



UNIVERSITI
KEBANGSAAN
MALAYSIA
*The National University
of Malaysia*



The 3rd AOSWA Workshop
Asia Oceania Space Weather Alliance
FUKUOKA JAPAN
MARCH 2-5 2015

Space Weather Research Development in UKM through International Collaboration



Exploring The Universe Mysteries®

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Space Science Centre (ANGKASA)

Institute of Climate Change

Universiti Kebangsaan Malaysia (UKM)

The National University of Malaysia

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Where are we?



**Space Science Centre
Institute of Climate Change
Universiti Kebangsaan Malaysia**

<http://www.ukm.my/angkasa/en/>

Introduction

Space Science Centre (ANGKASA) or previously known as Institute of Space Science was established on August 1, 2003. On December 16, 2013, ANGKASA has been merged with 3 other entities; Institute of Climate Change Research (IKP) and Earth Observation Centre (EOC) and Research Centre for Tropical Climate Change System (IKLIM) into the Institute of Climate Change (IPI), Universiti Kebangsaan Malaysia.



Space Science

Space Technology

Space Technology
Application

Space Governance

Vision and Mission

Vision

- To be a leader in space science and technology research by joining international space research activities

Mission

- To develop capacity for space research and industry
- To develop space science and technology for peaceful applications
- To promote the importance of space science for national development
- To support the national space programs

