

# FIJI METEOROLOGICAL SERVICE

Regional Specialized Meteorological Center



# **SEMINAR**

**21<sup>st</sup> ASIA PACIFIC SEMINAR ON CLIMATE  
CHANGE (26<sup>TH</sup> & 27<sup>TH</sup> ) JULY 2012**

**TECHNOLOGY DEVELOPMENT AND  
TRANSFER OF ENVIRONMENTALLY  
SOUND TECHNOLOGIES IN THE ASIA  
PACIFIC REGION**

**TITLE**

**FIJI'S METEOROLOGY EARLY  
WARNING SYSTEM IN  
SUPPORT OF CLIMATE  
CHANGE ADAPTATION**

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## OVERVIEW

- The Fiji Meteorological Service is responsible for providing weather and climate service to Fiji that includes early warning of weather and climatic phenomena.
- It also monitors Fiji's climate and provides information and advice on weather and climate from short to medium and medium to long term.
- The project clearly ties up with the national and sectoral policies as the direct beneficiaries are the entire population of Fiji.
- Moreover, this project links climate sensitive sectors to effectively use climate information and prediction for mitigation, adaptation, planning, sustaining and managing risk in a variable climate.
- This initiative taken today on will have far economic return for the benefit of future generations and enhance national development with better services to ensure safety of life and property in Fiji.

## **PROGRAMMEE - PSIP**

- PUBLIC SECTOR INVESTMENT PROGRAMME

## **National Climate Monitoring Upgrade Project - “Telemetric Systems”**

- **Cost – FJD \$900,000**
- **Brief Description**
- Strengthen the existing National Climate Monitoring Network to enhance weather and climate services to all sectors of Fiji for sustainable social and economic development by installation of Automatic Weather Stations around the country.
- Provide a wider coverage for timely monitoring of weather and climate, its variability and change including unusual weather and climate conditions associated with intra-seasonal, inter-annual and decadal timescales;

## **National Climate Monitoring Upgrade Project - “Telemetric Systems”**

- Facilitate weather and climate early warning systems for hydro-meteorological disaster risk reduction and adapting to adverse effects of climate change
- Satisfy Fiji’s needs for climate data for research purposes and development in view of local, regional and international obligations.
- The improved coverage and continuity in monitoring is expected to timely facilitate prediction of adverse weather and climate conditions including extreme events such as tropical cyclones, floods, high intensity rainfall, droughts and rare meteorological events.

