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Observationally constrained analysis on the distribution of fine- and coarse-mode nitrate in global models

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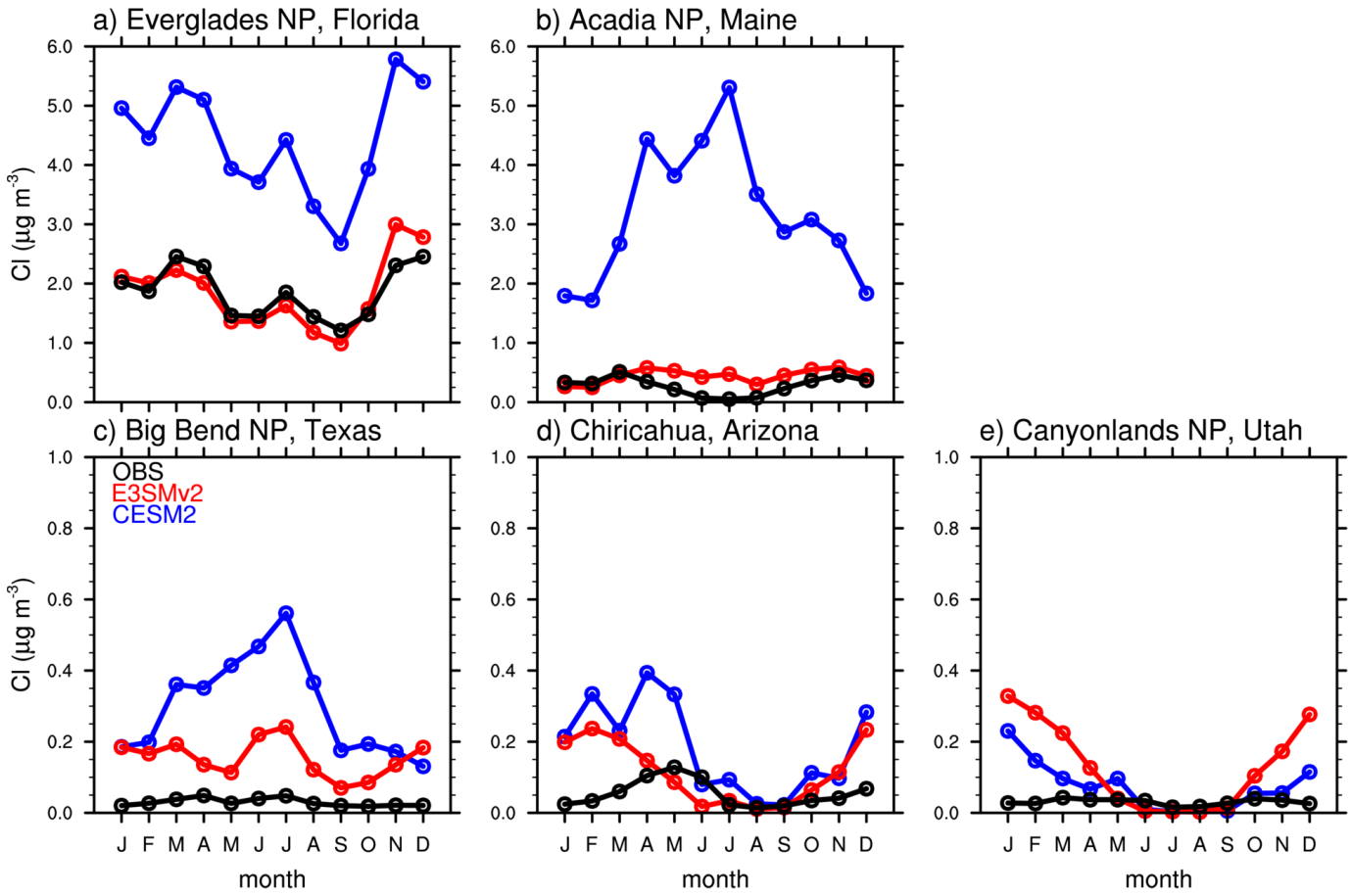


Figure S1. Same as Figure 7 but for chlorine surface concentrations (μg m^{-3}). Observations are not available at Virgin Island.

