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Vanuatu Klaemet Infomesen blong Redi, Adapt & Protekt / Climate Information Services for Resilient Development in Vanuatu

VanKIRAP Project Update

October 2022

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Feature: Infrastructure Sector

New lidar drone brings next level

technology to Vanuatu's fight against climate change

Vanuatu's Public Works Department (PWD) has a new drone capability that is breaking ground in the Pacific region.

“The new DJI Matrice 300 RTK drone comes with DJI's Zenmuse L1 integrated lidar and photogrammetry scanner, so it can collect Lidar data, in addition to the capture of high-definition images and videos,” says Moirah Matou, VanKIRAP Project Manager.

Lidar stands for 'light detection and ranging', and is an optical remote sensing technology that provides extremely accurate high resolution elevation data. It is commonly used to make high-resolution maps with applications in surveying, atmospheric science, climate information services, geography, and aerial climate and disaster assessments, among other areas.

The procurement of the new drone and lidar scanner has been facilitated through VanKIRAP.

PWD will use the drone to capture geo-referenced image data of project locations that will be subsequently processed to create digital elevation models (DEMs), a kind of 3D model.

“The new DEMs will be combined with current climate information and engineering models to understand better the landscapes and suitable engineering approaches when we are designing new roads and bridges, so Vanuatu's infrastructure will be more climate resilient”, says Raviky Talae, VanKIRAP's Infrastructure Sector Coordinator.

“This new capability will mean PWD will no longer need to outsource this capability to external service providers, saving the Vanuatu Government millions of vatu every year. Integrating data obtained with the drone with existing climate model data will allow us to build more roads that are climate ready and climate proof”.

Plans are in place to produce lidar DEMs of other areas in Vanuatu to complement the topographic and bathymetric lidar survey of selected parts of the country that was undertaken by the PACCSAP program in 2012-13.

The new drone will also be available to undertake post-disaster damage assessments.

“If a cyclone makes landfall in Vanuatu today, we can deploy the drone, conduct detailed aerial surveys, and produce damage assessments straight away. We won't have to wait for outside assistance like in the past. One of the lessons learnt after Cyclone Harold in 2020 was that we need to be self-reliant and have the capacity to meet our own priorities. Mapping challenges in Vanuatu are in the past”, says Moirah Matou.

A one-week workshop in early October co-hosted by VMGD, SPREP, and NZ training provider Ferntech trained staff from PWD, VMGD and the Department of Water Resources (DoWR). Six participants received specialised training on drone operation, mapping, data collection and post-processing.

Field demonstrations and trials were undertaken at the Kawenu Field, Port Vila and other sites around Efate.

Funding for the drone aircraft and the training workshop was provided through a partnership between the Green Climate Fund (GCF), SPREP and VMGD through the VanKIRAP Project.

Watch video >>

New River and groundwater monitoring increases climate resilience

The successful installation of a river monitoring station in the Sarakata river in Luganville, Espiritu Santo, Sanma Province, Vanuatu, establishes a flood management and early warning system for more than 17,700 local residents.

Six ground water monitoring stations are also in operation to support planning and decision making by local water advisory committees, Luganville Municipal Council and the Sanma Provincial government.

The new river monitoring station monitors the river level, river discharge, rate of rise, rainfall total, rainfall intensities and other parameters in near real-time. Data is recorded every five minutes and communicated via satellite to the VMGD's head office in Port Vila.

A public dashboard is available for everyone in Vanuatu and abroad to access the information online.