# Observational Stations Network/Systems

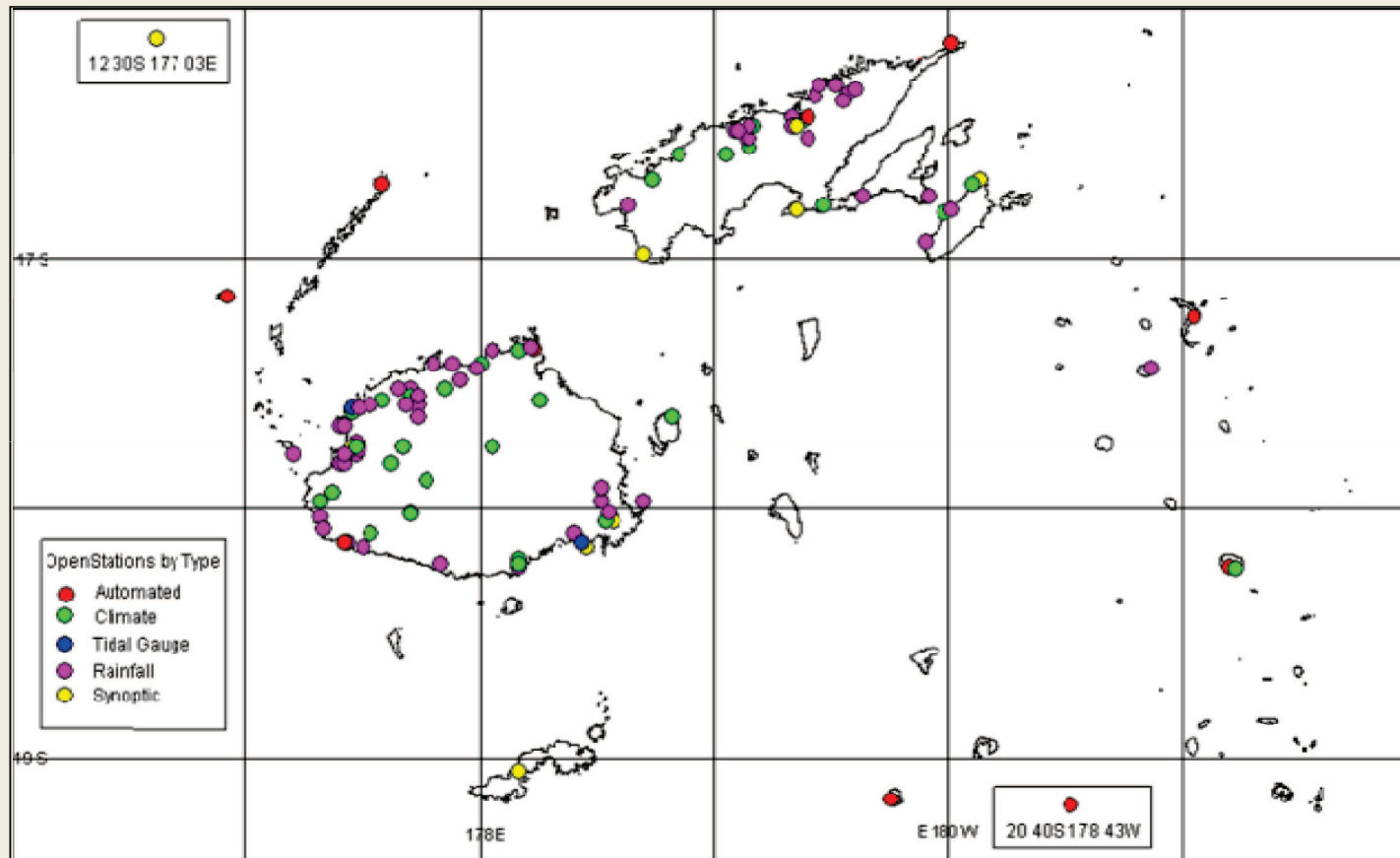


Fig 1



## Distribution of Current Telemetric System

- 16 TB3 Fully Automatic Rainfall Stations



- Two are Electronic Weather Stations (temperature, pressure and wind)

