

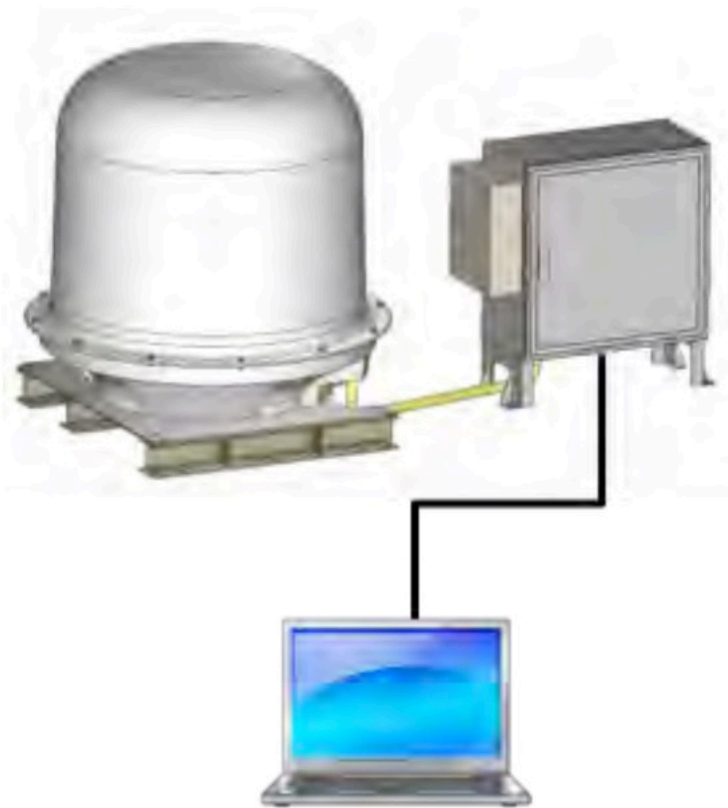
G1-3: Launching radar systems in Merapi and Kelud area

Subgroup leader : S. Oishi

Planned activities

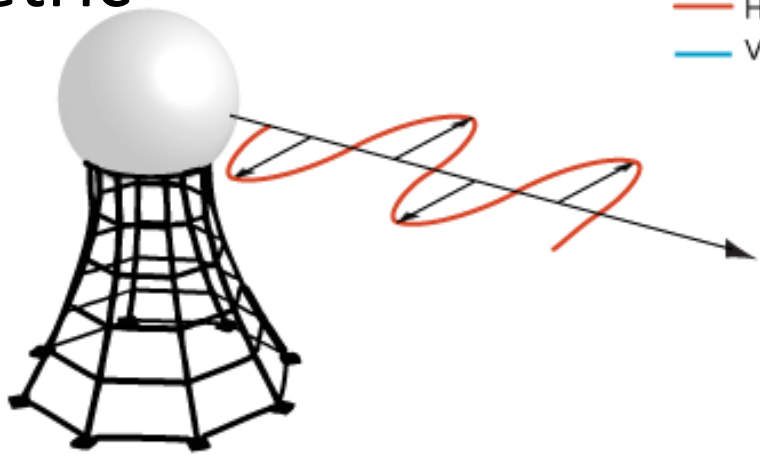
- Launching X-MP radar in Indonesia and Japan
 - Merapi : volcanic ash and rain causing flush flood
 - Kelud : rain causing flush flood
 - Sakurajima : volcanic ash validation
- Applying the data of X-MP radar
 - G2: real time estimation of discharge rate
 - G3: forecasting multimodal sediment disasters as outside forcing of volcanic ash amount and rainfall
 - G4: dispersion simulation of volcanic ash

World's smallest and Lightest class X-MP radar

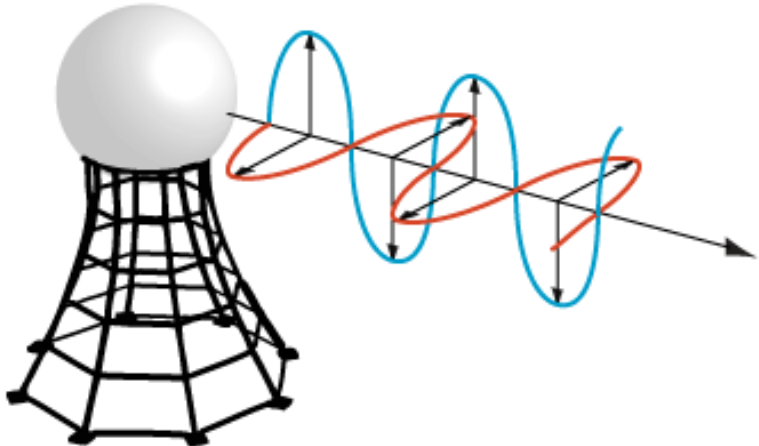


Fully Polarimetric Doppler Solid State

KEY
— Horizontal electric field wave
— Vertical electric field wave



Current radars (non-polarization)