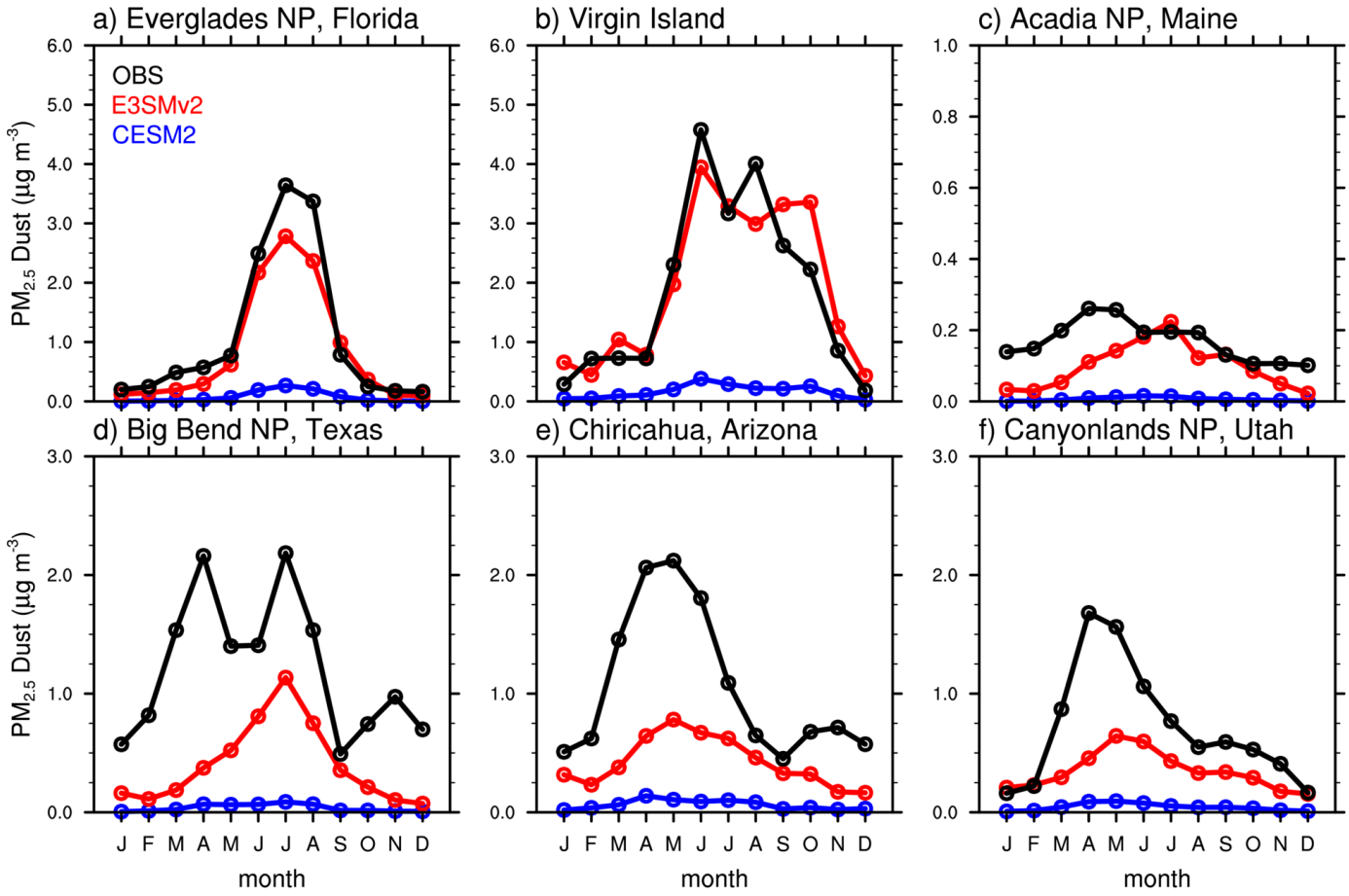


Figure S2. Same as Figure 7 but for $PM_{2.5}$ dust surface concentrations (µg m^{-3}).