Organization



Head, Space Science Centre
Prof Ir Dr Mardina Abdullah

Manufacturing, Satellite Navigation and Ionospheric Research
Research Fellow



Datuk Dr. Sheikh
Muszaphar
Shukor Al-
Masrie

Astronaut in Residence



Assoc. Prof. Dr.
Wayan Suparta

Space Meteorology and
Aerospace Sciences



Dr. Mohammad
Rashed Iqbal
Faruque

Electromagnetic Compatibility
and Metamaterial



Dr Sabirin
Abdullah

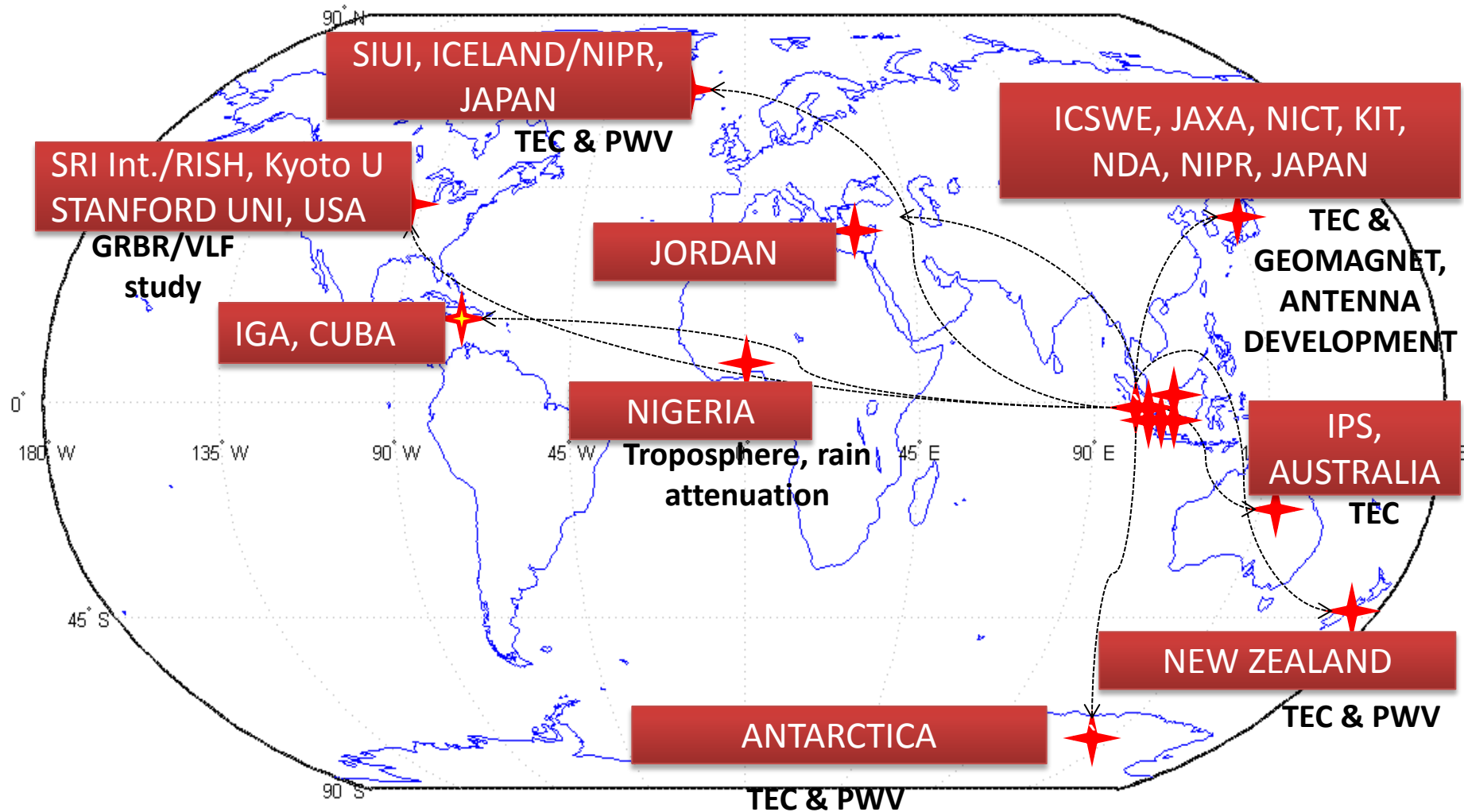
Ionospheric Physics
and GPS



Dr. Teh Wai
Leong

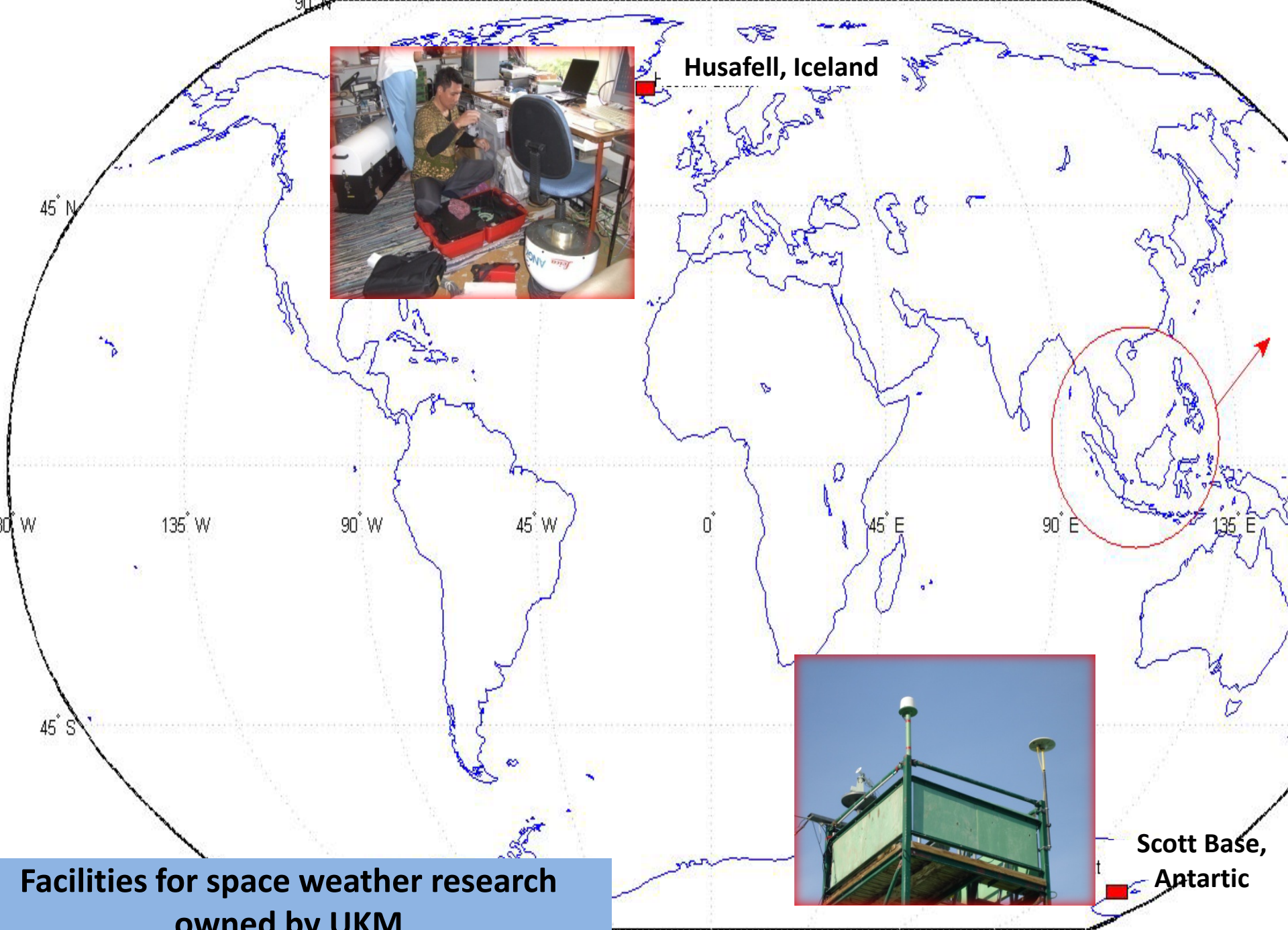
Magnetospheric
Physics and Satellite
Data Analysis

