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Supplement of

Coupling aerosols to (cirrus) clouds in the global EMAC-MADE3 aerosol–climate model

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In this Supplement additional figures are shown, which complement the evaluation of EMAC-MADE3 presented in Sect. 4 of the paper. For details about each figure, see Kaiser et al. (2019, hereafter K19) and the corresponding sections of the paper as mentioned in the figure captions.

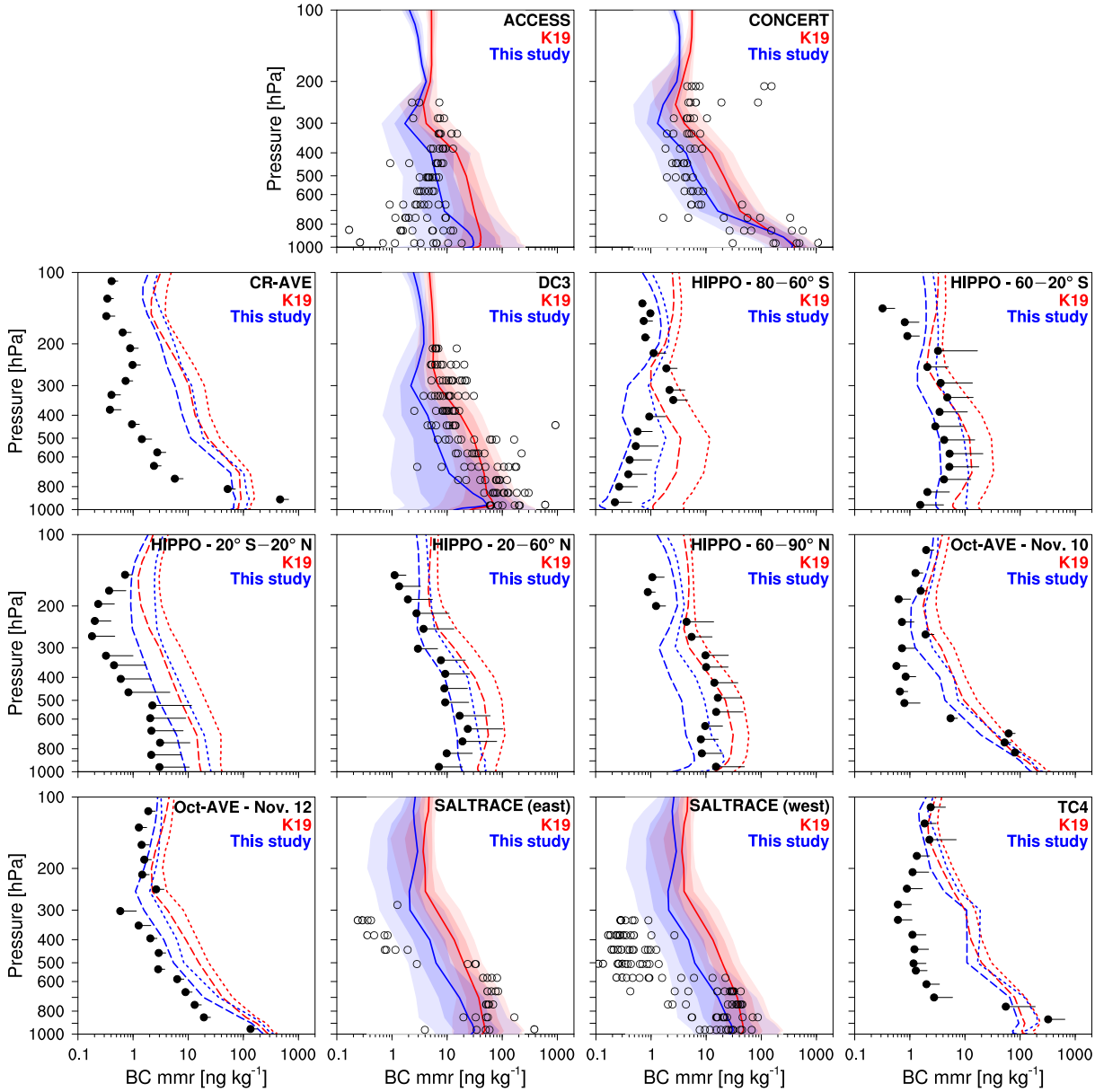

Figure S1: Black carbon mass mixing ratios (mmrs) as simulated in K19 (red) and in this study (blue) compared with measurements during various field campaigns (black). Dashed lines and filled circles represent mean values; dotted linesand whiskers represent standard deviations, which are only shown in the direction of larger values for clarity. Solid lines stand for median values. Light and dark shadings indicate the 10th to 90th, and 25th to 75th percentiles, respectively. Hollow circles are the median values of individual flights. Descriptions of the campaigns are provided in K19. Note that the vertical axis of the left plot in each row applies to the other plots of that row as well, and the horizontal axes of the plots in the lowermost row also apply to the plots in the other rows.

