



The 2020 University of Chicago Undergraduate Research Symposium Proceedings: Abstract

Risk of Sea Level Rise in the Galápagos Islands

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Rising sea levels are a global problem that could pose a serious risk to both the infrastructure and unique natural ecosystems of the Galápagos Islands. However, records show no measurable sea level rise in the archipelago, despite a modest increase in the broader eastern equatorial Pacific. As a result, sea level rise has received little discussion in official planning documents, despite the potential for severe economic and environmental impacts. This report seeks to quantify the potential impact of multiple sea level rise scenarios in the Galápagos Islands. My team gathered street-level photography of every accessible street on the islands of San Cristóbal and Santa Cruz. Using Mapillary object detection software, I identified 1,909 objects of interest on both islands, supplemented with 1,025 features drawn from OpenStreetMap. In order to evaluate potential impacts, I then assigned each object or feature to a risk zone based on its elevation and scenarios for future sea level rise. Under all sea level rise scenarios, I found that only San Cristóbal would see impacts on any commercial zone. These impacts only occur in the “intermediate-high” scenario, which, when combined with a strong El Niño event, could produce sea level rise of up to 2m by 2100. Impacts on transportation infrastructure could occur in less severe scenarios. While this study was unable to address the impacts of sea level rise on the natural environment, the possibility of severe impacts on the commercial infrastructure of San Cristóbal merits further study and municipal planning to mitigate potential damage.



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Bringing Sunshine to Illinois – Improving Illinois Solar for All’s Mission to Serve Low-Income Communities

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This research paper seeks to examine the highly celebrated state program, Illinois Solar for All. Created as a part of the Future Energy Jobs Act, one of the first bipartisan efforts in the country to address climate threats, Illinois Solar for All (ILSFA) provides solar panels to low-income communities in the form of distributed generation and community solar, targeting low-income residents, non-profit organizations, and public facilities. Attempting to combat environmental injustice issues, the program places a special emphasis on low-income communities and communities of color. However, despite the program’s much needed mission, it has several challenges in completing successful projects despite the submission of many applications. Through 30-45 minute interviews with multiple stakeholders in the program and a supplemental geographic zip code analysis outlining the various communities in need of this program, it is concluded that the program requirements are ultimately too stringent for any tangible benefits to be felt across the state. Furthermore, implementation challenges with respect to administrative burdens and communication restrictions between stakeholder parties hold the program back from its true potential. This study further suggests that while quantitative metrics allow for qualifying individuals for certain programs, they unfortunately limit the program’s intentions when narratives are often more telling of an organization or individual’s situation than pure numbers. In order to combat these issues and for the program to be a success, the paper recommends that ILSFA should use a qualitative analysis in their application cycle, create centralized communication portals between stakeholders, and provide financial support not just for solar panels but also for supplementary actions, such as roof replacements. These findings should be applied to the next cycle of ILSFA, and to new programs assisting low-income renewable energy programs across the country. Major existing state-wide programs, such as New Jersey Solar 4 All and the California Solar Initiative, could also benefit from acting upon the findings from this study. As climate change continues to aggressively affect our day-to-day lives, programs like Illinois Solar for All are undeniably important to ensuring economic and racial equality are persistent through environmental policy development.