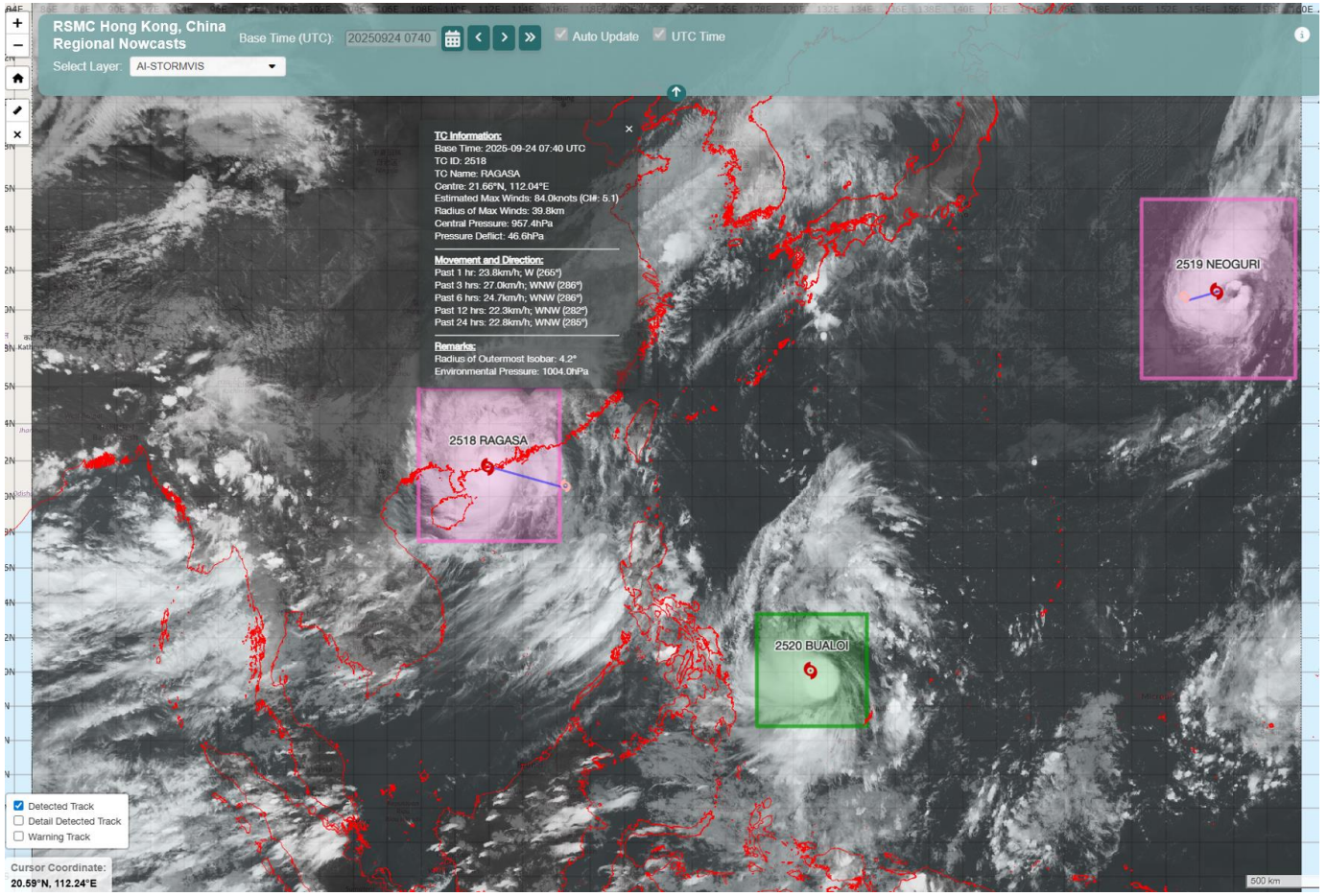
AI-STORMVIS

AI-driven **S**atellite-based **T**ropical cyclone **O**bject **R**ecognition, **M**otion **V**isualization, and **I**ntensity estimation **S**ystem

- AI-STORMVIS is a in-house developed tropical cyclone (TC) analysis system in the Hong Kong Observatory (HKO) for providing automatic TC position analysis and intensity estimation. It continuously monitors TC activities over the Western North Pacific (WNP) basin and the South China Sea (SCS) region based on Himawari-9 imagery updated in every 10 minutes.

- TC information including center position, intensity, size, past movement and direction, and pressure deficit of TC centre from environmental pressure are automatically generated based on Himawai-9 satellite images.



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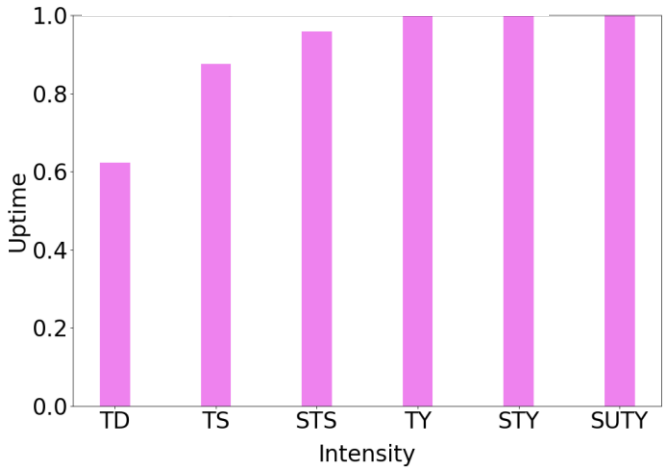
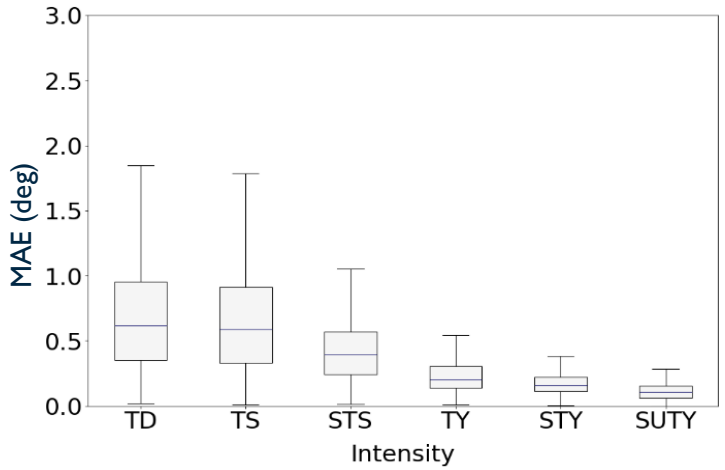
- AI-STORMVIS has been trained using:
  - Himawari-8/9 images and HKO Best Tracks during 2015 - 2023
  - TC tracks over the Indian Ocean have been utilized to enhance automatic detection when TC is within the western domain.

- Verification results (January – October 2025)

Detection rate exceeding 80% for TC with intensities at tropical storm or above, and 100% for typhoon or above.



Mean absolute error (MAE) of the detected TC centre position is about 0.5 degree (tropical depression to severe tropical storm) or less (typhoon or above)



MAE of the estimated intensity of various TC categories is around 10 knots