environment;
- 2) Write clear, critical reflection and research papers, with proper citations;

- 3) Give public presentations;
- 4) Call upon leaders in EJ, climate change, and marine ecology who they have added to their networks;
- 5) Offer constructive, substantive peer-review, and
- 6) Manage their time well.

### **Methodology, General Format and Expectations**

I aim to be responsive to various learning styles and skill sets. The course will consist of instructor lectures, class discussion, student presentations, paper writing, case study challenges, and other interactive learning exercises. Students should come to every class having read the assigned readings and fully willing to participate and interact with one another during non-lecture portions of the class. Homework will consist of reading academic and government papers, researching media, writing papers, preparing an oral presentation, exploring case studies and developing individual projects. The course is designed to facilitate interdisciplinary understanding across marine ecology, sociology, law, and politics. In our post-factual world where opinion is allowed to reign supreme, this course seeks to teach and promote objective, critical, independent thinking.

We will spend time learning to write strong papers and present compelling oral arguments, and the expectations for the writing and speaking assignments will be clear. My goal is for you to gain confidence in these critical professional skills. I will assign both group project work and individual presentations, so that students can develop collaborative working skills and be responsible for their own work.

All materials for the class can be found on the Internet and our class pages in Canvas, unless otherwise stated in the syllabus.

### **Attendance**

We all need to attend every class. Unless I hear from you well in advance of class and your reason for failing to attend is very good, not being there means you cannot participate, and participating is what will make this class and your grade in it a success. Being late or absent will count against your participation grade.

### **Creating the best hybrid class environment**

Having some of us together sharing a space and some of us in time zones all around the world is a challenge. But we can still create a community, where all of our voices are welcome and where we all belong. To help our class be a place where we are all engaged, let's ask directly for what we need and listen respectfully to the needs of others. We can do anything as a class if we're all on board!

- Please arrive on time and do not come and go at random from class. Showing up is the best way to build a community. Part of our course is focused on seeking solutions: we can only effect change if we are present.
- If you are online, please keep your video on as much as possible. If you will be in a place where it would be distracting for others to see your video or your bandwidth is very low, please let me know before class starts so I understand why your video is off.
- No cell phones on screen.
- No food on screen. Liquids are OK.
- Everyone will lead discussion at some point as part of their participation grade. The discussions that you lead, either on your own or in small groups, should draw upon outside resources, knowledge, and experience. You are expected both to have a thorough understanding of the readings and to go beyond the provided materials. Give the class context for the readings. Feel free to engage the class with break-out exercises, challenges, or other methods for investigating the material. Share your screen! Teach us!
- I will call on you at random to answer questions or contribute ideas, relying on the Socratic Method as a way to explore the material presented, help you develop your ability to make convincing arguments and provide a practice platform for speaking in front of the group.
- Being wrong or unsure of the answer is OK. I ask for a lot of improvising and engagement in the class; I would always rather have you participate with a possible error than be silent. We all make mistakes and we can all learn from them. In this classroom, we're all on the same team.

I'll check in with you at the mid-point as a class about how everything is going, but there's no need to wait until then to check in with me individually. Please communicate with me before a small thing becomes a big thing. I want to be the best professor I can be for you and I take that responsibility seriously. I want you to succeed in this class as much as you do. If we work together, each one of you will. Let me help you if I can.

### **Grading**

I will share my expectations with you before each assignment so you can understand the grading breakdown.

I will use the following standard grading system:

Grade	Grade Point	Percentage
A	4.0	95-100
A-	3.7	90-94
B+	3.3	87-89
B	3.0	84-86
B-	2.7	80-83
C+	2.3	77-79
C	2.0	74-76
C-	1.7	70-73
D	1.0	60-69
F	0	0-59

### **Writing**

- Citations

I write using the style of the scientific journal Ecology, because it's my discipline. Here's a website that explains that style:

<https://guides.library.utoronto.ca/bio153/citation>

You can use any style you like, *as long as you are consistent throughout and the citations are complete*. A complete citation means your reader can easily find the reference. Please ask for guidance if you have any questions.

