Pacific Island Groundwater and Future Climates: First-Pass Regional Vulnerability Assessment

The Australian Government's Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) Programme assists Pacific Island countries to manage future climate risks.

Islands in the Pacific region rely heavily on groundwater and, for many islands, it is the only reliable source of freshwater throughout the year. Sea-level rise and changes in rainfall patterns are likely to put water resources – already under pressure from increasing populations and pollution – at further risk, threatening the long-term viability of communities and islands.

The PACCSAP programme, in partnership with Geoscience Australia, undertook a regional assessment of the vulnerability of Pacific Island groundwater resources to future climatic conditions.

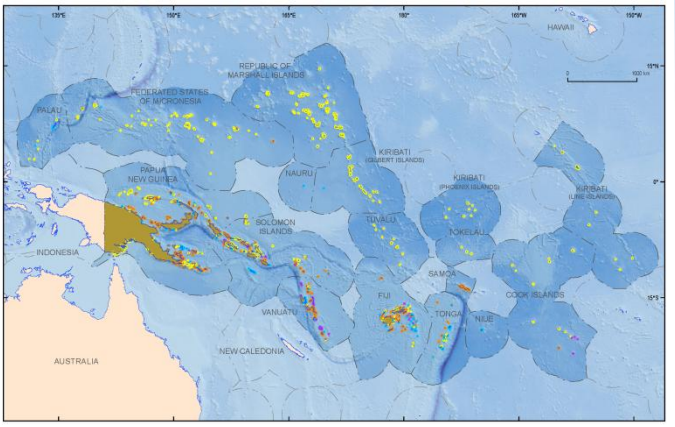

Figure 2: Regional map of Pacific island types

Figure 1: Using groundwater in Kiribati

This project assessed the potential vulnerability of Pacific island groundwater to **sea-level rise** and **low rainfall periods.** The assessment found that around 80% of islands assessed have moderate to higher vulnerability to projected sea-level rise (Figure 3). Federated States of Micronesia, Republic of Marshall Islands and Solomon Islands have the greatest number of most vulnerable islands.

In response to low rainfall periods, 97% of islands assessed have moderate to higher vulnerability (Figure 4). Kiribati, Republic of Marshall Islands and Solomon Islands have the greatest number of most vulnerable islands.

These results have implications for future water management and planning in the Pacific, and allow countries and regional development agencies to identify areas where more detailed analysis of vulnerability could be considered.

Key outputs from the project include:

– **Regional and country-specific maps** of more than 1,800 islands, identifying those with groundwater supplies considered vulnerable to climate impacts across the Pacific.

– **Regional spatial database** of more than 3,500 Pacific islands, including information on geology, groundwater, potential for permanent freshwater, name, area, coastline length, elevation, width, and population density.

– **Report on the future vulnerability** of groundwater in the Pacific islands to climate impacts.

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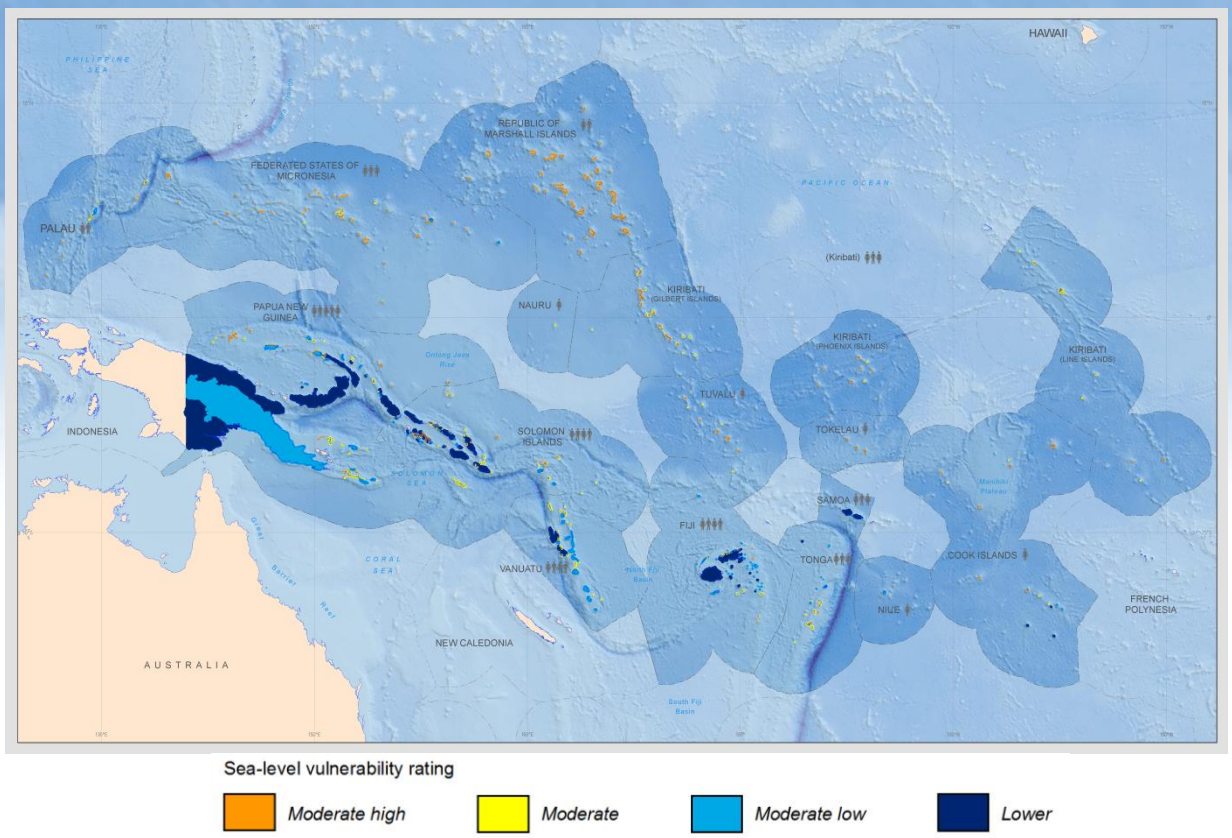

