

Overview and advancement of the Asian Summer Monsoon Anticyclone in perspective to surface pollutant transports, cloud formation and weather modification

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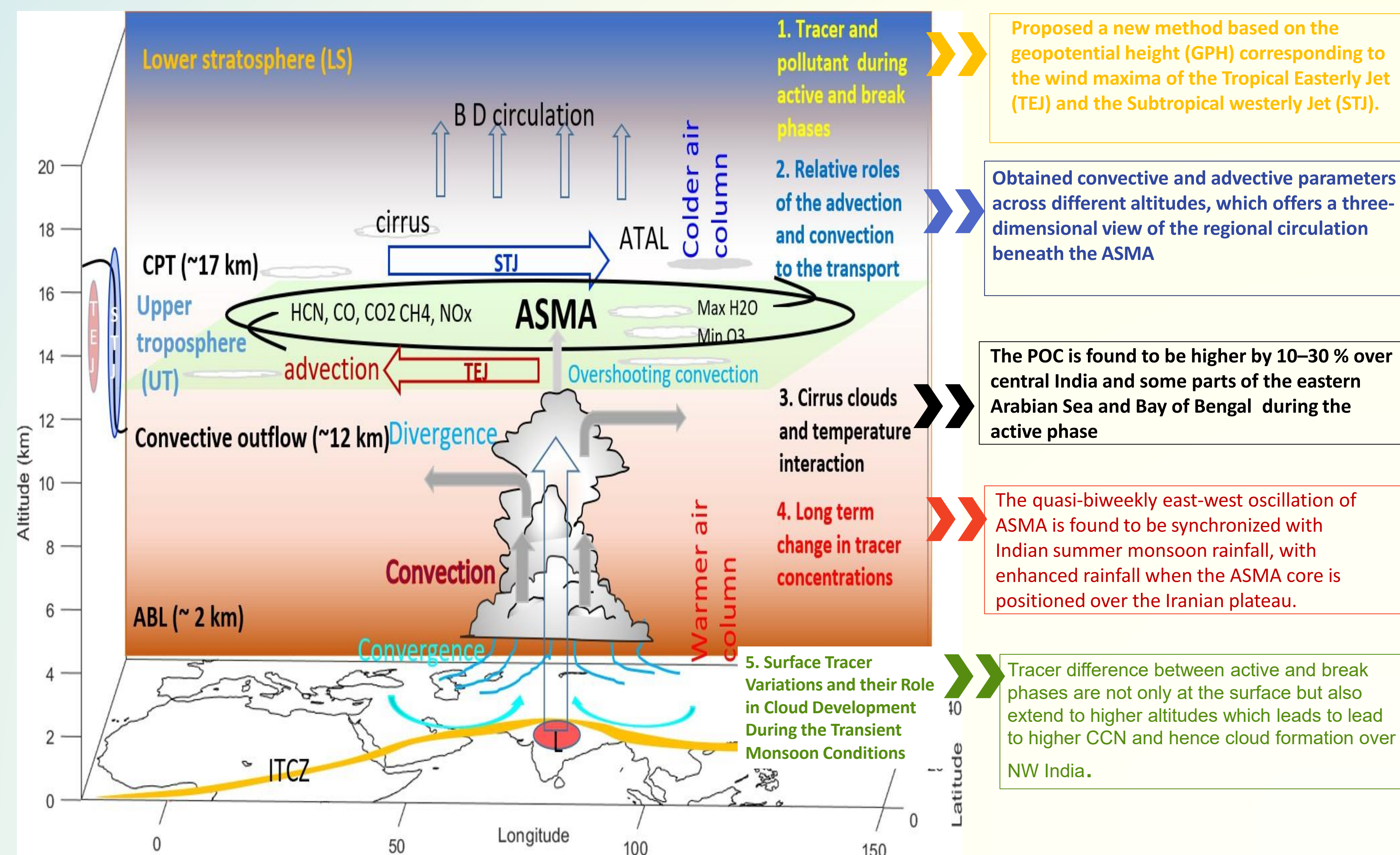


