



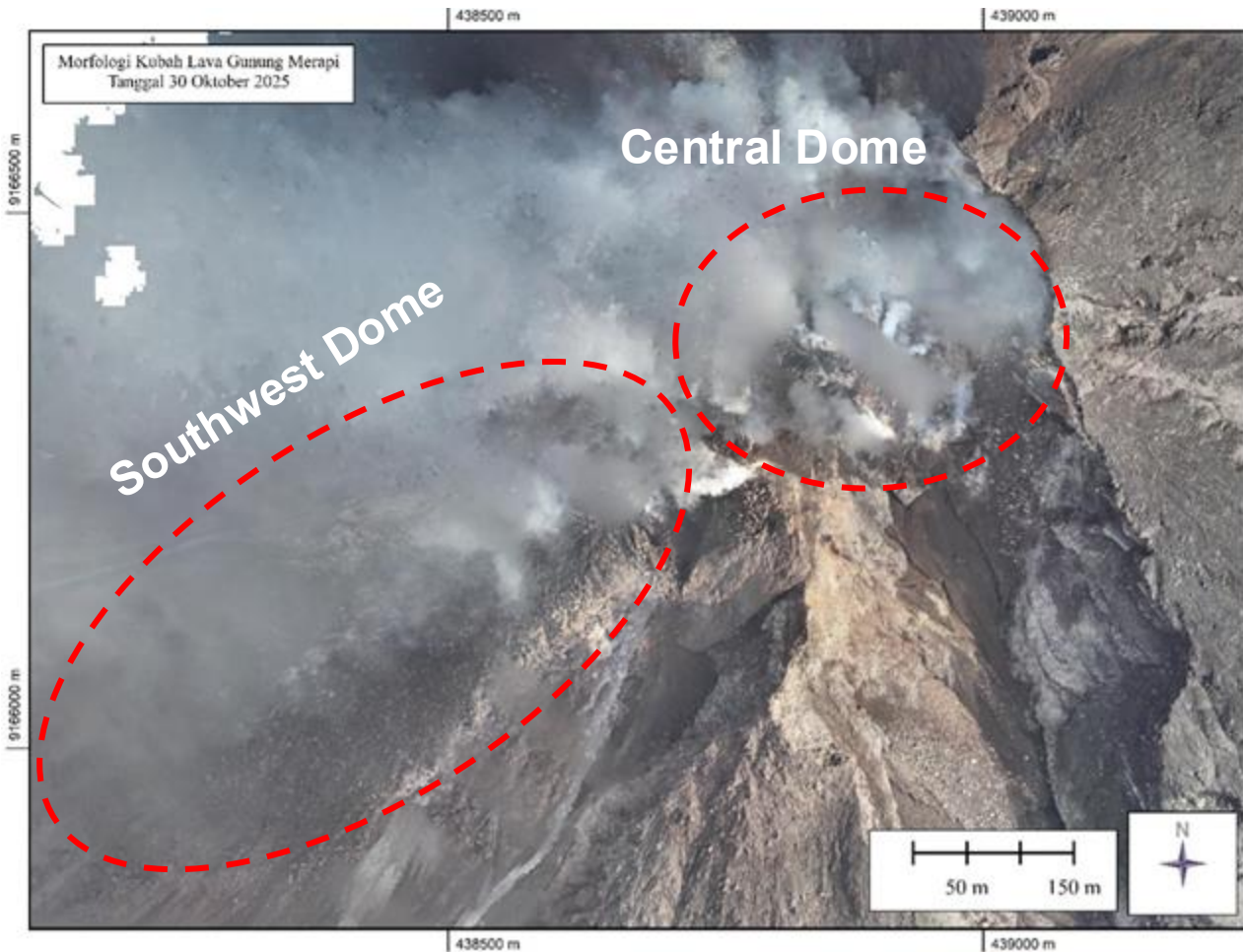
GEOLOGICAL AGENCY

CVGHM - BPPTKG (MERAPI VOLCANO OBSERVATORY)