- Rewriting

Showing improvements and evidence of learning from your last assignment in your next assignment should be the priority in a short course. However, I am supportive of all of your efforts to improve and rework your writing, so I will leave it to you to decide if you have the additional time to go back to a paper you have already submitted.

If you are going to rewrite a paper, please let me know in advance so we can go over the comments I made and any other issues that either you or I want to discuss. I want to know that you have a clear understanding of how you can make your writing better, which will help you write and me grade more successfully.

When I receive a rewritten paper, I am looking for improvements and responses to the comments we reviewed together in the first paper, plus no additional errors.

I will grade the rewrite independently and *your final grade for the assignment will be the average of the two grades*. It is possible to underperform on your rewrite, which would have the unfortunate effect of lowering your grade for the assignment. Please

be thoughtful about rewriting so that it is a valuable investment of both your time and mine. Late papers are docked 5 points per 24-hour period.

### **Academic Integrity**

Do not plagiarize. You are not learning, and you are not respecting yourself or the owner of the original work. A student commits plagiarism when she/he/they:

- submits the work of another person as original work;
- gives inadequate attribution to an author or creator whose work is incorporated into the student's work, including failing to indicate clearly (through accepted practices within the discipline, such as footnotes, internal references and the crediting of all verbatim passages through indentations of longer passages or the use of quotation marks) the inclusion of another individual's work;
- paraphrases material from a source without sufficient acknowledgement as described above.

Students must adhere to Cornell's and UNH's Policies for Academic Honesty/Plagiarism and Discrimination

- Cornell: <http://cuinfo.cornell.edu/aic.cfm>
- UNH: <http://www.unh.edu/vpsas/handbook/welcome-university-newhampshire>

***Plagiarizing once results in a failing grade for that assignment.***

***Repeated instances of plagiarism result in a failing grade for the course and documentation with the University on your academic record.***

Students who are in doubt as to what constitutes plagiarism in a particular instance should consult me.

### **Assignments**

- **Paper 1 (15%).** What does anti-racism look like along the coast and in the ocean? Please draw on specific texts and materials in addition to incorporating your personal experiences where relevant. This paper is an opportunity both for you to organize your thoughts around some key ideas or a central thesis, and for me to take a look at your writing and citation usage. (3 pages)
- **Paper 2 (15%).** Reflections on the Negotiations role play. Academic or professional lessons learned as well as personal experiences. (2 pages)

- **Paper 3 (20%).** Paper on Solutions. Each of you takes a different discipline (*e.g.*, economics, sociology), and develops a solution from that discipline to some of the issues we've investigated during the class. (5 pages)
- **Oral presentation (25%).** 10 minutes. Pick a viewpoint of CEJ from anywhere in the world that we haven't examined in depth and that you don't agree with, and make an argument on that side of the issue. Describe and defend your adopted viewpoint to the class. No long videos and no notes. This assignment is your opportunity to develop and strengthen your public speaking skills.
- **Class participation, including small group participation (25%).** I will reward you for volunteering for assignments and for being prepared when I call on you. If you don't know the answers when I call on you, let's figure out why and help you succeed.

Some class participation exercises:

- Write and ask questions for our guest speakers
- Reactions to reading (including online discussion boards)
- Define terms from reading
- Peer-review exercises
- Rapid pop-up quizzes

### **Feedback**

As your professor, I care both about teaching you new material and supporting you in your academic careers. There are always ways to make a class better, and I welcome your feedback. I have structured the class with dedicated opportunities to check in. Office hours are good for offering feedback on an individual basis. I will also distribute a feedback survey after the first two weeks that you can complete anonymously if you choose. And we'll have time in class to discuss changes we can make going forward.

