



Supplement of

Aerosol variability over oceans using micro-pulse lidar and photometer: insights from TRANSAMA ship-based campaign

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Section S1: Synoptic scenario

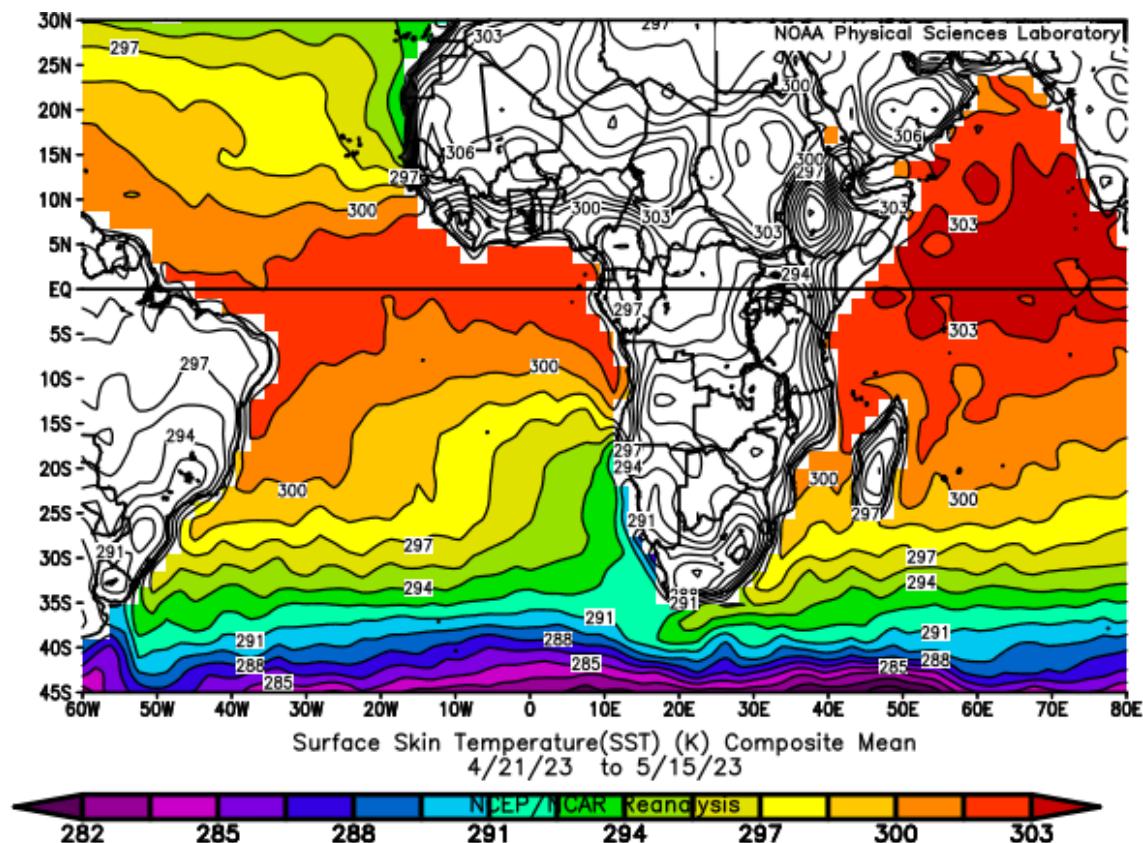


Figure S1. Sea surface temperature map showing the transect (Atlantic and western Indian Oceans) covered during the TRANSAMA campaign. Composite mean for 21 April–15 May 2023. Maps were generated using NOAA/ESRL reanalysis data through Physical Sciences Laboratory imagery tools (<http://psl.noaa.gov/>, last access: May 9 2025).