# Monitoring System at Merapi: Digital Transformation, Workflow, and Data Management

# Merapi's Current Threats

## Southwest and Central Lava Domes



Source of the rockfalls and pyroclastic flows (primary hazard), and lahars (secondary hazard)

## 1888's Lava (Northwest Old Lava Dome)

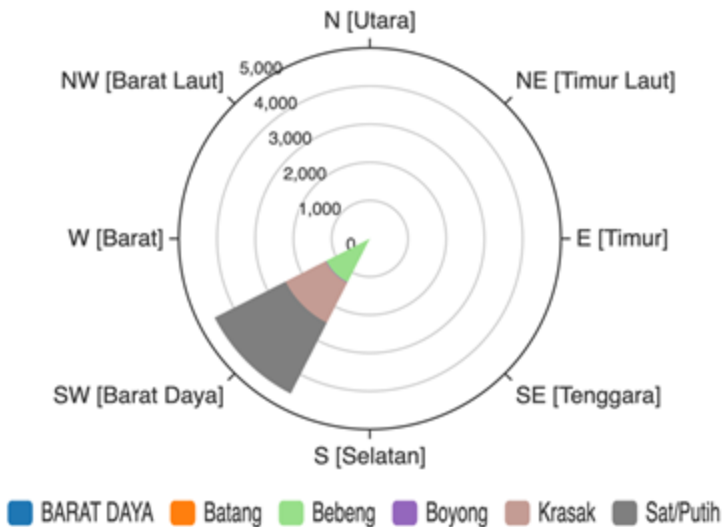


Lava 1888 – Babadan Local Observatory: the distance has been shortened by 18.65 meter since June 2020 – November 2025 (BAB0 - RB2)

# Merapi's Rockfalls and PDCs

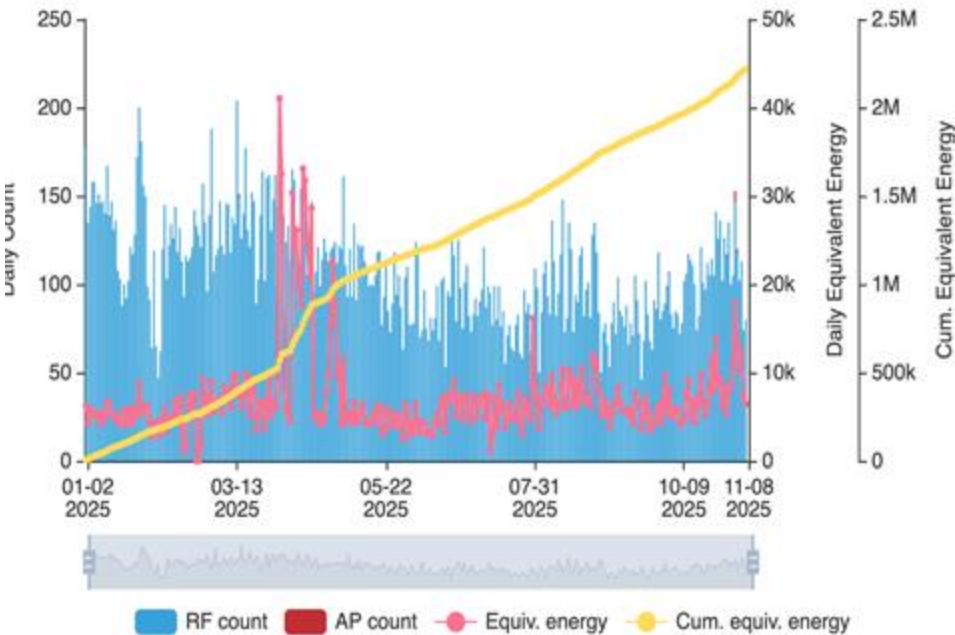
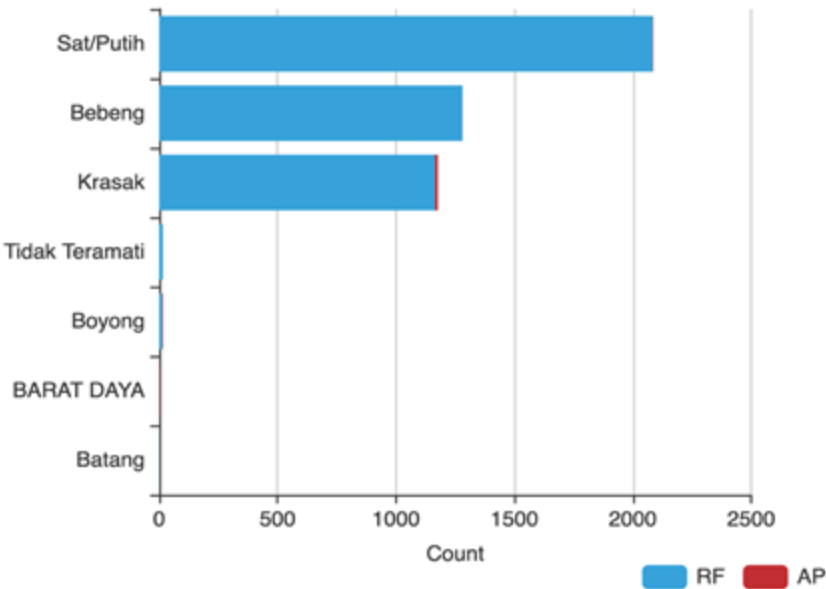
RF & AP Direction Group

