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The Extreme Weather Event Real-time Attribution Machine (EWERAM) – An Overview

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As greenhouse gases continue to accumulate in Earth's atmosphere, the nature of extreme weather events (EWEs) has been changing and is expected to change in the future. EWEs have contributions from anthropogenic climate change as well as from natural variability, which complicates attribution statements. EWERAM is a project that has been funded through the New Zealand Ministry of Business, Innovation and Employment Smart Ideas programme to develop the capability to provide, within days of an EWE having occurred over New Zealand, and while public interest is still high, scientifically defensible statements about the role of climate change in both the severity and frequency of that event. This is expected to raise public awareness and understanding of the effects of climate change on EWEs.

A team of researchers from five institutions across New Zealand are participating in EWERAM. EWE attribution is a multi-faceted problem and different approaches are required to address different research aims. Although robustly assessing the contribution of changes in the thermodynamic state to an observed event can be more tractable than including changes in the dynamics of weather systems, for New Zealand, changes in dynamics have had a large impact on the frequency and location of EWEs. As such, we have initiated several lines of research to deliver metrics on EWE attribution, tailored to meet the needs of various stakeholders, that encompass the effects of both dynamical and thermodynamical changes in the atmosphere. This presentation will give an overview of EWERAM and present the methodologies and tools used in the project.