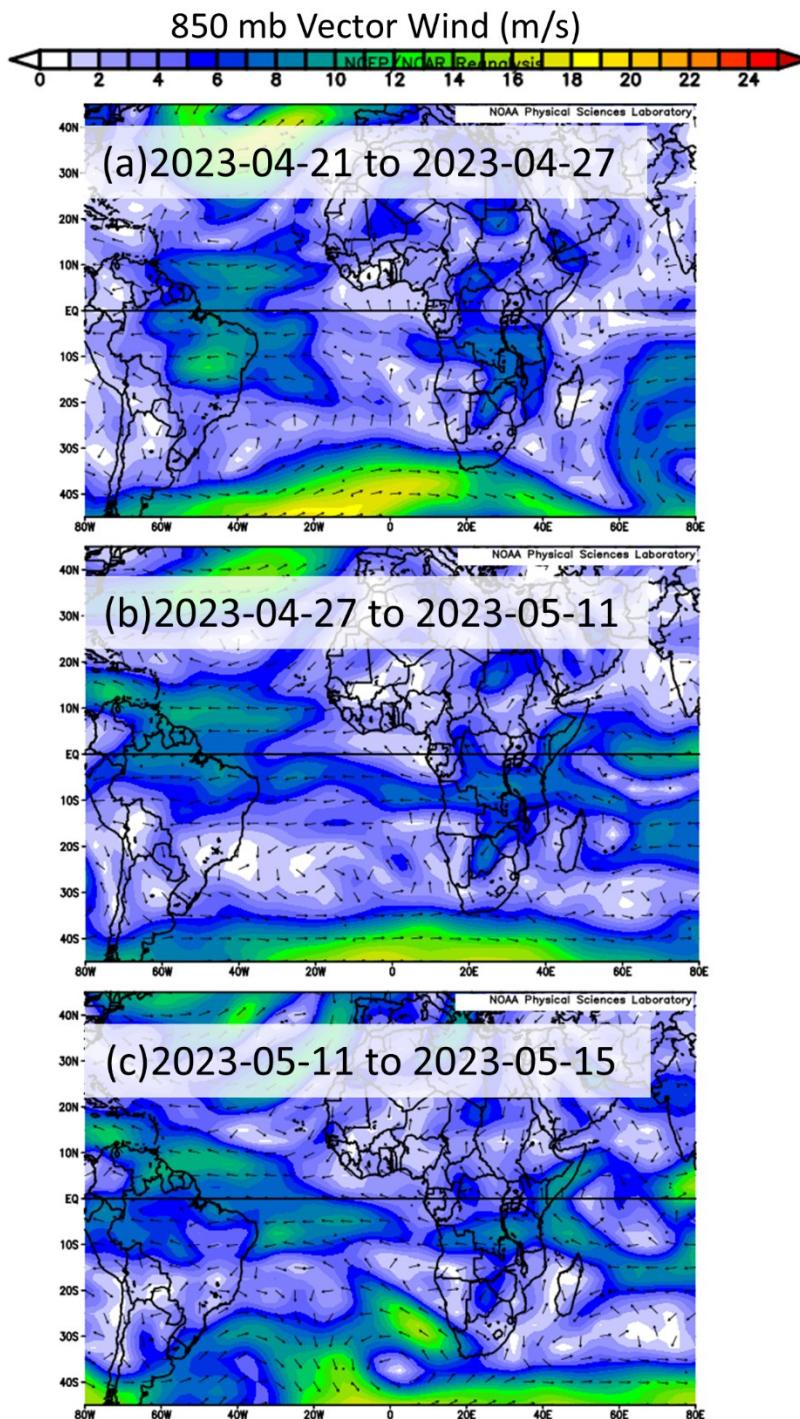


Figure S2. Vector wind maps at 850 hPa showing the transect (Atlantic and western Indian Oceans) covered during the TRANSAMA campaign. Composite mean for (a) 21–27 April 2023, (b) 27 April–11 May 2023 and (c) 11–15 May 2023. Maps were generated using NOAA/ESRL reanalysis data through Physical Sciences Laboratory imagery tools (<http://psl.noaa.gov/>, last access: May 9 2025).