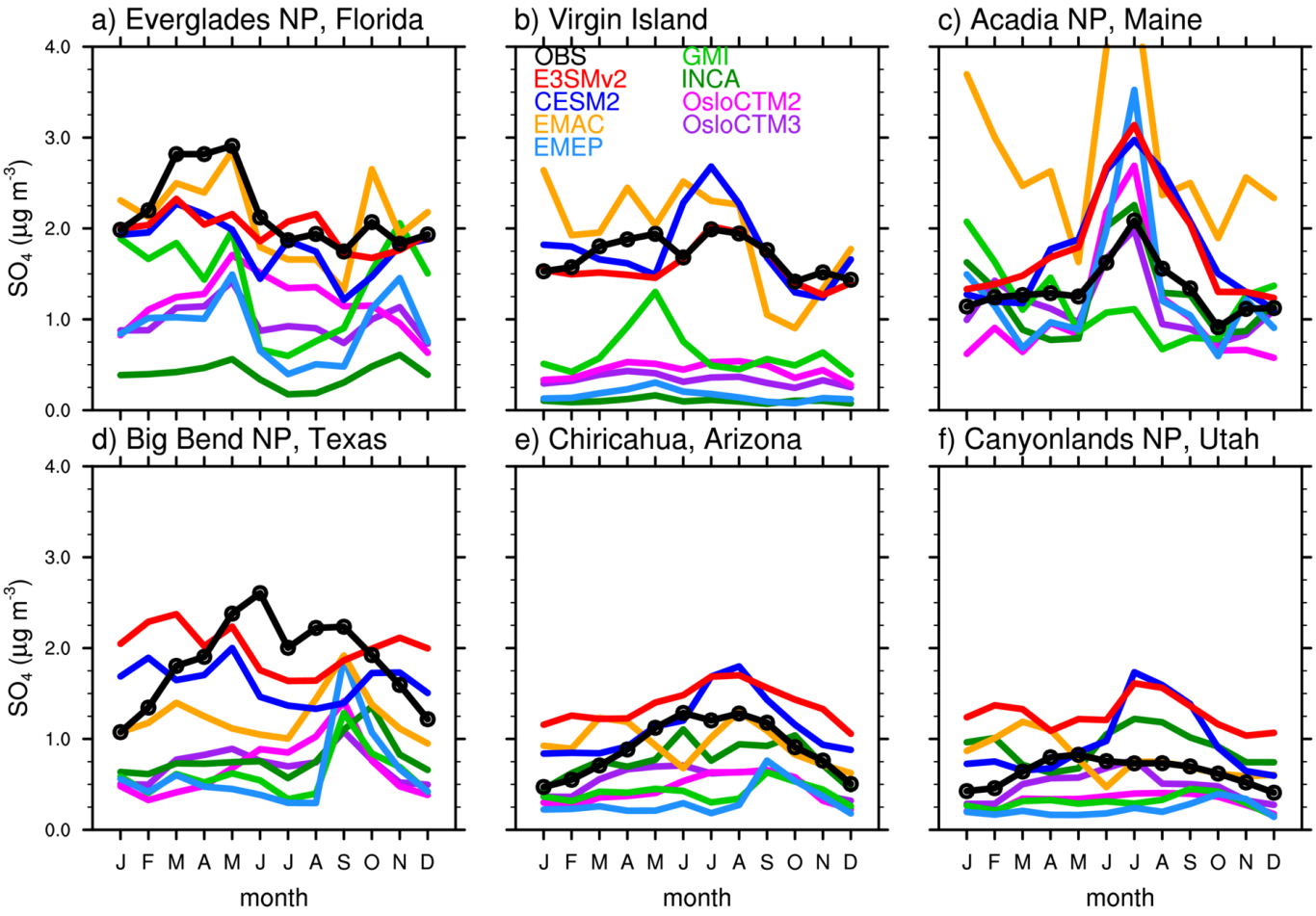
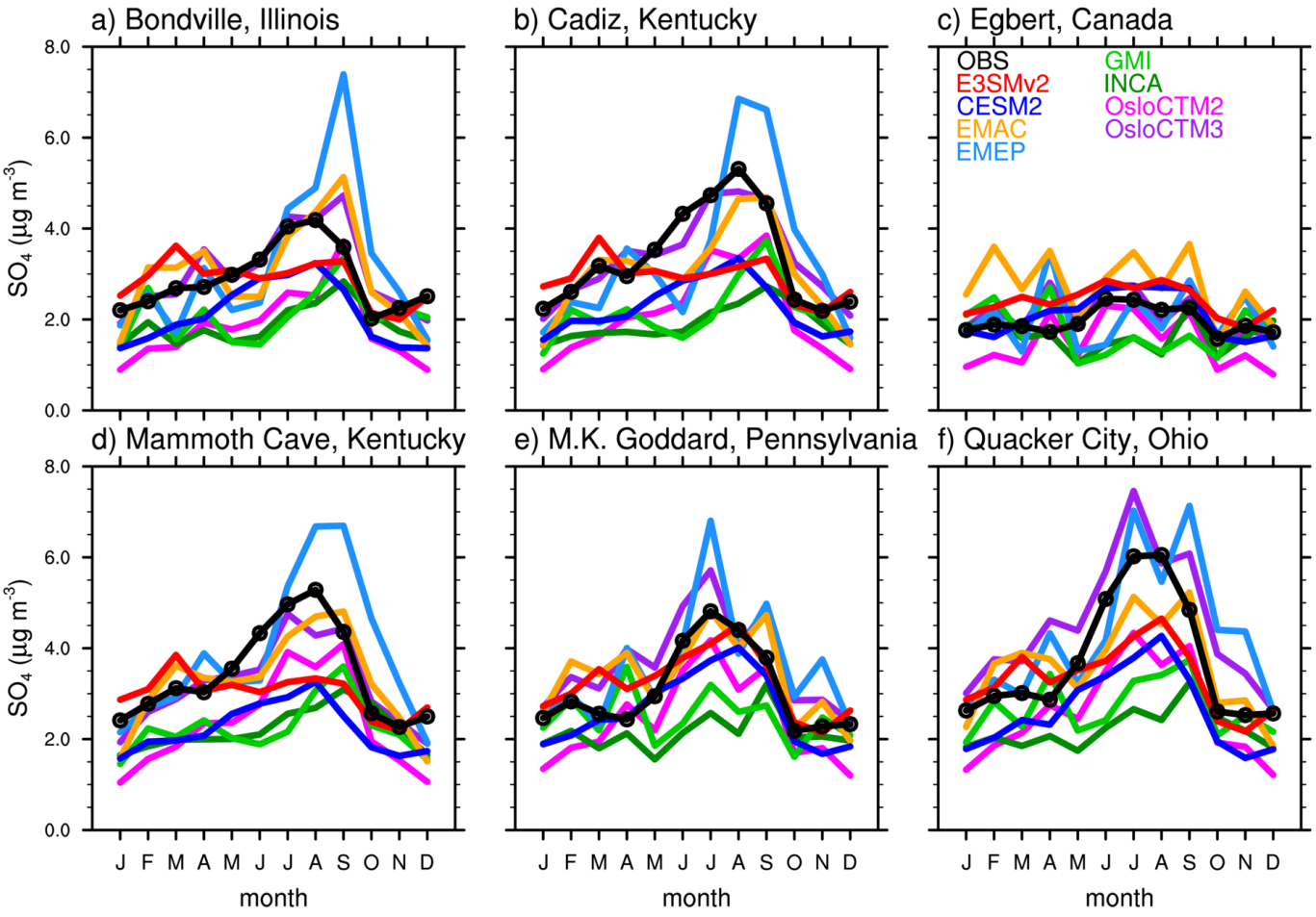


