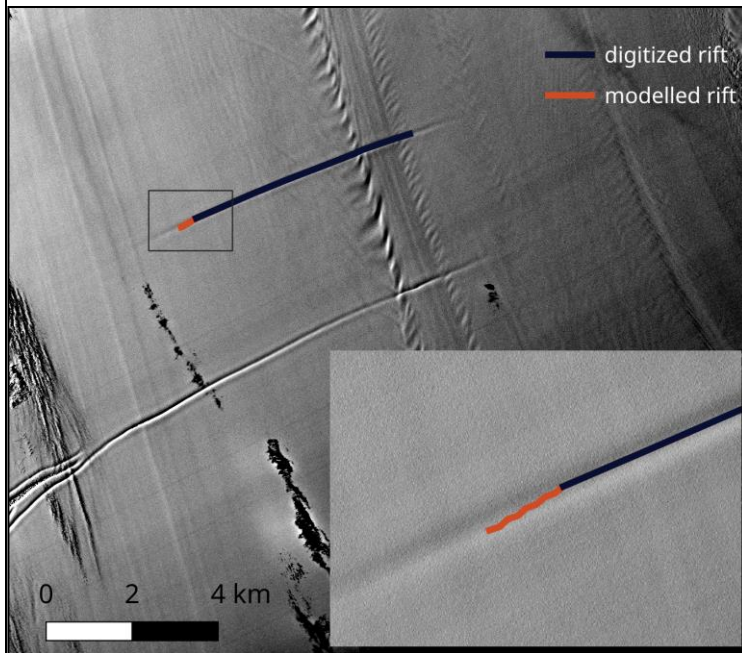# Coupling an XFEM code for linear elastic fracture propagation to a viscous ice flow model

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Ice shelves, floating extensions of grounded ice sheets and glaciers, border much of the Antarctic coastline and are responsible for most of the continent's ice mass loss. This is accomplished by melting and by iceberg calving, each process accounting for about half the total. Calving occurs as numerous smaller icebergs and by a small number of large tabular icebergs. Tabular icebergs separate from ice shelves at long, through-cutting rifts that form transverse to ice flow near the seaward fronts of the shelves. The formation and propagation of rifts transpire over time scales from days to decades, making observational studies rare. Thus, while ice shelf rifts represent a critical component in understanding and making projections of future Antarctic mass-balance, they are not well understood or represented in models. This work adapts current-day best practices in fracture propagation modelling to the Ice Sheet System Model (ISSM), therefore providing a diagnostic and predictive numerical tool for the study of ice shelf rifts.

Visual spatial analysis of Active Transport to School Patterns in Dunedin Adolescents

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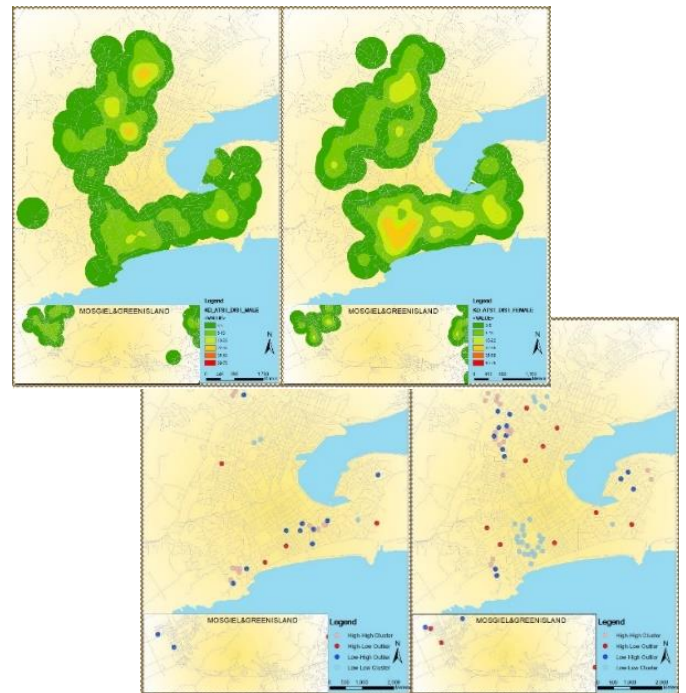
Active transport to school (ATS) is a convenient way for children to achieve the recommended daily physical activity level and develop life-long exercise habits. Understanding the factors that influence children's use of active transport is essential to inform the design of effective interventions to encourage active transport selection, such as the development pedestrian-friendly neighbourhoods and supportive infrastructure.

This research applied visual geospatial analysis methods to ATS to examine the relationship between ATS and its correlates over space. The results of kernel density estimation (KDE) and Local indicators of spatial association (LISA) indicate that gender, attendance at a co-educational school, distance to school and Neighbourhood Deprivation Index along with residential density, mixed land use entropy and intersection density show associations with ATS over space, while body mass index and ethnicity do not. The results of this research could be used as evidence to support future strategies and policies to increase the ATS rate.

School of Surveying
Te Kura Kairūri

12:00 noon, Thursday, 10 October 2019
L1 Lecture Theatre
School of Surveying, 310 Castle Street
Join remotely: https://otago.zoom.us/my/**surveyingseminar**

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