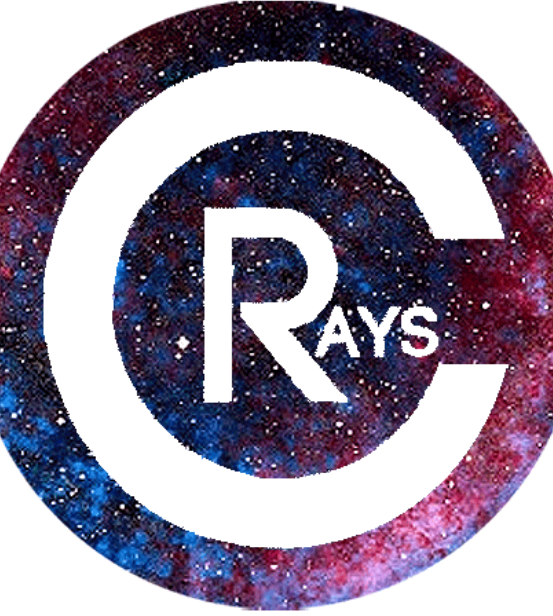


# Global Low-Cost (gLOWCOST) Cosmic-Ray Muon Detector Network



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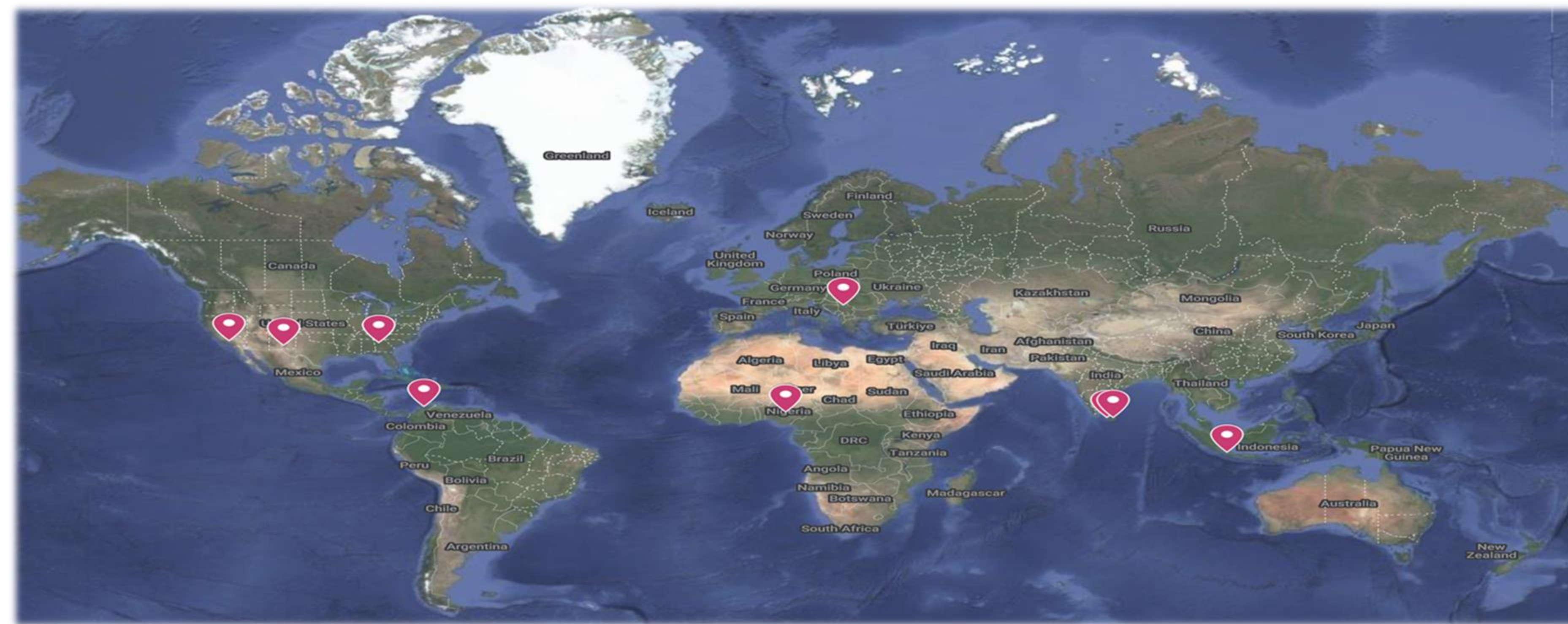
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## Overview

This project aims to develop a global network of low-cost, portable cosmic ray muon detectors, designed to collect muon flux data from various geographic locations with different cutoff rigidities, altitudes, and environmental conditions. The primary goal is to improve our understanding of how muon flux is influenced by both space weather and terrestrial weather, ultimately leading to the development of predictive models. These models could be utilized for enhanced forecasting and alert systems, benefiting not only ground-based infrastructure but also aviation and space activities. With the growing interest in space travel, such tools will be increasingly vital for ensuring safety and operational efficiency in the future.