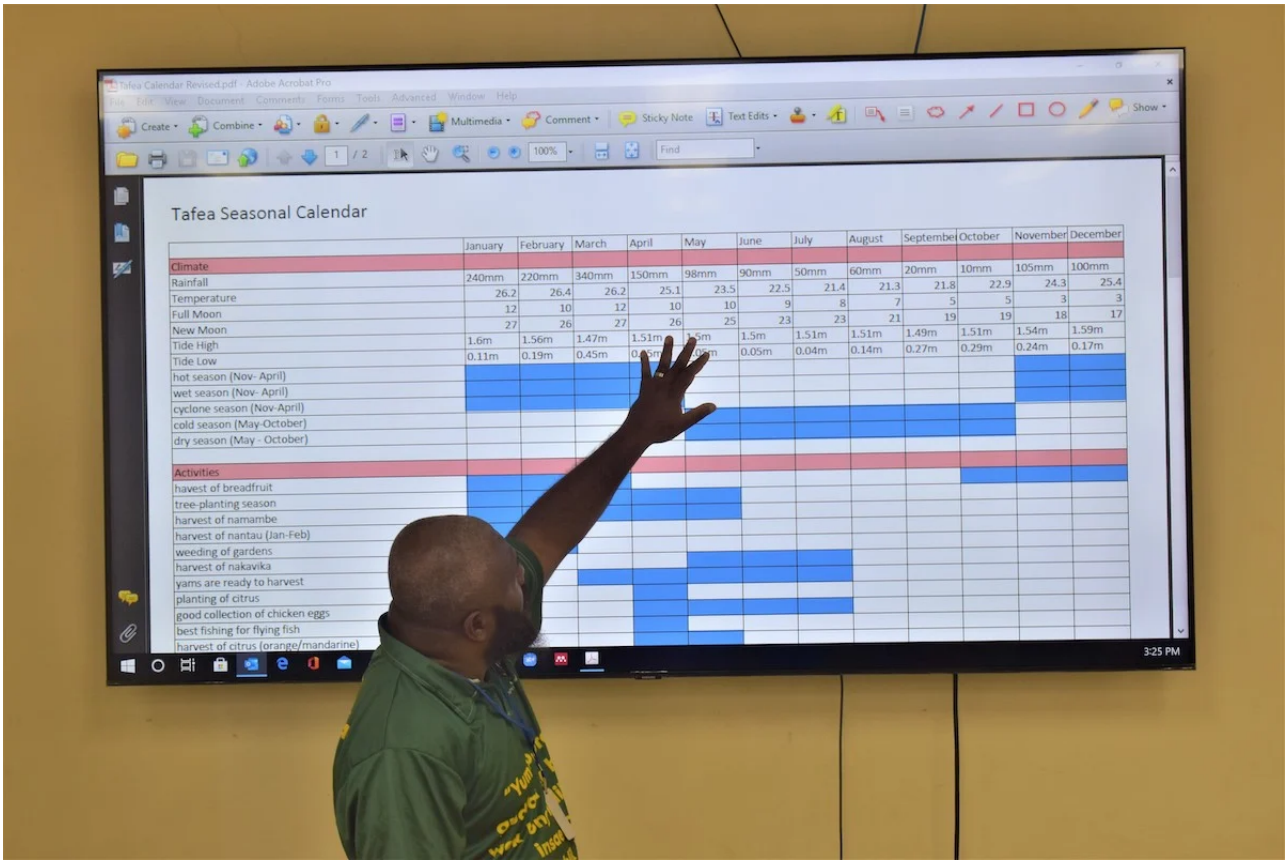
The information gathered by the new stations will increase the capability of both VMGD and DoWR in the establishment and institutionalisation of a flood management and early warning system for the Sarakata river.

“The undertaking of monitoring and assessment of ground, surface and atmospheric water enables consistent reporting on Luganville’s river flow regime, flood analysis and

drought analysis, and water quality," says Jonah Taviti, VanKIRAP's Water Sector Coordinator.

"The new river and groundwater monitoring stations are important for VMGD and for DoWR hydrological services (DoWR), not only because they support our monitoring and early warning services, but because they implement a comittment that the Vanuatu Government made to the people in the 2030 People's Plan (aka the Vanuatu National Sustainable Development Plan, or NSDP)," says Moirah Matou, VanKIRAP Project Manager for VMGD.

"The training and capacity building we have received from SPREP, and our service provider Campbell Scientific Australia has increased our knowledge on how we can provide localized preparedness for our communities", she says.



Traditional Knowledge workshop on weather, climate and oceans

Traditional knowledge (TK) about weather, climate and oceans has been championed at a recent workshop for Vanuatu Meteorology and Geohazards Department (VMGD) staff who working on the traditional knowledge component of the VanKIRAP project.

Staff received mentoring and training from SPREP and Australia's Bureau of Meteorology (BoM) at the five-day training workshop.

“The workshop was really useful. The outcomes have been really positive, with new TK products to be released in the coming months such as a booklet of Vanuatu indicators for weather, climate and oceans”, says Moirah Matou, VanKIRAP's Project Manager for VMGD.

