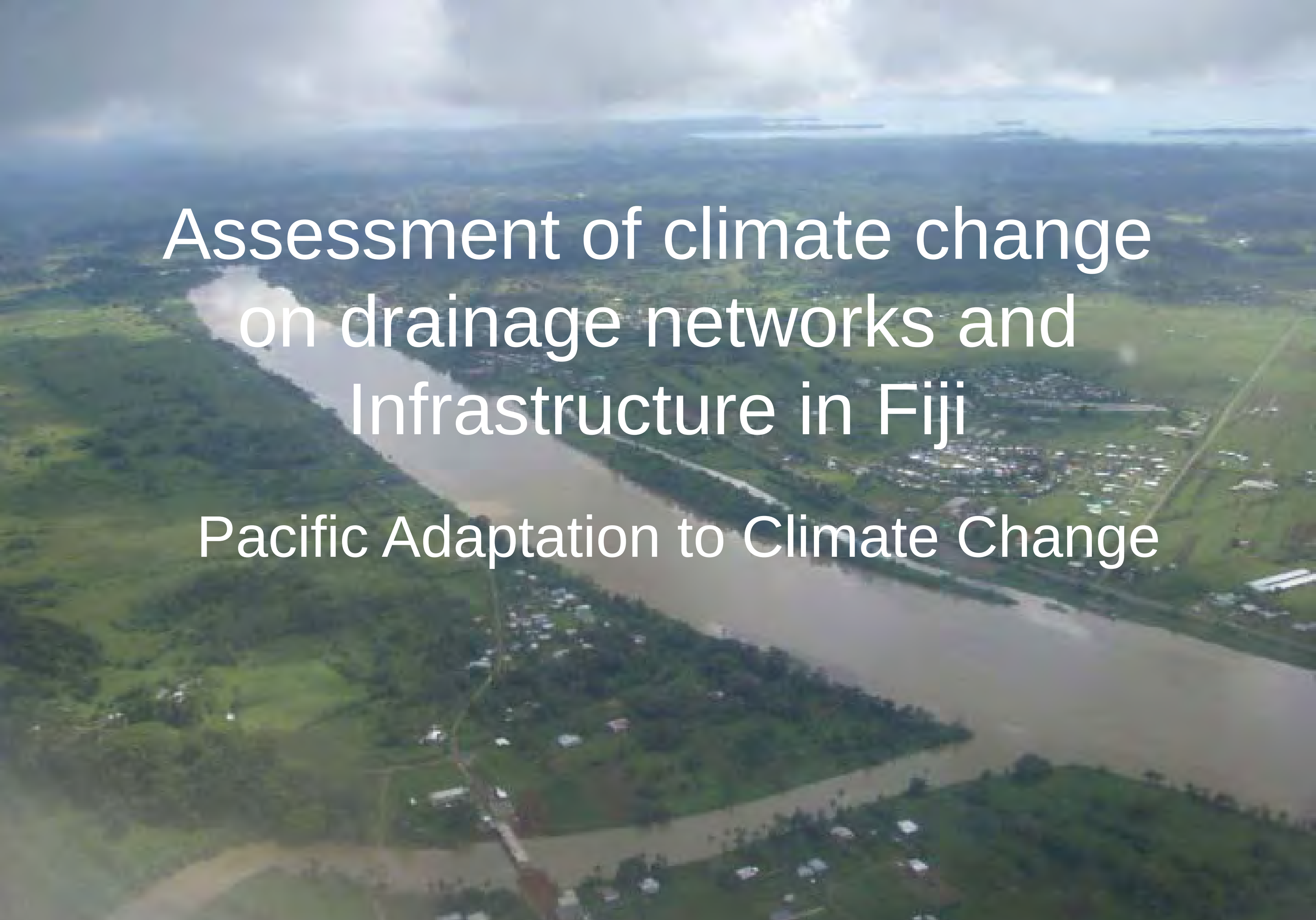

Assessment of climate change on drainage networks and Infrastructure in Fiji

Pacific Adaptation to Climate Change

NIWA Taihoro Nukurangi

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2 km
Nausori
settlement
>200 people
N
Rewa Delta
VITI Levu Island
FIJI ISLANDS
Size of delta: 86 km^2
Population: 27,950
Prof. P Nunn
Nausori
Suva
Navua

