

A satellite in space with Earth in the background. The satellite has a central body and two large solar panel arrays extending outwards. The Earth's surface is visible in the lower half of the frame, showing clouds and the curvature of the planet.

Parallax Correction of Cumulonimbus Clouds in Extreme Weather Events

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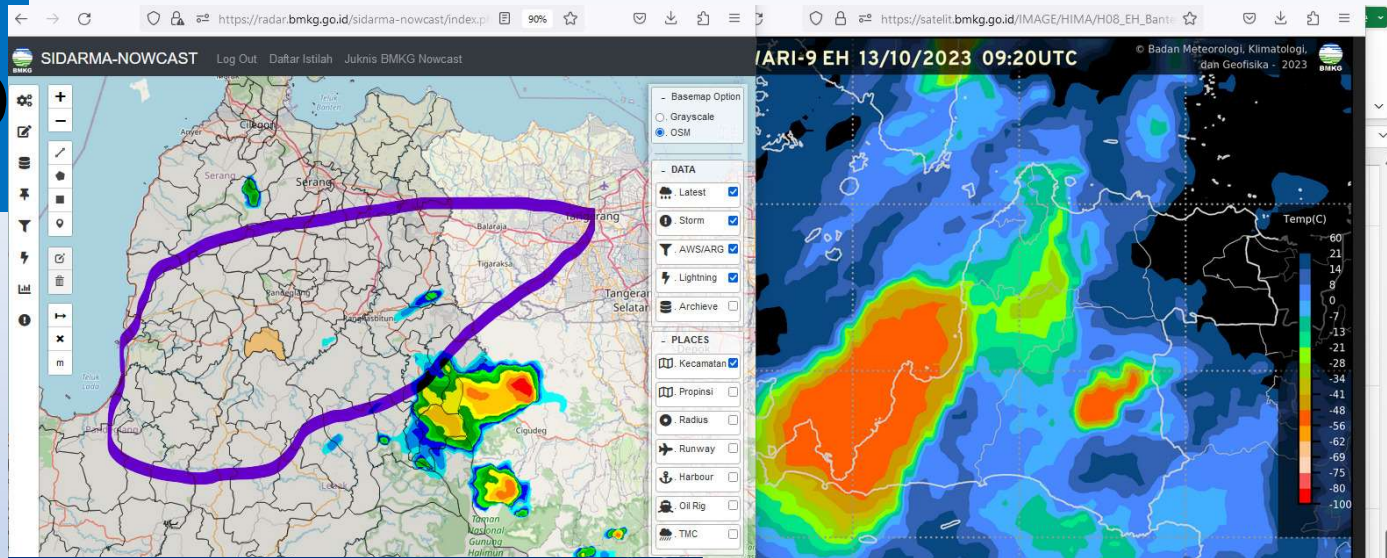
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BACKGROUND

- Mandate responsibility to publish weather early warning for Banten province area.
- Blank Spot Area from Radar Coverage.
- Difficulty in manually correcting cloud positions to reduce parallax effects.