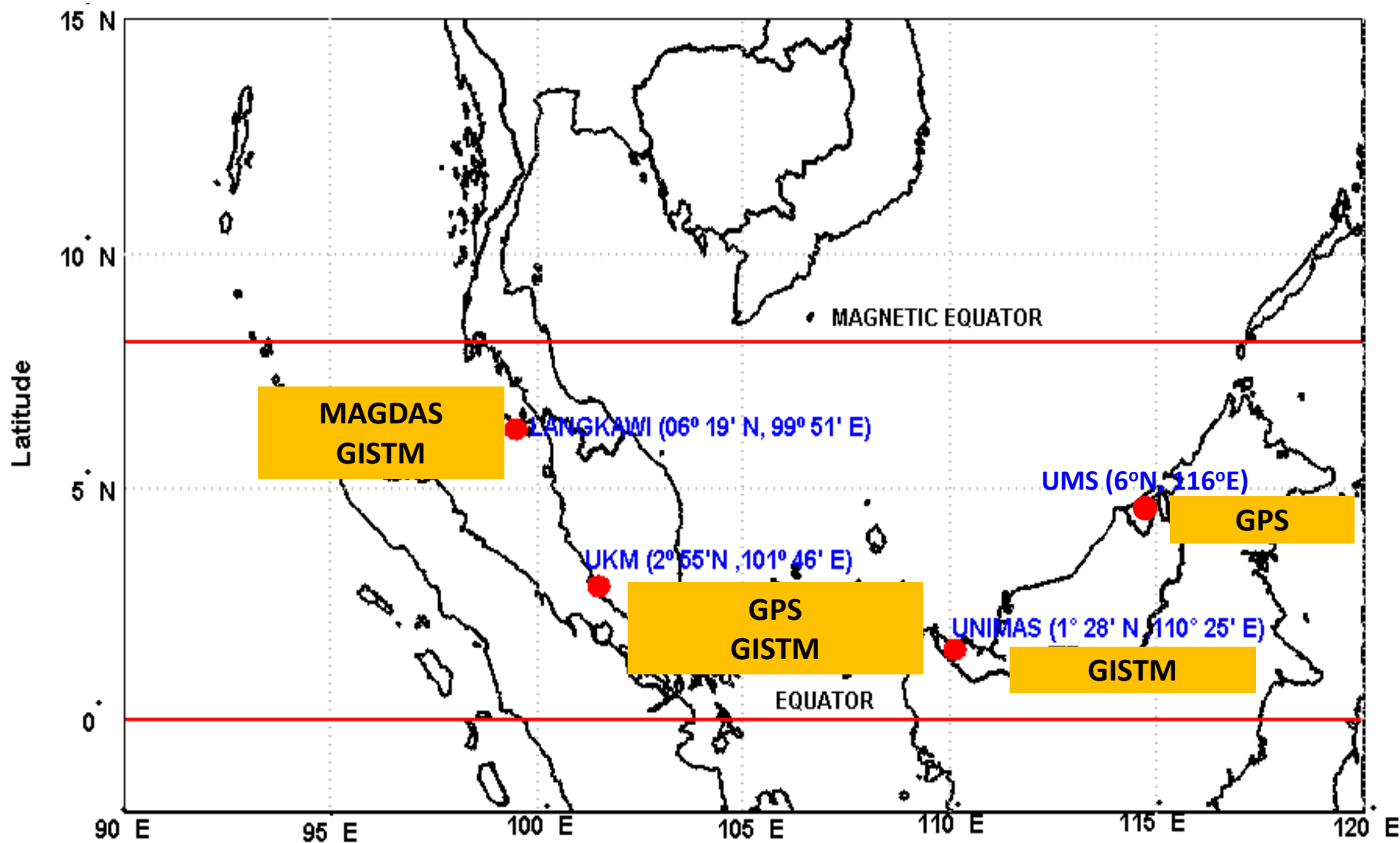
Research Collaboration



Facilities

Equipment	Location
Software - Matlab	Radio & Satellite Lab, UKM
Ku-band Beacon Receiver (own developed), UKM	Radio & Satellite Lab
Trimble TS5700 GPS Receiver – Akademi Sains Malaysia (ASM)	Scott Base, Antarctica Husafell, Iceland
Trimble TS5700 GPS Receiver – Akademi Sains Malaysia (ASM)	Radio & Satellite Lab
MET3A Meteorological Instrument – UKM	Radio & Satellite Lab
Magnetic Data Acquisition System (MAGDAS)	Balai Cerap Negara, Langkawi
Leica GRX 1200 Pro GPS System	SIUI, Iceland
GPS IONOSPHERIC SCINTILLATION & TEC MONITOR (GISTM)	UKM, UNIMAS, LANGKAWI
GRBR (Collaboration with SRI International and RISH, Japan)	UKM, USM
Multi-GNSS Monitoring Network (Collaboration with JAXA)	USM
Trimble GPS Rx	UMS
Satellite Ground Base Station	ANGKASA,UKM
Data Lab	ANGKASA, UKM
Radio Astronomy Research Facilities	UKM, National Space Agency
e Callisto	ANGKASA,UKM