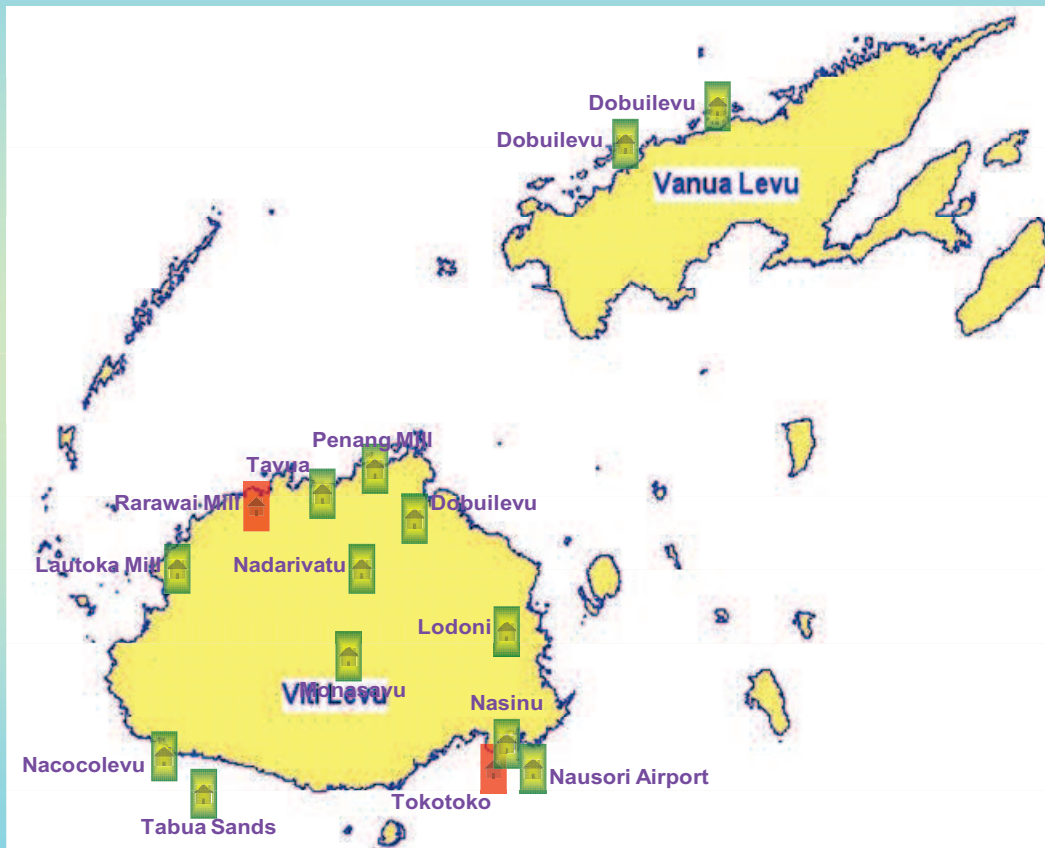


FIG 2

## Proposed Telemetric System 2013-15



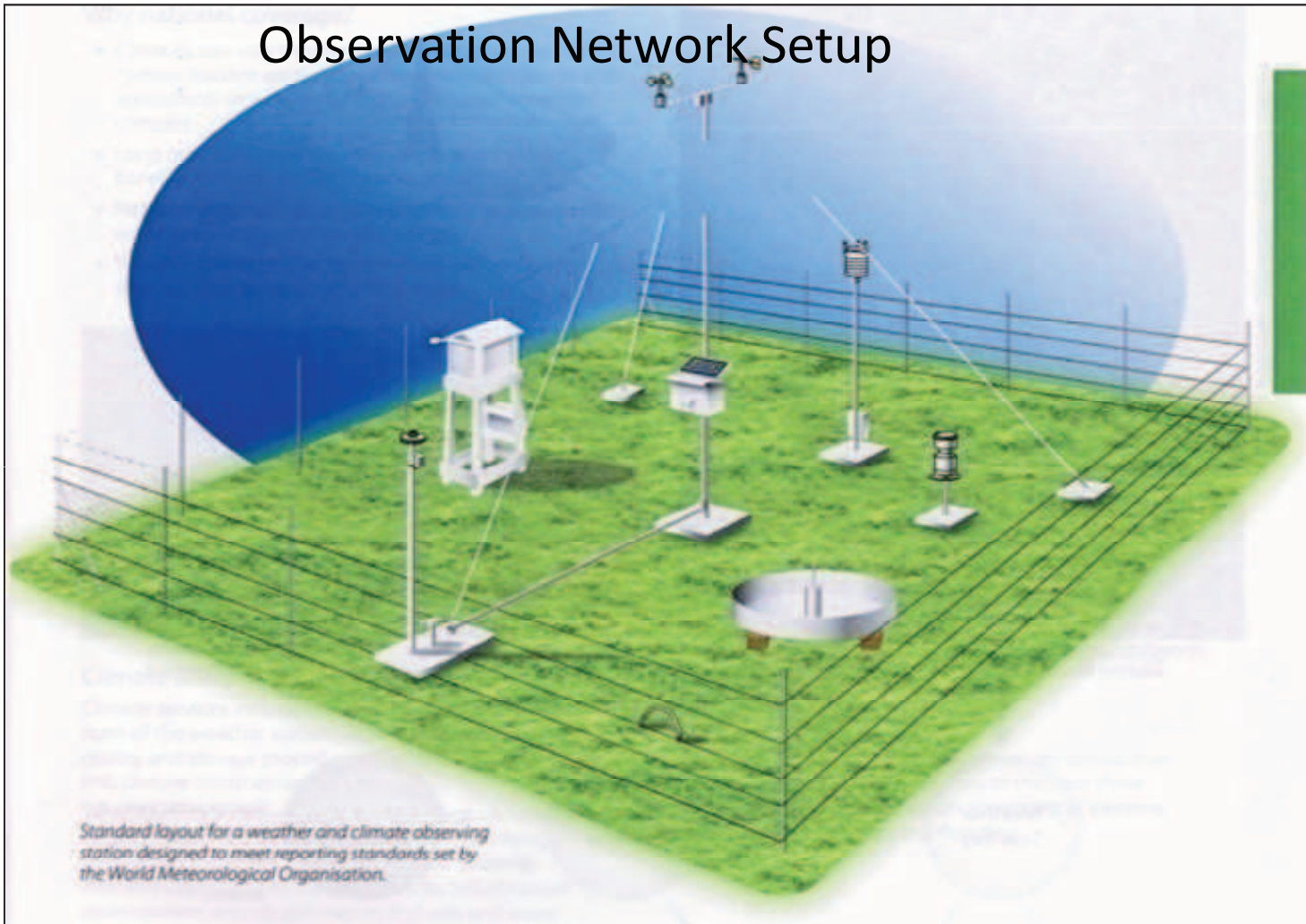
12 Fully Automated  
Electronic Climate  
Stations

- Rainfall
- Temperature
- Pressure
- Wind
- Earth temperature
- Radiation
- Relative Humidity