Figure S3. Same as Figure 7 but for sulfate surface concentrations (µg m^{-3}).



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59 **Figure S4.** Same as Figure 8 but for sulfate surface concentrations (µg m^{-3}).

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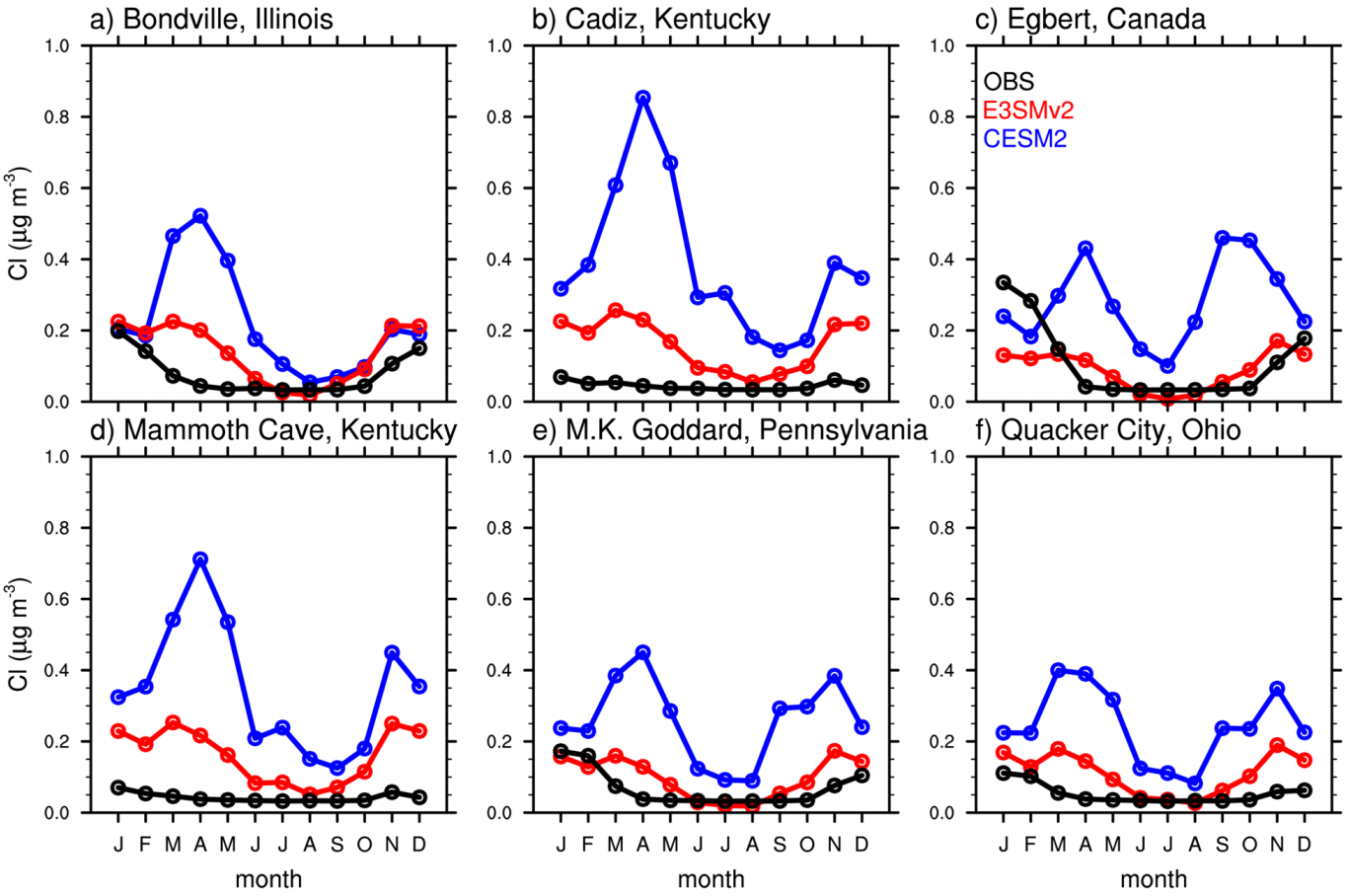

Figure S5. Same as Figure 8 but for chlorine surface concentrations (µg m^{-3}).