2025-01-01 00:00:00 - 2025-11-10 00:00:00

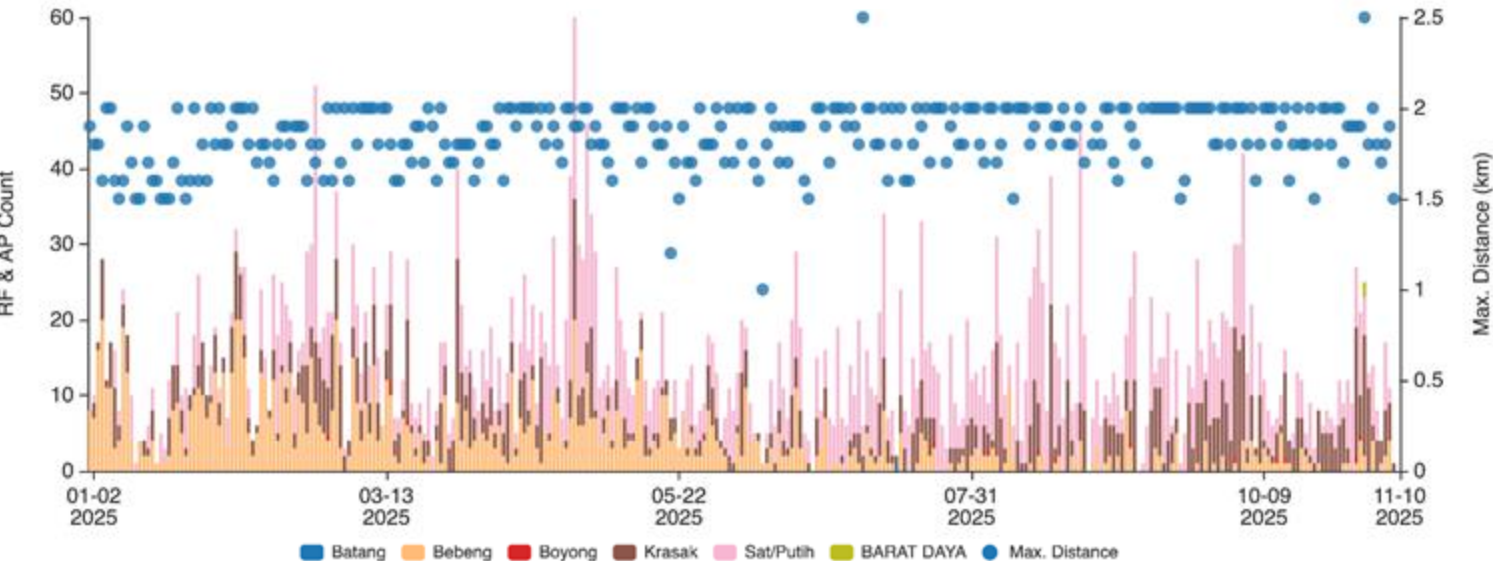


RF & AP Direction

2025-01-01 00:00:00 - 2025-11-10 00:00:00



RF & AP Direction Stack

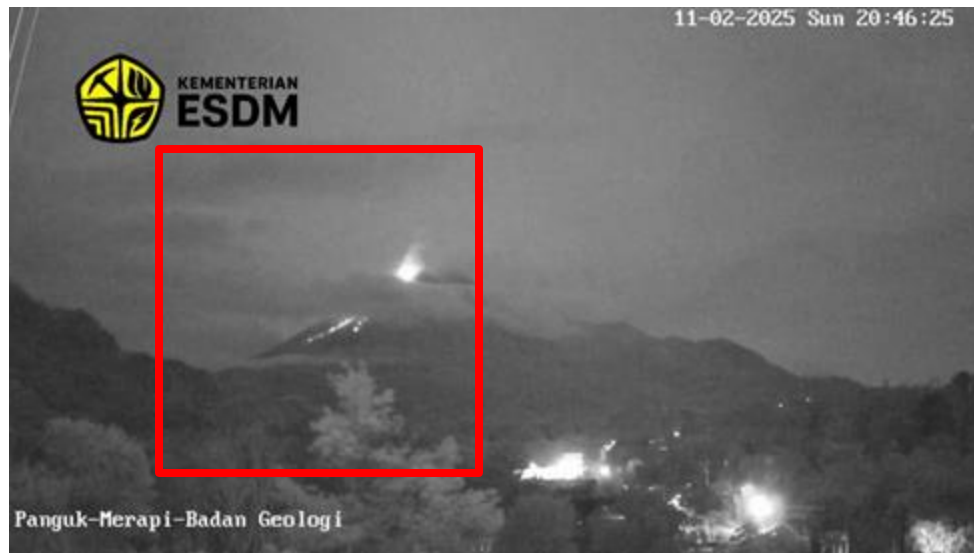


# Recent PDC Events (October 2025)



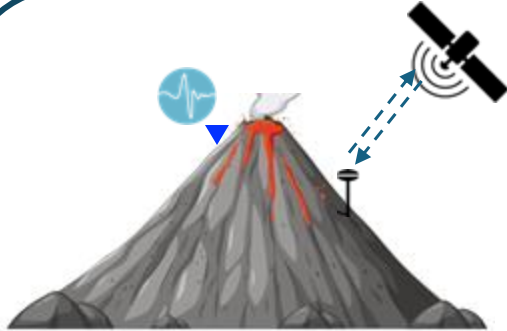
- ❑ 6 PDC events in October 2025
- ❑ Kejadian APG:
  - Oktober 1, 2025 05:56 local time, towards Putih River
  - Oktober 2, 2025 05:30 local time, towards Krasak and Boyong Rivers
  - Oktober 11, 2025 13:08 local time, invisible
  - Oktober 22, 2025 20:07 local time towards Krasak and Boyong Rivers
  - Oktober 28, 2025 13:32 local time towards Krasak River
  - Oktober 29, 2025 05:46 local time towards Krasak River

