



**Fig. S1.** Simulated versus measured dust deposition ( $\text{mg m}^{-2} \text{yr}^{-1}$ ) and surface dust concentration ( $\mu\text{g m}^{-3}$ ). Measurements are described in Sect. 2.2.1. Deposition: red: Ginoux et al. (2001), black: Tegen et al. (2002), green: Mahowald et al. (2009); Concentration: blue: Stier et al. (2005), magenta: Mahowald et al. (2009). The bold solid line indicates the 1:1 ratio, thin solid lines the 1:2 and 2:1 ratios, and dashed lines the 1:10 and 10:1 ratios.