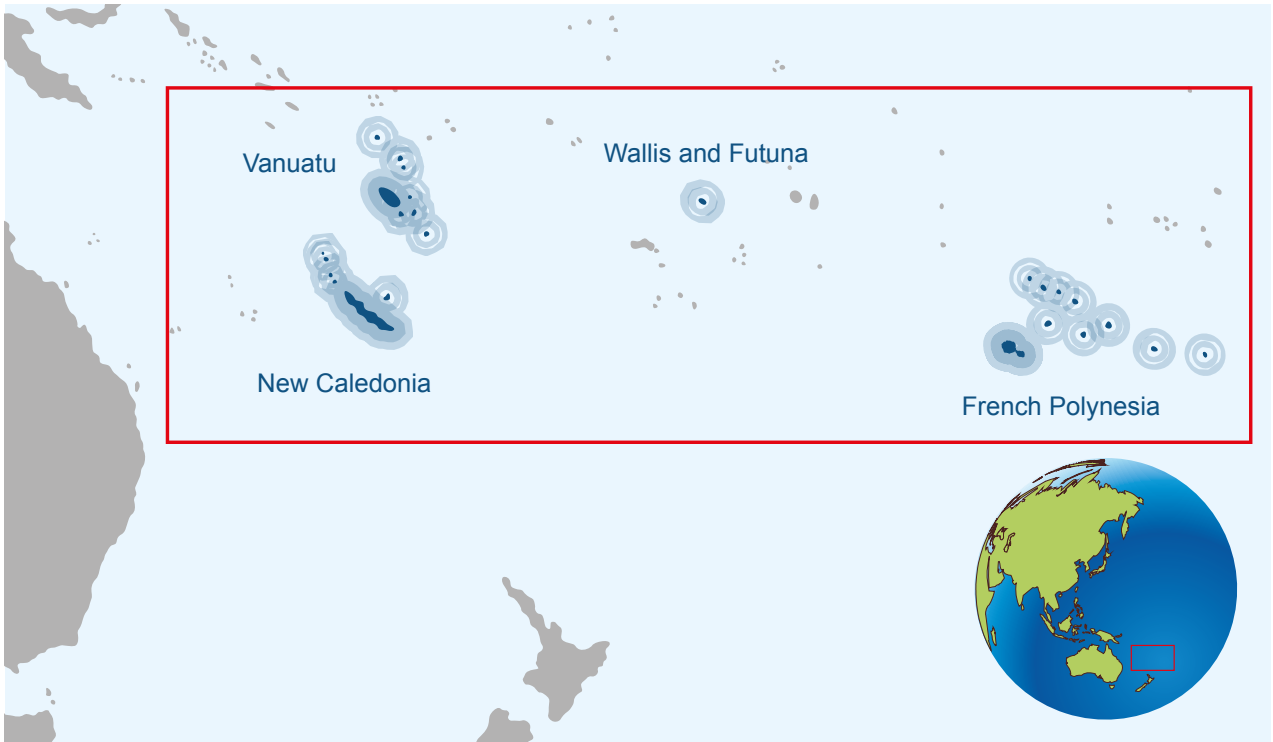


## Key climate knowledge for the Pacific

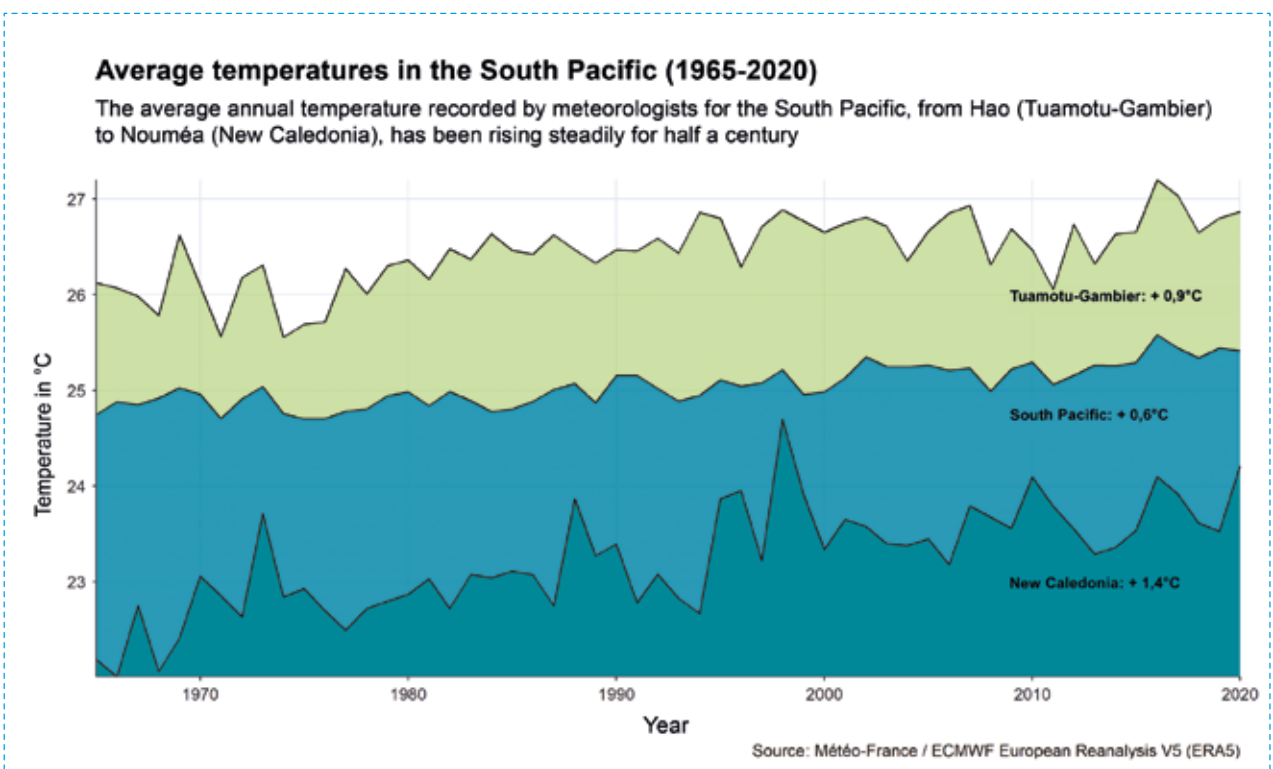
NEW CALEDONIA - FRENCH POLYNESIA - VANUATU - WALLIS AND FUTUNA

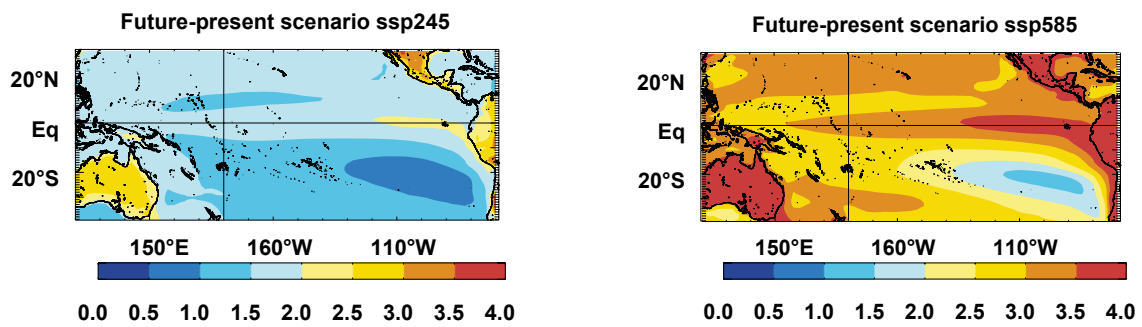


## Growing climate threats



Port Vila is a regional economic and commercial centre with a population over 50,000 on the edge of the Pacific Ocean. Between 1993 and 2015, water levels rose by 3 to 5 mm/year and air temperatures have risen by +0.5°C since 1970. According to global climate models, this trend is set to continue with ocean levels expected to rise by between 10 and 15 cm by 2030 and between 20 and 65 cm by 2100. Similarly, the temperature of the Pacific will continue to rise by 1-2°C according to best-case scenarios and 2-4°C according to worst-case scenarios.





