THE USE OF GNSS BASED TECHNOLOGY IN VANUATU

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PRESENTATION OUTLINE

- Brief description of Vanuatu.
- Application and uses of GNSS based technology in Vanuatu.
- Summary.

ABOUT VANUATU

- Officially known as the **Republic of Vanuatu,** is a Pacific island country located in the South Pacific Ocean.
- Located northeast of New Caledonia, east of Australia and west of Fiji.
- Capital city – Port Vila.
- Famed for it's beautiful islands, active volcanoes and a very-intact Melanesian culture.

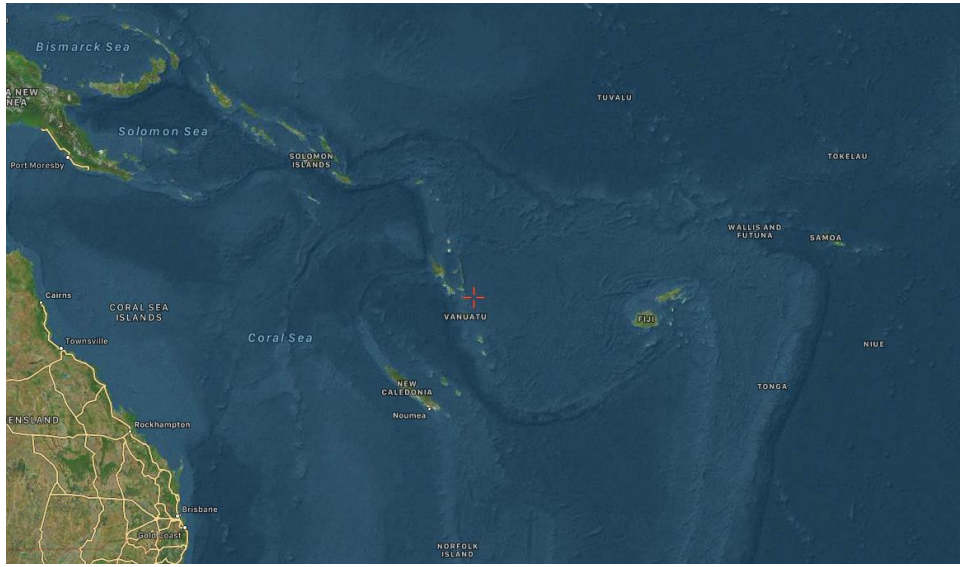

Figure 1: Location of Vanuatu in world map

Figure 2: Photograph of Port Vila Town

USE OF GNSS IN VANUATU METEOROLOGY AND GEO-HAZARDS DEPARTMENT

- Uses the data & image from various satellite to forecast weather and track the path of tropical cyclones.
- Uses satellite based remote sensing technique (using OMI and Modis installed on EOS-Aura satellite) to detect Sulfur dioxide and volcanic gas plume to monitor volcanic activities in Vanuatu.
- Also uses satellite for hazard mapping during disasters.