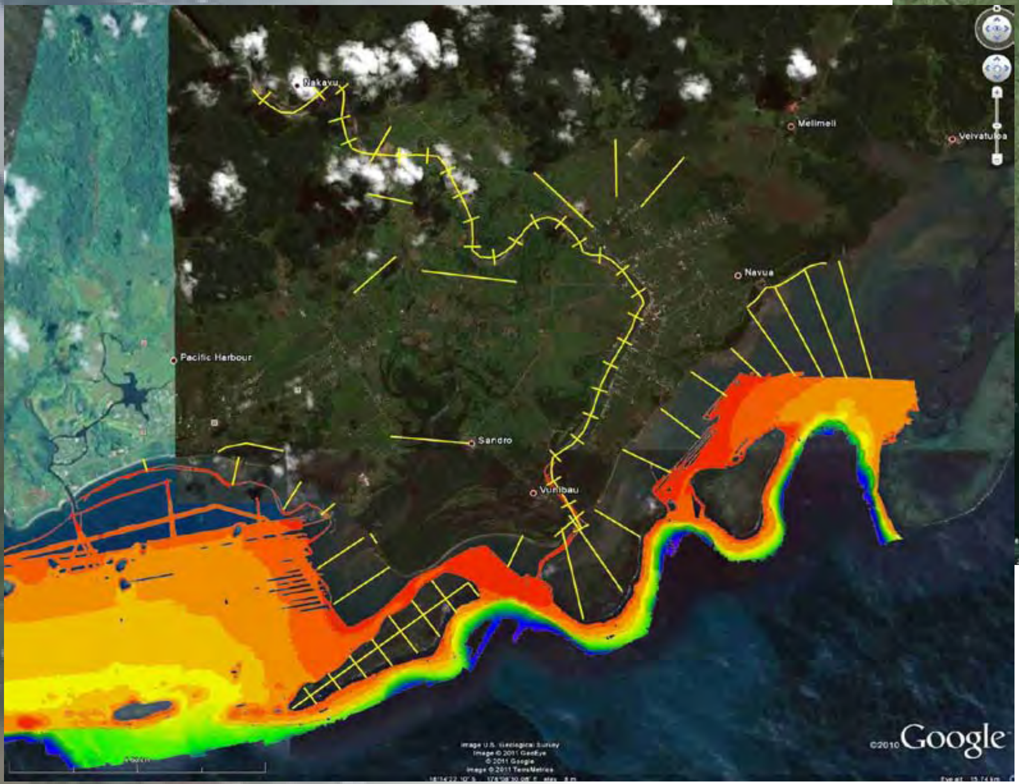
Purpose

- Develop baseline information necessary to support a risk-based approach to climate change adaptation in the project demonstration sites.
- Assess how climate change and sea-level rise will impact agricultural drainage schemes in the Rewa and Navua deltas.
- Provide a sound, objective and evidence-based framework for developing climate change adaptation strategies for development of drainage guidelines and demonstration of adaptation interventions.
- Demonstrate an approach that is scalable and can be transferred and applied to other areas in Fiji.

Project Components

- Climate change
  - Extreme rainfall
  - Sea level rise and extreme water levels
- Field topography and bathymetry data collection
- Hydraulic (drainage) and hydrological (river) modelling
- Socio-economic community vulnerability assessment
- Options development and appraisal
- Tools and guidance products to use and apply the information developed.

