**The Climate Change Crisis on the**

**Commonwealth of the Northern Mariana Islands**

Hannah R. Santos

Northern Marianas College

CO 210: Fundamentals of Speech Communication

Dr. Kimberly Bunts-Anderson

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Families and their livelihoods—are all at risk of being entirely submerged by rising sea levels. Island communities revolve their daily activities around the ocean in almost every aspect of their life. Men and women spend hours by the shores to capture fish as sustenance. Children gather on the beach to play and swim in the pristine waters. However, these regular activities, in the near future, will face complications from the adverse effect of climate change. In the present and in the future, the Commonwealth of the Northern Mariana Islands will continue to experience drastic changes in sea levels, typhoon and storm intensity, and ocean systems.

The Earth’s climate has been drastically changing more than ever before. From the beginning of the industrial age, human activities have accumulated and expanded extensively from fossil fuel extractions, deforestation, and land alterations. These activities produce greenhouse gas emissions that collect within the atmosphere and drive the Earth into a warmer state. Impacts of this phenomenon are seen globally through human health, agriculture, water supply, transportation, energy, and ecosystems. With the magnitude of these effects seen in larger countries, it is especially evident in smaller islands, such as the Marianas.

The sea level surrounding the Marianas is rising—creating challenges for communities and infrastructure. Since 1978, the long-term sea level trend shows an average rise of 0.07 inches (Derrington, Greene, Grecni, Miles, & Keener, 2021). The levels fluctuate on various timescales. A survey was conducted by myself to examine the observations of the local residents in terms of sea levels and moving shorelines. 15 people were asked whether they perceived the shoreline to have changed and 66% of the participants noticed the shoreline’s increased movement landward. Furthermore, in the events of El Niño and La Niña, the sea level lowers and rises by as much as 1 foot. In the events of low sea levels, corals are prone to exposure and die-offs. Furthermore, small changes in sea levels can paradoxically impact on high water frequency that will result in damage to the infrastructure of buildings and roads, and cause the degradation of beaches and vegetation (Derrington, Greene, Grecni, Miles, & Keener, 2021). Lastly, the sea level rise within the CNMI is expected to be greater than the global average.

With the CNMI being no stranger to typhoons and storms, it is known to produce intense winds, severe rains, large waves, and an upsurge of sea water. The effects of these natural events can drastically damage infrastructure and even end lives. During El Niño, there is an increased risk of typhoons as the normal seasonal winds of the CNMI weaken (Greene & Skeele, 2014). Furthermore, scientific evidence shows that tropical cyclone intensity will increase while the occurrence will decrease. It is expected that the atmosphere will stabilize with ongoing greenhouse warming in the future (Derrington, Greene, Grecni, Miles, & Keener, 2021, p. 21). The CNMI must anticipate infrequent but severe typhoons in the time ahead.

As climate change drastically increases the ocean temperatures, coral reefs are at risk of thermal stress (Davin & Brannet, 2010). This results in the coral reefs to expel algae, which is vital to the survival of the systems. Coral reefs and algae have a mutualistic relationship in which the former provides shelter and the latter provides oxygen. Once the algae is secreted from the coral, this results in coral bleaching. Moreover, ocean acidification will occur as the ocean absorbs carbon dioxide from the atmosphere. Anthropogenic, or human-caused, carbon dioxide comes from greenhouse gas emissions. Emissions from the burning of fossil fuels, cement production, and deforestation have pumped about two trillion tons of carbon dioxide into the atmosphere since the beginning of the Industrial Revolution. Deforestation adds to the issue by contributing about 10 percent of all carbon dioxide emissions. As atmospheric CO2 levels increase, so do the levels in the ocean.

The Commonwealth of the Northern Mariana Islands will continue to face the inevitable consequences of climate change. The lives of every islander are bound to be impacted in more ways than they know and it will be evident in their daily lives. Children will experience several catastrophic and traumatic typhoons in their lifespan. The local environment is expected to deteriorate from the harsh temperatures. At the rate of human activities with adverse effects on climate change, the island communities will suffer from rising sea levels, severe typhoons/storms, and changes in the ocean system. However, it is never too late. Islanders must come together, recognize the issues they are facing, and aid to heal the environment as one community.

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