## CLASS SCHEDULE AT A GLANCE

	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>Week 1</b>	Course logistics and introduction.  <div style="text-align: right;">1</div>	Guest Lecture Vivienne Solis.  Paper 1 assigned. <div style="text-align: right;">2</div>	Course theory and context.  Paper 1 peer coaching workshop. <div style="text-align: right;">3</div>	Guest Lecture Ian Urbina.  <div style="text-align: right;">4</div>	Guest Lecture Lindsey Williams.  <u>Paper 1 due.</u> <div style="text-align: right;">5</div>
<b>Week 2</b>	Coastal climate change.  Art Class 1.  <div style="text-align: right;">6</div>	Relocation negotiation role-playing exercise.  Paper 2 assigned.  <div style="text-align: right;">7</div>	Guest Lecture Jennifer Jacquet.  <u>Paper 2 draft due for swap to peers.</u>  <div style="text-align: right;">8</div>	Guest Lecture Dave Reidmiller.  <u>Written peer review due.</u>  Verbal peer review session. <div style="text-align: right;">9</div>	Guest Lecture Rizwana Hasan.  <u>Paper 2 due.</u>  <div style="text-align: right;">10</div>
<b>Week 3</b>	Biases and racism.  Equity exercise.  Art Class 2. <div style="text-align: right;">11</div>	Solutions.  Paper 3 assigned.  <div style="text-align: right;">12</div>	Guest Lecture Andres Cisneros-Montemayor.  Oral presentation assigned.  <div style="text-align: right;">13</div>	Guest Lecture / Rock Talk Rashid Sumaila.  <div style="text-align: right;">14</div>	Oral presentation peer practice and coaching workshop.  <div style="text-align: right;">15</div>
<b>Week 4</b>	Guest Lecture Maxine Burkett.  <div style="text-align: right;">16</div>	<u>Oral Presentations due.</u>  <div style="text-align: right;">17</div>	<u>Oral Presentations due.</u>  <u>Paper 3 due.</u> <div style="text-align: right;">18</div>	<u>Oral Presentations due.</u>  <div style="text-align: right;">19</div>	Course Conclusion and Evaluation.  <div style="text-align: right;">20</div>

Vivienne Solis: <https://namati.org/network/organization/coopesolidar-r-l/>

Ian Urbina: <https://www.linkedin.com/in/ianurbina>

Lindsey Williams: <https://www.linkedin.com/in/lindseycwilliams>

Jennifer Jacquet: <https://jenniferjacquet.com>

Dave Reidmiller: <https://www.gmri.org/our-approach/staff/david-reidmiller>

Rizwana Hasan: <https://www.goldmanprize.org/recipient/rizwana-hasan/>

Rashid Sumaila: <https://oceans.ubc.ca/rashid-sumaila>

Andres Cisneros-Montemayor: <https://www.sfu.ca/rem/people/profiles/cisneros-montemayor/>

Maxine Burkett: <https://www.law.hawaii.edu/article/biden-administration-taps-university-hawai'i-richardson-law-professor-burkett-climate-role>



## **CLASS SCHEDULE BY DAY AND COURSE MATERIALS (DRAFT)**

### *Week I: What is Coastal Environmental Justice (EJ)?*

*Guest Speakers Vivienne Solis, Ian Urbina, Lindsey Williams*

#### **Day 1**

Introduction and course logistics. Definitions. Scope. Expectations. Focus on Environmental Justice, both in the United States and overseas.

#### **Readings:**

- EJ Principles. <https://drrobertbullard.com>
  
- Bullard, R. D. and B. Wright. 2012. *The Wrong Complexion for Protection: How the Government Response to Disaster Endangers African American Communities*. New York University Press. 744 pp.
  - Introduction: "Anatomy of Vulnerability"
  - Chapter 3: "The Legacy of Bias: Hurricanes, Droughts, and Floods"
  - Chapter 4: "Recovery and Reconstruction in Post-Katrina New Orleans."

#### **Discussion:**

Environmental Justice. Define it in your own words. What does it mean to you? Where have you seen or experienced it in your life? Identify coastal exploitation. Explore commonalities across cultures.

WHAT IS JUSTICE?

WHAT IS INJUSTICE?

Something becomes a JUSTICE issue when

True JUSTICE comes when

#### **Day 2**

Vivienne Solis Guest Lecture and discussion on Costa Rican artisanal fishing communities: food security, clean water, human rights, external threats.

#### **Readings:**

- 1) [Status of Social development of small-scale fishing communities: Costa Rica](#)
  
- 2) [Blue Economy Video in Costa Rica \(with subtitles\)](#)

#### **Assignment:**

- Paper 1 assigned

### Day 3

JEDI (Justice, Equity, Diversity and Inclusion), BEPI (Belonging, Efficacy, Place, Identity) & Anti-Racism. The intersection of individual experience and systemic policies. Does governance matter? How much does jurisdiction drive inequity? Red-lining, zoning, flood insurance, property rights. Case studies from US and overseas. Lecture and discussion.

