

UNDERGRADUATE SUMMER INTERN PROJECTS

Climate change following recent volcanic eruptions

Volcanic eruptions inject dust particles and other gases into the atmosphere, leading to substantial changes in atmospheric temperature and circulation. The volcanically forced climate response is also important because it has similarities to the potential effects of solar geoengineering techniques. By looking into the observations, reanalysis, and model simulations, this project aims to examine the impacts of volcanic eruptions on extreme events (e.g., heatwaves, floods, ...) on a global scale. By doing such analysis, the participants will develop an idea about the interaction between climate and extreme events; the research outcomes will also provide important implications for future climate change and solar geoengineering.

Climate change in a world with climate intervention

Building on current research on the cooling effects of volcanic eruptions that inject sulfur dioxide into the stratosphere, this project focuses on the hypothetical stratospheric aerosol injection (SAI) technique – a potential solar geoengineering strategy designed to remediate climate change effects. It is important to note that while geoengineering may offer potential solutions, it also poses significant risks and ethical considerations that need to be carefully evaluated. Therefore, this project aims to investigate two key questions: how will climate change by the end of the century with SAI deployment, and how will these results differ without future climate intervention? This research can potentially provide valuable insights and solutions to the challenges posed by climate change. The research outcome could potentially lead to innovative climate intervention strategies, offering hope for a more sustainable future.

Feel free to contact me (hien.bui@atm.ncu.edu.tw) with any questions!