Sky Seawood

Term Project Proposal

For my Term Project, I will be focusing on the topic of rising sea levels caused by global warming. The specific focus of this project will be on a coastal city, as these urban ecosystems are often the most affected by rising sea levels which impact their shorelines. I will use New York City as an example of one of these coastal cities because of my current proximity to it, which allows for possibilities of direct exposure to the environment and therefore direct inspiration for the final creative work to be made. The adaptations which have been completed to protect the city will also be covered in my project. Rising sea levels are important because they are one of many climate change effects that will change the way we live in the future if action is not taken. Picturing beloved places such as New York City restaurants, Coney Island, and Battery Park submerged in water is a grim image, but a necessary one to imagine a world where we don't act on climate change. Additionally, it is not just the beautiful landmarks and tourist attractions that are at stake, but the local residential communities who are often overlooked.

The main scientific concepts I will incorporate into my creative project are described in four questions: Why is New York City's sea level rising? How exactly does sea level rise work? How does the city's rising sea level relate to coastal flooding? What is being done about it? By answering these questions, a well-rounded understanding of the main topic of sea level rise can be reached and therefore incorporated into the creative work as coherently as possible.

Firstly, New York City's sea level is rising for a few core reasons. The most prominent reason is that water is continuously expanding on a global scale. This expansion is ultimately caused by global warming from the rise of temperatures as a result of human activities (Gornitz 1). These rising temperatures are caused by the increase in carbon emissions in the atmosphere, which is caused by the emission of greenhouse gases from things like electricity, heating, and transportation (EPA). Since the temperatures are rising, the temperature of water will rise, and since the water is getting warmer, the water's volume will increase (Lindsey). This is the primary component of why water levels are rising. Additionally, since higher temperatures result in ice sheets and glaciers melting, this will also contribute to the volume of water (Lindsey; Gornitz 3). A third but less common cause is the shift in water from land to ocean due to the depletion of groundwater and decline in liquid water on land (Lindsey).

Secondly, the process of how sea level rise works involves the expansion of water due to rising temperatures as mentioned above. Specifically, sea levels rise over time because of the continuous increase in temperatures from not just a small period of time, but on a large scale. If high emission levels continue to climb at the rate they are currently, sea levels are projected to be 2 meters higher in 2100 than they were in the year 2000 (Lindsey). The process of how sea

level rise works is dependent on time; if the amount of emissions we produce continues to increase over time, the sea level will correspondingly increase. However, even if the lowest possible emissions were produced, the global mean sea level would still reach the excessive level of one foot above the level in the year 2000 by the year 2100 (Lindsey).

Additionally, sea level rise relates to coastal flooding because the higher the sea level, the more susceptible to flooding a coastal city is when struck by a storm such as a hurricane. Hurricanes can cause storm surges due to the high winds which cause the water to surge through land (Craig). Also, high tide floods which are commonly referred to as "nuisance floods", or floods which are not known to be life-threatening but can still cause property damages, occur as a result of the tides washing up in the midst of the higher sea levels (Craig; Lindsey).

The city of New York has continuously responded to sea level rise in a number of ways, initiating many large adaptations, some of which have been completed, to protect it from flooding associated with the sea level rise. Several efforts have been made to protect and support specific areas of the city in the face of sea level rise, particularly within the context of coastal storms and floods. These efforts were especially considered in the aftermath of Hurricane Sandy in 2012 and primarily rely on renovating the infrastructure of the city in its most vulnerable areas (Lewis).

The most vulnerable areas that are being focused on include Lower Manhattan, the coasts of Brooklyn, Queens and Staten Island. These areas are most vulnerable because they are the closest areas to the water on the shore. One effort which has been made to specifically address the issue of sea level rise in one of these areas, Lower Manhattan, includes the East Side Coastal Resiliency project (Lewis). The East Side Coastal Resiliency project is one of the most prominent projects actively in progress of making the city more resilient, and began as a collective response to Hurricane Sandy, funded by the government and city of New York. In this project, newly designed infrastructure was developed and has made significant progress in construction (Mayor Adams Completes First Section of East Side Coastal Resiliency Project, Taking Steps to Protect Lives, Property). This infrastructure included floodwalls, gates and raised park designs. Floodwalls and flood gates are both tools used to block the directions of water from rising (Lewis; Resiliency and Flood Protection).