Field data collection



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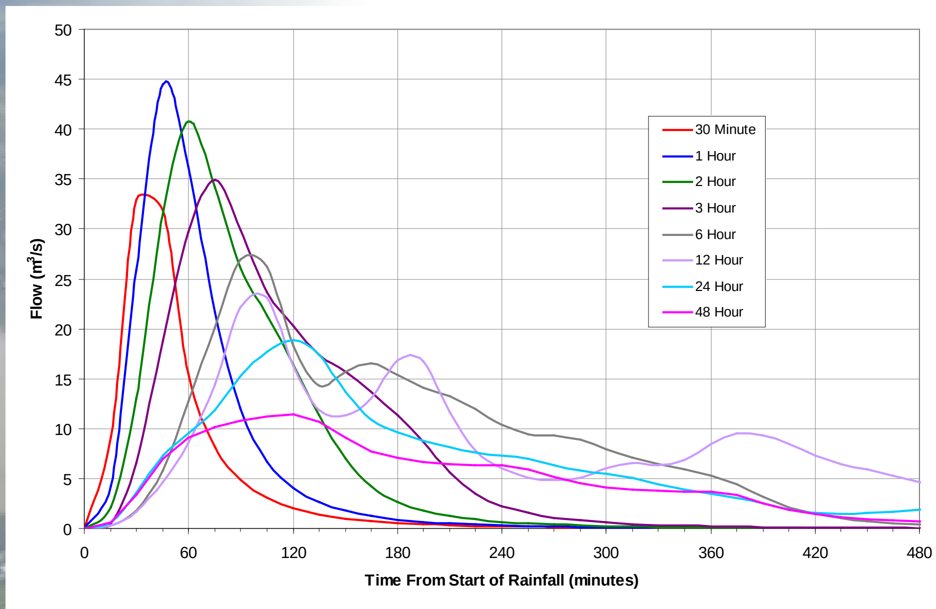
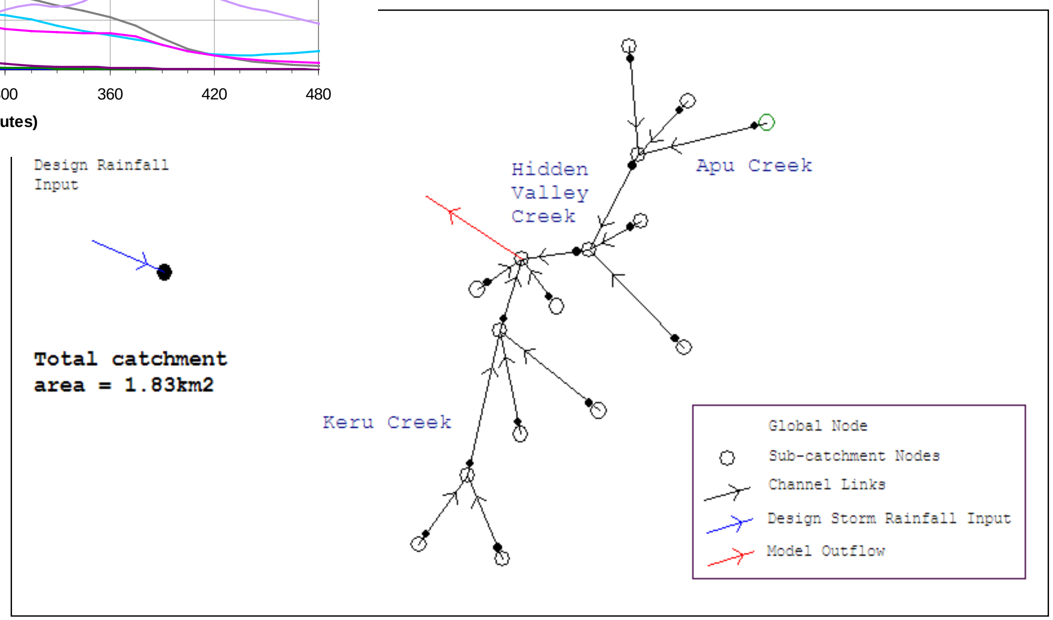
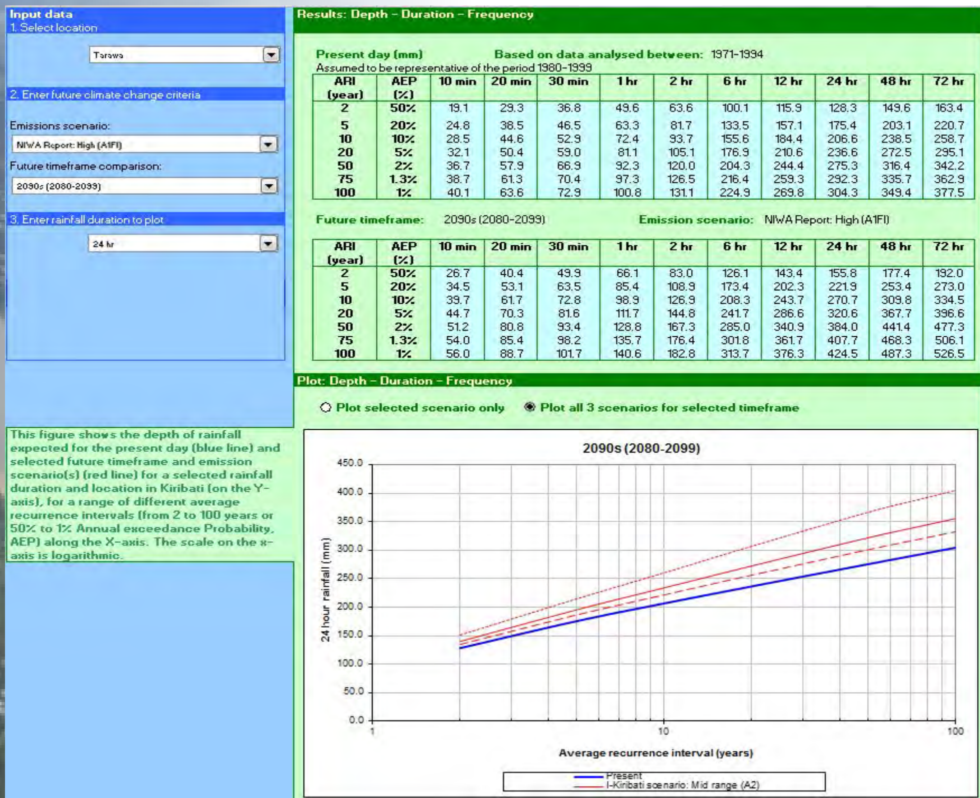
Hydrologic and hydraulic modelling