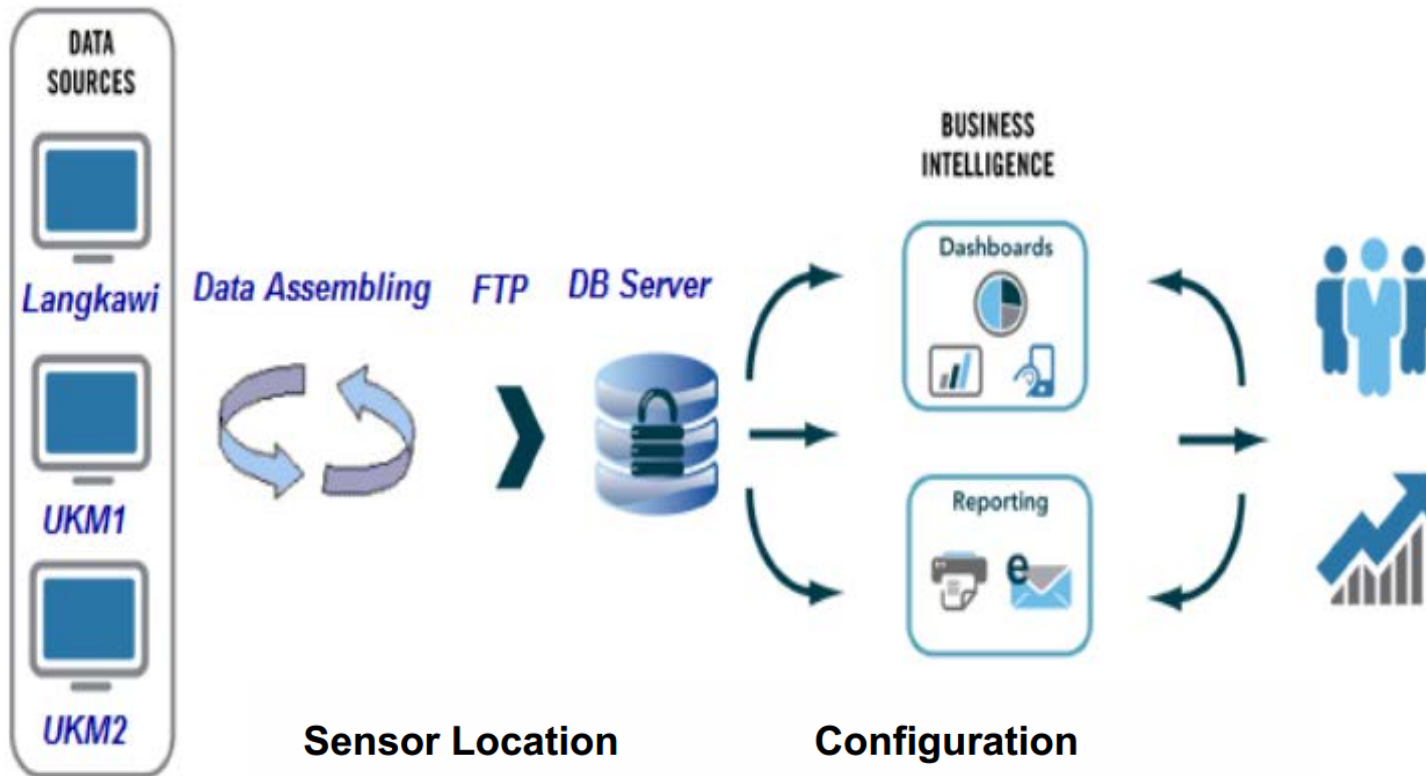




Facilities for space weather research
owned by UKM

Longitude

UKM Data Network Management Systems



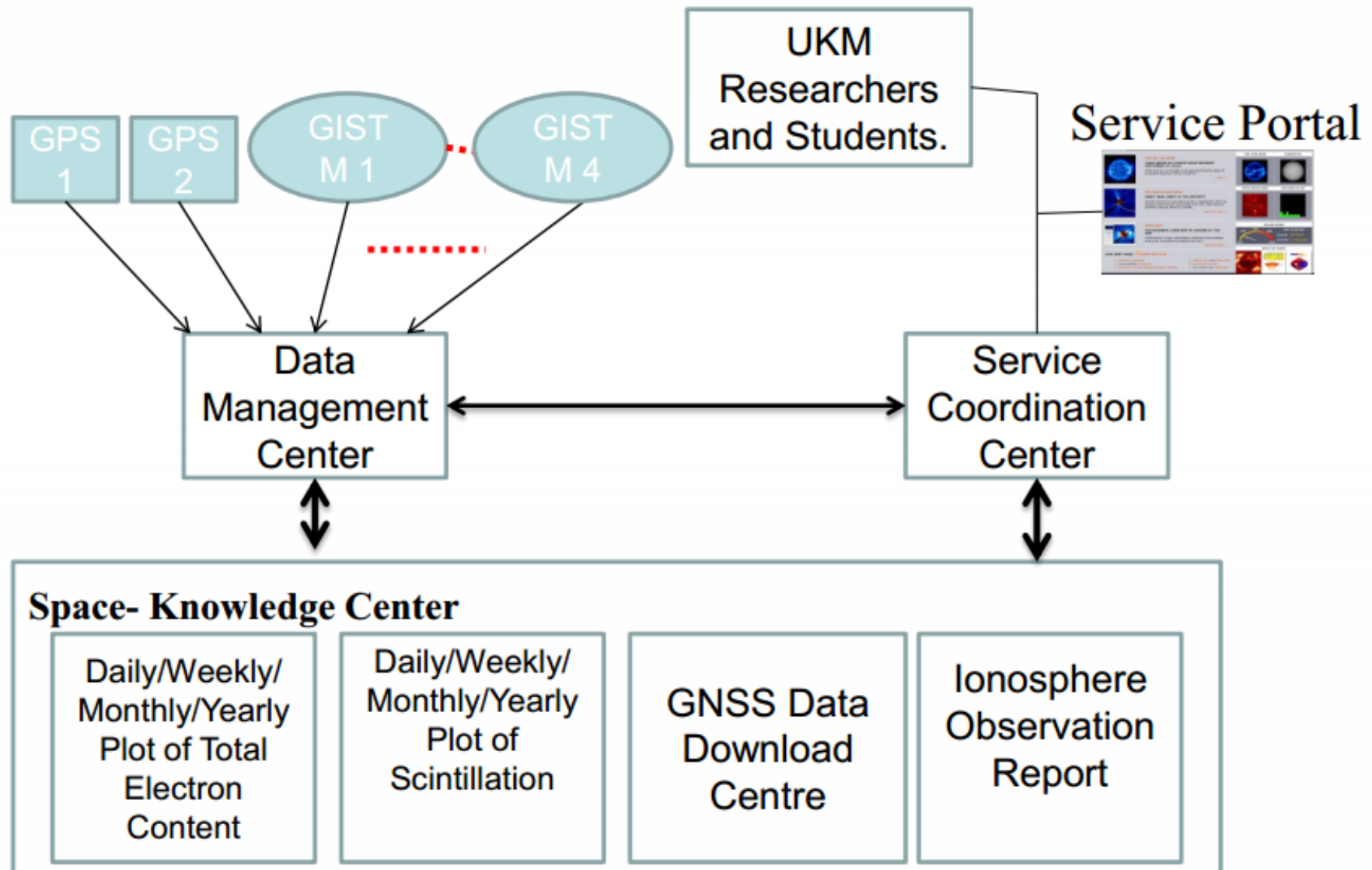
Sensor Location

- UKM1 – GISTM, UKM
- UKM2 – GPS, UKM
- UKM3 - GISTM, PL
- UKM4 - GPS, PP
- UKM5 – GISTM, UNIMAS
- UKM6 – GPS, Sabah

Configuration

- Stand alone
- Personal PC
- Connected with internet through IP
- Minimum maintenance
- No backup
- No downtime monitor or alert system