Paper 1 peer coaching workshop.

#### Readings:

- 1) Miriti, M. N., G. Bowser, C. R. Cid, and N. C. Harris. 2021. Overcoming Blind Spots to Promote Environmental Justice Research. *Trends in Ecology and Evolution* 36(4): 269-273.
- 2) Banzhaf, S., L. Ma, and C. Timmins. 2019. Environmental Justice: The Economics of Race, Place, and Pollution. *Journal of Economic Perspectives* 33(1): 185-208.

#### Discussion:

Anecdotes can help us build an understanding about institutional experience. They can help us directly address (1) external risk, danger, policing when outside/doing fieldwork; (2) “internal” risk from judgment from peers, family, mentors about doing marine ecology. Anecdotes can lead us to an understanding about JEDI and BEPI at institutions. What are the policies that are in place that keep Black & Indigenous People of Color from feeling a sense of belonging? Experiences become patterns that—once we identify them—can help us understand why we are where we are.

### Day 4

Ian Urbina Guest Lecture and discussion on fishmeal processing in Gambia and international experiences of CEJ in developing countries. Pressures of globalization.

#### Readings/Media:

- 1) How Fish Meal Production is Destroying Gambia's Waters.  
<https://www.newyorker.com/video/watch/how-fish-meal-production-is-destroying-gambias-waters>
- 2) Fish Farming Is Feeding the Globe. What's the Cost for Locals?  
<https://www.newyorker.com/magazine/2021/03/08/fish-farming-is-feeding-the-globe-whats-the-cost-for-locals>
- 3) The deadly secret of China's invisible armada: Desperate North Korean fishermen are washing ashore as skeletons because of the world's largest illegal fleet.

<https://www.nbcnews.com/specials/china-illegal-fishing-fleet/>

## Day 5

Lindsey Williams Guest Lecture and discussion on local and indigenous fishing conditions in New England.

### Readings:

- 1) USG Executive Order 12898 on Environmental Justice.  
<http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf>.
- 2) USG Executive Order 14008 on Tackling the Climate Crisis at Home and Abroad.  
<https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/> (section 219 to end or link here:  
<https://www.federalregister.gov/d/2021-02177/p-116>).
- 3) A Practitioner's Handbook for Fisheries Social Impact Assessment. 2020.  
[https://spo.nmfs.noaa.gov/sites/default/files/TM212\\_0.pdf](https://spo.nmfs.noaa.gov/sites/default/files/TM212_0.pdf) (pp. 36-37 especially).

### Assignment:

- Paper 1 due

## *Week II: How does Climate Change Intersect with CEJ?*

*Guest Speakers: Jennifer Jacquet, Dave Reidmiller, Rizwana Hasan*

## Day 6

Overview of coastal climate change: oceanography, economics, and societies' responses.

Why isn't the world like a big bathtub?

Where do SLR calculations come from? (Present and future projections.) Does it matter if different countries calculate them differently? Why? What do those calculations affect?

What factors affect SLR?

### Readings (to be selected):

- 1) Climate Information: Project model scenarios, query databases, digest climate news. Foundation for understanding how papers have changed over time.  
<https://www.climatechangeinaustralia.gov.au/en/>

<https://www.climatecentral.org>

- 2) Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, 2012.  
<https://www.nap.edu/read/13389/chapter/1>
- 3) Insurance primer:  
Climate change could make insurance too expensive for most people – report. The Guardian. 21 March 2019.  
<https://www.theguardian.com/environment/2019/mar/21/climate-change-could-make-insurance-too-expensive-for-ordinary-people-report>  
  