Another project brought forth to protect the city, specifically the northern side of the Brooklyn borough, includes the Brooklyn Bridge-Montgomery Resiliency project (Brooklyn Bridge-Montgomery Coastal Resilience). Despite this progress, some methods have been criticized for their possible ineffectiveness towards combating sea level rise in the long term. An example of this is the US Army Corp of Engineers' \$119 billion gate plan that was proposed to protect New York City and New Jersey shores from storm surges. Concerns were raised that it might not be effective for protecting the city because it mainly addresses the effect of storm surges like Hurricane Sandy, but does not specifically consider the effects of sea level rise, high tide flooding and storm runoff (Barnard). I intend to incorporate these ideas into my creative work by conveying them in a story, making them the center of the story's theme. My two main possible directions and mediums for a creative project are a ten page narrative short film script or a photography collage. My intended audience would be the residents of New York City and other coastal cities. I am choosing this audience because I think showing this to them will help make them more aware of how climate change affects them specifically. I want the work to have an effect on them which makes them want to take action and be more conscious about their environment. Also, since I am currently located in the city, I have convenient access to both the local residents, who are my core audience, and the environment that I'm focusing on. By being exposed to the location, I can have a close look at what is at risk, possibly by looking further into which neighborhoods have been most devastated in past occurrences of sea level concerns such as Hurricane Sandy, and actively visiting them for visual references for my creative work.

The method and direction of the creative work which I am leaning towards the most is a ten to fifteen page narrative short film screenplay. This direction has many possibilities on its own in terms of genre, character, theme, mood, and other story elements which can incorporate the scientific concepts. Due to the nature of the environmental threat of sea level rise caused by human-derived climate change, the biggest and most relevant possibilities to consider for the story is what exactly it will say about sea level rise and coastal flooding of New York City with its message, theme, and character progression. I think the most important decision to be made within this is if it will have a hopeful theme, a fatalistic theme, or a nuanced mixture of both. For instance, the story could be a sci-fi which ends with a character failing to save their loved one from a flood while their government has abandoned them for a different planet, with the fatalistic ending driving the audience to take action. Or perhaps the story is the same, but in a hopeful version, the character infiltrates the government in order to save their loved one, with this more pleasant ending providing hope to the audience that fixing climate change is not impossible.

A great example of a film that has covered this topic of an environmental threat that must be acted on is a Disney animated film I grew up watching called *Wall-E* (2009), directed and co-written by Andrew Stanton. *Wall-E* shows the Earth in a dystopian context of what happens if we don't act, but also has a message of hope that we can make impactful action. This film will be a major reference for my piece. I plan to incorporate themes of the devastation that would occur if we ignore the issue of sea level rise while simultaneously including the hope that we can hold onto as a precursor to fixing them. Watching more references is a part of the script development process, and can also be involved in the making of a pitch deck, or a presentation of inspirations, references, and major details of a script in the stages of pitching it to a producer.

In terms of the specific ways sea level rise, and the three scientific concepts of why it happens, how it happens, and how it correlates with flooding can be integrated into my work, the main methods will be having the major antagonist and conflict in the story be directly related to sea level rise, and having the protagonist's goal be directly related to proposed solutions of the issue as mentioned previously. Exploring different narrative possibilities for this integration until a

final story structure is chosen is necessary in order to outline and ultimately write the final script. For example, some ideas for stories which integrate the concepts could be one where the protagonist is an environmental activist trying to protect the residents of the neighborhood they grew up in during a flood, or one where the protagonist is a direct victim of a flood and lost their home or a loved one in a storm such as Hurricane Sandy and wants to protest the federal government's climate inaction. Another idea could be a future sci-fi genre where Coney Island is underwater and a cyborg sent to collect lost artifacts there has instead found a mysterious object that has potential to save the rest of the city from the looming threat of sea level rise.

