

SUMMER RESEARCH 2024/25

PROJECT ABSTRACT



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

PROJECT # 60

SUPERVISOR/S:	Dr Luke Harrington & Jesse Whitehead
PROJECT TITLE:	Exploring the intersection of river flood timescales and community vulnerability
FIELD:	Climate Science
DIVISION/SCHOOL:	HECS - Te Aka Mātuatua School of Science
PROJECT LOCATION:	Hamilton

PROJECT ABSTRACT:

The duration of rainfall required for peak fluvial flooding to occur varies depending on the size and characteristics of a given river catchment. Working with colleagues from NIWA, we have access to a data set which quantifies the duration of rainfall required for the risk of flooding to peak for different river catchments around the country. In this project, the student will use GIS and other modelling tools to analyse this hydrometeorological data set and overlay information about the vulnerability of different communities which are exposed nationwide. The student will build a picture of community exposure profiles for different types of fluvial flood timescales, and this will be then linked back to projections of future rainfall change in a warming world.

STUDENT SKILLS:

- Experience with GIS software (preferred) or programming languages (e.g. MATLAB, Python or R), or a willingness to learn.
- A physical science background would be beneficial
- Data analysis and critical thinking
- Ability to communicate and synthesize key results

PROJECT TASKS:

1. Use GIS or other programming tools to analyse both the "timescale to peak flood" data set as well as a suite of socioeconomic and demographic data sets
2. Analyse these data and produce novel insights about the exposure of communities to potential river floods which require rainfall over different timescales
3. Explore the implications of future changes in the intensification of rainfall over different timescales under climate change
4. Creation of research poster to synthesize results

EXPECTED OUTCOMES:

- Student's Research Poster (as per clause 6 of the [Scholarship regulations](#))
- Quantitative estimates of the characteristics of communities which live in river catchments with different timescales of rainfall required to produce peak flooding
- New insights as to how a warming world and its timescale-dependant impacts on the intensification of rainfall will translate differently to different communities around NZ.