# Recent PDC Events (November 2025)

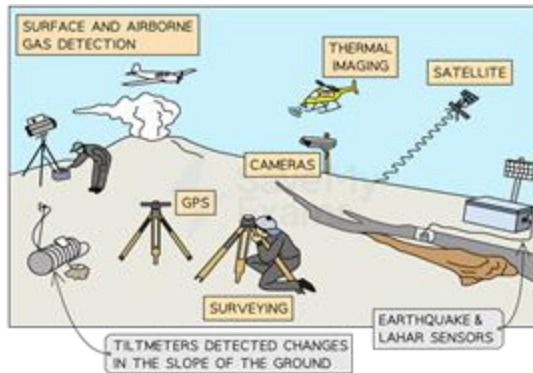


- ❑ From Nov 1 to Nov 20, 2025: 18 PDC Events
- ❑ 9 PDC series of events (Nov 2 – 3, 2025)
- ❑ PDC series:
  - November 2, 2025 11:04 local time
  - November 2, 2025 11:11 local time
  - November 2, 2025 14:27 local time
  - November 2, 2025 15:00 local time
  - November 2, 2025 16:08 local time
  - November 2, 2025 17:21 local time
  - November 2, 2025 20:46 local time
  - November 3, 2025 00:30 local time
  - November 3, 2025 00:37 local time