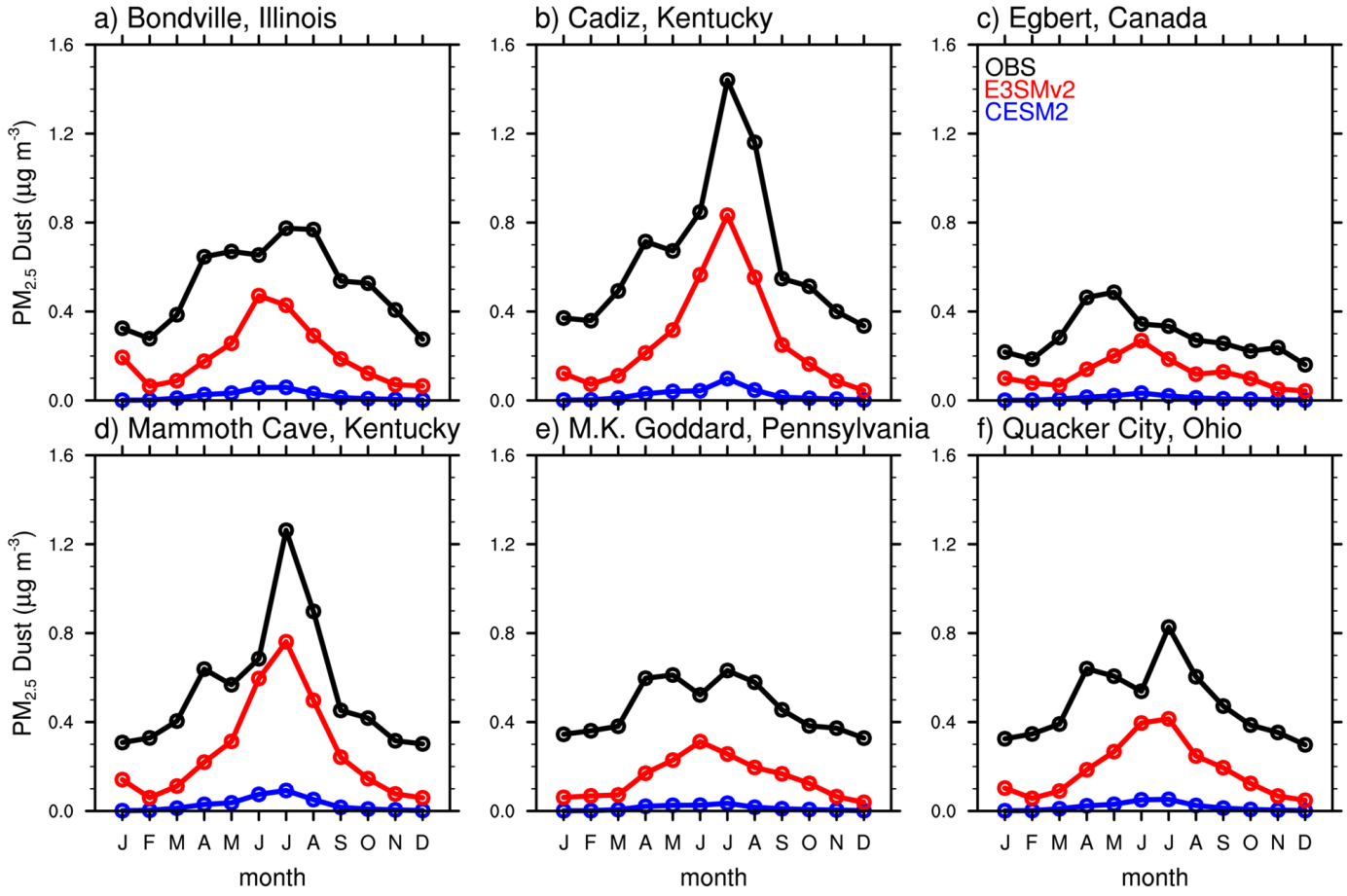

Figure S6. Same as Figure 8 but for $PM_{2.5}$ dust surface concentrations (µg m^{-3}).