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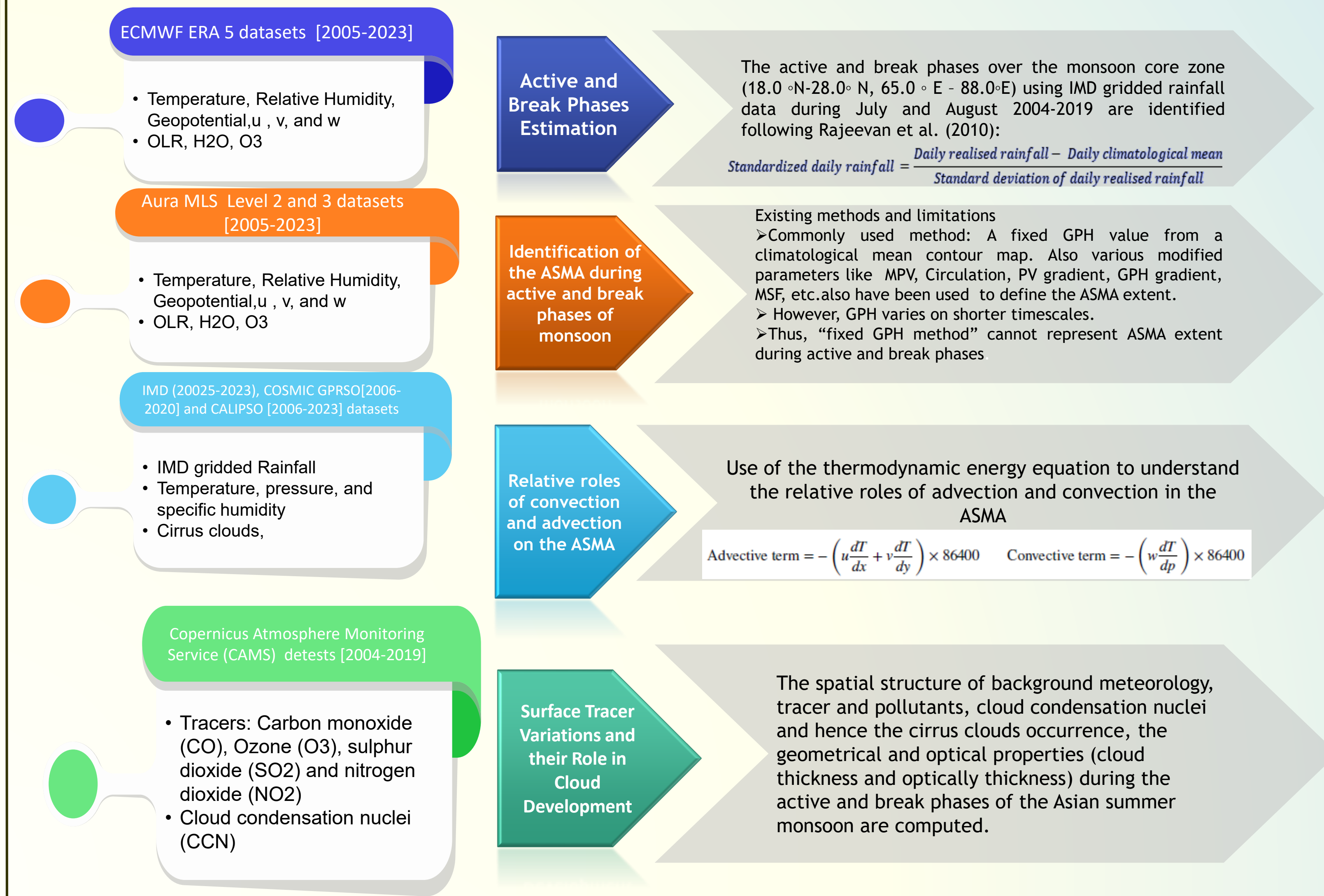


