



Supplementary Figure S1. Representative scanning electron microscope (SEM) images. Left panels show whole images, right ones show enlarged images. $< 32 \mu\text{m}$ images show abundant biogenic detrital particles such as diatom frustules, coccoliths, which occur as aggregates with OM. Similarly, we can find this kind of aggregation in $32-63 \mu\text{m}$ image. In contrast, the $63-125 \mu\text{m}$, $125-250 \mu\text{m}$, $250-500 \mu\text{m}$ images show isolated particles. Among, we can find that diagenetically modified association. Grain size fractions were analyzed for SEM image at ETH.