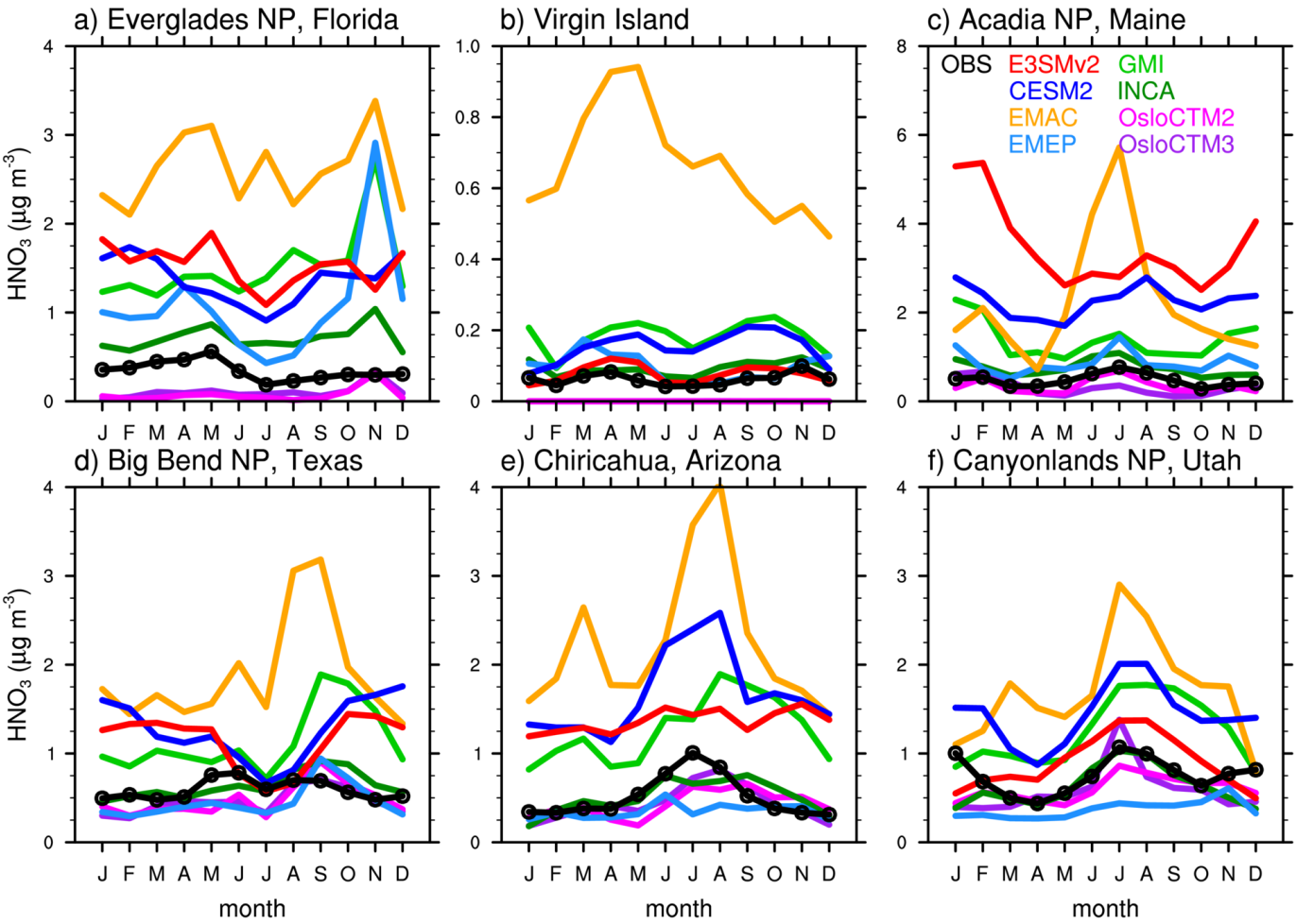

Figure S7. Same as Figure 7 but for HNO_3 surface concentrations (µg m^{-3}).