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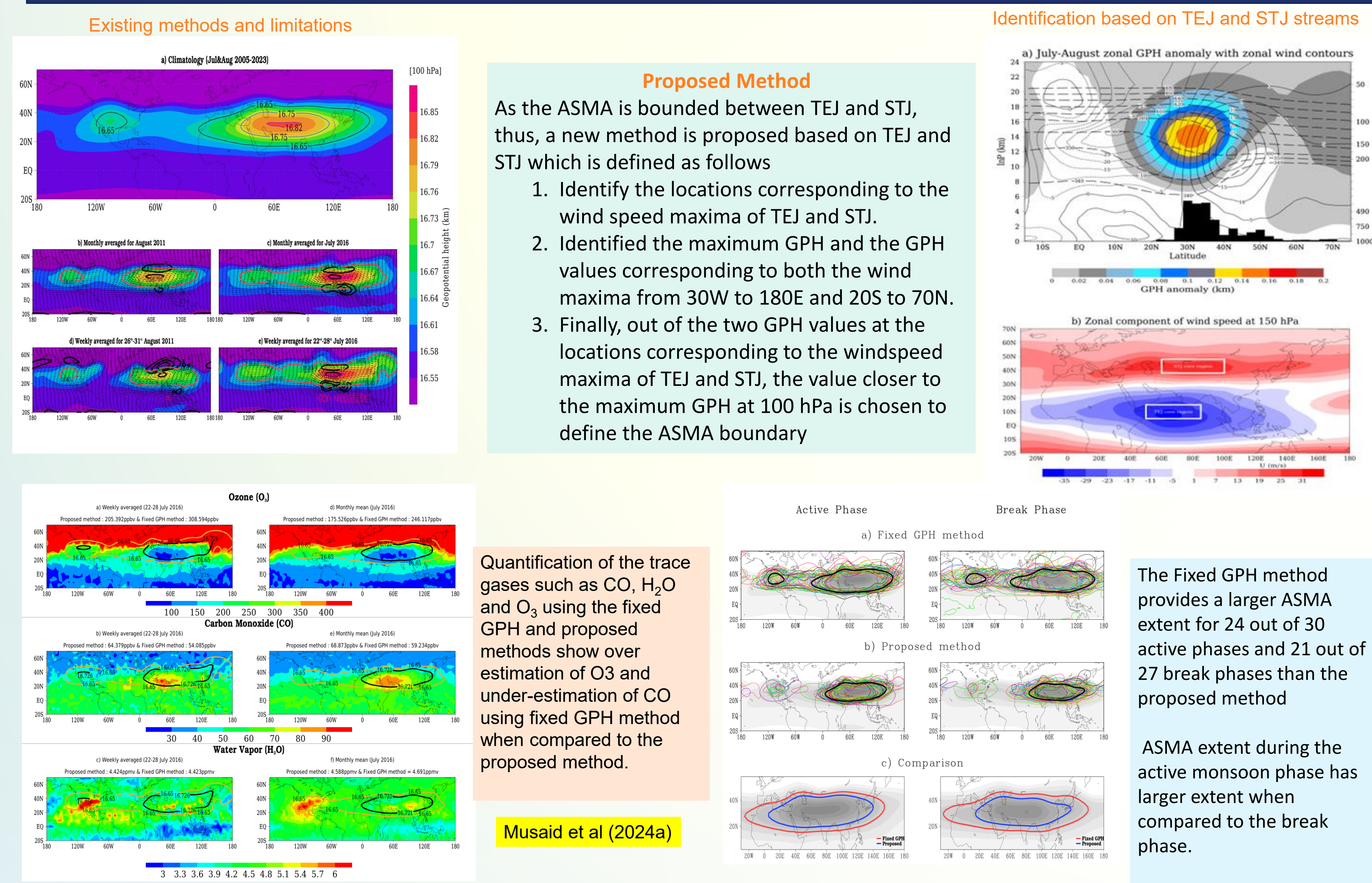
Abstract, Objectives and Introduction