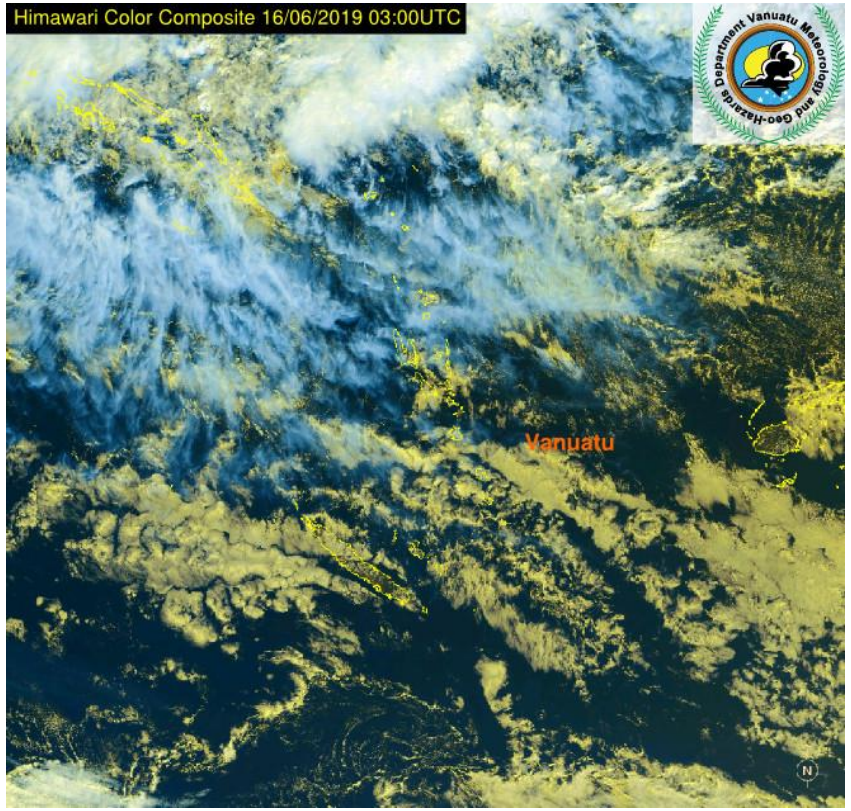

Figure 3: Satellite image for Pacific region
Source: Vanuatu Meteorology & Geo-Hazard department

USE OF GNSS IN TELECOMMUNICATION INDUSTRY

- TELSAT Pacific, Servicon & Canal+ - are satellite based telecommunication companies which provides digital- TV channels in Vanuatu.
- This satellite TV signals are received from various satellites mostly in C Band and KU band frequencies.
- TELSAT also provides satellite internet using KU signals from the JCSAT 3A satellite on 1.2m offset dish.

Figure 4: shows TELSAT VSAT terminal for Satellite internet
Source: Telsat Broadband Vanuatu Facebook Page

RURAL SATELLITE INTERNET SYSTEM -KACIFIC

- Kacific Broadband Satellites, in a joint project with Vanuatu Government and TELSAT Pacific, has introduced an exciting rural satellite internet system in the rural Lambubu area on Malekula Island in Vanuatu.

- This service provides a high-speed broadband connections at speeds of up to 17 Mbps from a Ku-band Satellite, allowing students to benefit from high speed internet connectivity.

Figure 5: shows students of Lambubu Primary School using satellite internet during the launch of rural satellite internet system.

Source: Vanuatu Daily Post.

COMPUTER LABORATORY AND INTERNET COMMUNITY CENTRE (CLICC)

- Under Vanuatu's Universal Access Policy (UAP), Vanuatu government launched two satellite based projects designed under the principle that schools can be hubs for community Internet access.
- These were the Computer Laboratory and Internet Community Centre (CLICC) and the Internet Community Senta (ICS) project.
- 19 rural schools and 3 internet Café's were part of this project which is now operational.
- Due to this initiative by the Vanuatu government, teachers and students from the remote islands are now able to access to the internet for free.

