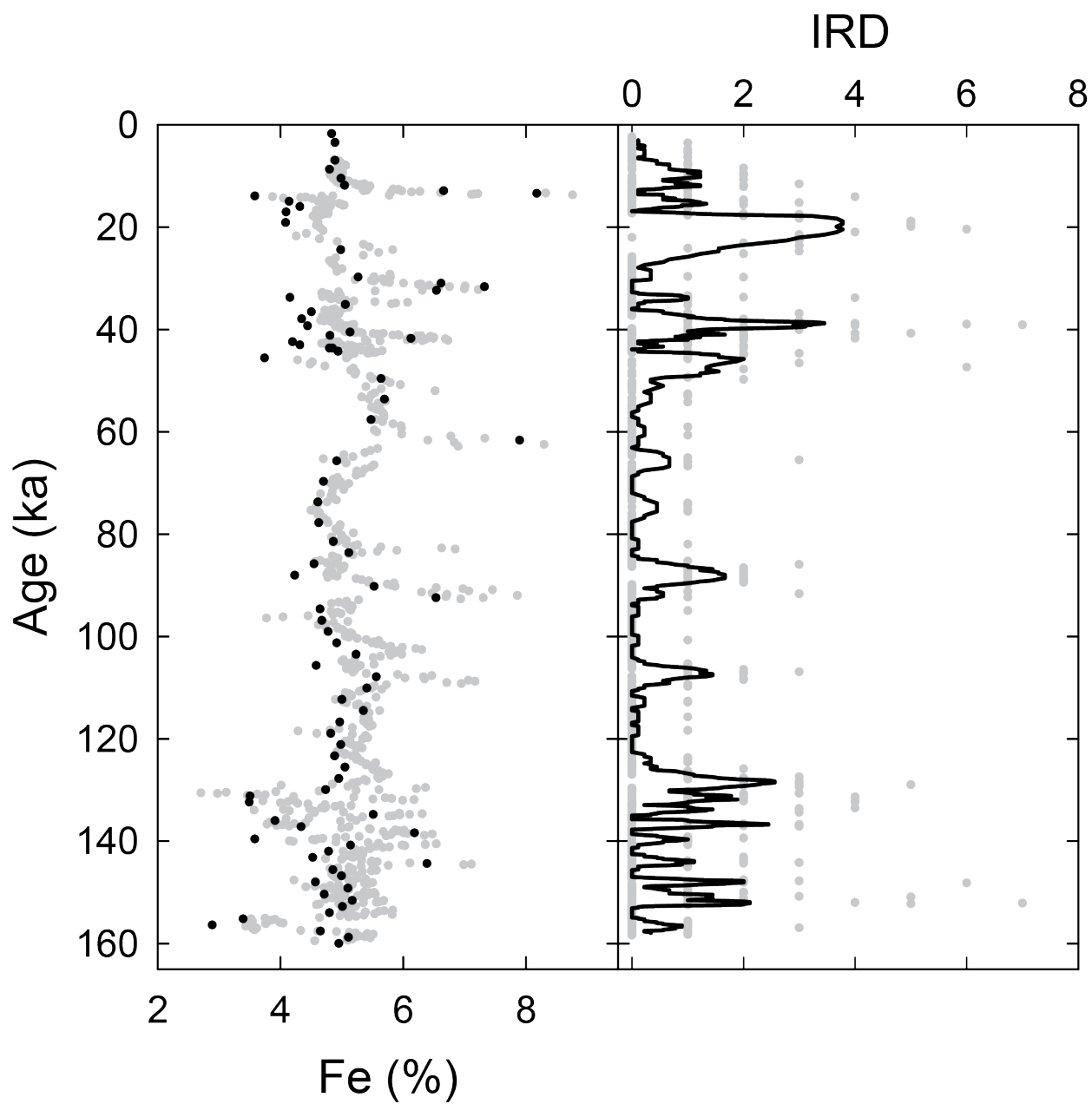
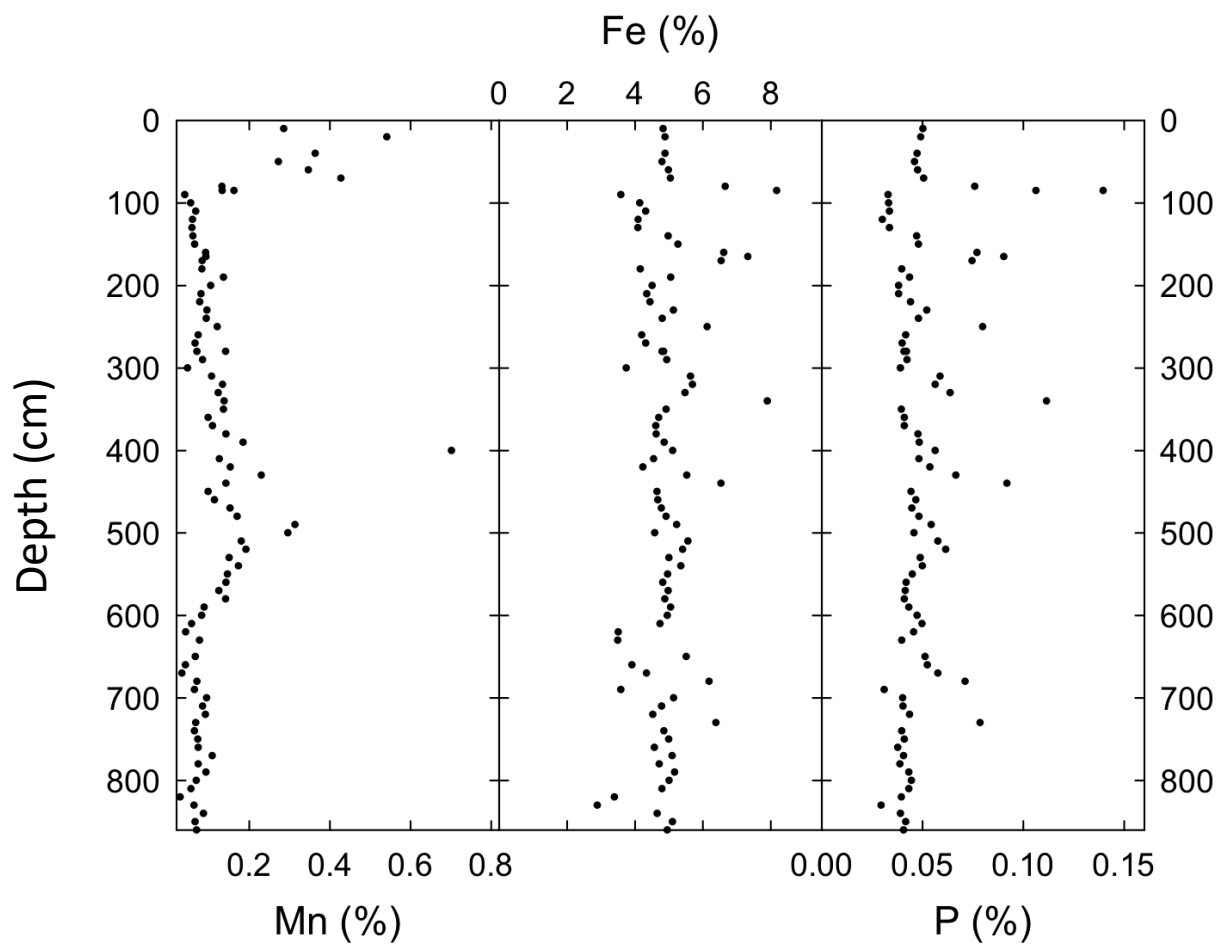
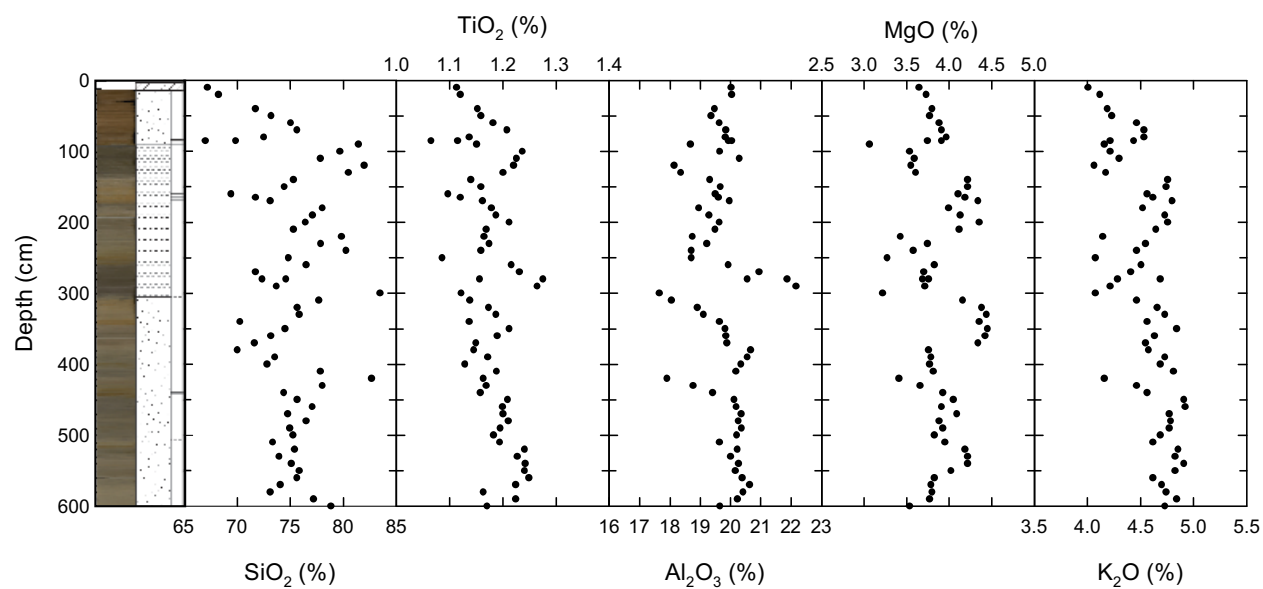




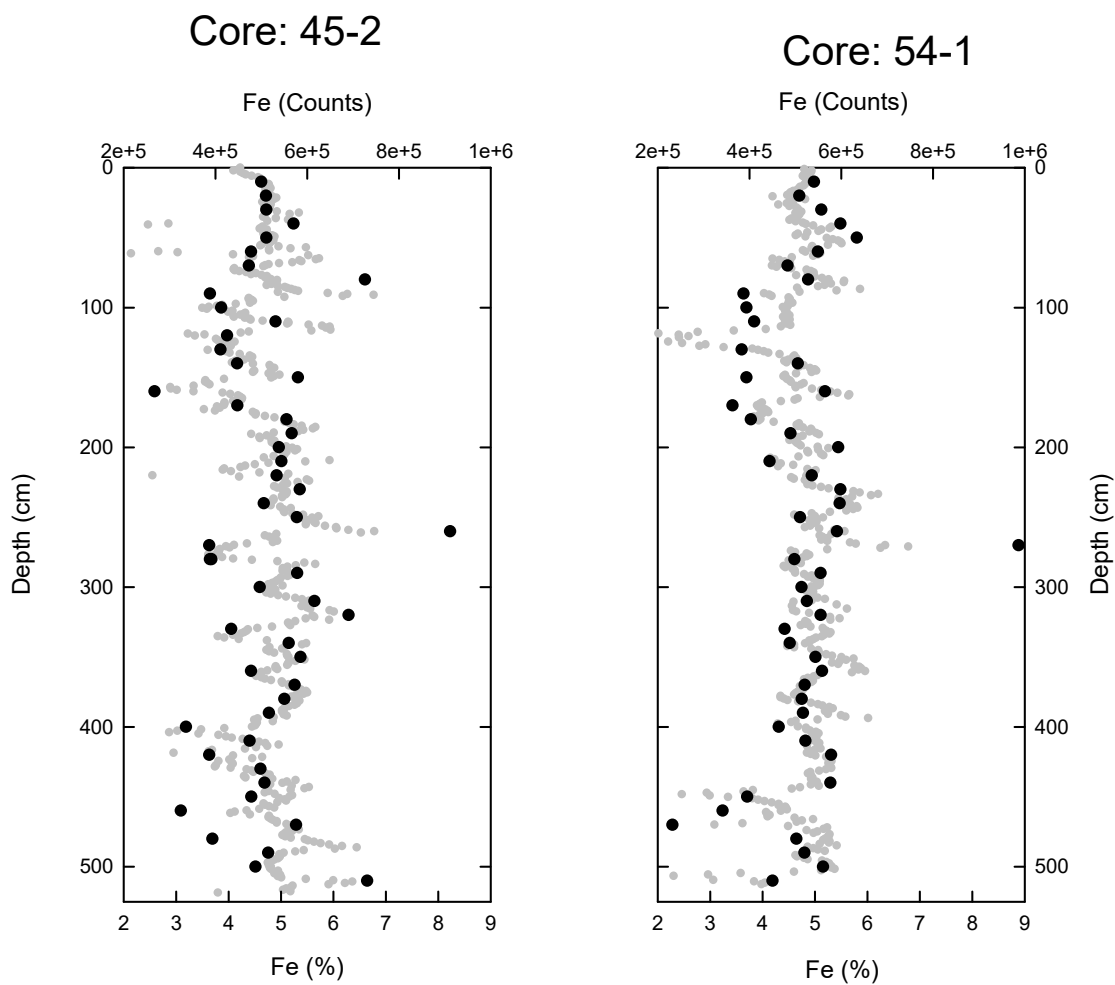
Supplementary Fig. S1: Fe concentrations (wt. %) and ice rafted debris (IRD) counts with a 5 pt running smooth from PS92/39-2.



Supplementary Fig. S2: Total Mn, Fe, and P concentrations for PS92/39-2 from XRF analysis. Manganese concentrations do not correlate strongly with Fe concentrations. In particular, Mn is largely enriched within the Holocene sediments and Mn is not enriched within laminated, Fe- and P-rich layers.



Supplementary Fig. S3: Lithogenic elements PS92/39-2 normalized to total concentration of lithogenic elements to control for concentration changes forced by changes in Fe, Mn, P, TOC, CaCO₃. This plot highlights the relative change in each element and the fact that the Fe-rich layers are still distinct when dilution by authigenic and biogenic phases is considered.



Supplementary Fig. S4: Scanning XRF and quantitative XRF data from PS92/45-2 and PS92/54-1 illustrating that Fe-rich layers similar to those found in PS92/39-2 are common across the region. These layers have a similar total Fe total ($> 8\text{wt.}\%$) as the layers within PS92/39-2.