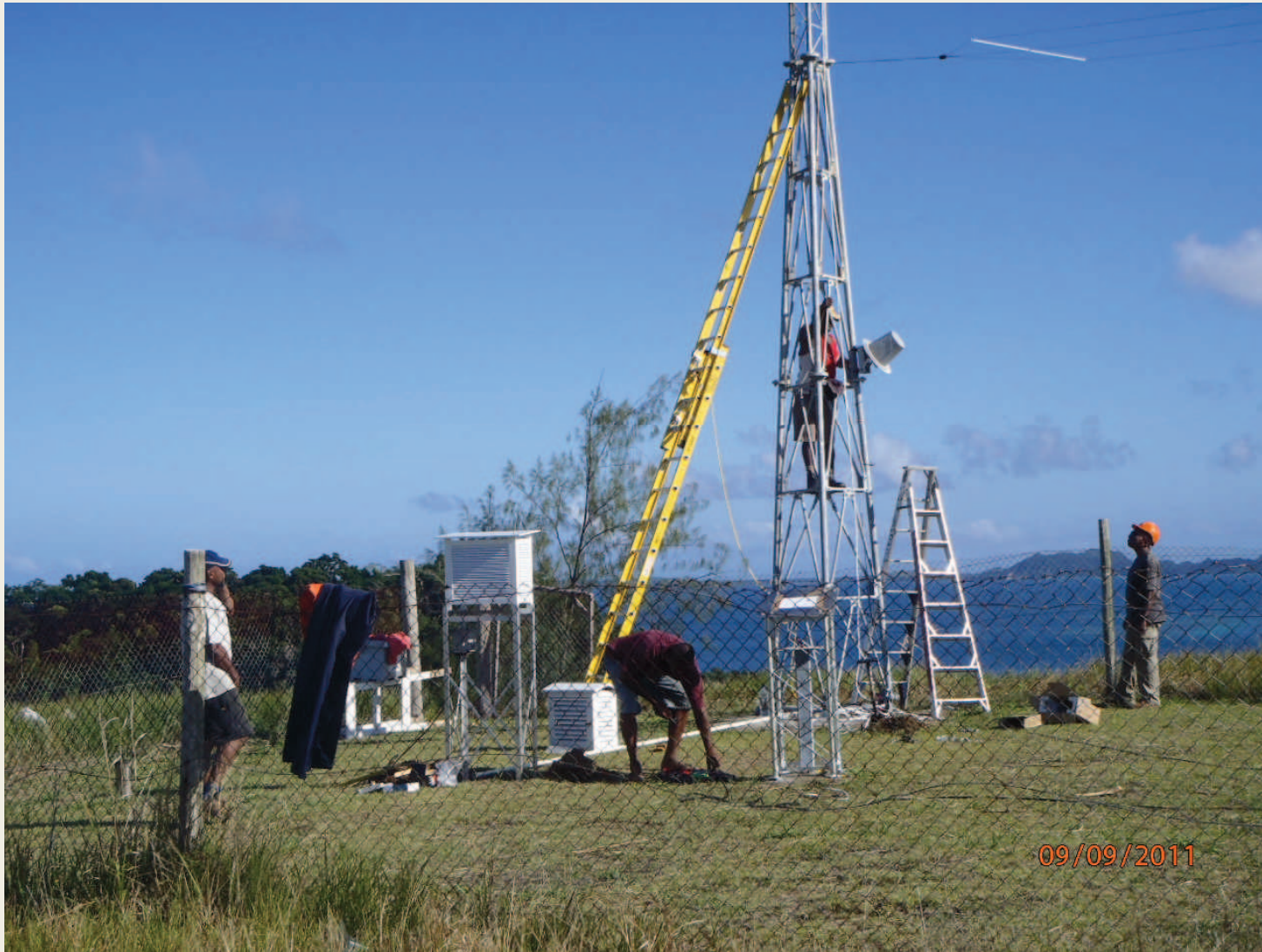
FIG 3

# Observation Network Setup



**FIG 4**

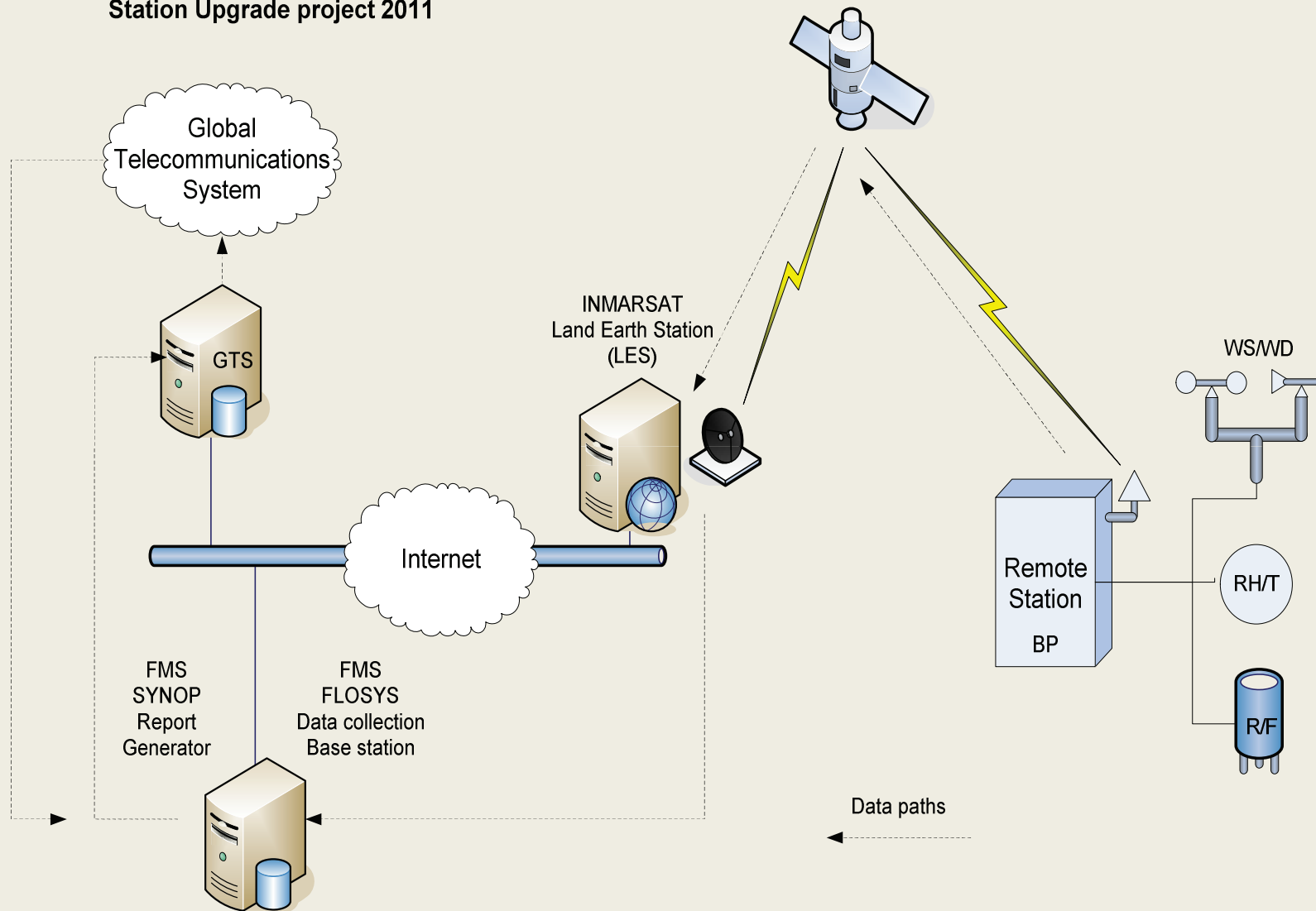
## Automatic weather station Installation



●

**FIG 5**

**Schematic FMS Remote Island MET  
Station Upgrade project 2011**



**FIG 6**



## **Installation & Upgrade of Weather Surveillance Radar System**

- **Cost – FJD \$4.9MILLION**
- **Brief Description**
- The installation of a new Radar and the upgrade of the existing two weather Radar to Doppler status in order to provide improved early warning in Tropical Cyclones Forecasting and early flood warning of Major Rivers in Fiji due to heavy precipitation.