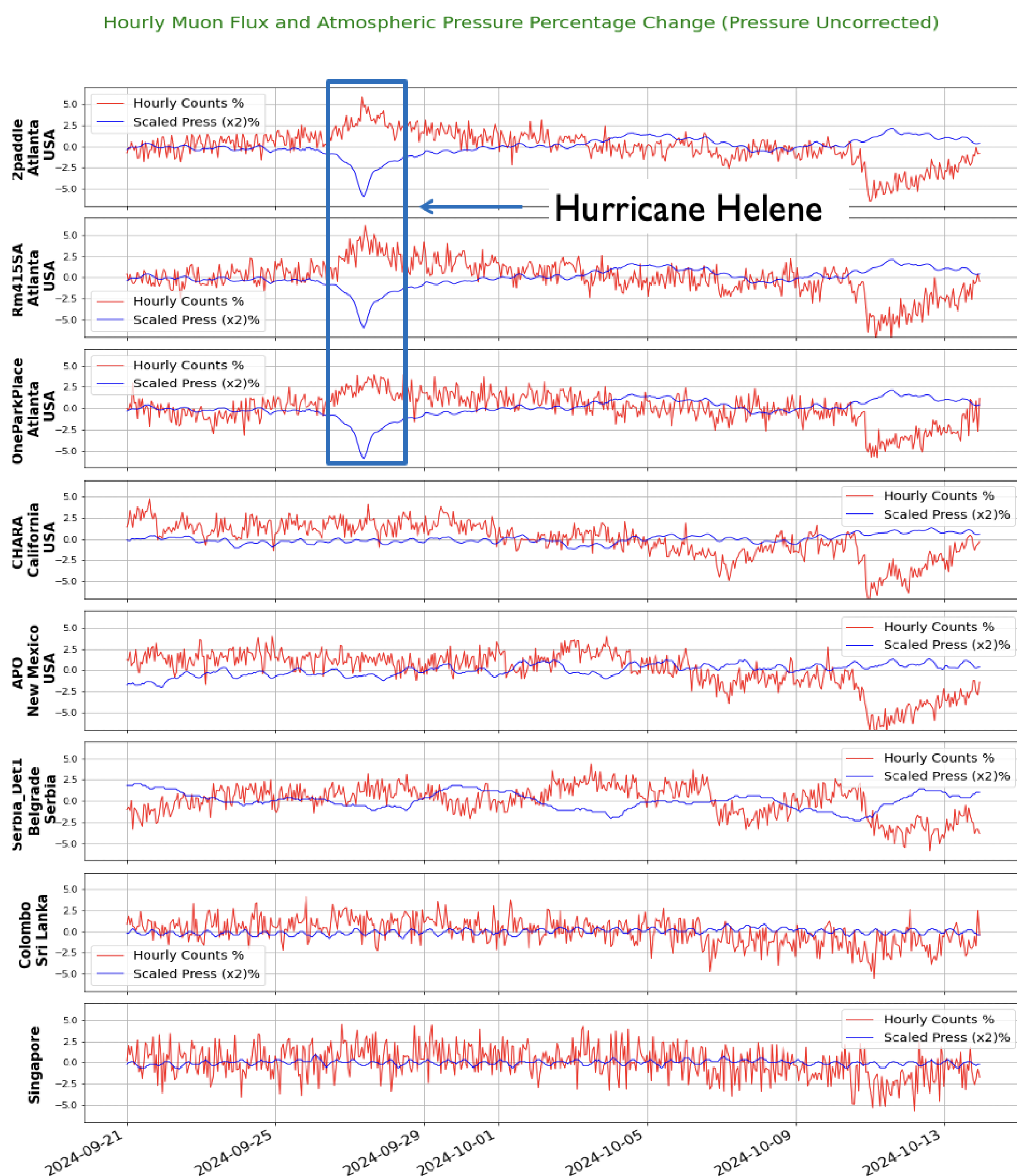
## Map of the Current Detector Network



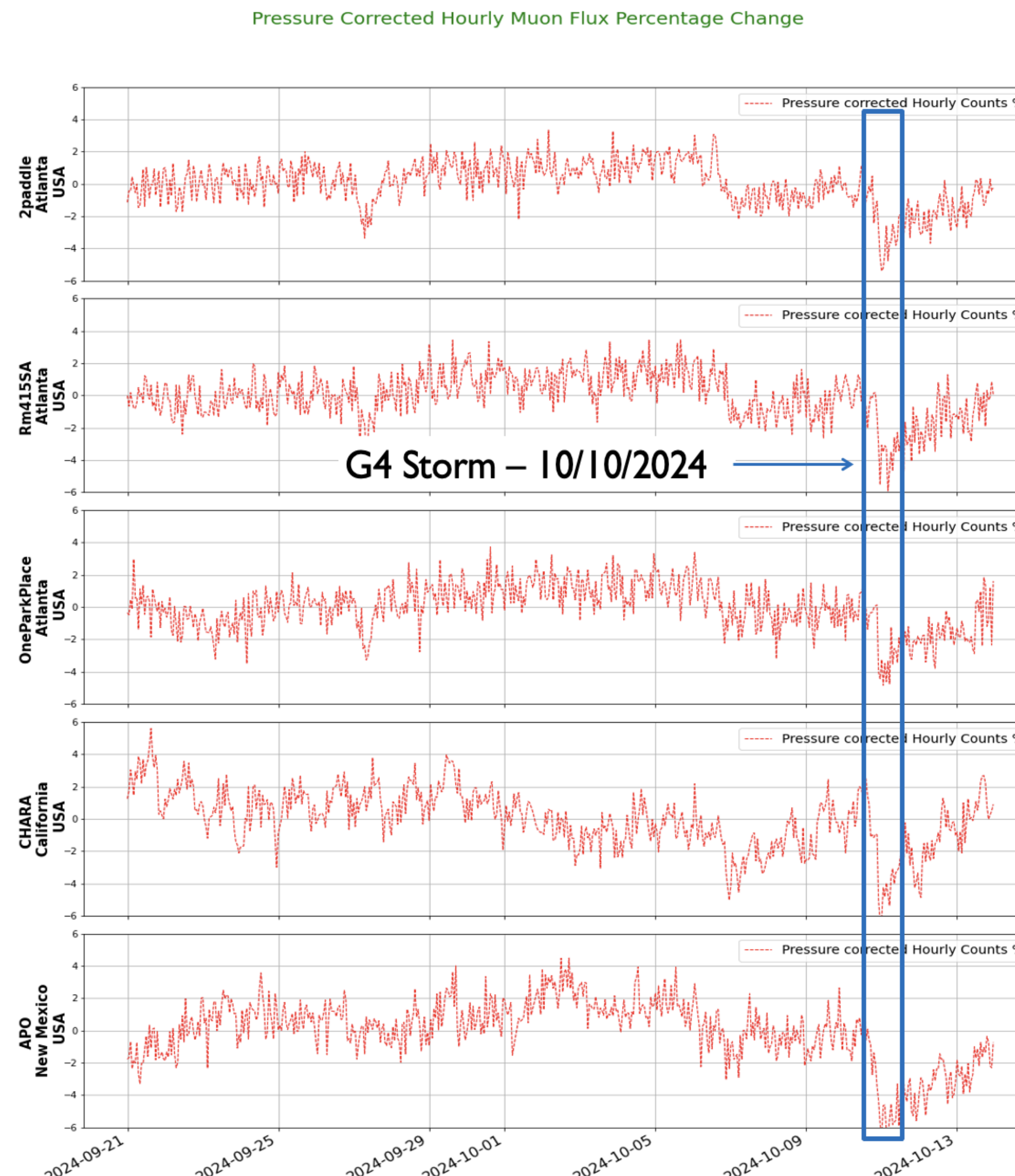
- United States
  - Serbia
  - Colombia
  - Nigeria
  - Sri Lanka
  - Singapore
- } Near the Equator line

It is essential to broaden our detector network to collect data from diverse geographic locations, where key parameters such as rigidity and altitude vary.

## Graph Panel



## Graph Panel – Pressure Corrected



## Challenges

- **Infrastructure Issues:** Persistent challenges include power outages and room temperature fluctuations, both of which can impact the stability and accuracy of data collection.
- **Legal and Regulatory Frameworks:** Navigating the legal requirements and regulatory frameworks across different regions poses a significant challenge, particularly for expanding the detector network and data sharing.

## Summary and Future

The variation in muon flux is strongly influenced by atmospheric parameters such as pressure and temperature and is also sensitive to space weather phenomena. Expanding the current detector network will allow for a more robust collection of data across different environmental and geophysical conditions. Future work will focus on:

1. Developing comprehensive models to quantify the atmospheric dependence of muon flux and working towards constructing a predictive forecasting system.
2. Investigating the impact of space weather events on muon flux with the aim of building a reliable model to forecast these variations.
3. Exploring the influence of oceanic changes on muon flux and integrating this understanding into broader environmental models.