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X-BAND POLARIMETRIC SYSTEM TRAINING FOR DISASTER RISK MANAGEMENT

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X-Band Polarimetric in Disaster Risk Management

The X-Band Polarimetric (XBP), which employs the dual polarisation approach, is thought to be an essential technology in disaster risk management for preventing or mitigating water-related calamities as weather radar technology develops. X-Band radar has a compact physical size and can be made to be mobile. It is appropriate for rainfall monitoring with both temporal and spatial resolution due to its shorter wavelength (3–4 cm). In addition, it can deliver rainfall dispersion details in addition to nearly real-time data (with intervals of one to two minutes). (Diss et al., 2009; Fajriani, Jayadi, Legono, & Sujono, 2021; FURUNO, 2016; NIED, 2005). Rainfall data play a key role in providing disaster information to help the Disaster Risk Management communities to prepare and prevent disasters, mostly water related disaster (Chandrasekar, Chen, & Maki, 2012; Hasan, Goto, & Miyamoto, 2019).

X-Band Polarimetric in Malaysia

Installed at UTM Pagoh Campus in October 2023, the first XBP in Malaysia serves the primary purpose of gathering data and converting it into understandable formats like.csv and.png. Furthermore, the radar has the capability to collect data on the size and velocity of the raindrop. The training on this radar was conducted from January 29 to February 2, 2024 and was coordinated by Tedra Technology and the Disaster Preparedness Centre (DPPC), UTM. Multiple-positioned UTM and TNBR employees attended this session, which sought to introduce the new radar technology and its application for disaster risk management goals. There are two sessions in this training: Session 1 covers hardware and technical specifications, and Session 2 covers database and system architecture. Figure 1 displays the scanning image (.jpeg) given by the XBP radar on the right side and the physical radar at UTM Pagoh Campus on the left.

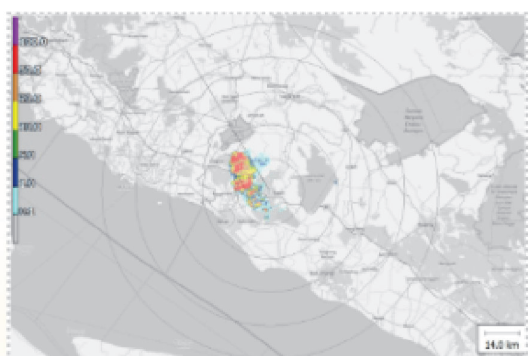

Figure 1: The XBP installed in UTM Pagoh, Johor (left). The scanning output of XBP (right)

In the first session, the participants were briefed on the technical aspects of the radar and how it could be maintained (Figure 2). For the site viewing, the participants got to go to the actual radar location, positioned at the top of the building. Additionally, the participants will be able to control the internal radar programme by changing the scan mode, scanning degree, and a few other settings.

Figure 2: The radar technical briefing in the first session

The XBP radar framework, including the server architecture and server setup that cover the communication protocols among the devices, was introduced to the participants in the second session. They had the opportunity to independently explore the server and gain experience working with the real rainfall data that the XBP radar had collected during this session. A few of the training activities are depicted in Figure 3.

Figure 3: Some activities during the training in the second session

All participants in this training programme gained a great deal about using XBP radar technology in their jobs, especially when it comes to preparedness and preventative efforts for disasters. Furthermore, the development of AI and machine learning will aid in averting disasters, particularly in localised areas, by assisting NGOS, the business sector, and state governments (Johor, Melaka, Negeri Sembilan, and Pahang). It can be stated that a variety of industries, including forestry, urban planning, agriculture, and maritime, may benefit from the data this radar provides.

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