<https://www.reinsurancene.ws/tag/climate-change>
- 4) Bronen, R. and F. S. Chapin. 2013. Adaptive governance and institutional strategies for climate-induced community relocations in Alaska. Proceedings of the National Academy of Sciences 110: 9320-9325.
- 5) Gattuso, J.-P., A. Magnan, R. Billé, W. W. L. Cheung, E. L. Howes, F. Joos, D. Allemand, L. Bopp, S. R. Cooley, C. M. Eakin, O. Hoegh-Guldberg, R. P. Kelly, H.-O. Pörtner, A. D. Rogers, J. M. Baxter, D. Laffoley, D. Osborn, A. Rankovic, J. Rochette, U. R. Sumaila, S. Treyer and C. Turley. 2015. Contrasting futures for ocean and society from different anthropogenic CO<sub>2</sub> emissions scenarios. Science 349(6243): aac4722-1 to 10.  
DOI: 10.1126/science.aac4722
- 6) Kulp, S. A. and B. H. Strauss. 2019. New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding. Nature Communications 12 pp.  
<https://doi.org/10.1038/s41467-019-12808-z>  
  
Lu, D. and C. Flavelle. 29 October 2019. Rising Seas Will Erase More Cities by 2050, New Research Shows. New York Times article.  
[https://www.nytimes.com/interactive/2019/10/29/climate/coastal-cities-underwater.html?te=1&nl=climate-fwd:&emc=edit\\_clim\\_20191030?campaign\\_id=54&instance\\_id=13481&segment\\_id=18366&user\\_id=b3d4097bc4501b3cf2ee6551f506aacc&regi\\_id=92021424](https://www.nytimes.com/interactive/2019/10/29/climate/coastal-cities-underwater.html?te=1&nl=climate-fwd:&emc=edit_clim_20191030?campaign_id=54&instance_id=13481&segment_id=18366&user_id=b3d4097bc4501b3cf2ee6551f506aacc&regi_id=92021424)
- 7) Magnan, A. K. and J.-P. Gattuso. 2016. The cascading effects of climate-related changes in the ocean. In: Laffoley, D. and Baxter, J. M. (editors). 2016. Explaining ocean warming: Causes, scale, effects and consequences. Gland, Switzerland: IUCN. 456 pp.

- 8) Moser, S. C, S. J. Williams and D. F. Boesch. 2012. Wicked challenges at Land's End: Managing coastal vulnerability under climate change. *The Annual Review of Environment and Resources* 37: 51-78.
- 9) Nicholls, R. J., D. Lincke, J. Hinkel, S. Brown, A. T. Vafeidis, B. Meyssignac, S. E. Hanson, J.-L. Merkens and J. Fang. 2021. A global analysis of subsidence, relative sea-level change and coastal flood exposure. *Nature Climate Change*. 11 pp.  
<https://doi.org/10.1038/s41558-021-00993-z>

**Discussion:**

Food security, human rights, coastal access and coastal vulnerability (storms, flooding risks).

**Art Class 1: Visualizing CEJ**

**Day 7**

Relocation negotiation role-playing exercise.

**Assignment:**

- Paper 2 assigned

**Day 8**

Jennifer Jacquet Guest Lecture on coastal aquaculture and shifts in marine food production. Ecological effects of coastal climate change.

Paper 2 draft due for swap to peers.

**Readings:**

- 1) Tim Eichenberg lecture on SLR in San Francisco:  
<https://www.youtube.com/watch?v=EcS-dLXVavc>
- 2) Climate Gentrification in the US Southeast: 3 March 2021:  
<https://edition.cnn.com/interactive/2021/03/us/climate-gentrification-cnnphotos-invs/>
- 3) Young, T., E. C. Fuller, M. M. Provost, K. E. Coleman, K. St. Martin, B. J. McCay and M. L. Pinsky 2019. Adaptation strategies of coastal fishing communities as species shift poleward. *ICES Journal of Marine Science* 76(1): 93-103. DOI:10.1093/icesjms/fsy140.
- 4) Green, K. M., J. C. Selgrath, T. H. Frawley, W. K. Oestreich, E. J. Mansfield, J. Urteaga, S. S. Swanson, F. N. Santana, S. J. Green, J. Naggea, and L. B.

Crowder. 2021. How adaptive capacity shapes the Adapt, React, Cope response to climate impacts: insights from small-scale fisheries. *Climate Change* 164(15). 22 pp.