## New Weather Radar Installation – 2011



**FIG 7**

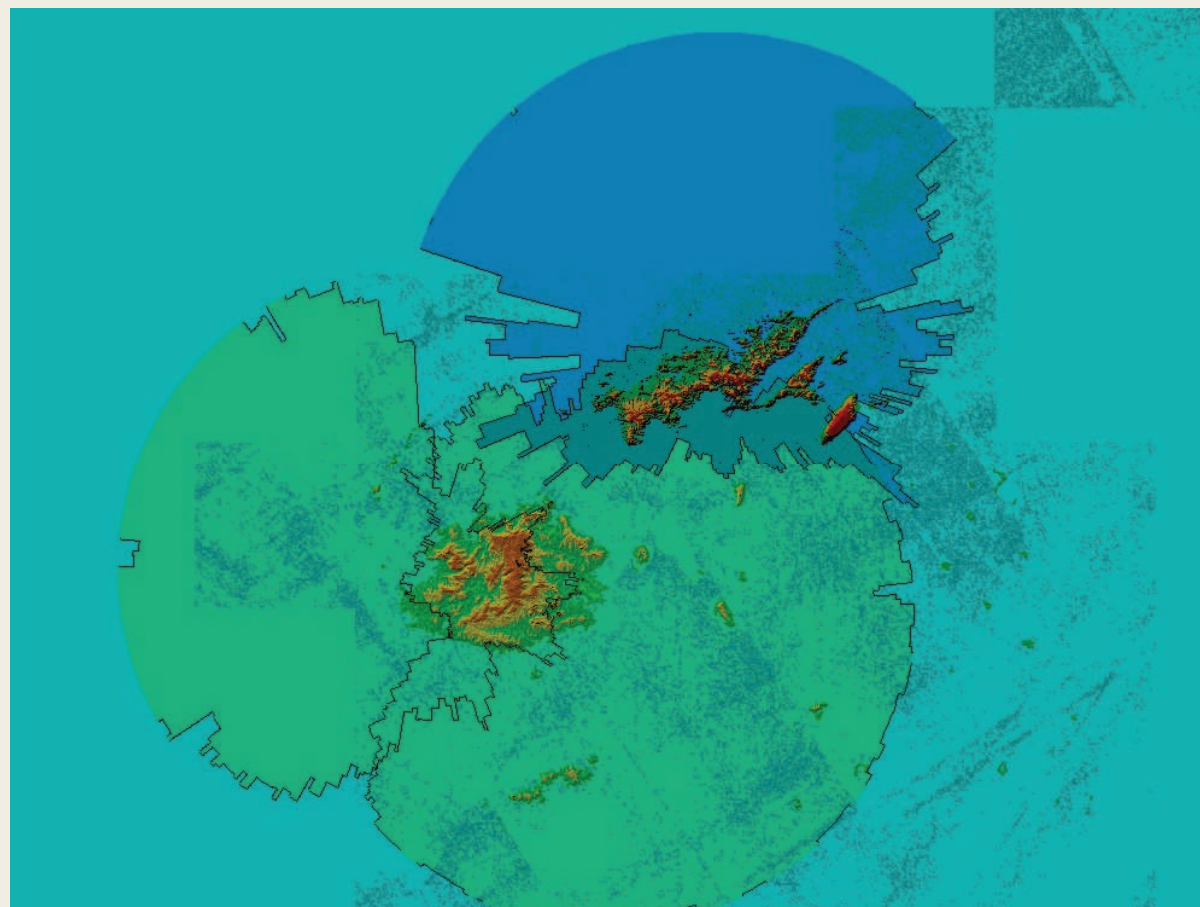
# RADAR EQUIPMENT



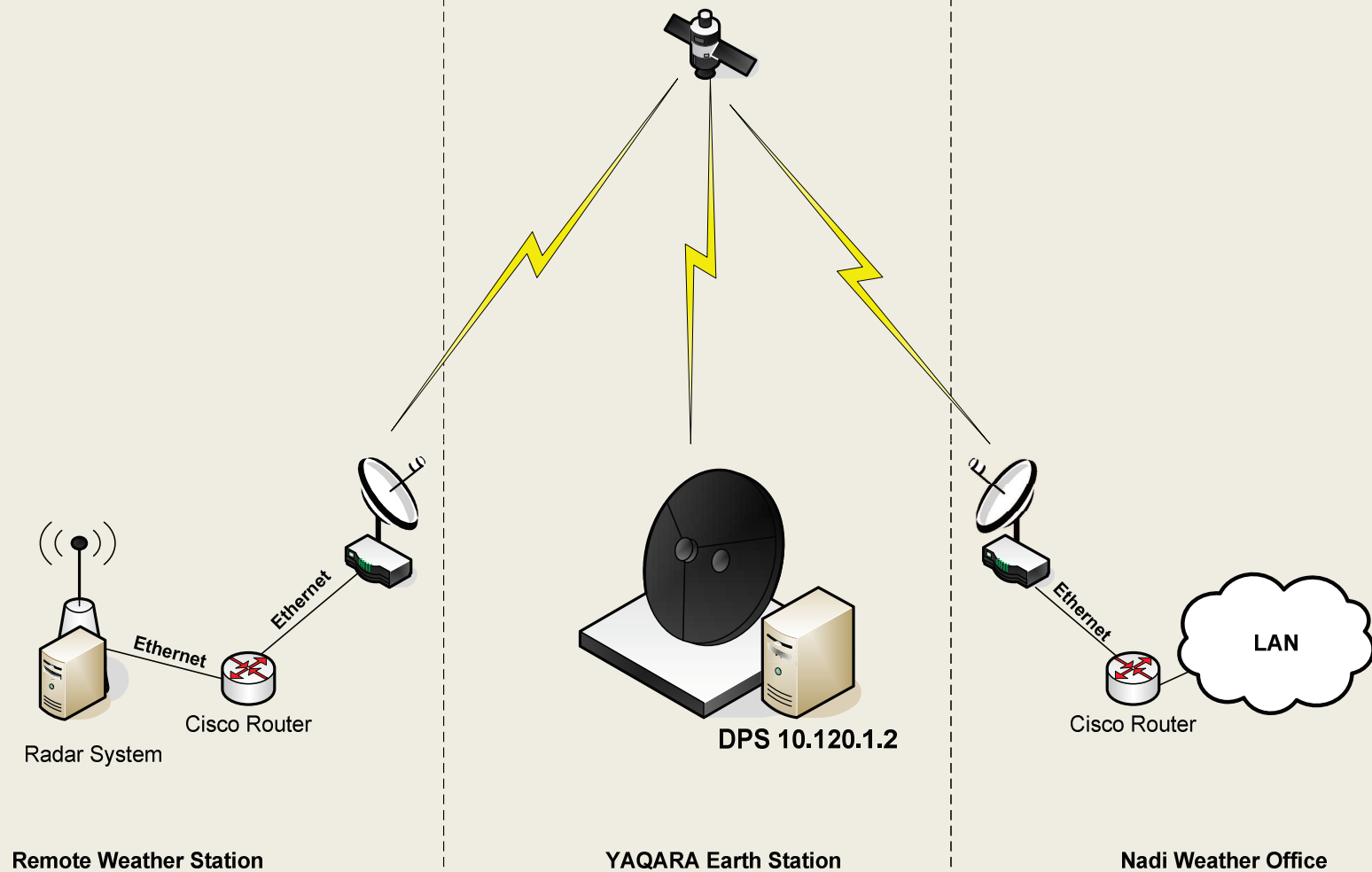
**FIG 8**



## FIJI'S WEATHER SURVEILLANCE RADAR COVERAGE



# VTSAT RADAR COMMUNICATION



**FIG 10**

## **OTHER PROJECTS**

- 1 – JICA – JAPAN
- 2 - KOICA - KOREA

1.

## **Improvement of Equipment for Disaster Risk Management in FIJI**

- **COUNTRY – JAPAN - JICA FUNDING**
- **COST – FJD \$5.7M**
- **IMPLEMENTATION 2013 TO 2014**
- **Brief Description**
- To contribute toward improving disaster risk management in Fiji through the provision and installation of equipment in the facilities of the Fiji Meteorological Service.

## Improvement of Equipment for Disaster Risk Management in FIJI

- **FACILITIES –**
- Tide Gauges for Tsunami Warning, Storm Surge Warning, Coastal Flood Warning, Sea Temperature Forecast
- Automatic Weather Station for Early Warning in Strong Winds, Heavy Precipitation
- Wind Profiler for wind shear warning
- Lightning detector for early warning on lightning strike
- VTSAT for communication in early warning and disaster

## **Development of an Integrated Coastal Inundation Forecasting System in FIJI**

- **Country – KOREA, KOICA funding**
- **Project Duration: November 2012 – October 2013**
- **Total ODA budget (USD): 400,000 USD (for year 1)**
- **Brief Description**
- Beneficiaries will be the coastal communities in Fiji in the immediate term, through the improved performance of national institutions responsible for coastal disaster forecasting, warning, and climate adaptation planning.

## Development of an Integrated Coastal Inundation Forecasting System in FIJI

- **Objective**
- Identifying and documenting national status and requirements for coastal inundation forecasting/warning, through continuous dialogue among national stakeholders, WMO and international expert groups;
- Establishing a road-map for an operational end-to-end coastal inundation forecasting system;
- Incorporate and specialize a cross-cutting communication platforms between researchers, forecasters and disaster managers involved in Coastal Flood Management.

