

Innovations on radar convection dynamics and Japan-Indonesia collaboration

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Planetary fluid dynamics has two categories: (i) vortex or Rossby waves, and (ii) convection or gravity waves. Radars including UHF/VHF bands have been used as standard tools for (ii). Because (i) and (ii) are dominant respectively in mid-/high- and low-latitudes on Earth, radars are essentially important in the equatorial region. In particular the Indonesian maritime continent (IMC) is the convection center due to systematic diurnal-cycle along the world's longest coastlines, which affects equatorial atmosphere over oceans (intraseasonal and interannual variations), mid-/high-latitudes (monsoons and teleconnections) and middle/upper atmospheres (upward propagating waves). Such significance of IMC had been already noticed far before construction of EAR, and now many radars including our HARIMAU radars have been used to clarify each category of convection dynamics. Asian countries developing far rapidly than expected before EAR construction need much accurate weather/climate predictions to sustain their development against their own vulnerability as well as global crisis. The two G20-member archipelagic nations must consider new collaborations including atmospheric science and technology.

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