“TK will soon be integrated with forecasts produced with western meteorology and climate science. VMGD is looking forward to releasing its first properly analysed TK forecast for the upcoming tropical cyclone (TC) season”.

The workshop held earlier this month at VMGD involved presentations, hands-on exercises and field tests of TK and climate information tools

“As a TK officer, this workshop was really important to me. The collection and handling of data are the most important first steps for TK, followed by focus verification and focus prediction” says Mickey Jella, Traditional Knowledge Officer, VMGD.

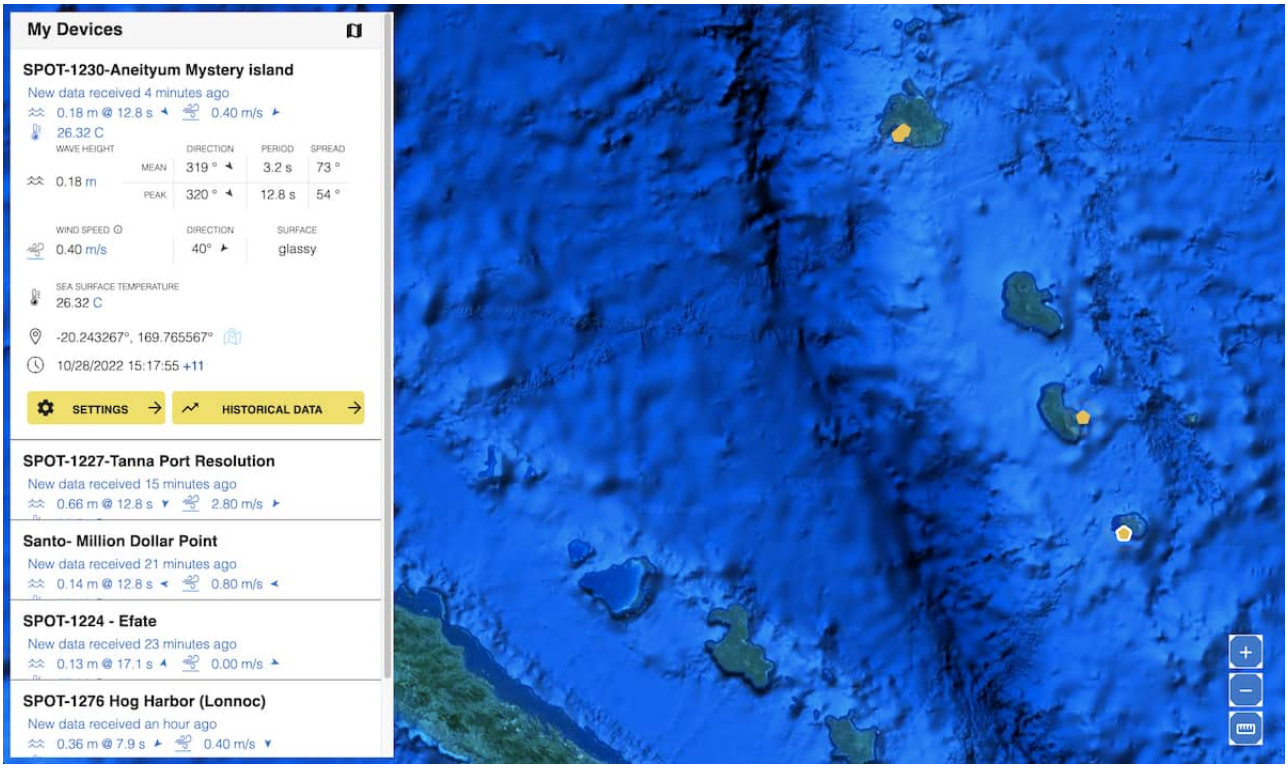
“For this to be properly done in a standardized way, a TK officer should master each steps up until forecasting stage", he says.

The workshop was facilitated by Dr. Lynda Chambers, from BoM and Siosinamele Lui, SPREP's Traditional Knowledge Officer. The training sessions were categorised as follows:

1. Hands on training and forecast skills assessments for TK officer;
2. Assessment of data in the TK database and on on-site analysis;
3. Field test of a new Climate Watch App (for TK Monitoring)
4. Finalize documentation for standard operational procedure and data access protocols;
5. Develop and draft community TK communication and visibility product.