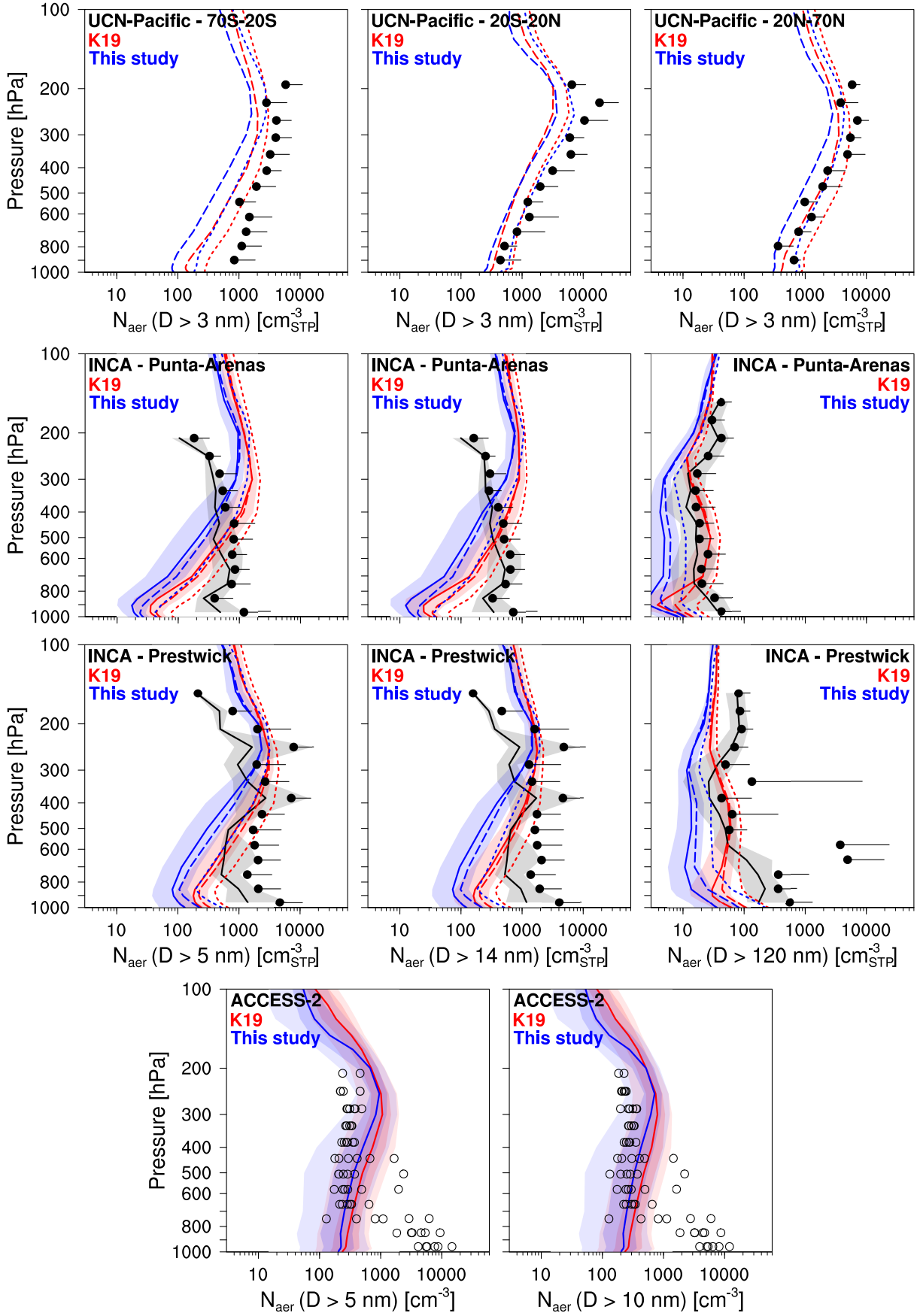

Figure S2: Same as Fig. S1 but for aerosol particle number concentrations with various cutoff diameters.

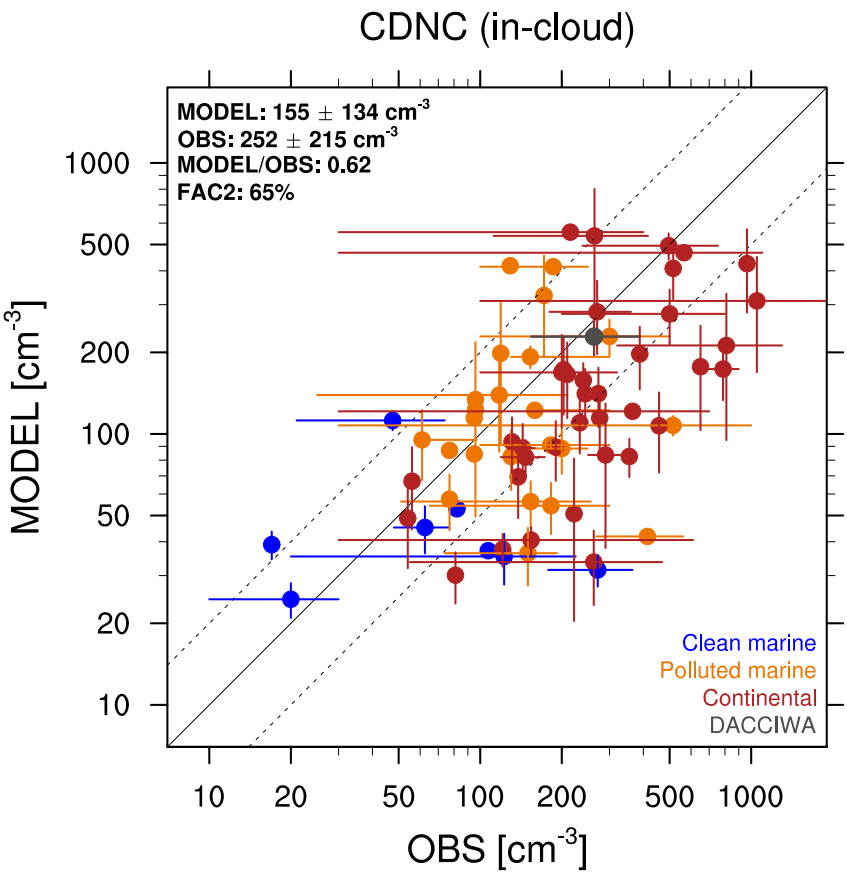

Figure S3: As in Fig. 3 in the paper, but using a different method for calculating supersaturation in liquid clouds. See Sect. 4.3 in the paper for details.

