

Supporting Information

A multi-site climatology of aerosol mixing state from hygroscopicity measurements

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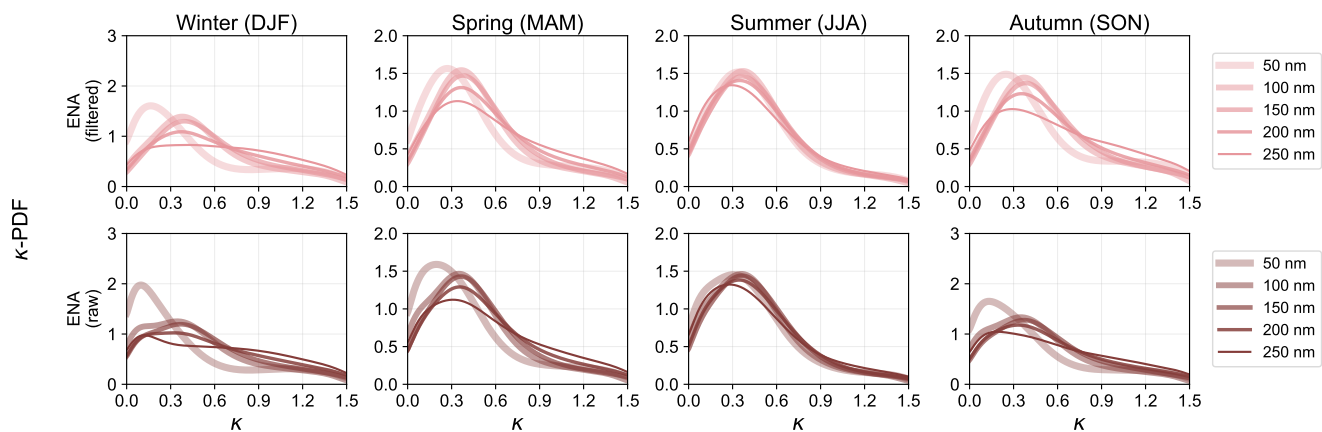


Figure S1: Comparison of seasonal κ -PDFs at the Eastern North Atlantic (ENA) site with (top row) and without (bottom row) the local pollution filter applied. Line opacity and thickness vary with particle diameter, with smaller particles shown as thicker and more opaque lines.