UKM GNSS Data Analytics Centre



Knowledge Center Structure Design



ANGKASA
INSTITUT SAINS ANGKASA
INSTITUTE OF SPACE SCIENCE

Home

About Us

Knowledge Center ▾

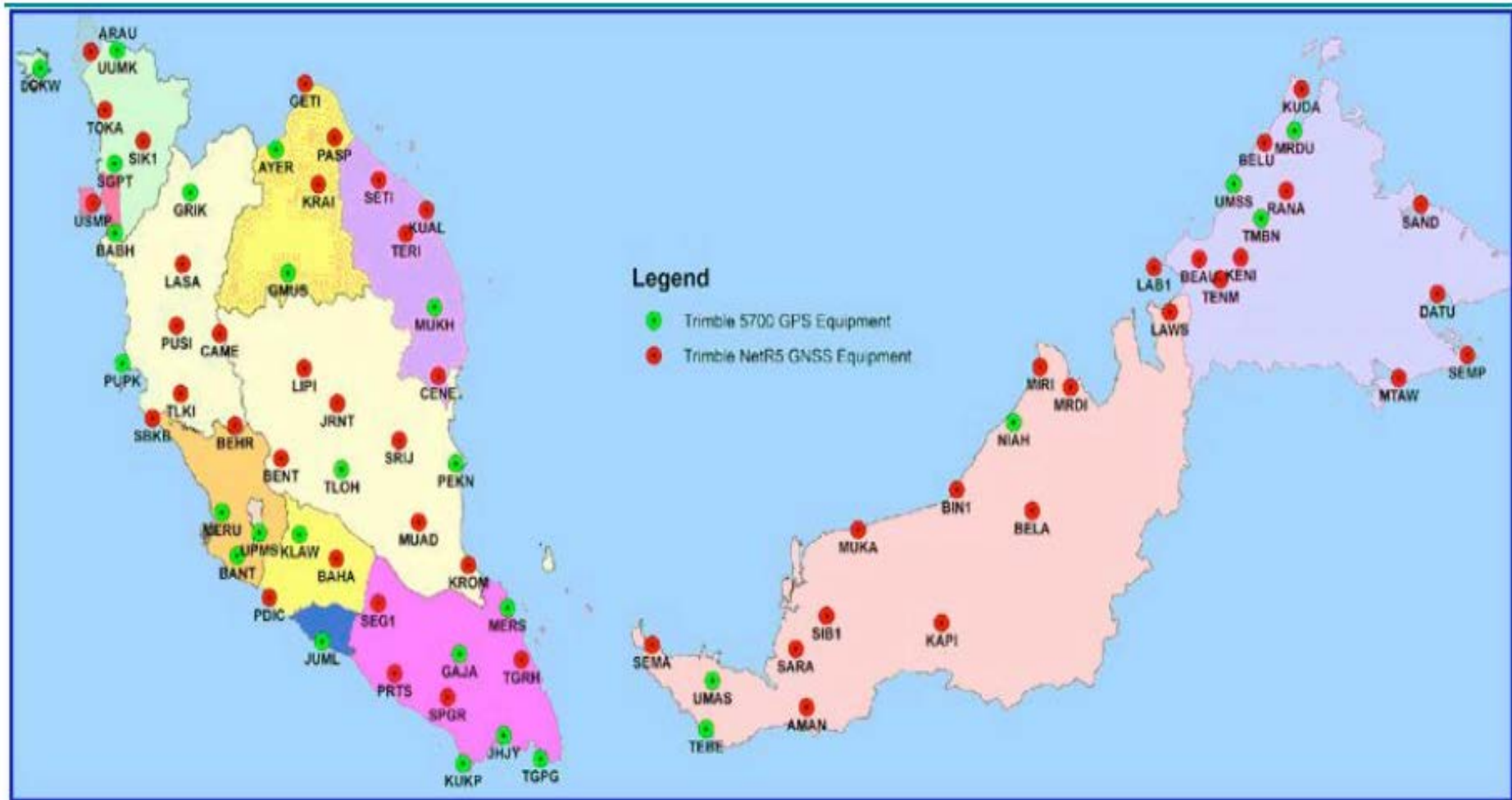
Data Center

Contact Us

Welcome to
ANGKASA

**KNOWLEDGE PORTAL
& DATA CENTER**

Malaysia Real Time Kinematic GNSS Network (MyRTKnet)



78 GNSS reference stations continuously (owned by Department of Mapping and Surveying Malaysia (JUPEM))

OMIAI



SEEDS	Data	see attached paper
	Instrument	see attached paper
	Model	Bernese processing software
		Ionospheric delay model based on ray-tracing
	Human Resources	PhD and MSc students but still not enough
	Other	Can provide space for equipment installation
NEEDS	Data	GPS and ionosonde data, GRBR, COSMIC, VLF
	Instrument	ionosonde, GPS, GISTM
	Model	Quick and easy processing model
	Human Resources	students, experts and operators
	Funding	For research, internship/fellowship, meeting etc.
WANTS	Operation	Data server and operation system
	Research	Space Science/ Weather/ Technology
	Other	graduated students/experts

Target in near future in space weather

- Focusing more on research in space weather :
 - Ionospheric modeling and prediction
 - Upper and Lower Atmospheric coupling
 - Ionospheric irregularities / disturbances- scintillation, TIDs, plasma bubbles
 - Arctic and Antarctic Related Research

Potential Partner Institutes

- Current : ICSWE, IPS, STEL Lab, NICT, NIPR, SRI Int.
- Potential : KMITL , Vietnam, NPL, IGGCAS and others

FOR MORE INFO, PLEASE VISIT

Webmail : www.ukm.my/angkasa

Email : angkasa@ukm.edu.my

Twitter : ANGKASA_UKM

**Facebook : Pusat Sains Angkasa,
UKM**





Call for Papers

IconSpace2015

2015 International Conference on Space Science and Communication

Space Technology for Humanity

Important Dates:

Full paper submission: 15 March 2015

Acceptance notification: 15 May 2015

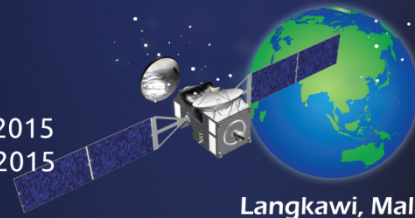
Early bird payment: 1 June 2015

Camera ready with payment: 15 June 2015

Conference day: 10-12 August 2015

Onsite registration (for non-presenter): 10 August 2015

Tutorial day: 12 August 2015



**Langkawi, Malaysia
10-12 August 2015**

Topics:

Track 1: Astrophysics and Astronomy

Track 2: Atmospheric Sciences

Track 3: Geosciences and Remote Sensing

Track 4: Satellite & Communication Technology

Track 5: Disaster Management

Track 6: Space and Climate Change & Others

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