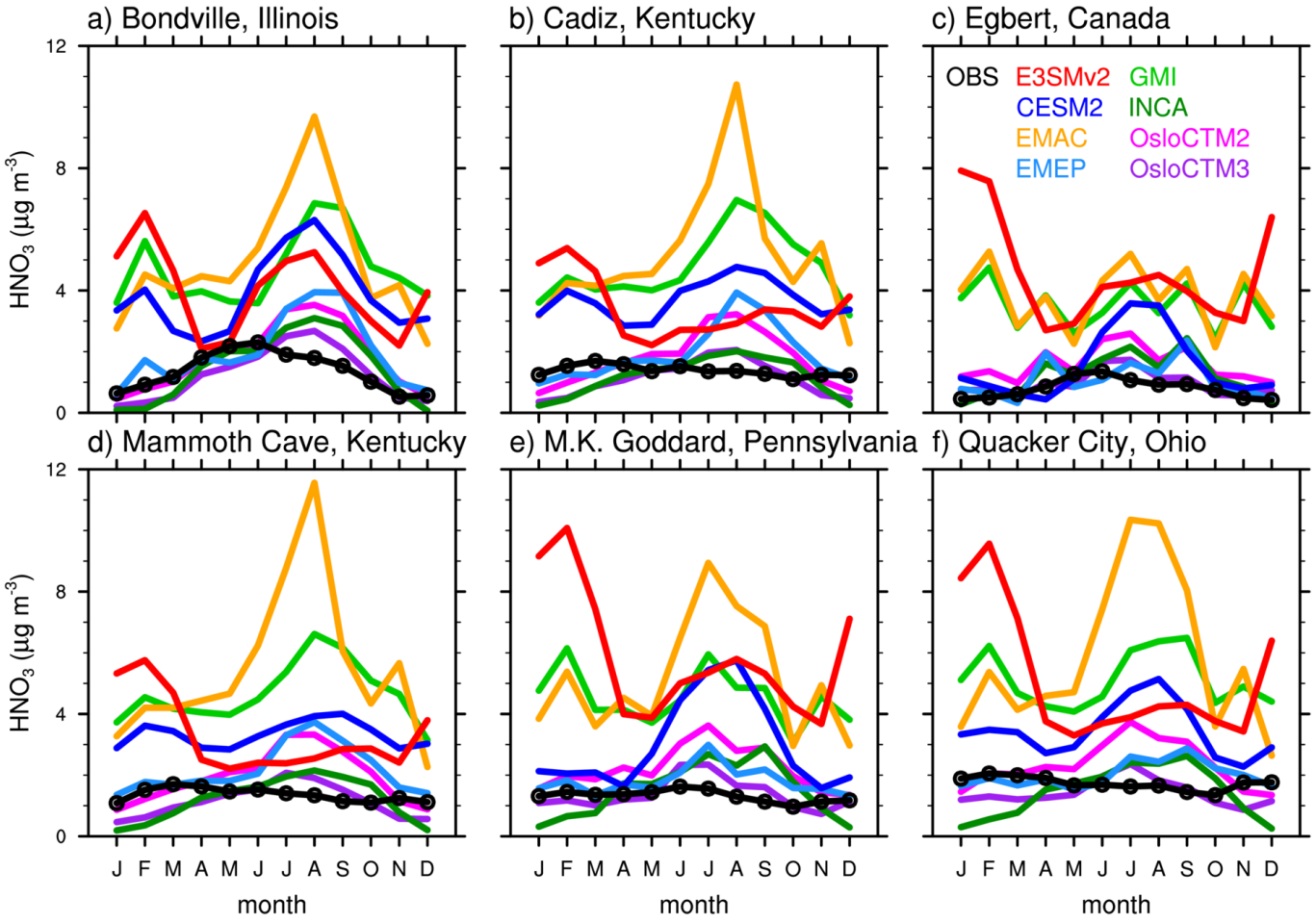

Figure S8. Same as Figure 8 but for HNO_3 surface concentrations (µg m^{-3}).

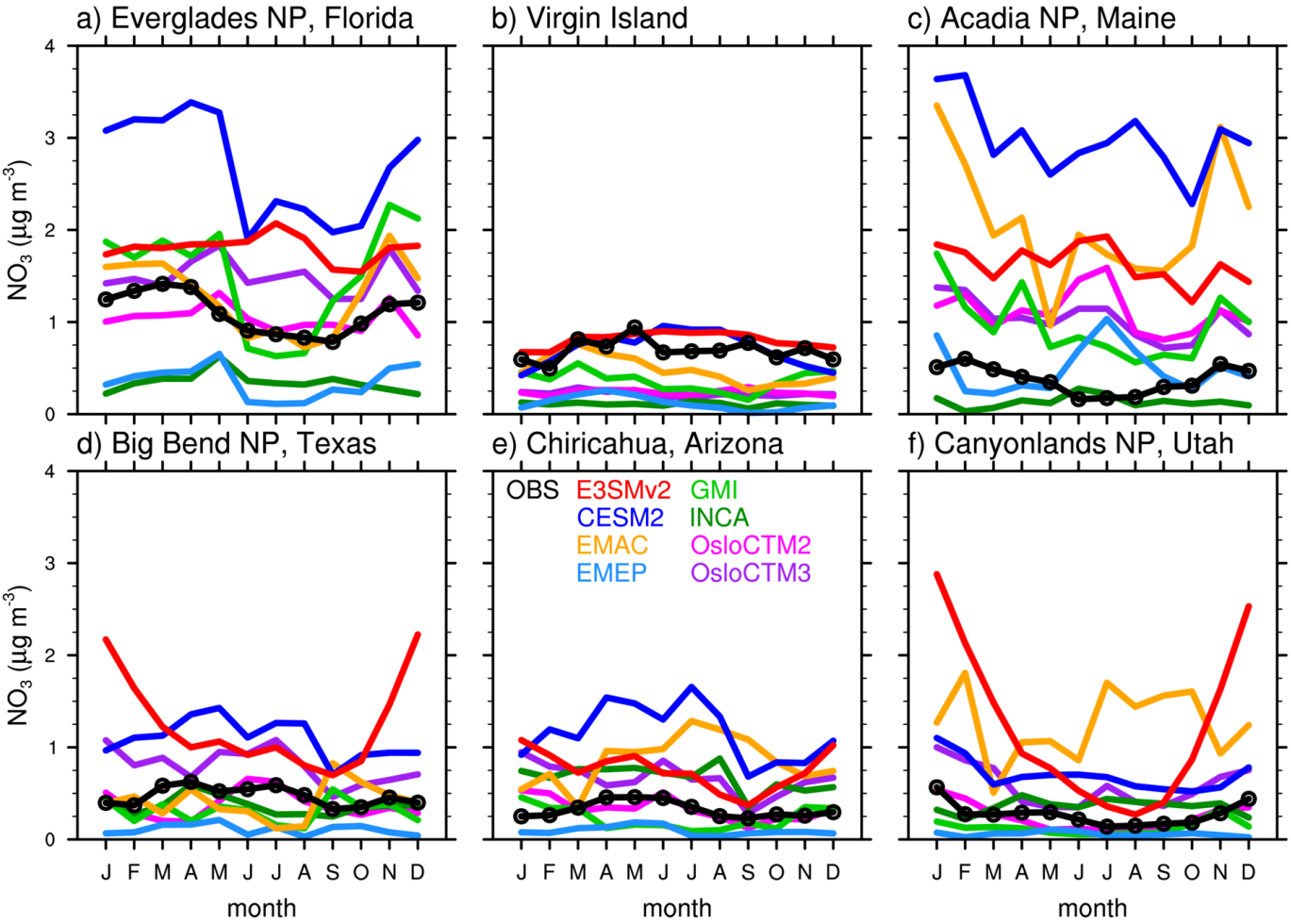

Figure S9. Same as Figure 7 but for nitrate surface concentrations (µg m^{-3}).