Tools



ARI (year)	AEP (%)	10 min	20 min	30 min	1 hr	2 hr	6 hr	12 hr	24 hr	48 hr	72 hr
2	50%	19.1	29.3	36.8	49.6	63.6	100.1	115.9	128.3	149.6	163.4
5	20%	24.8	38.5	46.5	63.3	81.7	133.5	157.1	175.4	203.1	220.7
10	10%	28.5	44.6	52.9	72.4	93.7	155.6	184.4	206.6	238.5	258.7
20	5%	32.1	50.4	59.0	81.1	105.1	176.9	210.6	236.6	272.5	295.1
50	2%	36.7	57.9	66.9	92.3	120.0	204.3	244.4	275.3	316.4	342.2
75	1.3%	38.7	61.3	70.4	97.3	126.5	216.4	259.3	292.3	335.7	362.9
100	1%	40.1	63.6	72.9	100.8	131.1	224.9	269.8	304.3	349.4	377.5

Future timeframe: 2090s (2080-2099) Emission scenario: NIWA Report: High (A1FI)

ARI (year)	AEP (%)	10 min	20 min	30 min	1 hr	2 hr	6 hr	12 hr	24 hr	48 hr	72 hr
2	50%	26.7	40.4	49.9	66.1	83.0	126.1	143.4	155.8	177.4	192.0
5	20%	34.5	53.1	63.5	85.4	108.9	173.4	202.3	221.9	253.4	273.0
10	10%	39.7	61.7	72.8	98.9	126.9	208.3	243.7	270.7	309.8	334.5
20	5%	44.7	70.3	81.6	111.7	144.8	241.7	286.6	320.6	367.7	396.6
50	2%	51.2	80.8	93.4	128.8	167.3	285.0	340.9	384.0	441.4	477.3
75	1.3%	54.0	85.4	98.2	135.7	176.4	301.8	361.7	407.7	468.3	506.1
100	1%	56.0	88.7	101.7	140.6	182.8	313.7	376.3	424.5	487.3	526.5

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Socio-economic vulnerability assessment

- Develop an understanding of the communities or elements within communities that are more susceptible to climate-related risks and how these vulnerabilities may change over time.
- Develop an understanding of the underlying causes of community vulnerability and establish the relative significance of rainfall, inundation and other climate risk-related vulnerability within this wider community vulnerability context.
- Reduce barriers to inter-generational adaptation planning
- Contribute to helping empower community leaders to develop effective risk reduction and adaptation options and strategies
- Ensure that identified adaptation options can be effectively implemented and that they do not exacerbate vulnerabilities in any way.

Outputs

- New drainage design guidelines
- Calculator tools to enable climate change impacts of extreme rainfall & coastal defence performance to be assessed
- Technical reports
- Indicative river & coastal inundation maps
- Options assessment and appraisal including socio-economic inputs
- Increased capacity with LAWRM to apply the process in other locations.

Introduction to the Project team

NIWA
Taihoro Nukurangi

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SECRETARIAT OF THE PACIFIC COMMUNITY
Applied Geoscience and Technology Division (SOPAC)

Land and Water Resource Management Division

Vinaka vakalevu

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