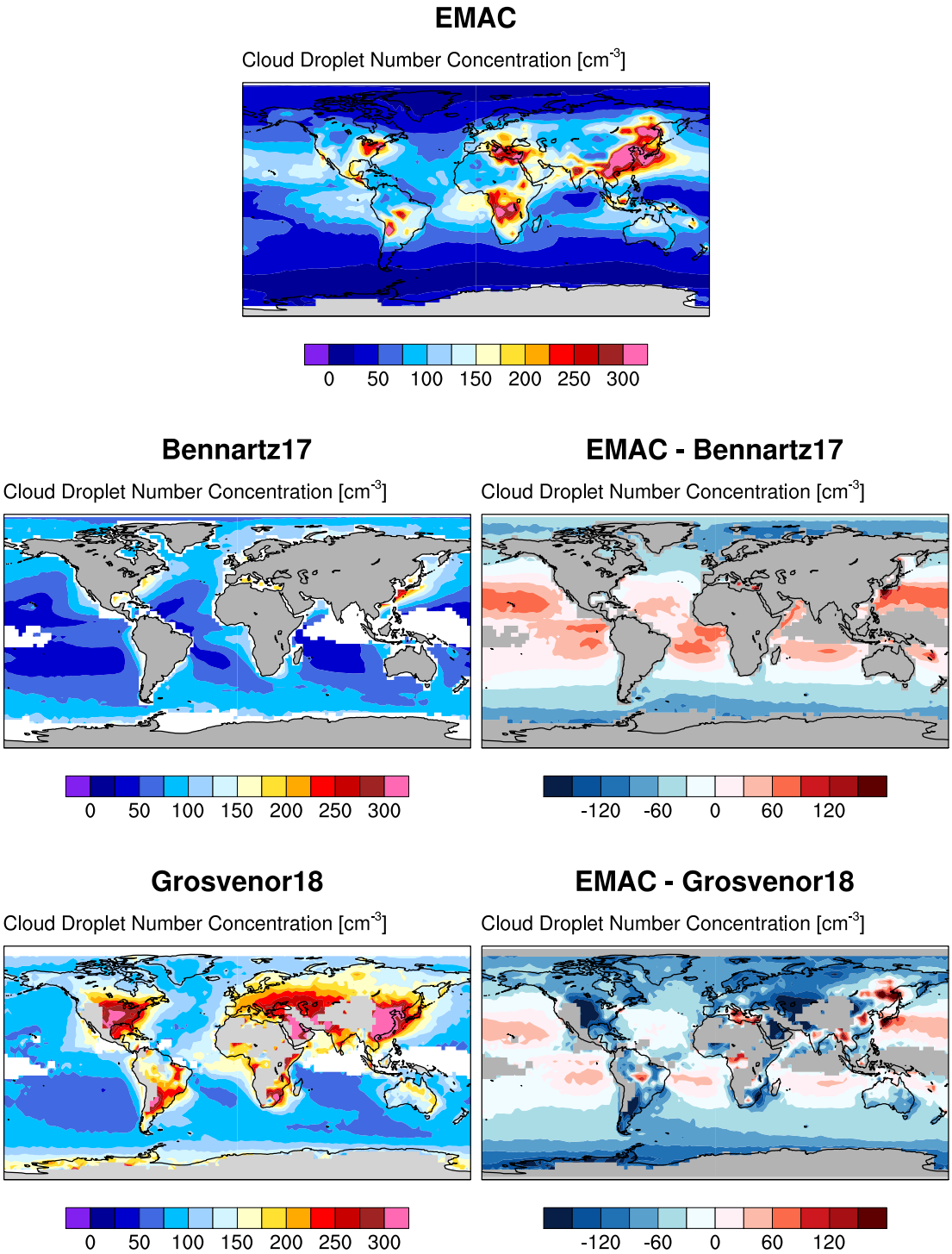

Figure S4: As in Fig. 4 in the paper, but using a different method for calculating supersaturation in liquid clouds. See Sect. 4.3 in the paper for details.