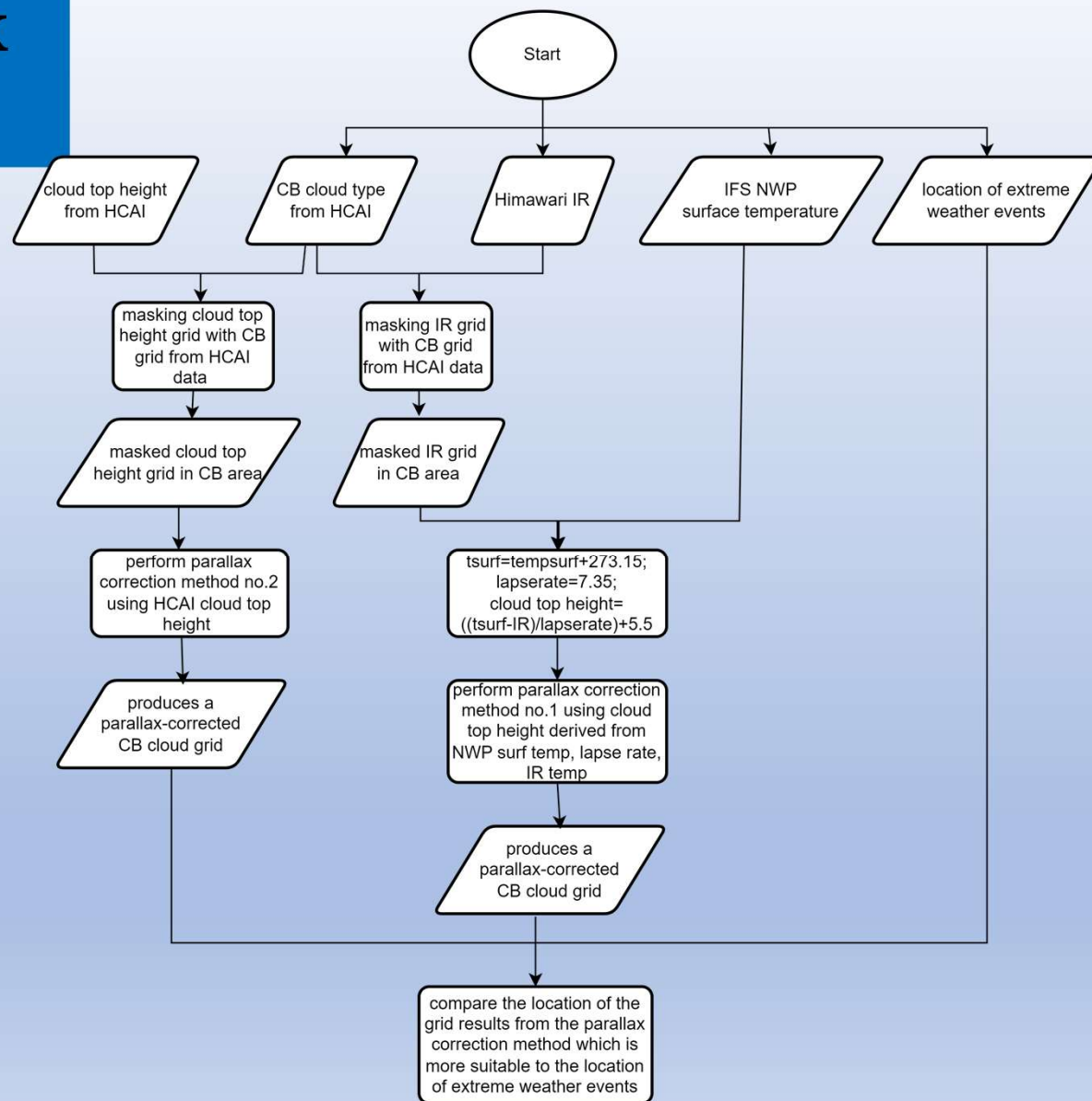
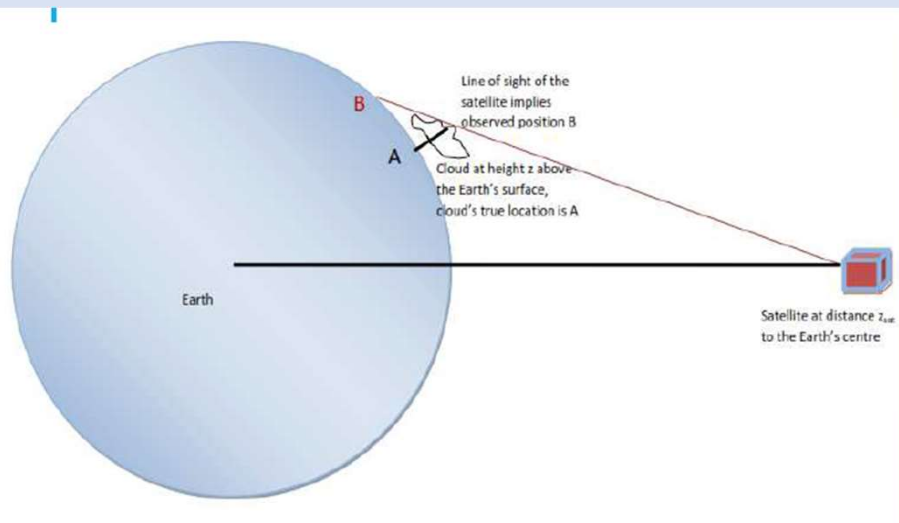