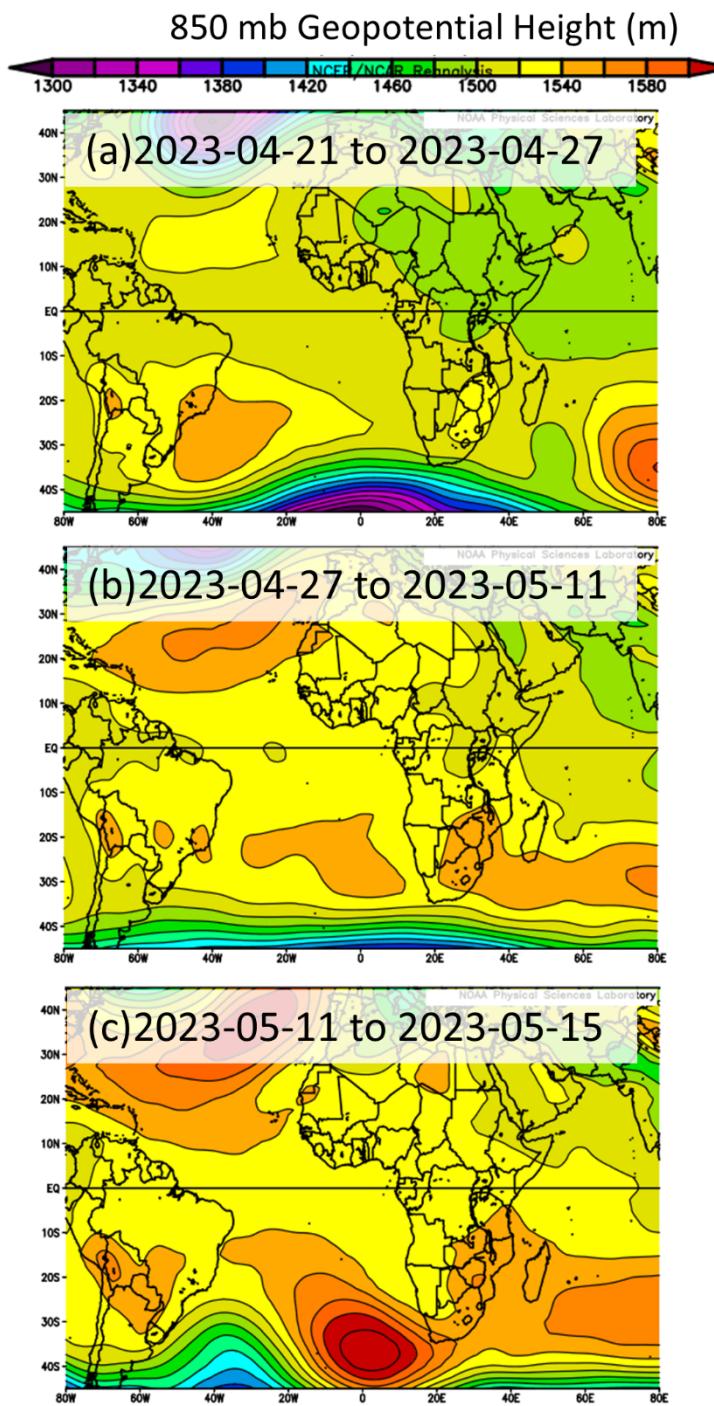


Figure S3. Geopotential Height maps at 850 hPa showing the transect (Atlantic and western Indian Oceans) covered during the TRANSAMA campaign. Composite mean for (a) 21–27 April 2023, (b) 27 April–11 May 2023 and (c) 11–15 May 2023. Maps were generated using NOAA/ESRL reanalysis data through Physical Sciences Laboratory imagery tools (<http://psl.noaa.gov/>, last access: May 9 2025).