# Workflow/Business Process



*(near)real time monitoring data (Seismic, GPS, DOAS, Thermal)*



*field survey data (EDM, Gravity, Drone)*



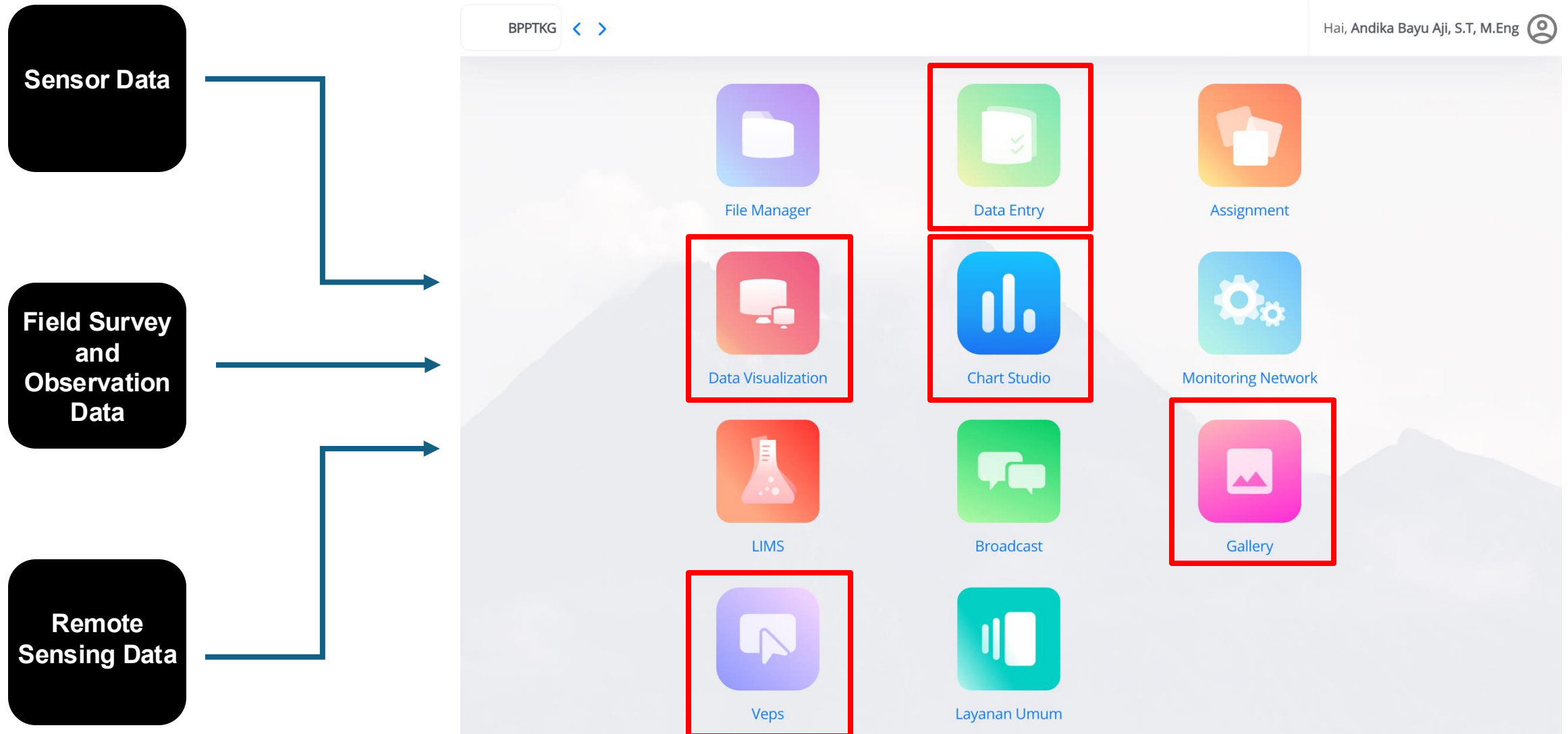
Data Analysis and Data Management



Data Interpretation

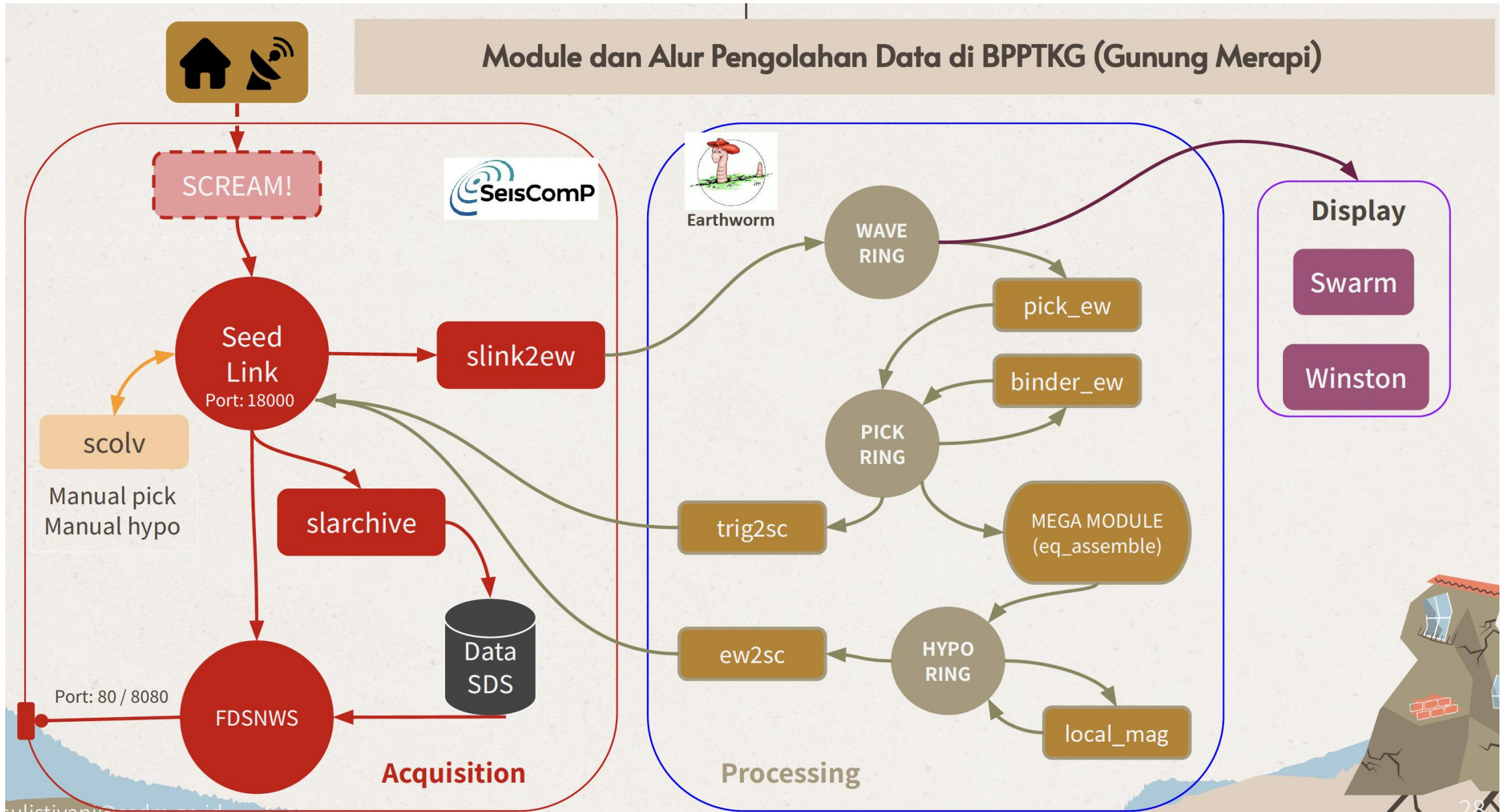


# Data Management: One Stop App (Cendana15)



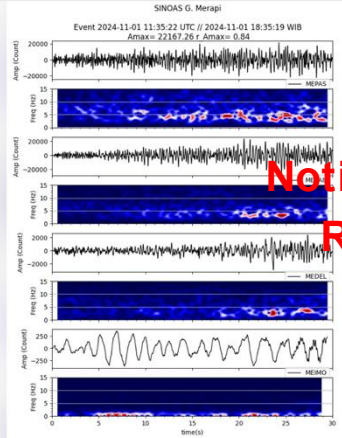
# Seismic Data Flow

## Module dan Alur Pengolahan Data di BPPTKG (Gunung Merapi)



# Early Warning

SINOAS G. MERAPI V.2  
25 subscribers



**Telegram  
Notification: VEQ,  
RF, and PDC**

#26

[Stream Update](#)

Generated at 2024-11-01 18:35:59 8 6.36 PM