New dual-pol radars (polarization)

Source: NATIONAL WEATHER SERVICE WEATHER FORECAST OFFICE

Achieved activities by 2014

- X-MP radar has been launched
 - Merapi : 27 January 2015
 - Kelud : 1 February 2015
 - Sakurajima : 5 July 2014



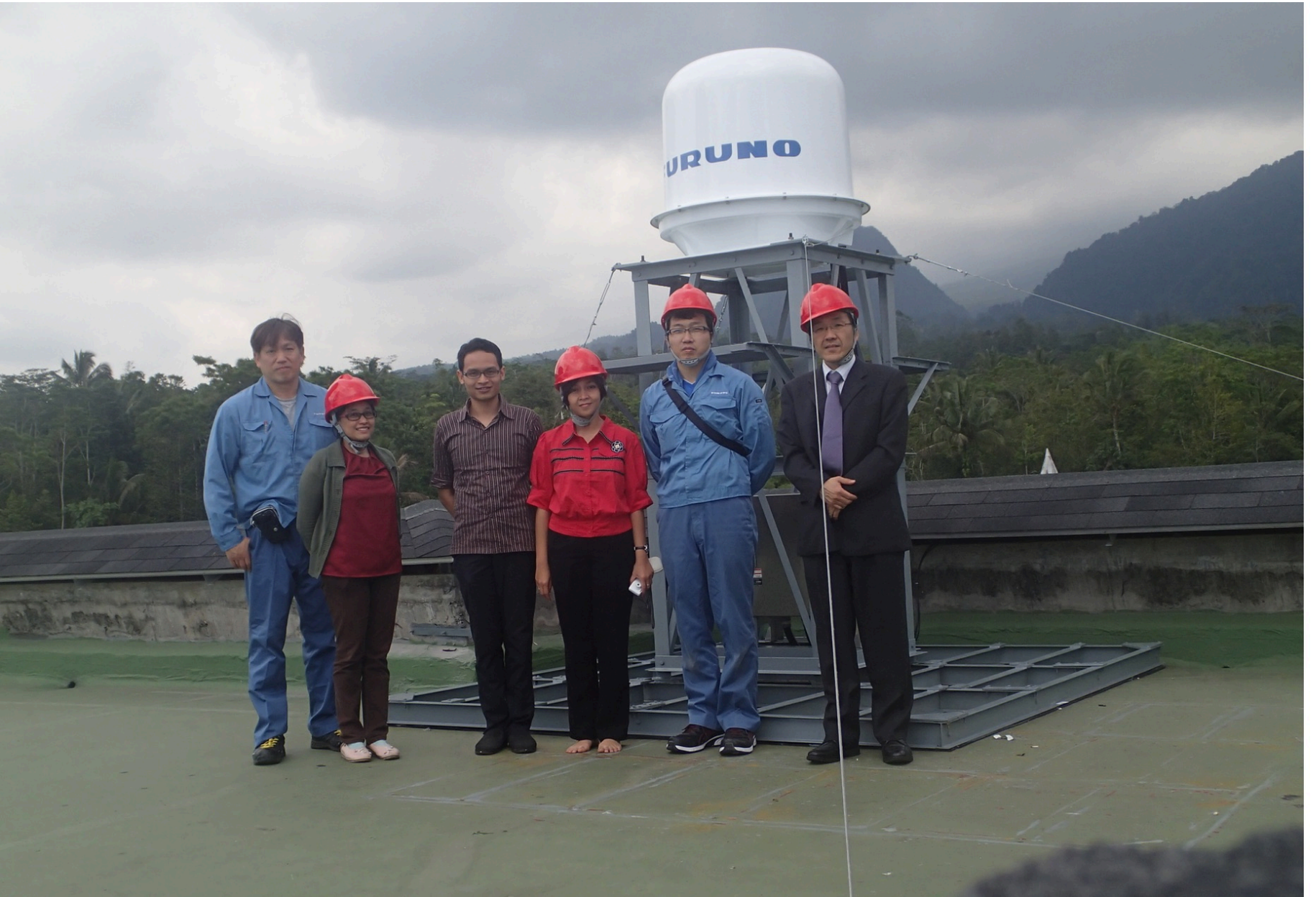
sakurajima



merapi



kelud









Radar certification

TCB

GRANT OF EQUIPMENT
AUTHORIZATION

TCB

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

TUV SUD BABT
Forsyth House Churchfield Road
Walton-on-Thames, Surrey, KT12 2TD
United Kingdom

Date of Grant: 12/12/2014
Application Dated: 12/12/2014

Furuno USA Inc
4400 NW Pacific Rim Blvd.
Camas, WA 98607

**Attention: Shane Ryan , Type Acceptance /
Commerical Service**

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE,
and is VALID ONLY for the equipment identified hereon for use under the
Commission's Rules and Regulations listed below.

