

Workshop on Observation Systems of Climate Change in the South Pacific

11-12 June 2015 IRD Centre, Nouméa, New Caledonia



Parallel Session 2: Observing impacts of climate change on ecosystems and biodiversity, and on marine and terrestrial resources

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Panel:

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What impacts will be addressed by which data ?

Impacts need to be addressed first:

Changes in environmental abiotic parameters (pH, CO₂, T°...)

Ecological community changes;

Phase-shift;

Species distribution changes;

Ecological functions;

Habitat characteristics;

Ecosystem services

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What types of data are needed?

Pre-request: state of art for visibility and accessibility of the data

Importance of standardisation of metadata to track data for future analysis

Statement: **Super set of heterogeneous data of biodiversity**

Needs:

1- **Abiotic data**: physical and chemical environment: for example CO₂, pH, T°, UV, rainfall, carbon cycle, landscape and seascape continuum approach...

2- **Biodiversity and biological data**:

- a- Species diversity
- b- Biotic interactions
- c- Ecological functions
- d- Ecosystem level
- e - Indigeneous knowledge integration

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1- Observations

What types of tools are needed?

Statements

Good proxies rarely available

Need of standardized methods

Lack of permanent human resources

Lack of computational resources

The way forward

Long term monitoring: ecological sites & permanent plots network

Alternative tools for global biodiversity mapping: Omics approaches,

Functional groups /biological traits approach

Diachronic approaches (historical data including indigenous knowledge + monitoring)

Long time series of remote sensing

Landscape/seascape transitions

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What types of tools are needed?

2- Experimentation

Experimental design: model systems (sentinelle islands; mesocosms)

Invasive eradication as reverse experiment

Winners and losers species approach to define proxy of climate change impacts (functional group approach) – resistance/resilient/adaptation of species and systems

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How will data be used and model integration will be achieved?

Models are needed for prediction

Ongoing dialog between data providers and modeling people need to be facilitated

Need of real and accurate data to feed the models

Models to be developed for various conditions: downscaling is needed especially in pacific region

Database curation and management for current and future needs

Reinforce computational resources to support modeling needs

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What partnerships are needed to support and exploit these observation systems ?

New partnerships and strengthen existing partnership are needed to collect, document safeguard, synthesize and disseminate information on observed changes

Increase partnership between scientists and local communities

Increase scientific partnership within and across the Pacific rim

Increase scientific partnership with Europe, such as ESA...

Enlarge partnership with other agencies of competencies

Improve dissemination of information through ongoing partnership

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Pacific specificities

Pacific islands are the heart of the ongoing extinction crisis

Small islands states: among the highest vulnerable countries

High diversity of traditional knowledge

Landscape/seascape continuum

Patchiness

Downscaling required

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Recommendations

Improve partnership to overcome policy difficulties to access data

Promote free data access across the region including ESA sentinel program

Crisis situation in the region means urgent need to establish long term ecological sites: low lying coral reef islands (sentinel islands), high island with gradients, sentinel ecosystems network over the pacific region

Promote ongoing programs for local capacity building

Promote stronger links between experts to distinguish between anthropogenic and natural climate change

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Complex interactions between effects of climate change and biodiversity both terrestrial and marine