#26

8 6.36 PM

Peringatan! Terjadi RF/AP di sungai Bebeng. Suhu di sungai Bebeng MAX: 22 derajat AVG: 10 derajat.  
2024-11-01 18:36:19 8 6.36 PM

BPPTKG



**PERINGATAN!!!**

Nilai RSAM 9968

Waspada! Kejadian APG >

1KM

**PDC Notification  
via cendana15**

**BPPTKG Alarm**  
(under development)

**311.43** Rsam



Tim infokom BPPTKG  
3 online

<https://t.me/infohujanmerapi>

1.30 PM

INFO BADAN GEOLOGI, Jumat 14/03/2025 14:35:01 WIB:  
Terjadi hujan di puncak Gunung Merapi mulai pukul 13:09 WIB dengan curah hujan 39 mm, durasi 1 jam 26 menit, dan intensitas 82 mm/jam. Hujan masih berlangsung saat ini, waspada! bahaya lahar di sungai-sungai yang berhulu di Gunung Merapi serta Awan Panas Guguran di daerah potensi bahaya. Masyarakat diimbau untuk menjauhi daerah bahaya serta mematuhi rekomendasi.

Kanal telegram untuk informasi hujan lebih lengkap:

<https://t.me/infohujanmerapi>

2.35 PM

alzwar Wawaa

Forwarded



Aliran K Gendol

3.09 PM

**Whatsapp  
Notification :  
High-Intensity  
Rain and Lahars**

# Challenges

- ❑ Need Data Storages (a lot.....)
- ❑ There is no rule to determine when the archived data is obsolete
- ❑ Power Outage
- ❑ No staff is checking the continuity of the data
- ❑ No staff is checking the data quality