## **Disaster Risk Reduction Approaches for Fiji & the South Pacific Islands**

- **Budget – KOREA – KOICA - US\$2,000,000**
- **Brief Description**
- Reduce social cost for recovery from disaster damage by improving forecast accuracy
- Protect public welfare and support business activities by providing customized weather information
- Assist the disaster management efforts of Fiji and other Pacific Islands to mitigate and reduce disaster risks
- Make the international cooperation for the climate change mitigation and adaptation and for the research of the climate change impact from the equatorial region to middle-latitude area.



## **Disaster Risk Reduction Approaches For FIJI & the South Pacific Islands**

- KOICA, University of the South Pacific and Fiji Meteorological Service shall cooperate with each other in carrying out the following tasks to achieve the Projects objectives.
- Develop and install Communications, Ocean & Meteorological Satellite data receiving system and disaster watchdog at USP, forecasters system and weather chart systems at FMS.
- Dispatch Korean experts to Fiji to provide necessary technical and adjustment training.
- Invite Fijian officials and specialists to Korea to provide them with knowledge and skills necessary for project

## **Lessons learned in the development transfer and implementation**

- **Automatic Weather Station**
- AWS is operationally better than the manual because it provides real time data continuously which assist in timely early warning dissemination.
- Telecommunication mode is GPRS and it is reliable and cost effective.
- Costly maintenance due to remoteness of site and costly spare parts
- Need for local technicians need training in institutions abroad to obtain the skills to maintain the systems

## Lessons learned in the development transfer and implementation

- **Radar Systems**

- Effective tools for real-time weather monitoring and dissemination of early warning on Tropical Cyclones, Flooding.
- Expansive technology need financial support from donor countries for procurement and maintenance.
- Sophisticated technology and lack of technical expertise for maintenance and technicians need training to obtain the skills and competencies.
- Need regular maintenance and calibration in order to maintain high quality data.

## Successful elements and enabling environment

- Flexible tax system
- Government's incentive in investment
- Government's road map to improve the disaster response time and warning system.
- Governments strategy to improve infrastructure by 70% allocation in the budget.
- National climate policy that promotes climate change adaption in terms of funding

## Successful elements and enabling environment

- Strict environmental law
- Transparent and strict procurement regulation
- Telecommunication monopoly removed
- Political interference is neutralized
- Government proactive role in intergovernmental cooperation

# Environmentally Sound Technology

## **Environmental implications**

The project does not have any environment problems associated with it except for some site clearance in the cases of new locations where there is over grown trees. The project will be environmentally friendly and all the environment legislations will be adhered to.

## **Appropriateness of technology**

This project will use the technology that is durable to the harsh tropical conditions. These are time tested instruments that have been in existence and will meet the needs of FMS in the next 15 to 20 years. The technology to be used is a state of art in modern data acquisition technology and being pursued.

## Conclusion

- Fiji Meteorological Service also has plans to upgrade and install other observational system in future to meet the need for real time data for National weather Forecasting Centre in terms of weather, flood and tropical cyclone forecasting and Climate Services Division for climate monitoring & prediction including extreme climatic events such as wet periods, dry spells and droughts, climate change and adaptation, policy and planning and tailored value added climate data and products to meet the national demands on weather and climate information.

## Conclusion continue

- Fiji Meteorological Services promotes cooperation in the establishment of networks for making meteorological, climatological, hydrological and geophysical observations, as well as the exchange, processing and standardization of related data, and assists technology transfer, training and research.



## Conclusion continue

- The upgrade with telemetric systems existing climate stations and Radar systems upgrade will certainly increase capacity to respond effectively to climate change adaptation and its responsibilities in forewarning Fiji's public on impending disasters.
- It is also expected to add value to the early warning systems and rehabilitate the current aging network and strength it to be sufficient for many years to come.

## RECOMMENDATION

- As Technology continues to be developed and modified every now and then and due to the high cost associated with it is highly recommended that developed countries to assist developing countries like Fiji in Technology development and transfer in terms of funding, expertise, installation and training for early warning system for the very important purpose of climate change adaptation.

## RECOMMENDATION CONTD

- In the case of Fiji as it is the hub of the small Pacific islands many grant aids are been allocated to the meteorology department in terms of technology and for its sustainability it needs the continuous technical and financial support of this donor countries otherwise many of these projects are destined to fail and the consequences is the Nation and its people will suffer in terms of disasters early warning due the climatic changes that is taking place in our planet.

END OF  
PRESENTATION



KATRINA

SUSAN

RON

THANK YOU  
FOR YOUR  
ATTENTION

JANUARY 1998