# Assessing Climate Change Risk of Rural Coastal Plains

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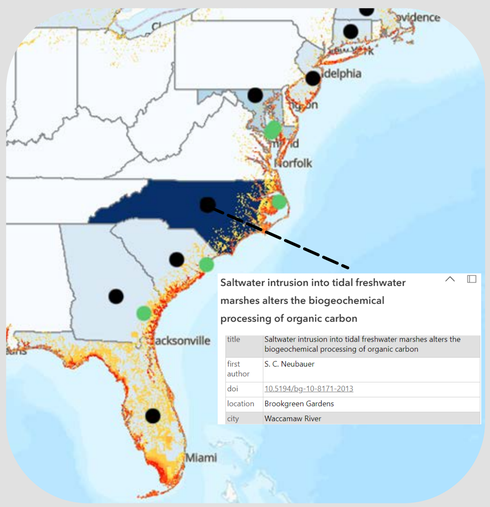
# Abstract

Our project was about discovering the variability in Saltwater Intrusion and Sea Level Rise (SWISLR) around the world. To achieve this, we created a centralized database to track where and how SWISLR was being discussed. We started with research in the United States and eventually expanded to all of North America. Our end product was an interactive map that could be used by local communities and researchers to aid in developing solutions to SWISLR.

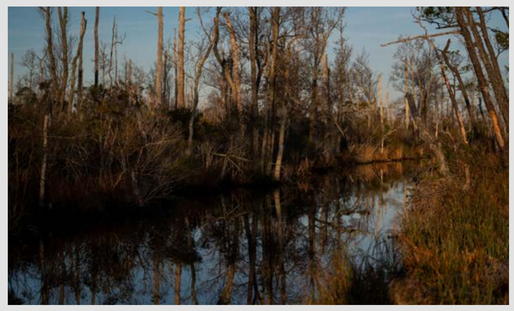




**QR CODE FOR MAP:**

**https://tinyurl.com/swislr**

# SWISLR SALT WATER INTRUSION AND SEA LEVEL RISE

Climate change has resulted in sea level rise around the globe and with this has come increased intensity of tides and storms. As saltwater inundation increasingly extends inland, it affects our freshwater aquifers, farmland, ecosystems, living areas, and more. Varying topography and sea level rise among coastal areas mean that there is a lot of variation on how these regions are affected, making it hard to have a holistic understanding of SWISLR.



# Methods

## Paper Gathering

Our project started with gathering papers from research databases like **SCOPUS** and **Web of Science**. We used Python scripts to access their APIs in an automated way and filter out relevant results.

## Paper Screening

After we acquired a large collection of papers, we went through a manual screening process to make sure they were relevant to our project and that they studied some part of the US. We also analyzed characteristics among the data collected.

## Text Analysis

In order to map out studies, we need to discover where they were being performed. We started using Python scripts to find location information. Eventually, we transitioned to using **ChatGPT's API** for text analysis.

## Mapping

The last step of our project involves mapping the studies in **ArcGIS**. Using the location data found from our text analysis, we translate it into Longitude and Latitude then plot it on our map.

# Results

## SWISLR DATASET

We compiled a dataset containing SWISLR research papers, including essential details like research study areas, DOIs, PMIDs publication year, authors, and abstracts.

## PYTHON SCRIPTS

We created Python scripts to access papers via SciHub using DOI. The ChatGPT prompt allows users to request location data from the papers. All code accessible from: **github.com/othmaneechc/SWISLR**

## ONLINE WEBMAP

We compiled all locations where SWISLR was studied and uploaded them into an intractable web map using ArcGIS, accessible through the SWISLR website **(swislr.org)**