Differences in surface air temperature (in °C) between the future period (2075-2100) and the present period (1980-2014) according to two climate scenarios, one of which corresponds to a significant global reduction in greenhouse gases in line with the 2015 Paris Agreement (SSP2-4.5, Shared Socioeconomic Pathway), while the other shows the unchecked continuation of current trajectories of greenhouse gas emissions. The maps show an average calculated from 20 IPCC models.

The threat to Vanuatu's capital is just one of many examples of the **vulnerability of the Pacific Island Countries and Territories (PICTs)** to the effects of climate change: rising temperatures, more frequent and intense droughts, rising sea levels and coastal erosion, salinization of freshwater lenses, ocean acidification and marine and atmospheric heat waves which are a major contributor to coral bleaching, etc.

Over time, "risk cultures» have developed in these archipelagos which are all different in terms of geomorphology, history and economic development. Each island society has learned to cope with climate and socio-environmental events according to its own knowledge, norms and values.

These countries and territories are already being affected by the increase in the number of extreme climate and hydrological events.

Faced with these growing climate risks, they need to organise coherent and structured responses to adapt to climate change, which means modifying ways of living and doing things through **National Adaptation Plans**. Detailed knowledge of the future climate at local level is a prerequisite for these strategies, in order to assess vulnerabilities.

However, some key characteristics of the future climate, such as average precipitation, extreme temperature and precipitation events or cyclones, are not well known.





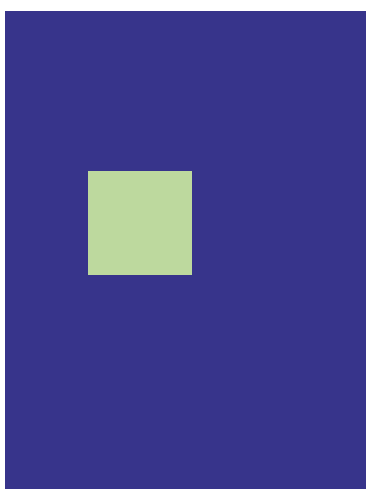
## The need for adapted climate simulations

The available climate information is too broad scale and uncertain in the South Pacific Convergence Zone (SPCZ\*), which future dictates the climate in the region. There are too few high-resolution projections, making it impossible to quantify trends in cyclones and rainfall in the region, and future droughts and large-scale heat waves, for example.

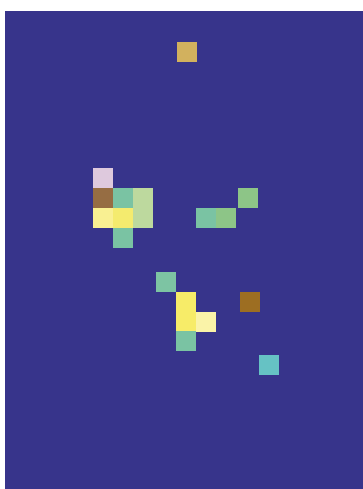
**Given the level of risk in the area, more detailed climate simulations with appropriate island spatial scales are essential.**

### IPCC\* models are not adapted to the scale of the islands

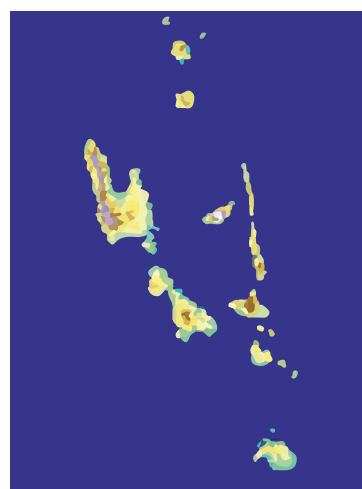
Global climate models  
for Vanuatu (100 km)



Regional climate models  
for Vanuatu (20 km)



High-resolution climate models  
for Vanuatu (2.5 km)



IPCC simulation



CLIPSSA simulation

\*Intergovernmental Panel on Climate Change

The CLIPSSA (Pacific Climate, Local Knowledge and Adaptation Strategies) project is led by the French National Research Institute for Sustainable Development (IRD), Agence Française de Développement (AFD) and Météo-France. It aims to produce new scientific data on the future climate of the Pacific. It proposes to study the key impacts of climate change on sectors such as agriculture, energy, access to water and health in order to improve knowledge of vulnerabilities connected with climate change and facilitate the creation of adaptation strategies. The project will also analyse the feelings and experiences of populations faced with these impacts, as well as the development of local knowledge mobilised to deal with extreme events, constituting «risk cultures». Lastly, it will study different ways of integrating the diverse range of existing or co-produced scientific and local knowledge into adaptation policies.

