

A CORDEX Flagship Pilot Study for simulating Island Climates in the Pacific (IC-Pac)

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Abstract: Numerous small island states are confronting substantial, potentially existential, threats due to climate change. These islands are often not represented in Global Climate Models (GCMs) because of their coarse resolution and exclusion from current CORDEX domains, resulting in their absence from regional climate projection ensembles. Consequently, climate change projections for many small islands are derived from GCM projections for the open ocean, which do not accurately reflect the island climates. Beyond sea level rise, these islands are affected by changes in various climate extremes (e.g., tropical cyclones, extreme rainfall, extreme heat, drought). However, future changes in these hazards over islands are characterized by low confidence, as indicated in the recent IPCC report.

This project aims to generate actionable climate change projections for a region encompassing numerous Pacific island states and territories. To capture critical island climate processes, these projections must be high resolution (kilometer scale). Additionally, to quantify confidence levels and uncertainties, a multi-model ensemble approach is necessary. The project will also incorporate empirical-statistical downscaling methods, including those based on machine learning techniques, tailored to island climates. This presentation outlines the project plan and the current status of IC-Pac (<https://ic-pac.org/>).

Keywords: *Island climate, regional climate projections, CORDEX, Pacific.*