Improved Retrieval of AOD from Geostationary Environment Monitoring Spectrometer (GEMS) Based on Artificial Intelligence Techniques

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1. Introduction

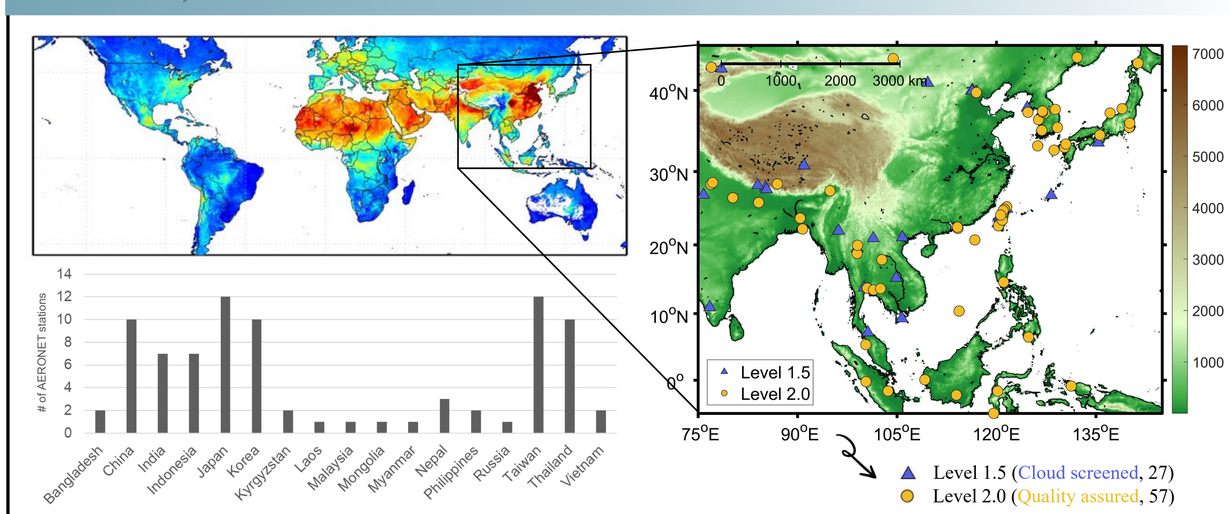
Background

- **Atmospheric aerosols** are particles composed of **solid or liquid matter** suspended in the atmosphere. They play a crucial role in the Earth's climate system by directly absorbing and scattering sunlight or indirectly changing the microphysics of clouds. Also, ambient air pollution can affect biological systems, including human health.
- **Aerosol Optical Depth (AOD)** is the degree to which **aerosols prevent the transmission of light** by absorption or scattering, and it can be used as a proxy for air quality.
- Therefore, the necessity of **accurate monitoring of its continuous concentration distribution and behavior** is also emerging.

Objectives

- Propose **AI-based improved retrievals of AOD from GEMS satellite** data using ground-based observations from AERONET as reference data.
- Accurate **hourly AOD monitoring** in Asia-Pacific region using geostationary satellite.

2. Study Area & Data



- **Study area**: Asia-Pacific (5°S – 45°N, 75°E – 145°E)
- **Study period**: January 2021 – December 2022 (2 years)
- 84 AERONET satations (Source: https://aeronet.gsfc.nasa.gov/new_web/index.html)

3. Methodology

4. Results & Discussion

5. Conclusion

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