DATA

- Extreme Weather Event during Jan – August 2023
- Himawari High Resolution Cloud Analysis Information (HCAI)
 - Height of the Cloud Top
 - Cloud type (CB)
- Himawari Enhance Infrared
- ECMWF Integrated Forecasting System (IFS) NWP Forecast
 - Surface temperature

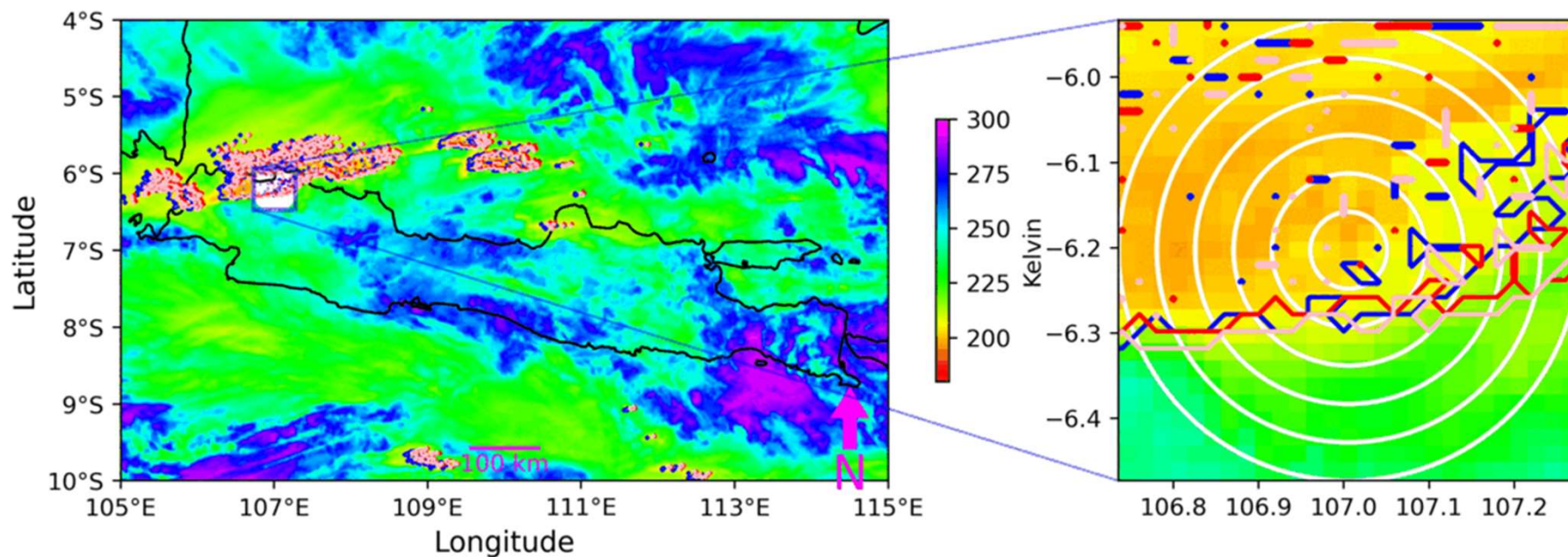
Calculation Parallax Correction





