



# **Adaptation to Climate Change In the Pacific Islands Region (ACCPIR)**


## **Service Package 2: Development of Climate Change Databases in Vanuatu**

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# Outline

- Part 1: Climate Change-related Database Management Systems (DBMS)
  - Water Resource Inventory (WRI) System
  - Lands Department Databases
  - WRI and Lands Department Databases
  - Climate Databases
- Part II: Climate Change-related GIS Databases and Data
  - Vanuatu Resource Information System (VANRIS)
  - Lands GIS Databases
  - Vanuatu Population Geographical Information System (PopGIS)
  - Forest Resource Information System (FRIS)
  - Web-based GIS System
- Part III: Country needs



# Part 1: Climate Change-related Database Management Systems (DBMS)

# Water Resource Inventory (WRI) System

- Water Department wants to create a WRI System inventorying Water Quantity (Under development with first prototype operating by early December) and another yet-to-be developed system pertaining to Water Quality.
- Water Quantity Sub-system contains information mainly related to rural settlements. Comprised of 3 sub-systems:
  - Water Systems in Vanuatu and settlements they service.
  - Water Supply Systems types (Direct Gravity Feeds, pumped supplies, hand pumps and Rainwater Tanks) and water sources existing Settlements use.
  - Settlement sanitation information mainly related to access to toilets.

# Lands Department Databases

- Lands Department has 4 DBMS concerning leases and customary land with info related to Climate Change:
  - e-Registry – Contains info related to lessor, lessee, lease type, lease term, lease documents etc...
  - e-Survey – Contains info related to old lease title no., area of lease, etc...
  - Vanuatu Lease Audit Management System – Contains info related mainly to breaches of lease provisions (Such as illegal foreshore development, building without a permit, illegal clearing along a river bank etc...)
  - e-Customary Land Tribunal – Contains info related to land tribunal decisions, council of chiefs and tribunal judges, custom owners, customary boundary info, custom land sketch maps or survey plans.





## WRI and Lands Department Databases

- Lands Dept and Water DBMSs currently has no dedicated server to effectively house and interlink sub-systems as they are currently standalone on individual computers.
- The WRI and Lands Dept RDBMSs were developed using PHP, HTML and Javascript and run on Apache HTTP Server with the database layer built on MS Access or MySQL.



# Climate Databases

- ClimSoft (AusAid funded)
  - Stores all weather/climate elements
    - i.e.: rainfall, temperature (grass minimum, dew point, maximum, minimum), cloud cover, sunshine hours (radiation), evaporation, atmospheric pressure, relative humidity, wind, visibility etc
  - MySql backend, php, apache
- E-Monthly Register
  - Daily registers all weather elements and after quality checks then incorporated into ClimSoft
  - MySql backend, php



# Part II: Climate Change-related GIS Databases and Data





## Vanuatu Resource Information System (VANRIS)

- VANRIS contains information related to:
  - Places, transportation links, coastline, contours, climate, erosion, soil, land use (E.g. Farming suitability and land use intensity), temperature, topography (E.g. Land Form, Rock Type, slope) and vegetation (E.g. Dominant vegetation, secondary vegetation).
- Out of date as it was last updated in 1999. Also, has errors not only because data is out of date but because of digitizing errors and over-generalization of data for i.e.



# Lands GIS Databases

- The Ministry of Lands' in-house GIS Data comprises of:
  - Cadastral GIS Databases for the whole of Vanuatu (Links up to Lands RDBMSs).
  - Conservation/Protected Areas for most parts of Vanuatu.
  - Water Quality testing sites and Water Quantity sites (Can be linked up to WRI RDBMS).
  - Energy GIS Data related to solar power, wind power, hydropower sites and committees in charge etc...

# Australian Defense Force (ADF) GIS Data

▶ GIS Data created by the ADF in 2008 consists of:

- transportation links, coastline, land elevation, bathymetry, Human Land Use Data (Settlement Areas, landmarks, Quarries, Resorts, Rubbish Dumps etc...), Places (Settlements, Villages, Area Council HQs, Bungalows, etc...), Plantations, Vegetation and Crop Planting Areas, Hydrographic Features (Lakes, rivers, fords, rivers, Inundation Areas and inland shorelines), Physical Features (E.g. Peaks, Caves, points, ridges, Volcanic and Geothermal Features).
- This data replaces some of the data that VANRIS houses but no application in place to house and centralize this data them effectively.