FCC IDENTIFIER: ADB9ZWWR2100

Name of Grantee: Furuno USA Inc

Equipment Class: Licensed Non-Broadcast Station
Transmitter

Notes: Dual Polarimetric X-band Weather
Radar

| <u>Grant Notes</u> | <u>FCC Rule Parts</u> | <u>Frequency Range (MHZ)</u> | <u>Output Watts</u> | <u>Frequency Tolerance</u> | <u>Emission Designator</u> |
|--------------------|-----------------------|----------------------------------|-------------------------|--------------------------------|--------------------------------|
| | 80, 90 | 9470.0 - 9470.0 | 100.0 | 1250.0 PM | 60M0P0N |
| | 80, 90 | 9470.0 - 9470.0 | 100.0 | 1250.0 PM | 50M0Q0N |
| | 80, 90 | 9470.0 - 9470.0 | 100.0 | 1250.0 PM | 60M0V0N |

RF exposure compliance is addressed at the time of licensing, as required by the
responsible FCC Bureau(s) including antenna co-location requirements of Section
1.1307(b)(3). The device must be installed to provide a separation distance of at
least 5.9m from all persons during normal operation. End-users and installers must
be provided with antenna installation instructions and transmitter operating conditions
for satisfying RF exposure compliance.

For FURUNO WR2100

Frequency Permission


KEMENTERIAN KOMUNIKASI DAN INFORMATIKA RI
DIREKTORAT JENDERAL SUMBER DAYA DAN PERANGKAT POS DAN INFORMATIKA
DIREKTORAT OPERASI SUMBER DAYA
 Jl. Budi Kemuliaan I No. 2 Jakarta 10110
 Telp. (021) 30003100




IZIN STASIUN RADIO (ISR)
 Dikeluarkan berdasarkan Undang-undang No.36 TH 1999 tentang Telekomunikasi dan Peraturan Pelaksanaannya
NOMOR : 01827962-000SU/2620152020

| | | | |
|---|-----------------------------------|---|---|
| KODE PEMOHON 00103684 | NOMOR APLIKASI 500009072015 | NOMOR STASIUN 0001 | IZIN PENYELENGGARAAN : NO : TGL : |
| DIBERIKAN KEPADA PUSAT VULKANOLOGI DAN MITIGASI BENCANA ALAMAT : GEOLOGI JL. DIPONEGORO BANDUNG 40122 XX2 BANDUNG JAWA BARAT TLP. 7271402 FAX. 7202761 | | JENIS IZIN STASIUN : TH RADIO JENIS DINAS : Special Service NAMA STASIUN : POS PENGAMANAN GUNUNG KELUD ALAMAT STASIUN : SUB-DIV JASA ASA II/2. BEND, SELOREJO, PJT 1 KEL. PANDAN SARI NGANTANG MALANGJAWA TIMUR65392 | |
| NAMA PENANGGUNG JAWAB : TANGGAL TERBIT : 27 Aug 2015 TANGGAL BERAKHIR : 26 Aug 2016 | | TANDA PANGGILAN : DAERAH LAYANAN : | |
| BARU | | KOORDINAT LOKASI : 112° 21' 32.93" B7° 52' 42.58" LS | |
| DATA TEKNIS LEBAR PITA : 7.000 kHz KELAS EMISI : PON, QON, VON DAYA PANCAR : 51,352 dBW NOMOR KANAL : | | TINGGI LOKASI (ASL) : 612,4 m DATA ANTENA MEREK : JAPAN TIPE : FURUNO AZIMUTH : 2.7 ° ELEVASI : TINGGI ANTENA (AGL) : 6,8 m | |
| DATA PERANGKAT RADIO MEREK : JAPAN PEMANCAR : JAPAN PENERIMA : JAPAN NOMOR SERI : | |  TIPE : FURUNO ELECTRIC CO LTD_WR-2100 FURUNO ELECTRIC CO LTD_WR-2100 | |
| DATA FREKUENSI TX RX | FREKUENSI 9.470.000 MHz MHz | POLARISASI D | DATA STASIUN LAWAN NAMA TANDA PANGGILAN KOORDINAT |