**The operational objective: inform adaptation strategies and the development of long-term adaptation and action plans.**

The work of the CLIPSSA project will focus on Vanuatu and the French Territories (New Caledonia, Wallis and Futuna, and French Polynesia). Its multidisciplinary strategy and results will mark a new era in climate simulations and the creation of climate-related impact models in the region as a whole.

\*South Pacific Convergence Zone

## Expected results

- High-resolution climate simulations for the entire South Pacific area for a better understanding of the future of the Pacific climate in terms of heat waves, precipitation, drought and cyclone activity
- Very high-resolution simulations for three specific geographic areas (Vanuatu and New Caledonia, Wallis and Futuna, and French Polynesia) for the next 100 years
- Update climate change data from IPCC models and national priorities for key sectors affected by the climate. In agriculture, for example, the simulations will provide answers to the following questions: how will rainfall and drought change over the coming decades? Are these changes a threat to agriculture? What changes might this lead to for crops?
- Databases containing local knowledge and practices that constitute the «risk cultures» of Oceanian societies, i.e. non-confidential knowledge and know-how that will be particularly useful in adapting to extreme phenomena
- An analysis of the transformations that have affected places and times of transmission of useful knowledge and skills for adaptation
- Promotion of climate change adaptation strategies among the population by drawing on local traditional knowledge



## The partnership

This multidisciplinary project involves researchers from the climate and social sciences and aims to create informed dialogue with the competent authorities and civil society in the countries and territories concerned.

The project is in line with existing frameworks: Vanuatu's Climate Change and Disaster Risk Reduction Policy 2016-2030 (Vanuatu 2030: the People's Plan); Wallis and Futuna's Climate Change Adaptation Strategy, and the climate policies of New Caledonia and French Polynesia.

It will be accompanied by a steering committee composed of representatives from the governments of Vanuatu, French Polynesia, New Caledonia, Wallis and Futuna and the Secretariat of the Pacific Regional Environment Programme (SPREP).



### 3.5 years

simulations will be available in the first 2 years



### A multi-disciplinary team

- 5 post-docs  
(2 climate, 2 climate impacts, 1 SSH ecological knowledge)
- 2 PhD students  
(1 ecological knowledge, 1 Météo-France on climate)
- 1 project engineer



### 1 climate portal

in partnership with



### €4 million

AFD, IRD, Météo-France



Agence Française de Développement (AFD) Group is a French public financial institution that finances, supports and accelerates transitions towards a fairer and more sustainable world. As a platform for French foreign aid for sustainable development and investment, AFD works with its partners to create shared solutions with and for the populations of the South. In the Pacific, AFD has maintained a long-term partnership with New Caledonia, Wallis and Futuna and French Polynesia for over 70 years as the leading financial and technical partner of local governments. In the past decades, AFD has made investments throughout Vanuatu and currently supports several projects.



IRD is a major French player in the international development agenda. It champions an original model based on fair scientific partnerships with developing countries, mainly those in the inter-tropical regions and the Mediterranean area. Its research focuses on the science of sustainable solutions. The IRD centre in Nouméa has been present in New Caledonia for 70 years and is the Institute's largest satellite in the French overseas territories. It also has the largest concentration of French and European researchers in the Pacific. IRD's activity in New Caledonia focuses on issues connected with insularity and global changes.



Météo-France is a French public establishment supervised by the Ministry for Ecological Transition and is the national meteorological and climatological service. In addition to monitoring the climate in mainland France and overseas, Météo-France is also very involved in research programmes on climate change (global and regional projections) and its impacts (adaptation to climate change, changes in extreme phenomena, etc.) through the work of the Climatology and Climate Services Department, the institution's climate research teams (CNRM-GAME laboratory) and overseas inter-regional departments including French Polynesia and New Caledonia in the Pacific.

## Contacts

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