Figure 3: Potential vulnerability of groundwater in the Pacific region to projected mean sea-level rise in 2050.

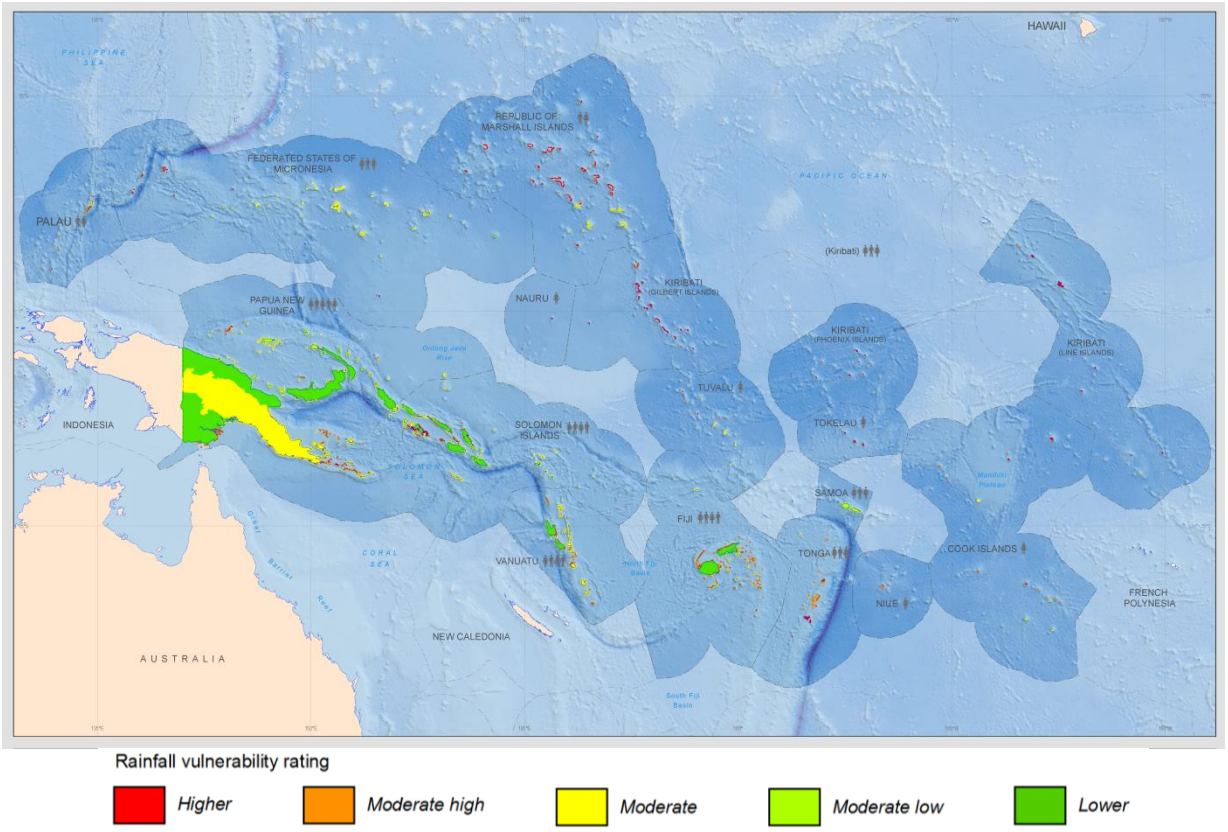

Figure 4: Potential vulnerability of groundwater in the Pacific region to lowest mean annual rainfall in 2050.

For further information visit http://bit.ly/1piIksy

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