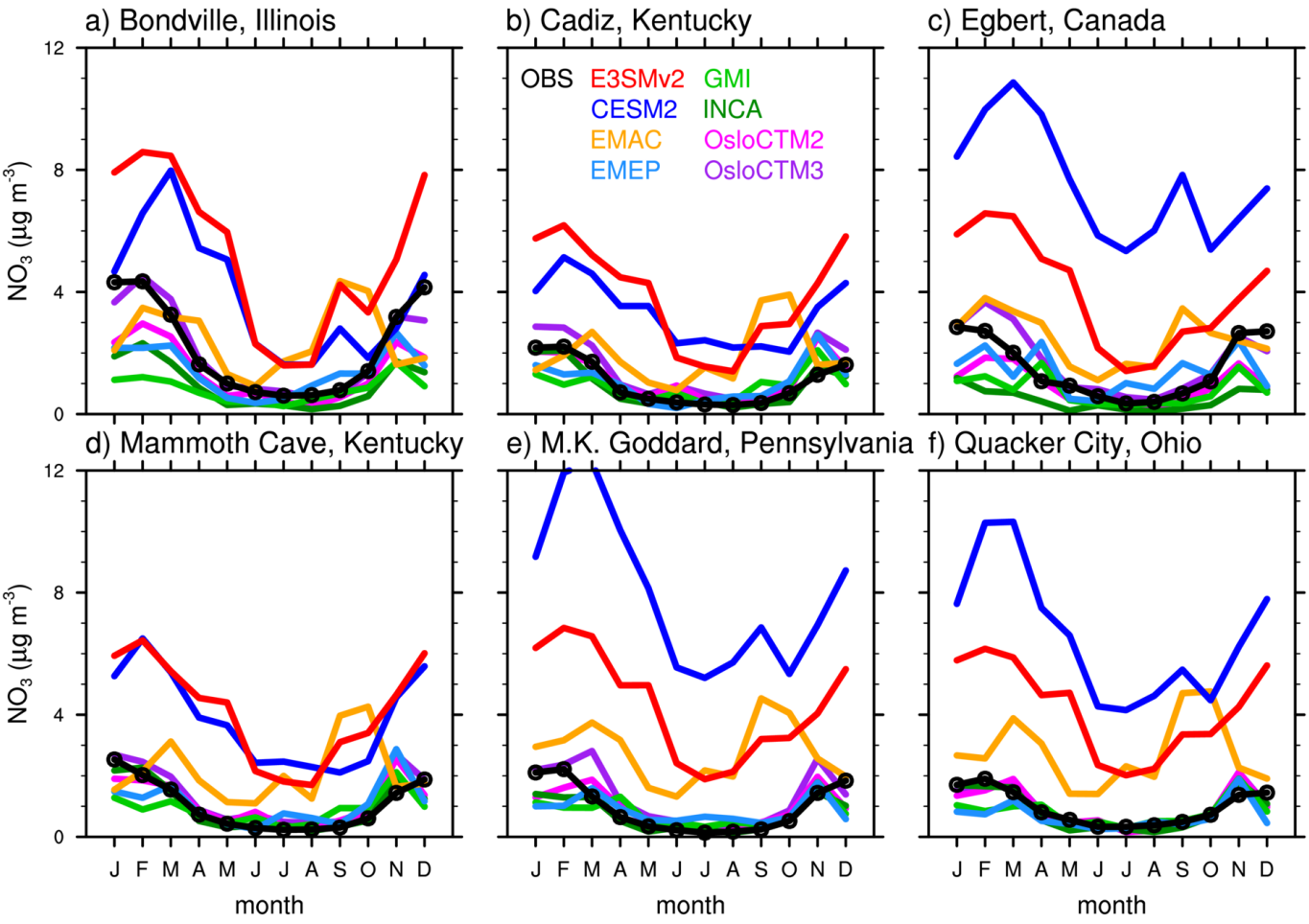

Figure S10. Same as Figure 8 but for nitrate surface concentrations (µg m^{-3}).

Table S1. Global annual mean of dust emission, dust burden, sea salt emission, and sea salt burden.

Model	Dust emission (Tg a^{-1})	Dust burden (Tg)	Sea salt emission (Tg a^{-1})	Sea salt burden (Tg)
E3SMv2	4619	28.2	2148	4.74
CESM2	2018	24.8	2987	6.88
GMI	1960	16.9	4600	4.57
INCA	1075	15.6	24892	22.5
OsloCTM2	N/A	17.6	N/A	6.12
OsloCTM3	N/A	22.0	N/A	5.92