Section S2: CALIOP lidar observations from the CALIPSO satellite

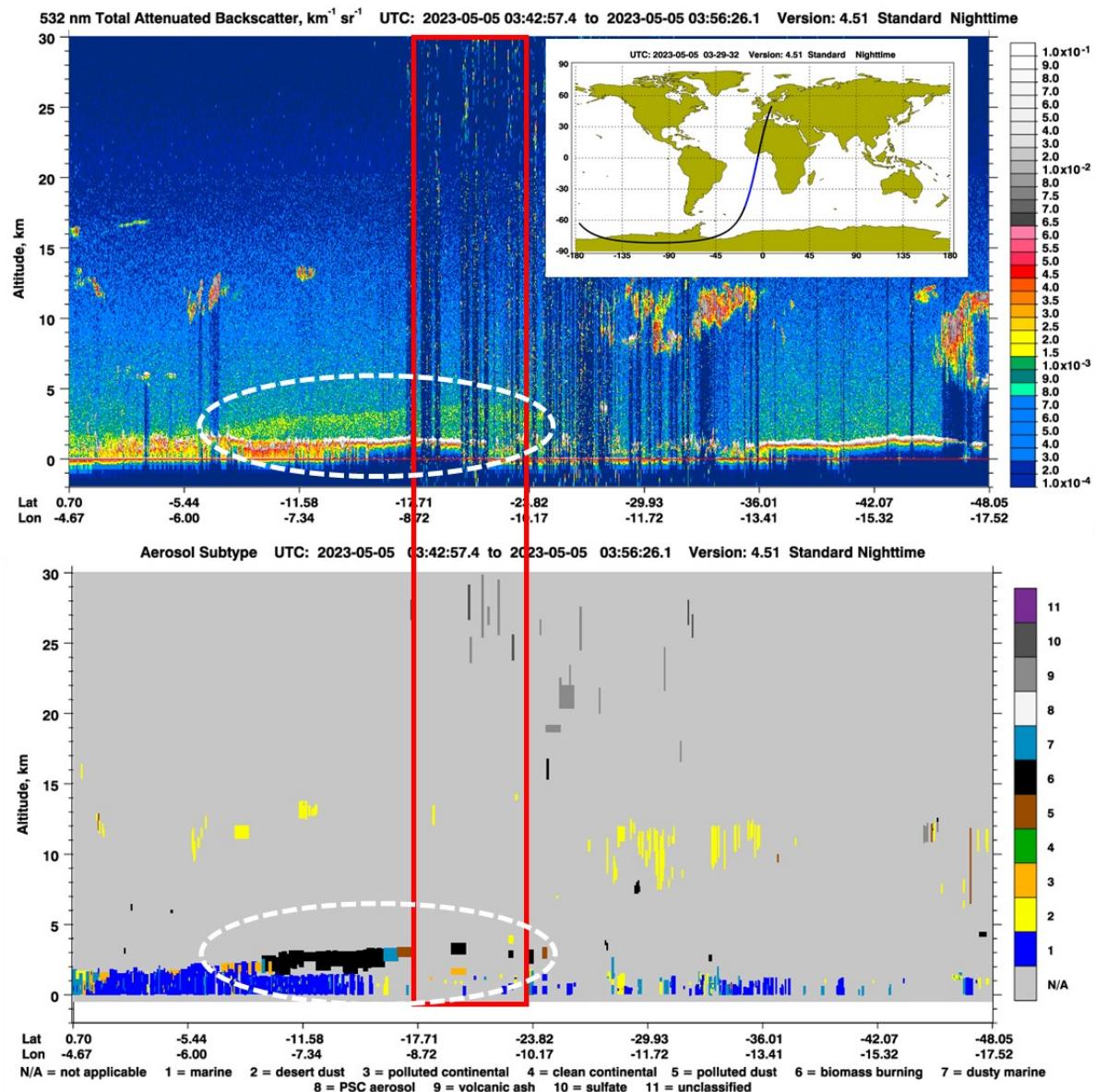


Figure S4. Vertical distribution of total attenuated Backscatter at 532 nm and aerosol subtype mask derived from CALIOP (Cloud–Aerosol Lidar with Orthogonal Polarization) lidar aboard CALIPSO (Cloud–Aerosol Lidar and Infrared Pathfinder Satellite Observations). Red boxes indicate the profiles closest to the Marion Dufresne trajectory on 5 May 2023, and white dashed line highlights the presence of aerosol layer classified as biomass burning aerosols. CALIOP profile products (version 4.21) were obtained from the NASA Langley Atmospheric Science Data Center (ASDC) (<https://www-calipso.larc.nasa.gov/>, last access: 21 November 2025).