Portfolio

Below are samples of some of the projects I've worked on through different roles in the capacity of a Data and Atmospheric scientist.

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Technical Writing

Climate Operations Manual 2020

Description: Under my role as the Assistant Climatologist for the Caribbean track of the Pilot Programme on Climate Resilience (PPCR) at the Caribbean Institute for Meteorology and Hydrology (CIMH) Caribbean Regional Climate Centre (CRCC), I compiled the climate operations manual as an instructive document on climate procedures for technical officers. Below is a copy of the published Climate Operations Manual 2020. PPCR/CIMH reserves all rights to this document.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/Climate-Operations-Manual.pdf

Policy Briefs for Stakeholders

Description: Under my role as the Assistant Climatologist for the Caribbean track of the Pilot Programme on Climate Resilience (PPCR) at the Caribbean Institute for Meteorology and Hydrology (CIMH) Caribbean Regional Climate Centre (CRCC), I authored a collection of policy brief for stakeholders in several sections in the Caribbean region. Below are copies of the final drafts for these policy briefs. PPCR/CIMH reserves all rights to these document and their published forms.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/Agriculture_brief_draft.pdf
https://github.com/Dessyb86/Portfolio/blob/main/Health_Brief_draft.pdf
https://github.com/Dessyb86/Portfolio/blob/main/Water_Brief%20_draft.pdf

Soil Moisture Visualizer (sm_visualizer) User Guide

Description: sm_visualizer is a python script designed to ingest multiple climatic soil moisture files from different monitoring stations in .csv format, perform simple quality control techniques on each file and export several .csv data files and multiple pane .png images of these .csv files. Below is a copy of the sm_visualizer's user guide. PPCR/CIMH reserves all rights to the sm_visualizer's user guide.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/User%20Guide.pdf

Coding/Software Development

Soil Moisture Visualizer (sm_visualizer)

Description: sm_visualizer is a python script designed to ingest multiple climatic soil moisture files from different monitoring stations in .csv format, perform simple quality control techniques on each file and export several .csv data files and multiple pane .png images of these .csv files. Below is a copy of the sm_visualizer's code. PPCR/CIMH reserves all rights to the sm_visualizer.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/sm_visualizer.py

Risk Factor Calculations (risk_factor.r)

Description: risk_factor.r is a simple series of repetitive code written in the R programming language that analyses geospatial precipitation time series data in conjunction with climate indices (ENSO, NAO and PDO) to calculate the probabilistic risk factor of extreme precipitation events modelled by the General Extreme Value Distribution. This code was successively built as a part of the data analysis of my MS in Atmospheric Science.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/risk_factor.R

Geospatial Time Series Data Analysis and Visualization

Description: The following jupyter lab notebooks are the series of codes used in the data analysis and visualization of the geospatial time series data for my MS in Atmospheric Science. As the code was written in segments over a long period of time, it is segmented and void of intricacies such as functions. However, it was extremely efficient in producing the content for thesis and shows my familiarity with the most commonly used python packages.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/acpcp_analysis.ipynb
https://github.com/Dessyb86/Portfolio/blob/main/acpcp_compiler.ipynb
https://github.com/Dessyb86/Portfolio/blob/main/acpcp_rsme.ipynb
https://github.com/Dessyb86/Portfolio/blob/main/acpcp_plotting.ipynb

Research Publications

Probabilistic Risk of Extreme Winter Precipitation in North America in Reanalysis and Data and Climate Models

Publication: Barrett, P. (2023) Probabilistic Risk of Extreme Precipitation in North America in Reanalysis Data and Climate Models (991031821816302976) [Master's thesis, University of Miami]

Contribution: This is the thesis for the research project of my MS in Atmospheric Science, under the supervision of Dr. Benjamin Kirtman (Professor in Atmospheric Science at the University of Miami). I am responsible for the entirety of this work.

File URL:
https://scholarship.miami.edu/esploro/outputs/991031821816302976

Electronic Based Reported Anthropometry- A Useful Tool for Interim Monitoring of Obesity Prevalence in Developing States

Publication: Gaskin, P. S., Chami, P., Nancoo, T., Warner, P., Barrett, P., & Mayers, Y. (2020). Electronic based reported anthropometry—A useful tool for interim monitoring of obesity prevalence in developing states. *Plos one*, *15*(12), e0243202.

Contribution: Under the supervision of Dr. Peter Chami (Senior Lecturer in Mathematics), I gave significant contribution to the handling and statistical analysis of data for this research.

File URL:
https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0243202&type=printable

Atmospheric Dispersion Modelling in Barbados in Numerical Models and Machine Learning

Publication: Unpublished

Contribution: This is the incomplete thesis for the research project of my MS in Mathematics and Statistics, under the supervision of Dr. Peter Chami (Senior Lecturer in Mathematics at the University of the West Indies, Cave Hill) and Dr. Mechelle Gittens (Senior Lecturer in Computer Science and Head of the Department of Computer Science, Mathematics and Physics). I am responsible for the entirety of this work. The incompletion of this work was due to difficulties obtaining the required data.

File URL:
https://github.com/Dessyb86/Portfolio/blob/main/masters_thesis_dispersion.pdf