“Personally, one of the most technically interesting part of the workshop is the verification of forecasts, and merging of local knowledge with science base to monthly and seasonal focus", Jella adds.

“I trust that what I have learned from the workshop will enable me to properly analyse TK forecasts for existing and new TK products, including prediction for tropical cyclones”.



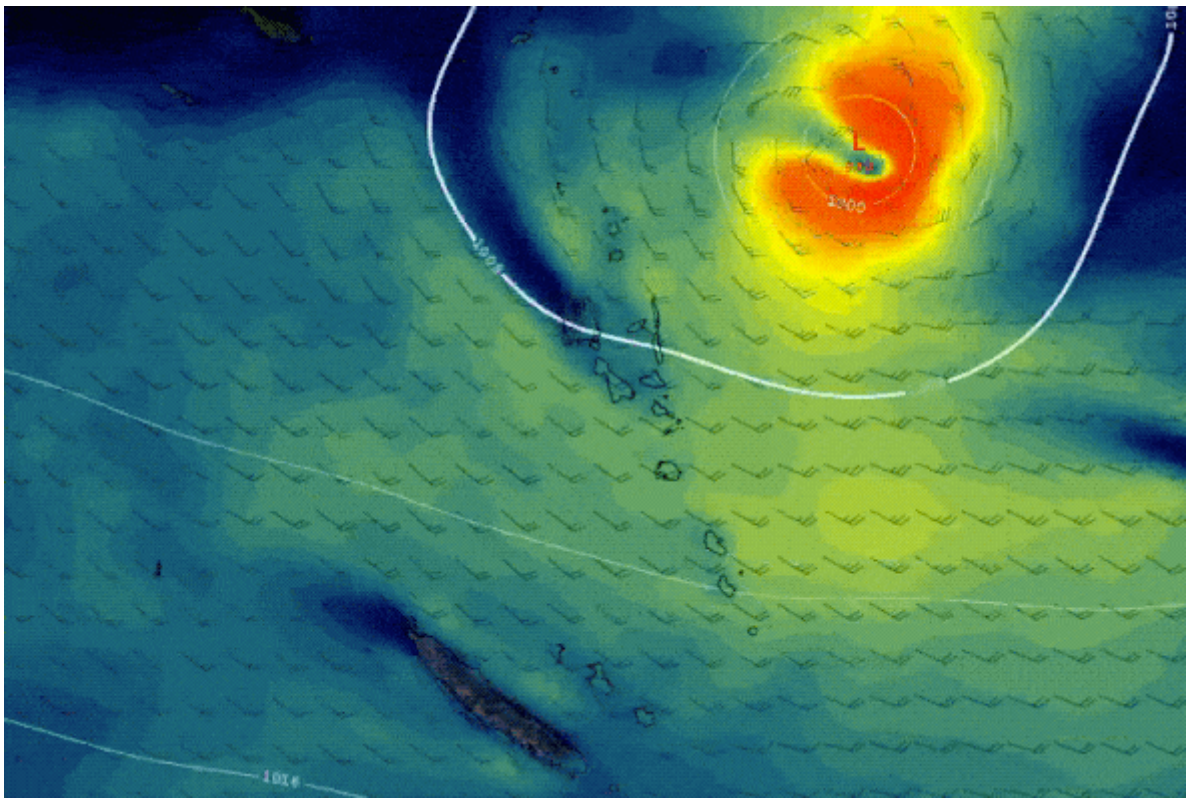
Fisheries Sector News

The Fisheries Dept team conducted an awareness with the Anelcauhat community representatives on Aneityum introducing the Sofar spotter marine climate monitoring buoy that VanKIRAP Project has been deploying throughout Vanuatu. On the following day, a site assessment was done to find a suitable location to deploy off Aneityum. The Spotter buoy were launched on 6 October between Inyeug and Anleluhu with the GPS coordinates 20°14'35.2"S 169°45'56.9"E.

The Fisheries team also conducted an information session on the new CIS product, Vanuatu Climate Outlook for Fisheries with the Anelcauhat community during the trip.

Another awareness was conducted with the Port Resolution community on Tanna on 11 October, and a buoywas deployed on the same date. The site assessment was done the day before. The spotter buoy was deployed on the Port Resolution Bay entrance with GPS coordinates 19°31'19.1"S 169°29'51.7"E.