<https://doi.org/10.1007/s10584-021-02965-w>

## Day 9

Dave Reidmiller Guest Lecture on New England coastal climate change.

Written peer review due. Verbal peer review session. Discuss what learned.

### Readings:

- 1) The Northeast chapter of the Fourth National Climate Assessment:  
<https://nca2018.globalchange.gov/chapter/18/>
- 2) New England states overview:
  - a. National Oceanic and Atmospheric Administration's State Climate Summaries:  
<https://statesummaries.ncics.org/>
  - b. Environmental Protection Agency's State Climate Fact Sheets:  
<https://19january2017snapshot.epa.gov/climate-impacts/climate-change-impacts-state.html>
- 3) Reports from Maine's Climate Council:  
<https://climatecouncil.maine.gov/reports>
- 4) One Climate Future - a joint climate action plan for the Cities of Portland and South Portland:  
<https://www.oneclimatefuture.org>
- 5) Boston's Climate Action Plan:  
<https://www.boston.gov/departments/environment/boston-climate-action>

## Day 10

Rizwana Hasan Guest Lecture on Bangladesh case study.

Class mid-point survey.

### Assignment:

- Paper 2 due

*Week III: Where are the Solutions?*

*Guest Speakers: Andres Cisneros-Montemayor, Rashid Sumaila*

**Day 11**

Lecture on behavioral economics and psychology. Scope Neglect and Availability Bias. How do we solve the problem of vulnerability along the coast? Hard data tell a lot, but if we can pinpoint where our biases are in how we deal with disaster, we have a fighting chance of enacting policies that restore equity.

Equity Exercise.

**Readings:**

- 1) [RARE Center for Behavior and the Environment](#)
- 2) <https://www.businessinsider.com/cognitive-biases-2015-10>
- 3) [https://en.wikipedia.org/wiki/List\\_of\\_cognitive\\_biases](https://en.wikipedia.org/wiki/List_of_cognitive_biases)
- 4) Jerch, R., M. E. Kahn, and G. C. Lin. 2020. Local Public Finance Dynamics and Hurricane Shocks. NBER Working Paper Series. Working Paper 28050. National Bureau of Economic Research. 66 pp. <http://www.nber.org/papers/w28050>
- 5) National Oceanic and Atmospheric Administration Climate Equity and Environmental Justice Seminar, 11 May 2021. Rhiannon Jerch, Susan Cutter, Emily Eisenhauer. <https://www.youtube.com/watch?v=9kDC5vkq0WM>

**Discussion:**

Connect back to anti-racism efforts. Ulterior motives.

**Art Class 2: Realizing CEJ**

**Day 12**

Solution Overview: Attribution and Relief (legal), Blue Economy (financial), Reparations (cultural, societal), Relocation (logistical).

**Readings:**

- 1) van Oldenborgh, G. J., K. van der Wiel, A. Sebastian, R. Singh, J. Arrighi, F. Otto, K. Haustein, S. Li, G. Vecchi and H. Cullen. 2017. Attribution of extreme rainfall from Hurricane Harvey, August 2017. Environmental Research Letters 12: 124009. <https://doi.org/10.1088/1748-9326/aa9ef2>

- 2) Ekwurzel, B., J. Boneham, M. W. Dalton., R. Heede, R. J. Mera, M. R. Allen and P. C. Frumhoff. 2017. The rise in global atmospheric CO<sub>2</sub>, surface temperature, and sea level from emissions traced to major carbon producers. *Climate Change* 12pp. DOI 10.1007/s10584-017-1978-0
- 3) Licker, R., B. Ekwurzel, S. C. Doney, S. R. Cooley, I. D. Lima, R. Heede and P. C. Frumhoff. 2019. Attributing ocean acidification to major carbon producers. *Environmental Research Letters* 14: 124060.  
<https://doi.org/10.1088/1748-9326/ab5abc>

**Discussion:**

Are these solutions viable? What are the barriers to advancing them?

**Assignment:**

- Paper 3 (due Day 18)

**Day 13**

Andres Cisneros-Montemayor Guest Lecture on the Blue Economy and Equity.