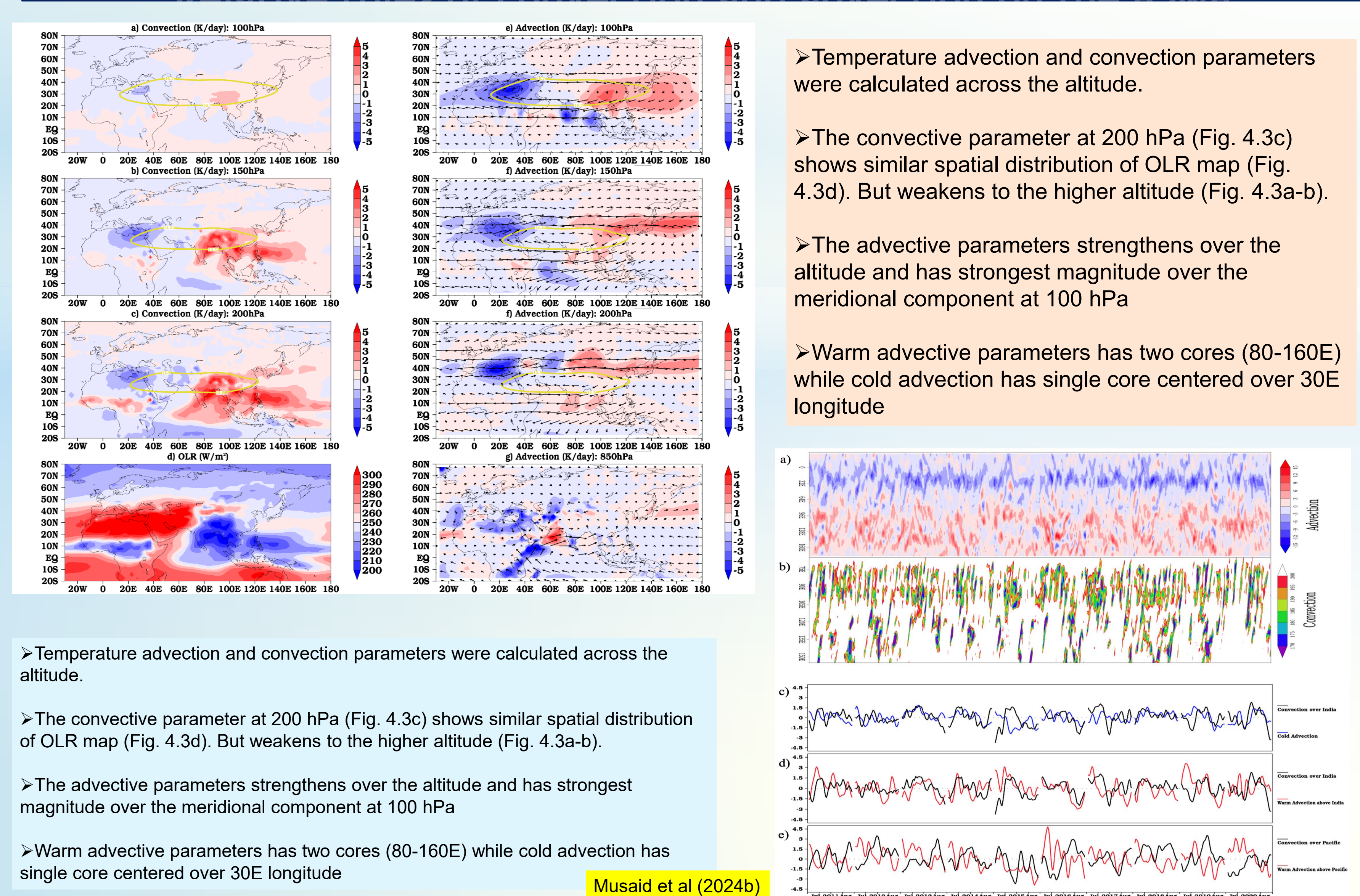
Datasets and Methodology



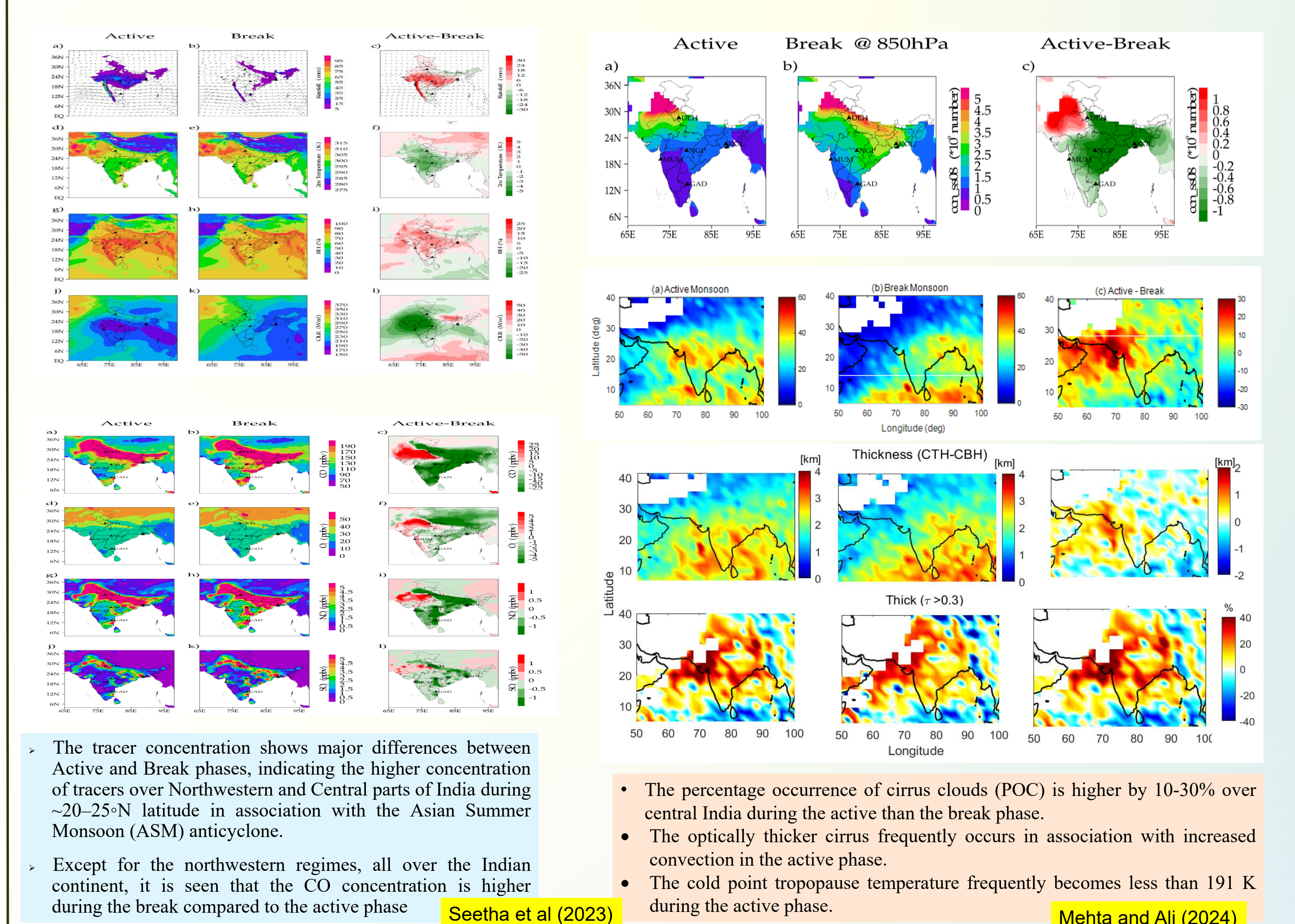
Identification of the ASMA during active and break monsoon phases