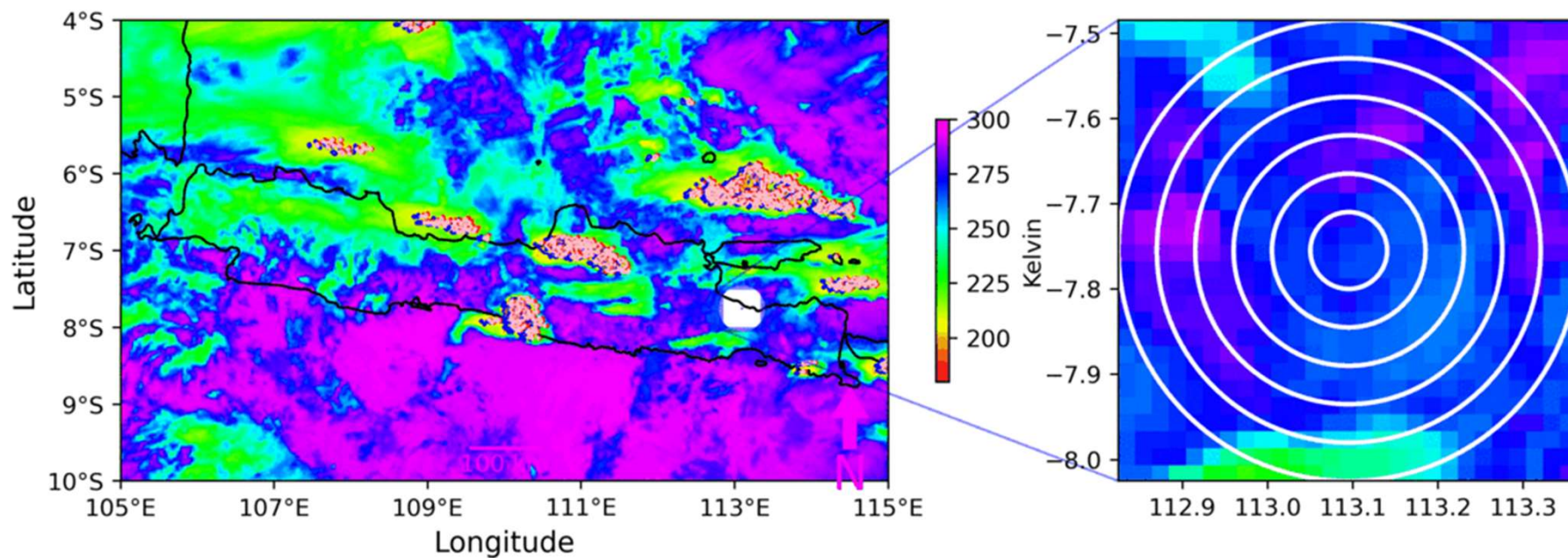
Case No.1 : Heavy Rainfall Event at West Java

Himawari-8 Infrared Image Product 2023-01-01 04:00 UTC Case No. 1



Case No.2 : Heavy Rainfall Event at East Java

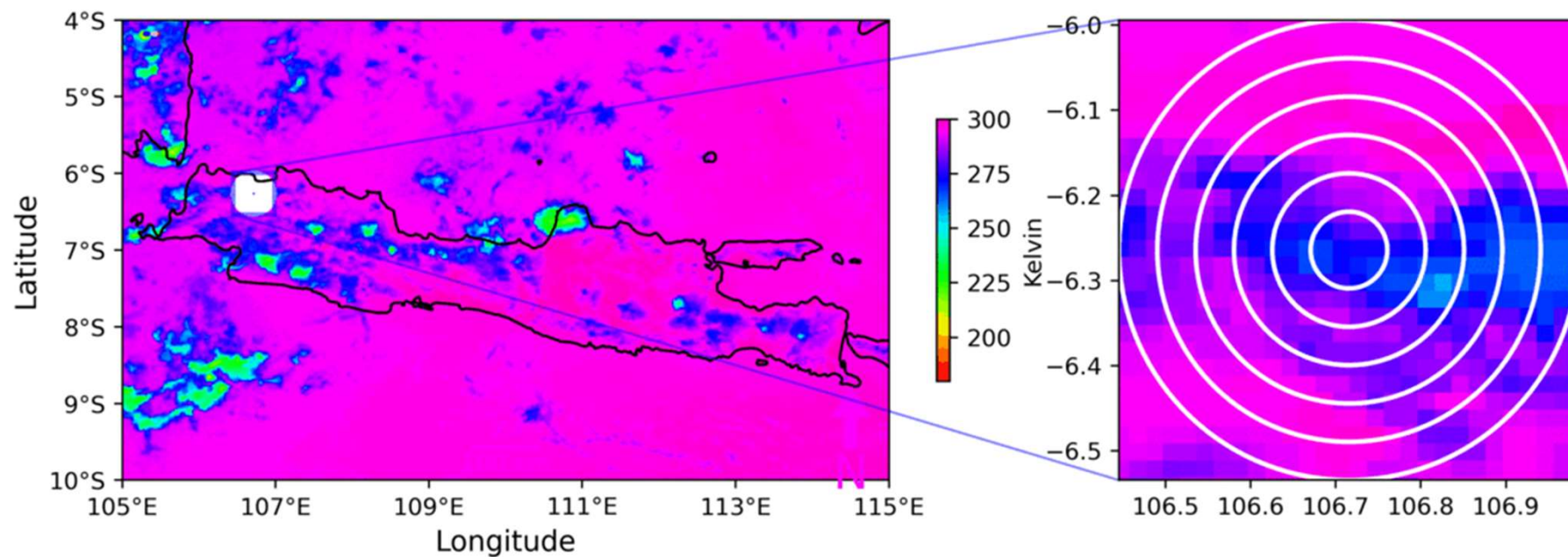
Himawari-8 Infrared Image Product 2023-02-11 06:30 UTC Case No. 2





