**CHESAPEAKE BAY BUOYS - WRITEUP**

Stemming from modern technological advancements in physical equipment and scientific measurement tools, environmental data shared within the public forum is now more accessible and prevalent than ever before. While academic studies are regularly conducted pertaining to the effects of human activity and economic industrialization on our planet’s overall ‘ecological health’, so much data exists wherein significant insights can be extracted from even heavily researched fields. By studying the Chesapeake Bay region through analysis of aquatic buoy data, this analysis aims to augment and further public discourse around the preeminent ecological threats facing the Bay and its local tributaries.

While there are many buoys deployed strategically across Earth’s oceans (by various governments), specifically lasering in on the Chesapeake Bay region allows for a manageable, yet detailed approach in evaluating regional patterns or trends. As the research team resides onsite in the DC metro area, all research as outlined herein holds great relevancy to the team and to the local DC population. Furthermore, by sourcing historical buoy records from the official database of the National Oceanic and Atmospheric Administration (NOAA), this affords inherent credibility to the raw data as collected and modeled herein, boosting the underlying significance of conclusions and findings. In a nod towards preserving a manageable scope of work, three buoys in the Chesapeake Bay were selected for comparative evaluation:

1. Annapolis (AN)
2. Potomac (PL)
3. Gooses Reef (GR)

Although many aspects of the buoy data presented herein may be worthy of in-depth exploration, certain pressing environmental concerns intrigued the research team as likely pillars of analysis. Notable cyclicality in water and air temperatures contribute greatly to aquatic ecosystem health, implying both temperature recordings are of critical importance in any prospective variable consideration. In considering water temperature data, fluctuation in buoy measurements may indicate notable swings in H2O oxygen content, which holds substantial implications for marine life (lower water temperature = higher oxygen content).

Much like water and air temperature, salinity content of the Chesapeake Bay’s water plays a crucial role in preserving or sustaining aquatic ecological health. Fresh water flowing into the bay from rivers or streams accounts for ~50% of the Bay’s entire water volume, indicating the substantial push-and-pull effect exerted by freshwater tributaries against powerful Atlantic Ocean currents. Extreme rainfall or drought can drastically impact overall salinity content, leading to hazardous conditions at times for various plant and animal species native to the region. Floods can also increase levels of sediment runoff, further distorting the ‘natural equilibrium’ salinity content preferred by marine life in the Chesapeake. Spikes in salinity, and/or severe fluctuations in water or air temperature can disturb natural migration and reproductive patterns for fish, crabs, oysters, and other underwater plant species which are pivotal to healthy functioning of the broader Chesapeake ecosystem.