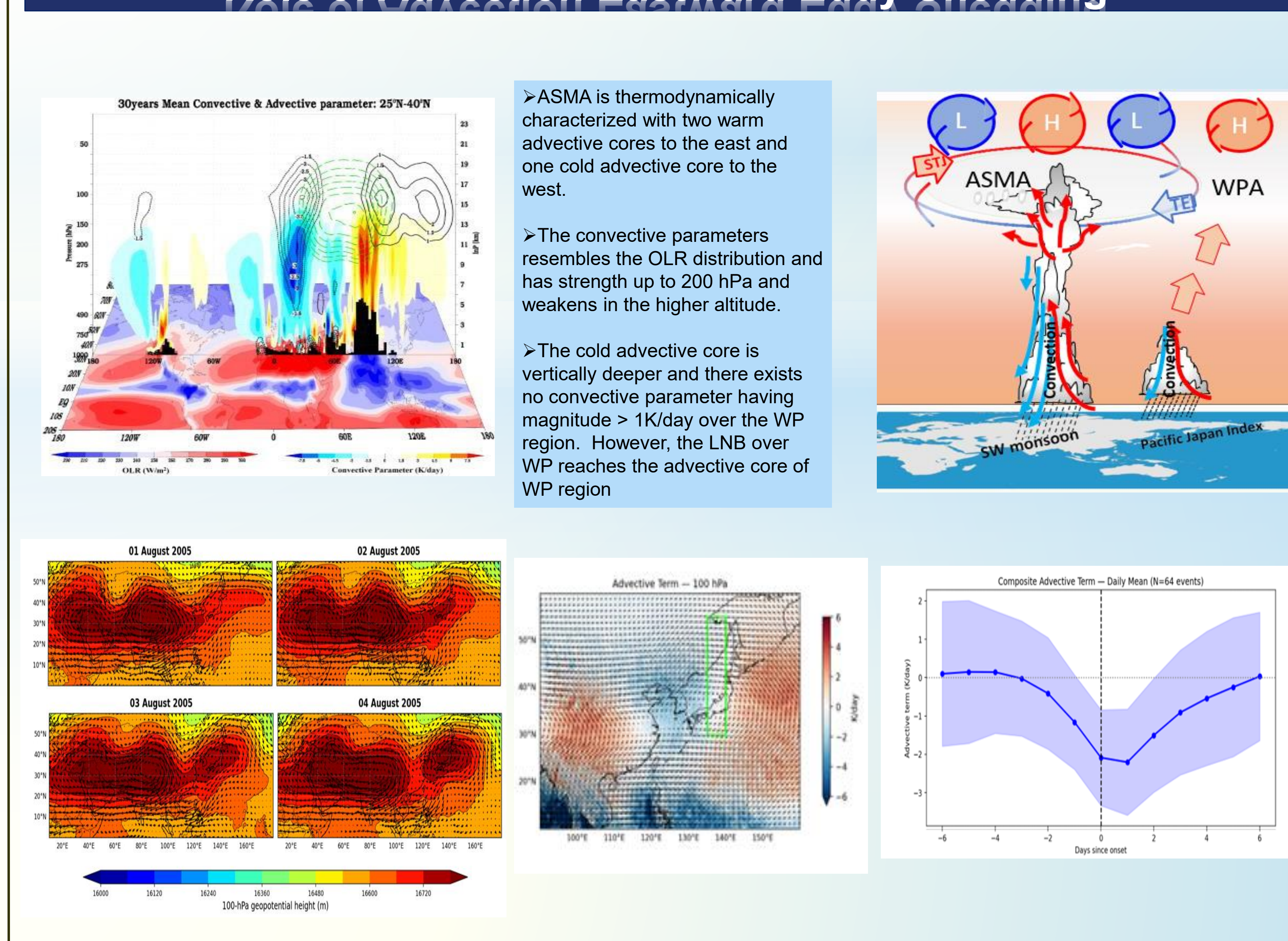
Relative roles of convection and advection on the ASMA



Background meteorology tracers and pollutants, CCN during active and break phases



Role of Advection Eastward Eddy Shedding



Summary

ASMA extent defined using the fixed GPH method is larger than the one defined using proposed methods for 24 out of 30 active phases and 21 out of 27 break phases from July-August 2005-2023. The ASMA is thermodynamically characterized by the warm advection to the east and the cold advection to the west across the altitude and the convection underneath which degrades with altitude. The cold advection over the subsidence region and warm advection over the Indian region is closely related to the convection over the Indian region and vice-versa. All the tracers show higher concentrations over the NW during the active phase. Tracer difference between active and break phases are not only at the surface but even extends to higher altitudes. Percentage occurrence of cirrus cloud (POC) during active and break monsoon phases. • POC is higher by 10–30 % over central India during active than break monsoon phase. • Thicker cirrus frequently occur in association with convection during active phase. • Tropopause temperature frequently becomes <191 K during active phase. Cold Advection plays an important role on eastward eddy shedding o ASMA

Reference

Musaid P. P., **Sanjay Kumar Mehta**^{*}, Susann Tegtmeier, Masatomo Fujiwara, et al (2024). Characteristics of Convection and Advection associated with the Asian Summer Monsoon Anticyclone, Clim Dyn 62, 8929–8945. <https://link.springer.com/article/10.1007/s00382-024-07371-3>

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Seetha C. J., S. K. **Mehta**^{*}, et al (2023). Characteristics of the atmospheric boundary layer during transient monsoon conditions, Theoretical and Applied Climatology, 153, 661–684. <https://doi.org/10.1007/s00704-023-04578-y>