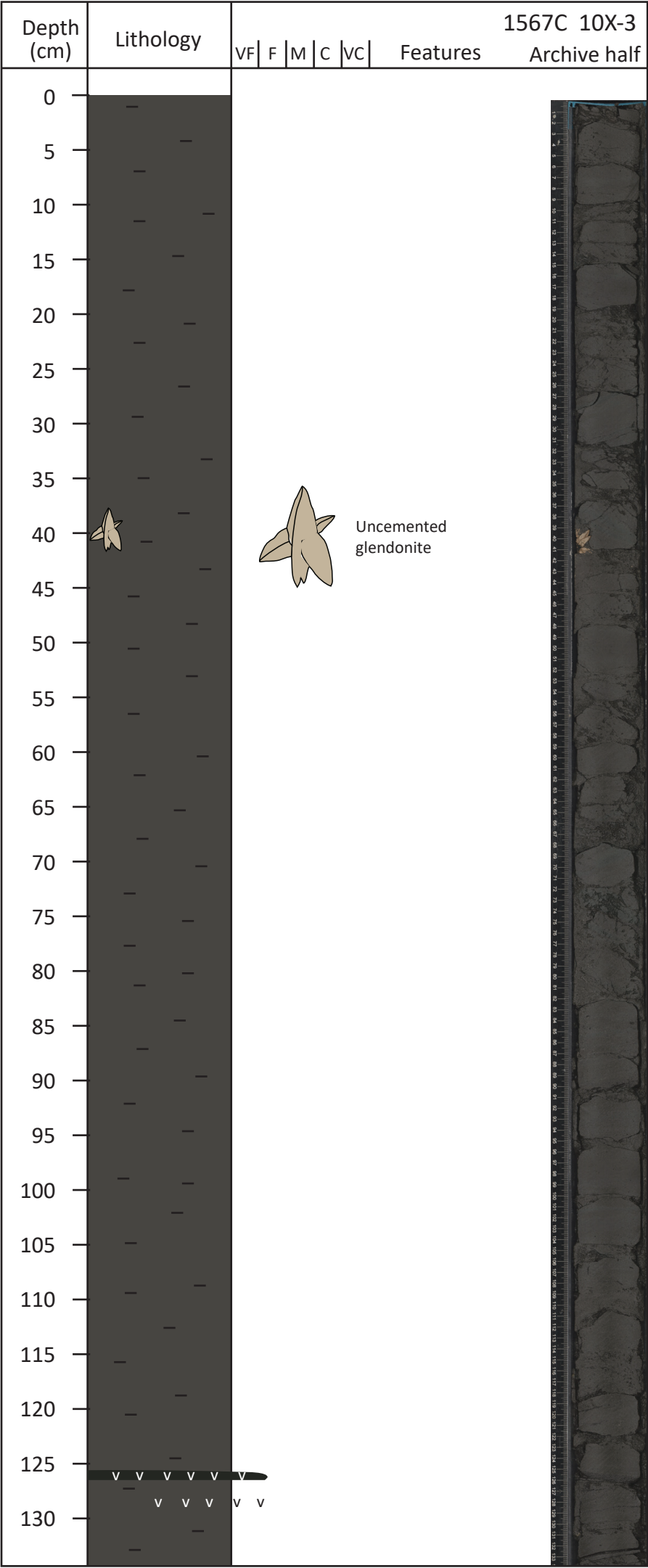



SUPPLEMENTARY 1




(S1) Fig. S1: High-resolution log of core section U1567C-10X-3.