Case No.3 : Heavy Rainfall Event at Banten

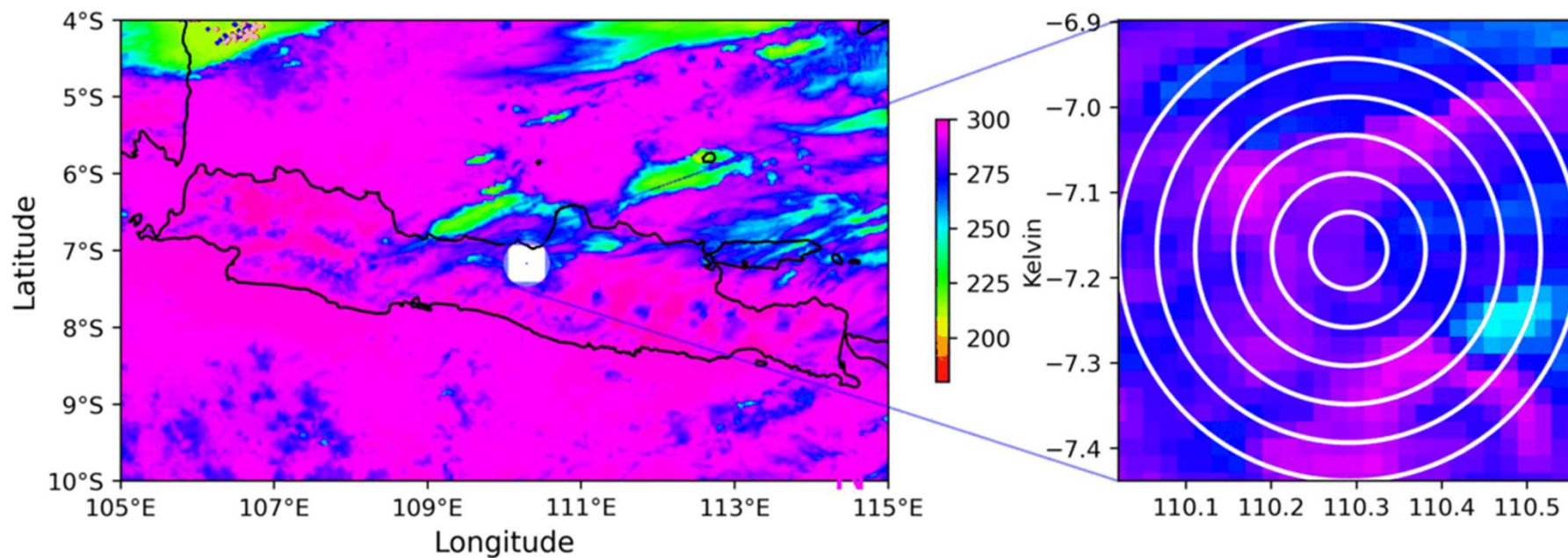
Himawari-8 Infrared Image Product 2023-03-10 05:50 UTC Case No. 3





Case No.4 : Heavy Rainfall Event at Central Java

Himawari-8 Infrared Image Product 2023-04-08 04:40 UTC Case No. 4





CONCLUSION

- Calculations using these two methods basically is not much different, with advantages in the correction method using the surface temperature IFS model.
- Correction of CB location about 6-10 km to the east - northeast of CB position before parallax correction.



STEP FORWARDS

- Refinement of parallax correction algorithms for other types of convective clouds.
- Adjustment of the result of satellite parallax correction algorithm based on the cloud position in the radar imagery.
- Switching the procedure from research to operational status.

Thank you