The process of creating the script would involve viewing inspirations and influences, brainstorming the story and its integration of the scientific concepts, outlining the structure of the story, and finally writing the script based on these previous steps. A first draft will be written, with a second draft possible after receiving feedback. To make sure the script makes sense and is feasible to shoot, feedback would be necessary from both people in the film field and the environmental science field. Additionally, this feedback can help make sure the depiction of sea level rise impacts could be improved for a better chance of encouraging action while keeping the audience engaged with the quality of the story.

The second method and direction of my creative work is a photography collage which includes photos on location in New York City with experimental digitally recreated images that depict what the photos would look like if the location was underwater. This would involve taking photographs of various spots on the coasts of Lower Manhattan, Brooklyn, and Queens. The goal for this would be to spark emotions of grief in the locations. It would put the viewer in an uncomfortable position as they are viewing beloved places in a devastated state. For example, places like Coney Island with rollercoasters broken and fish swimming through them, or Long Island City in Queens and Battery Park in Manhattan, all landmarks in different boroughs of New York City impacted by sea level rise. However, I want to also include photography of not just tourist-like landmarks, but authentic places that local residents frequent so that it recognizes the people who would be hit the hardest by this climate change effect. Overall, there would be a variety of different locations to depict the different ways sea level rise would have an impact. I want the tone to be a bit melancholic, but I don't want it to be so distressing that it simply adds on to the very fatalistic and hopeless tone that is often had when it comes to modern conversations of climate change. I also want to avoid the preaching tone of a PSA so that it can be more appealing to audiences, but I would still want to find a way to incorporate hope within it to evoke that desire for change in the viewer.

Annotated Bibliography

Barnard, Anne. "The \$119 Billion Sea Wall That Could Defend New York ... or Not." *The New York Times*, 17 Jan. 2020,

www.nytimes.com/2020/01/17/nyregion/the-119-billion-sea-wall-that-could-defend-new-york-or-not.html.

- Factual
 - The US Army Corps of Engineers have designed and studied gate barriers as an option to protect areas of New York City and New Jersey.
 - The gate barriers address storm surges such as Hurricane Sandy.
- Conceptual
 - Since the barrier only addresses large storm surges, it might not be effective for protecting the city because it does not specifically consider the effects of sea level rise, high tide flooding and storm runoff.

"Brooklyn Bridge-Montgomery Coastal Resilience." *Www.nyc.gov*, www.nyc.gov/site/Imcr/progress/brooklyn-bridge-montgomery-coastal-resilience.page.

- Factual
 - The Brooklyn Bridge-Montgomery Coastal Resilience project was initiated to reduce flood risk in the coastal area surrounding the Brooklyn Bridge.
 - Floodwalls and deployable flip-up barriers are designed to protect neighborhoods from future storm surges.
- Conceptual
 - By installing floodwalls and deployable barriers, coastal neighborhoods can be protected from flooding damages in the event of a storm surge.

Craig, Caroline, and Brian Palmer. "Sea Level Rise 101: The Causes, Effects, and Responses." *Www.nrdc.org*, 25 Mar. 2024, www.nrdc.org/stories/sea-level-rise-101.

- Factual
 - Sea level is expected to rise by more than one foot by the year 2100.
 - Hurricanes can cause storm surges due to the high winds which cause the water to surge through the land.
- Conceptual
 - The higher the sea level, the more susceptible to flooding a coastal city is when struck by a storm such as a hurricane because if the baseline sea level is high, any additional water will cause excessive amounts which push the environment above its limit.

EPA. "Sources of Greenhouse Gas Emissions." *United States Environmental Protection Agency*, 16 Jan. 2025, www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions.