KEY




Glendonite




Volcanic ash




Sand-sized ash grains




Mud/clay




Carbonate




Laminations



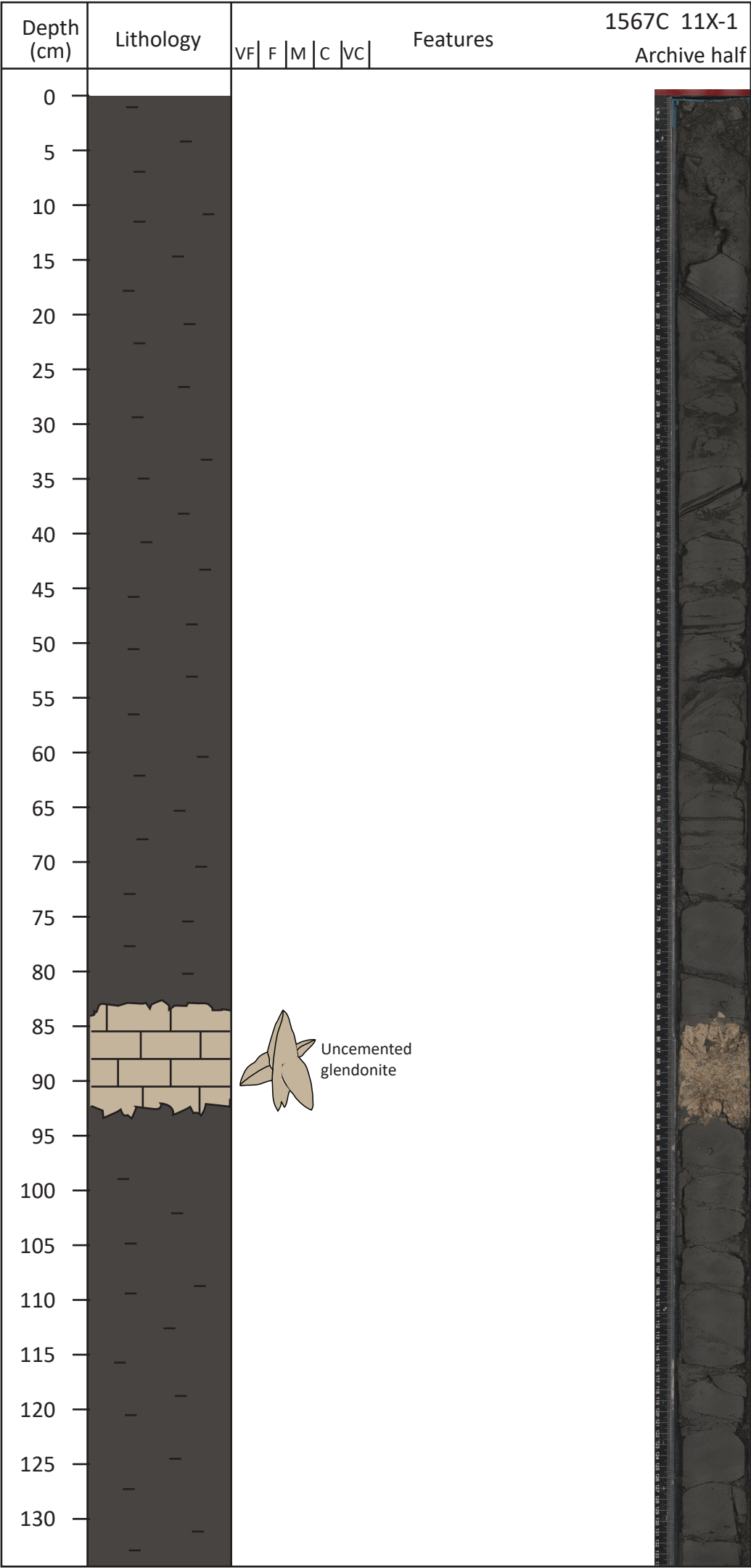