# Vanuatu Population Geographical Information System (PopGIS)

- An executable file with Access database and Mapinfo Tab file format, installed on stand alone PCs.
- Holds information on all household and individual records collected during censuses
- Uses spatial data to display relevant information relating to census of population and housing



# Forest Resource Information System (FRIS)

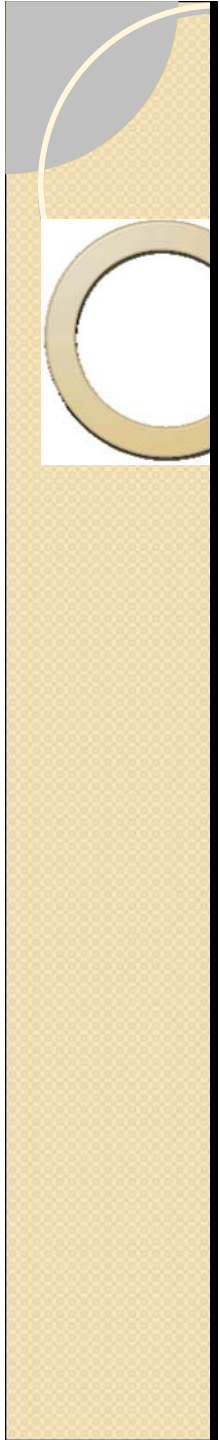
- Holds confidential information on Vanuatu's Commercial Timber species and timber volumes available in each Resource Mapping Unit (RMU) in Vanuatu.
- Species of commercial timber trees and estimated volume of timber available from 40+cm DBH. Data was developed during the 1993 National Forest Inventory.
- VDoF urgently needs an urgent update to this forestry data and FAO's "Strengthening Monitoring, Assessing and Reporting on Sustainable Forest Management(MAR on SFM) Project currently reclassifying vegetation maps of Vanuatu, will require more funds for ground truthing.



# Web-based GIS System

- A web-based GIS System is being developed by IRD and the University of New Caledonia (UNC) to interlink GIS data from various governmental and non-governmental agencies in Vanuatu.
- Lands Department lead agency in setting up this system.
- If successful, it will replace VANRIS.
- Most important aspect of this system is that it interlinks GIS data from these agencies but allows them control of data to share as it will be on servers within their agencies and system will interlink the GIS Data proprietary to these agencies. A data sharing framework needs to be put in place before this system can be implemented.
- Temporary link can be accessed from UNC website at <http://grimm.univ-nc.nc/geoportail/#vanuatu>





# Part III: Country needs



# Country needs

As envisaged by the Government of Vanuatu, the SP2 component of the ACCPIR project should provide:

- A system that is able to quickly and easily point Vanuatu stakeholders to relevant climate related information (data, documents, reports etc). Build on from the SPREP systems build for environmental information.
- The system should be
  - Online
  - Decentralized (point to data locations rather than hold everything itself)
  - Have a simple and user friendly interface that even the most basic computer user can navigate
  - Build on and accommodate existing data management and storage systems (not reinvent the wheel)
  - Consider the possibility of sharing objects (rather than raw data) to preserve and protect intellectual property
  - Be built and designed alongside ni-Vanuatu counterparts for total control and sustainability
  - Linked into regional support structures at SPC/SPREP for sustainability



# Country needs cont'

- Training and capacity building on how to use (and maintain/update) the system effectively with government, NGOs, industry and other relevant stakeholders
- Support the further development of a draft data sharing agreement being negotiated at present among Vanuatu stakeholders (helping to sort out the institutional and technical issues involved with sharing or publically releasing often sensitive information).
- Support to help departments identify and extract/produce value added 'objects' from the data that they hold that may be of relevance to climate change adaptation.
- Ongoing and long-term support to assist government officer INPUT data into the system that is eventually