- Factual
 - Carbon emissions in the atmosphere are caused by the emission of greenhouse gases from things like electricity, heating, and transportation.
- Conceptual
 - These greenhouse gas emissions are the cause of rising global temperatures, and therefore rising sea levels.

Gornitz, Vivien, et al. "Enhancing New York City's resilience to sea level rise and increased coastal flooding." *Urban Climate*33 (2020): 100654.

- Factual
 - Sea levels are rising in the New York City area.
 - There is a correlation between ice melts and the global rise of sea level.
- Conceptual
 - Sea level rise is caused by the expansion of water due to rising temperatures, which are caused by high-level greenhouse gas emissions. Ice melts are another contributing factor as the melting of ice adds to the mass of water.
 - Since coastal flooding, which threatens urban ecosystems, is caused by the rising sea level, which is caused by climate change, which is caused by rising greenhouse gas emissions, action must be taken to decrease the emissions in order to slow down the rate of coastal flooding and decrease the threats to life and property in coastal cities.

Lewis, Andrew. "After a Decade of Planning, New York City Is Raising Its Shoreline." *Yale E360*, 19 Dec. 2023, e360.yale.edu/features/new-york-city-climate-plan-sea-level-rise.

- Factual
 - The East Side Coastal Resiliency (ESCR) project, along with the BIG U project, were created in the aftermath of Hurricane Sandy with the initiative to protect New York City's coast by sustainably renovating infrastructure.
- Conceptual
 - Many of these projects involve lots of planning, which might not be enough on its own because the fast-moving nature of climate change impacts require immediate actions more than long term plans. The rapid nature of climate change dictates the need for short term plans because since the level of greenhouse gas emissions are rising at a higher rate than humans are taking action to reduce them, the outcome is filled with risks of preventable harm to the environment being irreversible.

Lindsey, Rebecca. "Climate Change: Global Sea Level." *Climate.gov*, National Oceanic and Atmospheric Administration, 22 Aug. 2023,

www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level.

- Factual
 - The average global sea level has risen by 8-9 inches since 1880.
 - The rate of global sea level is rising.
 - Almost 30% of the United States population lives in coastal areas.
 - Glaciers and ice sheets around the world are melting.
 - The volume of the ocean is expanding as the water gets warmer.
- Conceptual
 - Sea level is rising because the water is expanding, which is a result of the water getting warmer and therefore increasing in volume, as well as the melting of glaciers and ice sheets.
 - Because the baseline sea level is higher, coastal areas will be more susceptible to nuisance flooding.

"Mayor Adams Completes First Section of East Side Coastal Resiliency Project, Taking Steps to Protect." *The Official Website of the City of New York*, Oct. 2024,

www.nyc.gov/office-of-the-mayor/news/772-24/mayor-adams-completes-first-section-east-side-coastal-re siliency-project-taking-steps-to#/0.

- Factual
 - At least half of the East Side Coastal Resiliency project has been completed. Flood gates, floodwalls, raised parkland, and other measures were built. This part of the project cost \$163 million, which was less than their original budget, and was also completed earlier than projected.
- Conceptual
 - Since it's possible to take immediate action to protect New York City's coast in a faster amount of time than expected, measures can be taken to learn from this process and do things more quickly because the amount of time left to halt the effects of climate change shrinks as time goes on. By taking immediate action, city planners can see what progress can be made in a short amount of time, such as how long it takes to construct something, or how long it takes to see the effectiveness of a structure in the face of a flood caused by heavy rain.

"Project Elements." *Resiliency and Flood Protection - ESCR*, www.nyc.gov/site/escr/about/resiliency-and-flood-protection.page. Accessed 3 Mar. 2025.

- Factual
 - Floodwalls, gates and raised park infrastructure have been designed and progressed construction as part of the East Side Coastal Resiliency project.
- Conceptual
 - Since the new infrastructure must be designed for areas that people frequent often, actions can be taken to reduce the flood risk of the coast while maintaining the public's access to the waterfront for recreational purposes.