On 19 October, the Fisheries Sector Coordinator Nastasia Shing and a Fisheries officer went just outside Paradise Cove on Efate to clean the buoy that is deployed there. The buoy was deployed last June but biofouling has already started accumulating underneath the spotter buoy. The solar panels and the SST sensor were cleaned to make sure that the buoy can continue to capture maximum sunlight for power and collect data.



Vanuatu Tropical Cyclone training a huge success

Vanuatu Meteorology and Geohazards Department (VMGD) Climate Division received training on the Tropical Cyclones (TC) last week. The training was delivered for climatologists and climate officers at VMGD who are responsible for the preparation of the tropical cyclone outlooks every year.

The four-day training from 17-20 October was co-hosted by VMGD and SPREP as part of the VanKIRAP Project.

The training included sessions on (a) the science of tropical cyclones, (b) data collection of data for TCs, (c) Climatology of TCs, (d) TCs in El Niño and La Niña years, (e) the Southern Hemisphere Tropical Cyclone portal; (f) establishing a statistical methodology for the development of a tropical cyclone outlook.

The training was facilitated by Professor Yuriy Kuleshov, from Australia's Bureau of Meteorology, Moirah Matou, VanKIRAP Project Manager for VMGD, and Sunny Seuseu, Climate Information Services Officer, SPREP.

“I have learned a lot of new things in the training, found it very useful” said Glenda Pakoa, Principal Seasonal Climate Prediction Officer, VMGD.

“The highlight for me is the Tropical Cyclone Portal. In the past, I used to visit this portal, but I didn't know how to use it. Now after having gone through this training, everything is clear”.

“I am now more confident in using the Tropical Cyclone Portal to serve clients that come to VMGD for TC information and to help answer their questions. I can visualise tropical cyclone data for Vanuatu for the past 50 years, download cyclone tracks, find the

atmospheric pressure, locations and compare tropical cyclone occurrence in La Niña and El Niño years, and produce a tropical cyclone outlook for Vanuatu".

At the request of VMGD, the training also helped develop a new statistical methodology using analogue years to produce tropical cyclone guidance for the upcoming 2022/23 tropical cyclone season.

On Day 3 of the training, participants prepared a draft statement on the risk of tropical cyclones.

This statement will be officially published before the start of the tropical cyclone season in November to April next year.

"The highlight for me was the session on the new methodology we are now using to predict tropical cyclone occurrences for the upcoming season", said John Ruben, Principal Climatologist, VMGD.

"The training has been very useful for me and VMGD in developing TC statements."

"I would like to thank Professor Kuleshov for making the time to come to Vanuatu and sit with us and have these one-on-one discussions which have been so beneficial for us".

Professor Kuleshov says his highlight "was the interaction with my friends and colleagues at VMGD". "I really love it and found to be very rewarding."

"VanKIRAP deliver various climate information tools to allow VMGD to perform their duties to the highest standards but equally, or even more important for me personally, is building their capacity and confidence. Higher confidence goes hand in hand with higher capacity".

"It's great to have good tools, but if colleagues cannot use them, or have limited understanding about those tools, it limits their confidence and how they can provide users with the service".

"From my perspective, I am also very confident that this training delivered our objectives".

"Here is the understanding of tropical cyclones, here are the tools and here is the very high capacity of VMGD staff who can use this tool to work with clients and deliver a very good product at highest standard."

Professor Kuleshov will be visiting Vanuatu again in 2023 to continue his capacity building work with VMGD under the VanKIRAP Project.

About VanKIRAP

VanKIRAP (Vanuatu Klaemet Infomesen blong Redy, Adapt mo Protekt) is a project based at the Vanuatu Meteorology and Geohazards Department (VMGD) that is making climate information better, more relevant, and more accessible for people across Vanuatu.

VanKIRAP supports Vanuatu's resilient development by increasing the ability of decision-makers, communities and individuals to plan for and respond to the impacts of climate variability and change, using climate information services (CIS).

VanKIRAP is the Bislama name for the Vanuatu Climate Information Services for Resilient Development Project (CISRDP) project, which is funded by the Green Climate Fund (GCF) and jointly implemented by VMGD and the Secretariat of the Pacific Regional Environment Programme (SPREP).

Find out more here or follow us on Facebook

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