**Readings:**

- 1) Lindsay, A. R., J. N. Sanchirico, T. E. Gilliland, R. Ambo-Rappe, J. E. Taylor, N. C. Krueckg, and P. J. Mumby. 2020. Evaluating sustainable development policies in rural coastal economies. *Proceedings of the National Academy of Sciences* 117(52): 33170–33176.  
[www.pnas.org/cgi/doi/10.1073/pnas.2017835117](http://www.pnas.org/cgi/doi/10.1073/pnas.2017835117)
- 2) Österblom, H., C. C. C. Wabnitz, D. Tladi, E. H. Allison, S. Arnaud-Haond, J. Bebbington, N. Bennett, R. Blasiak, W. Boonstra, A. Choudhury, A. Cisneros-Montemayor, T. Daw, M. Fabinyi, N. Franz, H. Harden-Davies, D. Kleiber, P. Lopes, C. McDougall, B. P. Resosudarmo and S. A. Selim 2020. Towards Ocean Equity. High Level Panel. Washington, DC: World Resources Institute. 56 pp.  
[www.oceanpanel.org/how-distribute-benefits-ocean-equitably](http://www.oceanpanel.org/how-distribute-benefits-ocean-equitably)
- 3) Steven, A. D. L., K. A. Addo, G. Llewellyn, V. T. Ca *et al.* 2020. Coastal Development: Resilience, Restoration and Infrastructure Requirements. High Level Panel. Washington, DC: World Resources Institute. 84 pp.  
[www.oceanpanel.org/blue-papers/coastal-development-resilience-restoration-and-infrastructurerequirements](http://www.oceanpanel.org/blue-papers/coastal-development-resilience-restoration-and-infrastructurerequirements)  
<https://youtu.be/PiBQjnbFKec>
- 4) Cisneros-Montemayor, A. M., M. Moreno-Báez, G. Reygondeau, W. W. L. Cheung, K. M. Crosman, P. C. González-Espinosa, V. W. Y. Lam, M. A. Oyinlola, G. G. Singh, W. Swartz, C. Zheng & Y. Ota. 2021. Enabling



conditions for an equitable and sustainable blue economy. Nature 591: 396-407.

- 5) The National Treasury and Planning, Republic of Kenya. 2018. Third Medium Term Plan (2018 – 2022): Transforming Lives: Advancing socio-economic development through the “Big Four.” 249 pp.
- 6) World Ocean Council’s Sustainable Oceans Summit:  
<https://www.sustainableoceansummit.org>

**Assignment:**

- Oral presentation (due Day 17)

**Day 14**

Lecture about migration research (Weiskel & Sumaila).

Rashid Sumaila Guest Lecture/Rock Talk on Global Solutions

**Readings:**

- 1) Katharine J. Mach and A. R. Siders. 2021. Reframing strategic, managed retreat for transformative climate adaptation. Science 372 (6548): 1294-1299.  
DOI: 10.1126/science.abh1894
- 2) Sumaila, U. R., T. C. Tai, V. W. Y. Lam, W. W. L. Cheung, M. Bailey, A. M. Cisneros-Montemayor, O. L. Chen, and S. S. Gulati. 2019. Benefits of the Paris Agreement to ocean life, economies, and people. Science Advances 5: eaau3855.

**Day 15**

Oral presentation peer practice and coaching workshop.

***Week IV: How Does It All Fit Together?  
Guest Speaker: Maxine Burkett***

**Day 16**

Maxine Burkett Guest Lecture on Coastal Reparations as a Solution.

**Discussion:**

- What does shared power mean?
- What is the strongest and best way forward?

**Readings:**

- 1) Burkett, M. 2018. Behind the Veil: Climate Migration, Regime Shift, and a New Theory of Justice. Harvard Civil Rights-Civil Liberties Law Review 53: 445-493.
- 2) Burkett, M. 2015. Rehabilitation: A Proposal for a Climate Compensation Mechanism for Small Island States. Santa Clara Journal of International Law 81. Available at SSRN: <https://ssrn.com/abstract=3303679>

**Day 17**

Oral presentations due.

**Day 18**

Oral presentations due.

**Assignment:**

- Paper 3 due

**Day 19**

Oral presentations due.

**Day 20**

Conclusion to course. Next steps. Evaluation.