For Kelud Area

Frequency Permission


KEMENTERIAN KOMUNIKASI DAN INFORMATIKA RI
DIREKTORAT JENDERAL SUMBER DAYA DAN PERANGKAT POS DAN INFORMATIKA
DIREKTORAT OPERASI SUMBER DAYA
 Jl. Budi Kemuliaan I No. 2 Jakarta 10110
 Telp. (021) 30003100




IZIN STASIUN RADIO (ISR)
 Dikeluarkan berdasarkan Undang-undang No.36 TH 1999 tentang Telekomunikasi dan Peraturan Pelaksanaannya
NOMOR : 01827963-000SU/2620152020

| | | | | | |
|---|--------------------------------|---|---|-----------------|-----------|
| KODE PEMOHON 00103684 | NOMOR APLIKASI 500009072015 | NOMOR STASIUN 0002 | IZIN PENYELENGGARAAN : NO : TGL : | | |
| DIBERIKAN KEPADA PUSAT VULKANOLOGI DAN MITIGASI BENCANA ALAMAT : GEOLOGI JL. DIPONEGORO BANDUNG 40122 XX2 BANDUNG JAWA BARAT TLP. 7271402 FAX. 7202761 | | JENIS IZIN STASIUN : TH RADIO JENIS DINAS : Special Service NAMA STASIUN : POS PENGAMANAN GUNUNG MERAPI ALAMAT STASIUN : MUSEUM GUNUNG API MERAPI KEL. HARGOBINANGUN , PAKEM SLEMANDAERAH ISTIMEWA YOGYAKARTA55582 | | | |
| NAMA PENANGGUNG JAWAB : TANGGAL TERBIT : 27 Aug 2015 TANGGAL BERAKHIR : 26 Aug 2016 | | TANDA PANGGILAN : DAERAH LAYANAN : | | | |
| BARU | | KOORDINAT LOKASI 110° 25' 27.5" BT7° 36' 58.2" LS TINGGI LOKASI (ASL) : 720,3 m | | | |
| DATA TEKNIS LEBAR PITA : 7.000 kHz KELAS EMISI : P0N, Q0N, V0N DAYA PANCAR : 51,352 dBW NOMOR KANAL : | | DATA ANTENA MEREK : JAPAN TIPE : FURUNO AZIMUTH : 2.7 ° ELEVASI : TINGGI ANTENA (AGL) : 25,0 m | | | |
| DATA PERANGKAT RADIO MEREK : JAPAN PEMANCAR : JAPAN PENERIMA : JAPAN NOMOR SERI : | |  TIPE : FURUNO ELECTRIC CO. LTD_WR-2100 FURUNO ELECTRIC CO. LTD_WR-2100 | | | |
| DATA FREKUENSI | FREKUENSI | POLARISASI | DATA STASIUN LAWAN NAMA | TANDA PANGGILAN | KOORDINAT |
| TX | 9.470,000 MHz | D | | | |