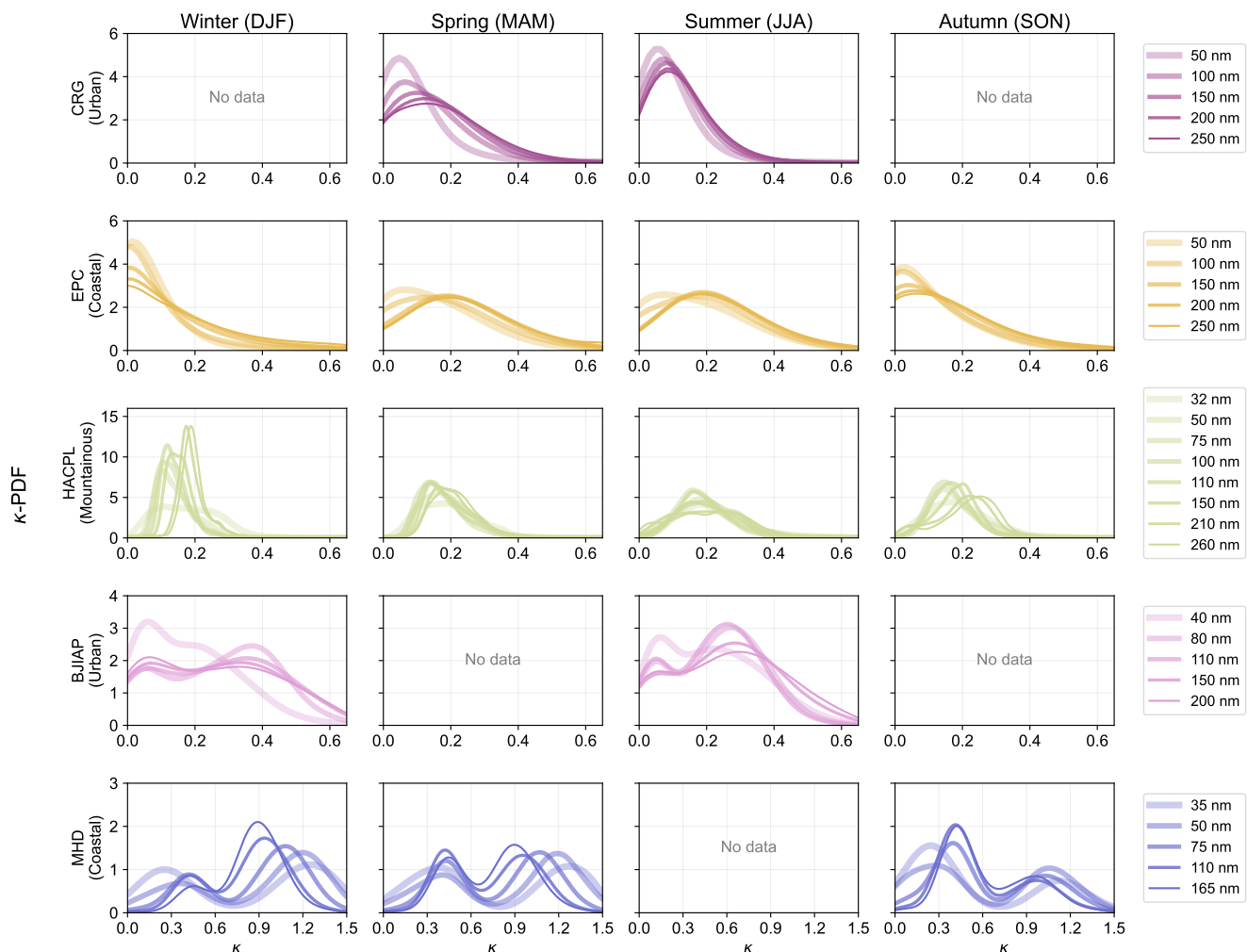


Figure S2: Seasonal κ -PDFs for the remaining five sites: Baltimore, MD (CRG, urban), La Jolla, CA (EPC, coastal urban), High Altitude Cloud Physics Laboratory, India (HACPL, mountainous), Beijing Institute of Atmospheric Physics, China (BJIAP, urban), and Mace Head Research Station, Ireland (MHD, coastal). Each panel shows the mean κ -PDF for a given season and particle size, averaged across all available days within the measurement period. Colors indicate site, while line opacity and thickness vary with particle diameter, with smaller particles shown as thicker and more opaque lines. Panels labeled “No data” indicate seasons with insufficient measurements due to campaign duration or data availability.