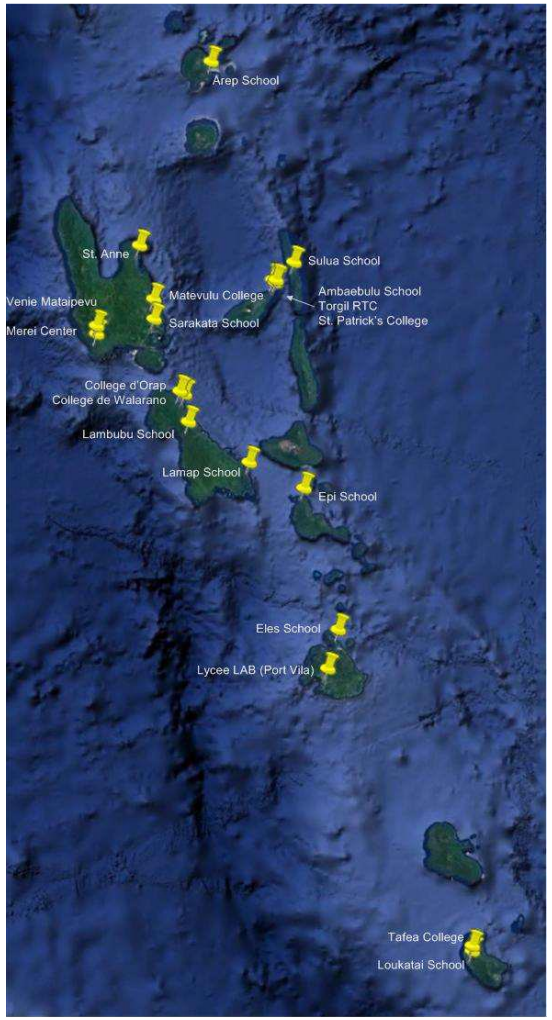

Figure 6: Map shows the location of CLICC sites.

Source: Telecommunication & Radiocommunication Regulator (TRR), Vanuatu.

VANUATU TO LAUNCH ITS FIRST COMMERCIAL SATELLITE IN 2019

- Vanuatu will be the first Pacific Island country to have its own active satellite, constructed by Boeing Satellite System.
- The Satellite, Kacific-1, will be launched into space by Vanuatu registered company - Kacific Broadband Satellites, in 2019 and will provide low cost broadband service to the Pacific region , including every island of Vanuatu.
- This launch of Kacific -1 will place Vanuatu at the forefront of satellite innovation amongst Pacific nations.

Figure 7: shows Vanuatu's flag hanging at the Boeing factory in Los Angeles, California.

Source: Vila Times

VANUATU USES GPS TRACKED DRONES TO DELIVER VACCINES TO REMOTE ISLAND

- Unicef arranged for the GPS tracked drone to deliver vaccines in remote places in Vanuatu that otherwise take long hours to reach.
- A one-month-old baby in a remote village in the island of Erromango in Vanuatu has become the first child to be immunised using vaccines delivered by commercial drone to the inaccessible island where she lives with her family.
- This GPS tracked drone carried the vaccines in a styrofoam box with ice packs and a temperature logger.
- This village is only accessible on foot or by boat - both those options take hours compared to the 25 minutes it took for the drone to reach the village.

Figure 8: Photographs showing nurse is opening the Styrofoam box containing the vaccines delivered by drone.

Source: UNICEF

USE OF GNSS IN AVIATION INDUSTRY IN VANUATU

- The Pacific GNSS- an approach chart based on GPS for Vanuatu, was installed in December 2016 which covers airports, aerodromes across the region, nine of which were installed in Vanuatu.
- The 9 airports in Vanuatu now have up to date charts and procedures which means now it's much safe to fly there. (source: Vanuatu Daily Post).

GNSS BASED PROJECT IN VANUATU

- South Pacific Community (SPC) have used GNSS CORS data/stations for hydrographic surveying in Malo Passage, Luganville, Vanuatu.
- The Australian Bureau of Meteorology (BoM) and Geoscience Australia (GA) have been maintaining the operation of the GNSS Continuous Operating Reference Stations (CORS) for the Pacific Sea Level Monitoring Project (PSLMP) in Vanuatu.
- UAV and RTK GNSS topography survey has been conducted in Tanna island of Vanuatu to do Hazard mapping during TC Pam between 25th Nov- 12th Dec 2016.
- Researchers in Vanuatu are using GNSS based technology to conduct a wide range of experiments and research for ocean mapping, remote sensing, surveying, transportation monitoring, robotics and disaster management.

SUMMARY

GNSS plays an important role in the livelihoods of people in Vanuatu and has a lot of application in different sectors such as :

- Telecommunication
- Aviation
- Meteorology
- Medical
- Disaster Management
- Research

QUESTIONS

Thank you for listening