

SATREPS

Science and Technology Research
Partnership for Sustainable Development

A JST and JICA program for research projects
targeting global issues and involving
partnerships between researchers in Japan
and developing countries

Project of UTeM, UNITEN, and Kindai
with the support of SATREPS, JICA, and JST

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MALAYSIA



Training of Rocket Triggered Lightning (RTL) in
Kanazawa, Japan



<https://sites.google.com/view/rtl-3d/>



<https://www.facebook.com/rtl3d>



RTL3D: KILAT

Real Time Lightning 3D Imaging and
Forecasting Project for Sustainable
and Reliable Supply of Energy and
Storm Disaster Early Warning



RTL3D: KILAT

To ensure a stable power supply for **conducive** business environment and mitigate disaster risks, our project aims to enhance observation capabilities of extreme weather and disaster response mechanisms through lightning protection measures with the research partnership of Malaysia and Japan.

Project period

June 2023 – June 2028 (5 years)

Project site

Between Kuala Lumpur and Malacca, Malaysia

Core research institutions

Malaysia



Universiti Teknikal Malaysia Melaka (UTeM)



Universiti Tenaga Nasional (UNITEN)

Japan



Kindai University (KINDAI)

Support institutions



Ministry of Higher Education (MoHE)



Ministry of Science, Technology and Innovation (MOSTI)

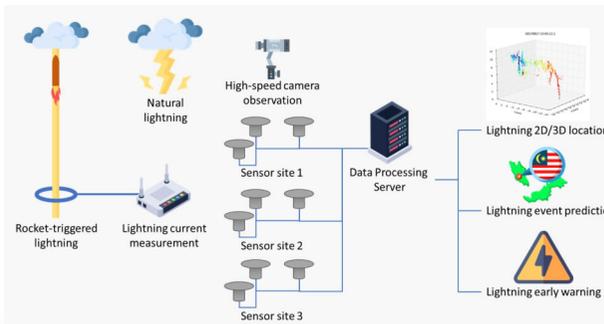


Japan Science and Technology Agency (JST)



Japan International Cooperation Agency (JICA)

Reduce the lightning damage and electrical failures

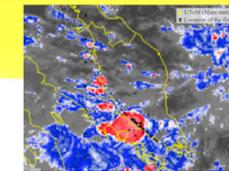


3D imaging of the electric charge distribution in thunderclouds in real time.

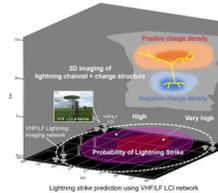
- Lightning observations on various frequencies of electromagnetic waves and, the establishment of an observation network to image whole lightning channel development in detail from the micro-discharge in clouds that are precursors of lightning discharge start, how they develop, and where they terminate.
- The locations and the amount of neutralizing charge inside thunderclouds can be estimated by the intricate information obtained from the above.
- The lightning return-stroke current waveforms measured from lightning strikes on tall buildings and in rocket-triggered lightning experiments can verify the results of these estimations and improve their accuracy, which enable the nowcasting of lightning activity.

Stable electric power supply and early warning system for severe weather disaster

- System to switch to a backup power source in places where an outage or voltage fluctuations cannot be permitted, or to maintain power and communications equipment with the highly accurate lightning observations and short-term prediction data.
- Early warning of heavy precipitation that may cause flood and other damage by Investigating the association between lightning activity and rainfall, . Extend these results from the Malacca Strait coastline to neighboring regions.



Observation Sensor Network



Real-time Lightning 3D Imaging Model



Social Implementation Products

Partner research institutions

Malaysia



TNB Research Sdn. Bhd. (TNBR)



Department of Irrigation and Drainage (DID)



Malaysian Meteorological Department (MMD)



Malacca State Government Agency (MPPM)



Kolej UNITI (KU)



Universiti Teknologi MARA (UiTM), Jasin Campus



Malacca Astronomy Site (FALAK)

Japan



Gifu University



Chubu University



OTOWA ELECTRIC CO., LTD. (OTOWA)



The University of Electro-Communications (UEC)



University of Fukui