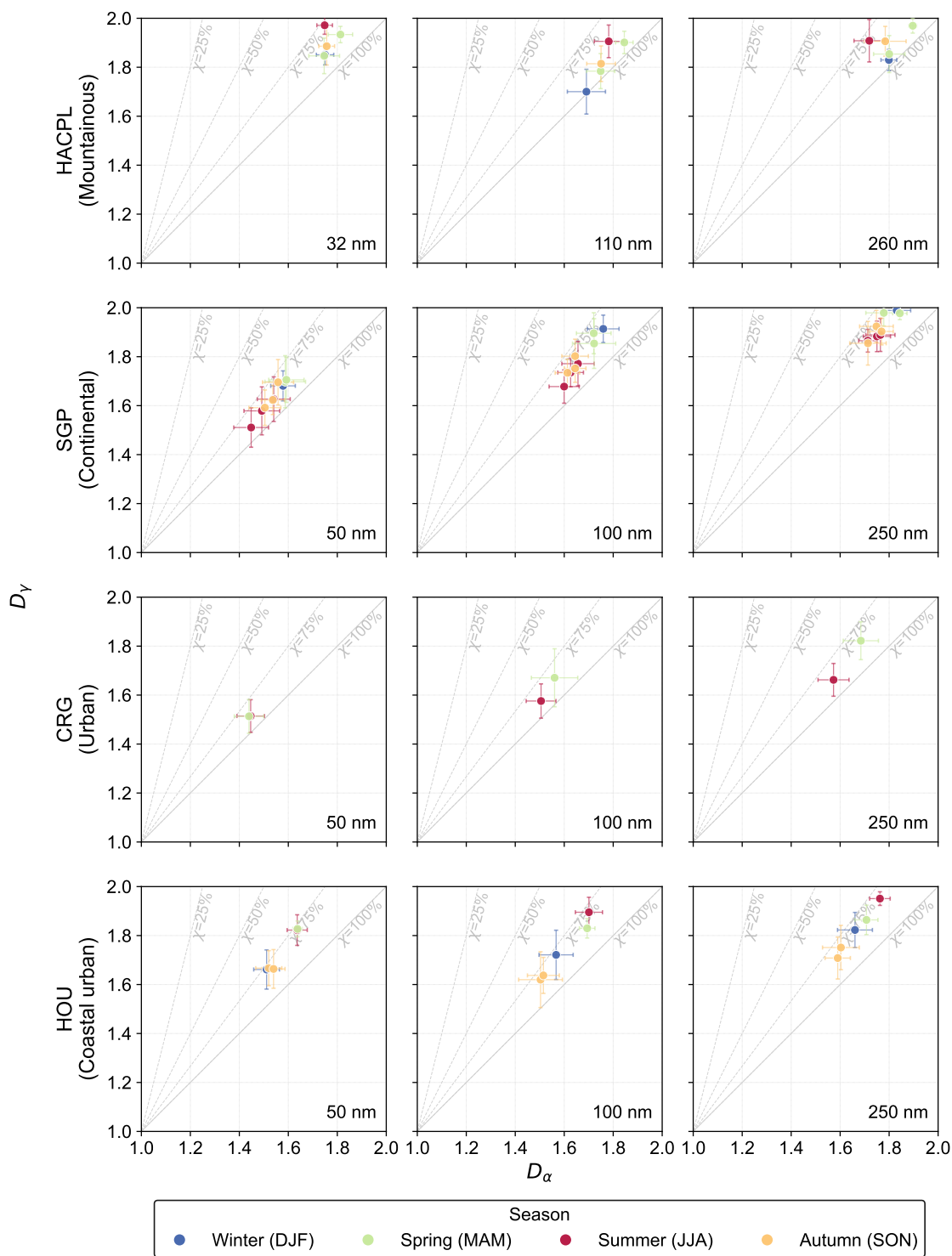


Figure S3: Per-particle diversity (D_α) and bulk population diversity (D_γ) for HACPL (mountainous), SGP (continental), CRG (urban), and HOU (coastal urban) at three representative particle sizes per site. Each point represents the seasonal median and bars span the interquartile range (IQR). Dashed lines denote aerosol mixing state index values of $\chi = 25\%$, 50% , 75% , and 100% . Colors represent seasons as indicated in the legend.

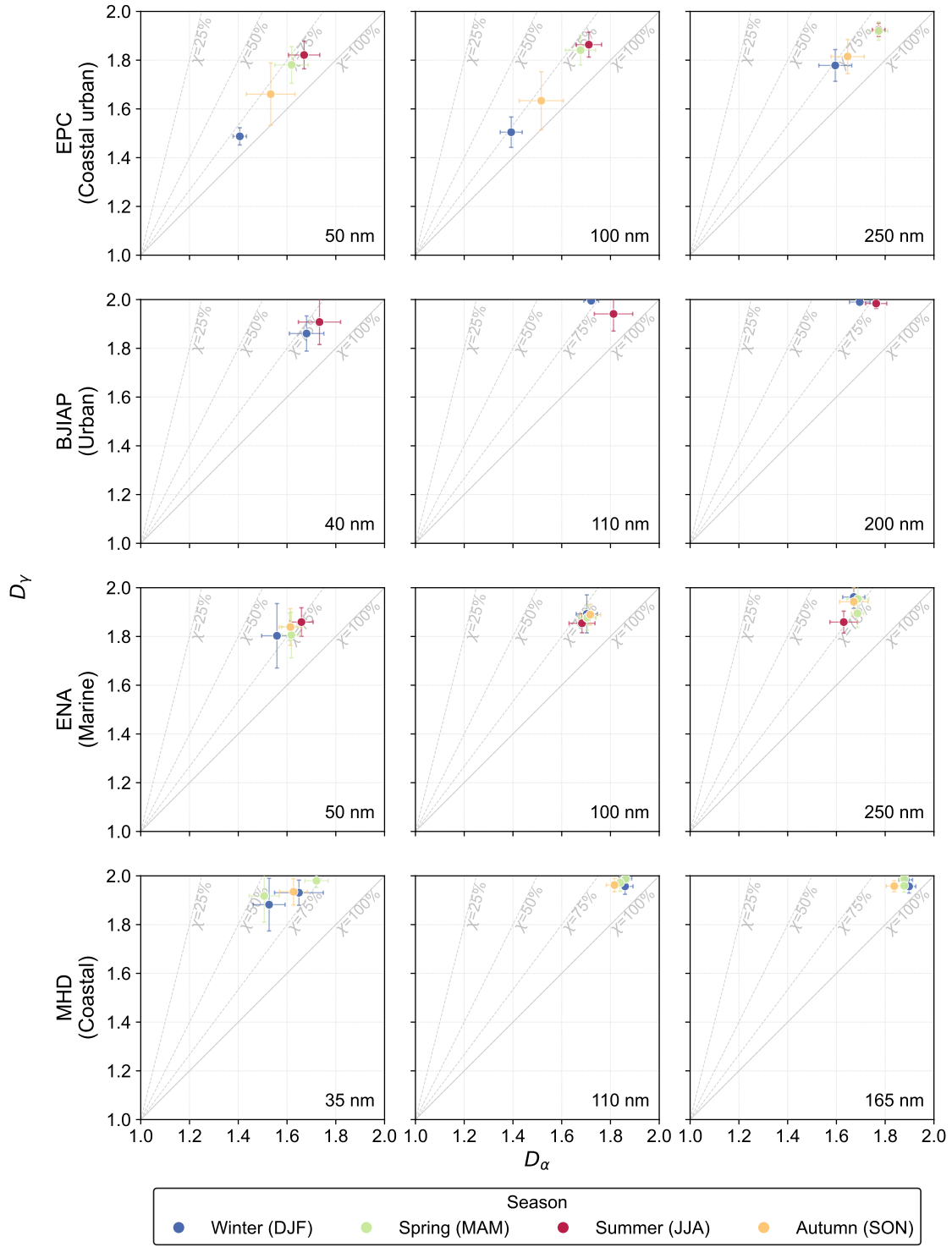


Figure S4: Same figure as S3 but for EPC (coastal urban), BJIAP (urban), ENA (marine), and MHD (coastal).