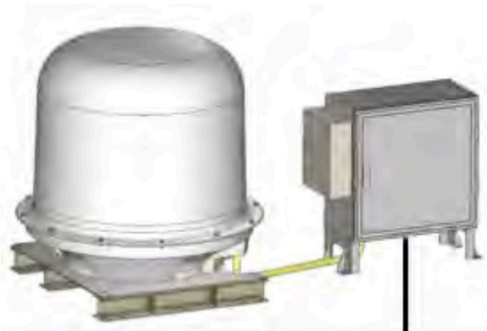
For Murapi Area

Next page

File Transportation



Multi Parameter Data is stored on site



Rain data in CSV format is stored in cloud server



Internet





ファイル転送

操作

表示

音声/動画

その他

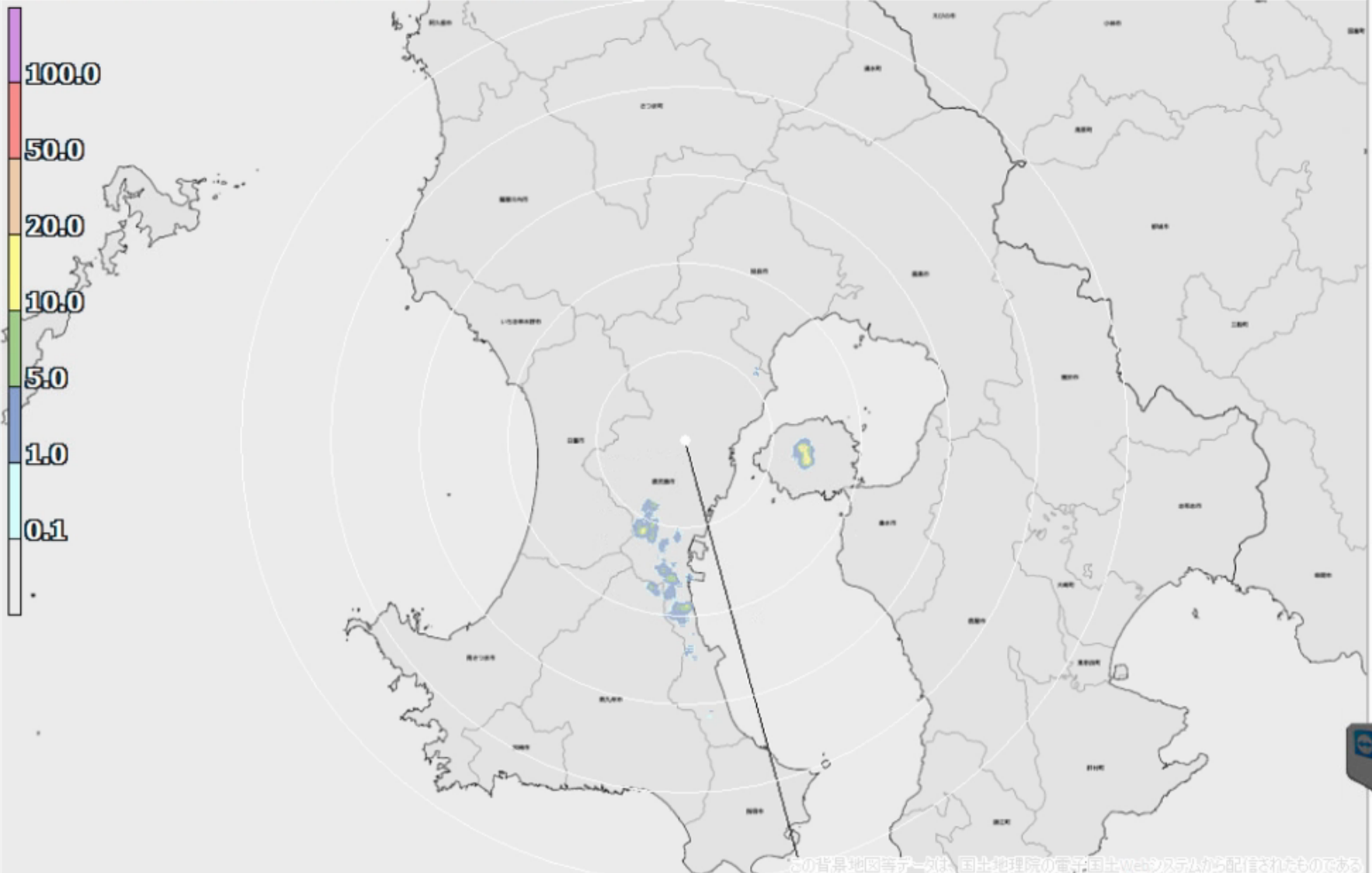
コメント



RainMap v03.24t



ファイル(F) 表示(D) 設定(S) レーダー操作(R) ヘルプ(H) 緊急動作停止(E)



この背景地図データは、国土地理院の電子国土v2.0システムから配信されたものである

通信中 HSQ scan AZ: 166.4 EL: 6.0

2015/11/09 12:18:29

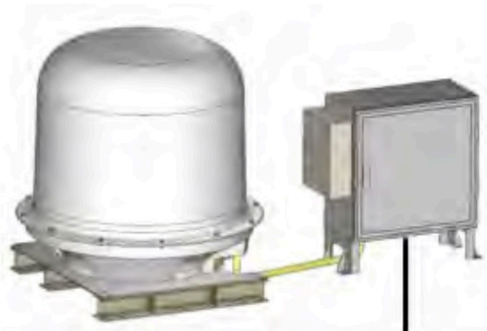


12:18
2015/11/09

File Transportation



Multi Parameter Data is stored on site



Rain data in CSV format is stored in cloud server



Internet



Next page

Achieved activities previously planned

- Obtaining license for releasing wave
- Making a database of rainfall amount
- Connecting radar to each system

- Establishing sequence for volcanic eruption
- Establishing trouble shooting scheme

- Keep developing to estimate volcanic ash

Thank you for your attention

Achieved activities

- Radar(s) have been launched and are ready to be used
- Conceptual model for estimating volcanic ash amount has been made.