Sub-laminations



Bioturbation

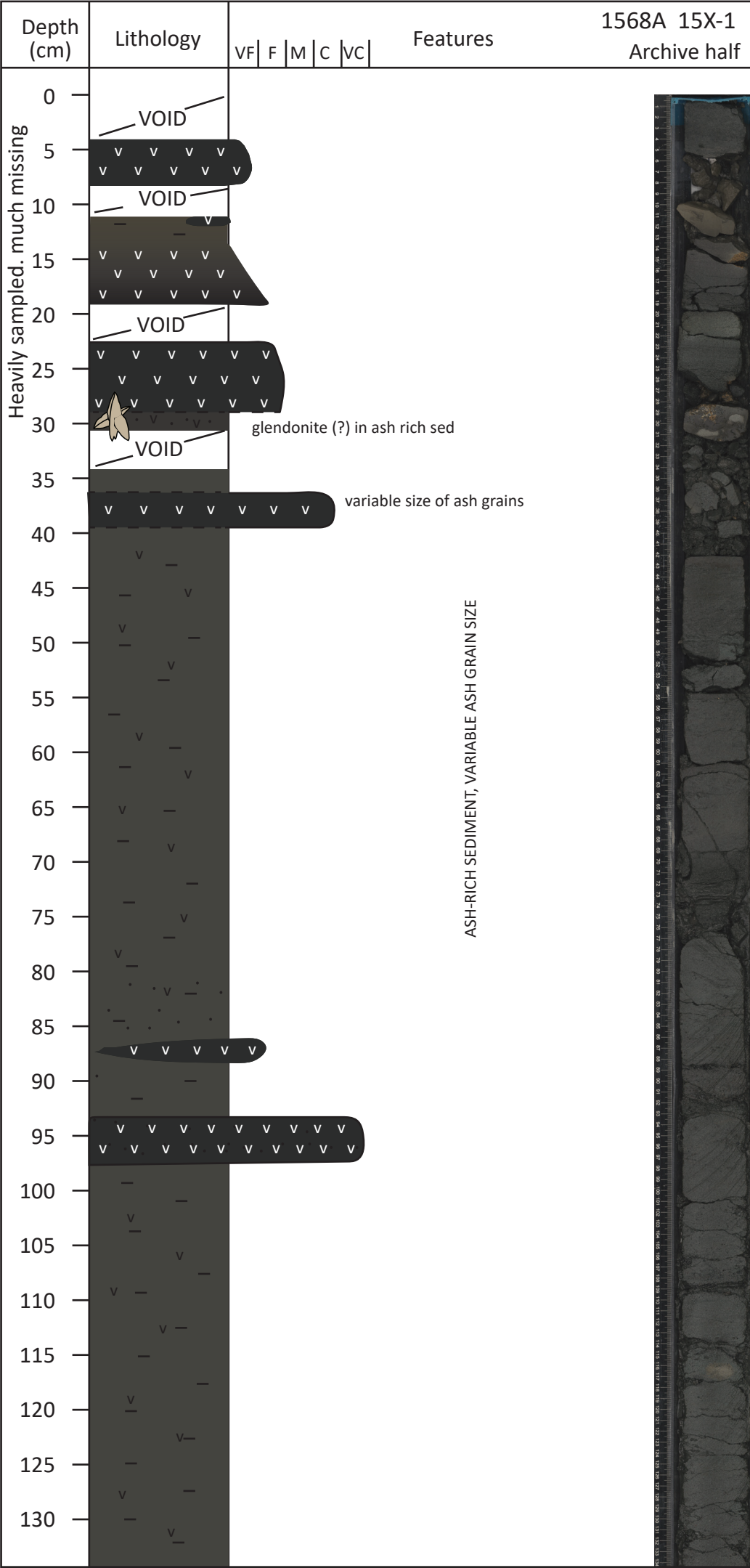


“Water escape structures”
/stress cracks

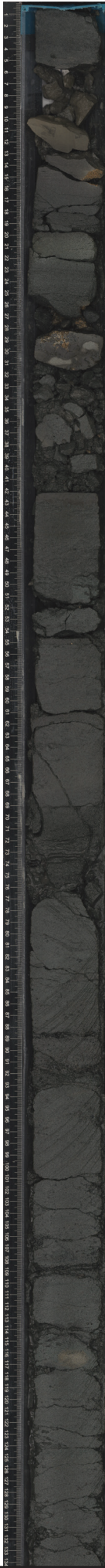


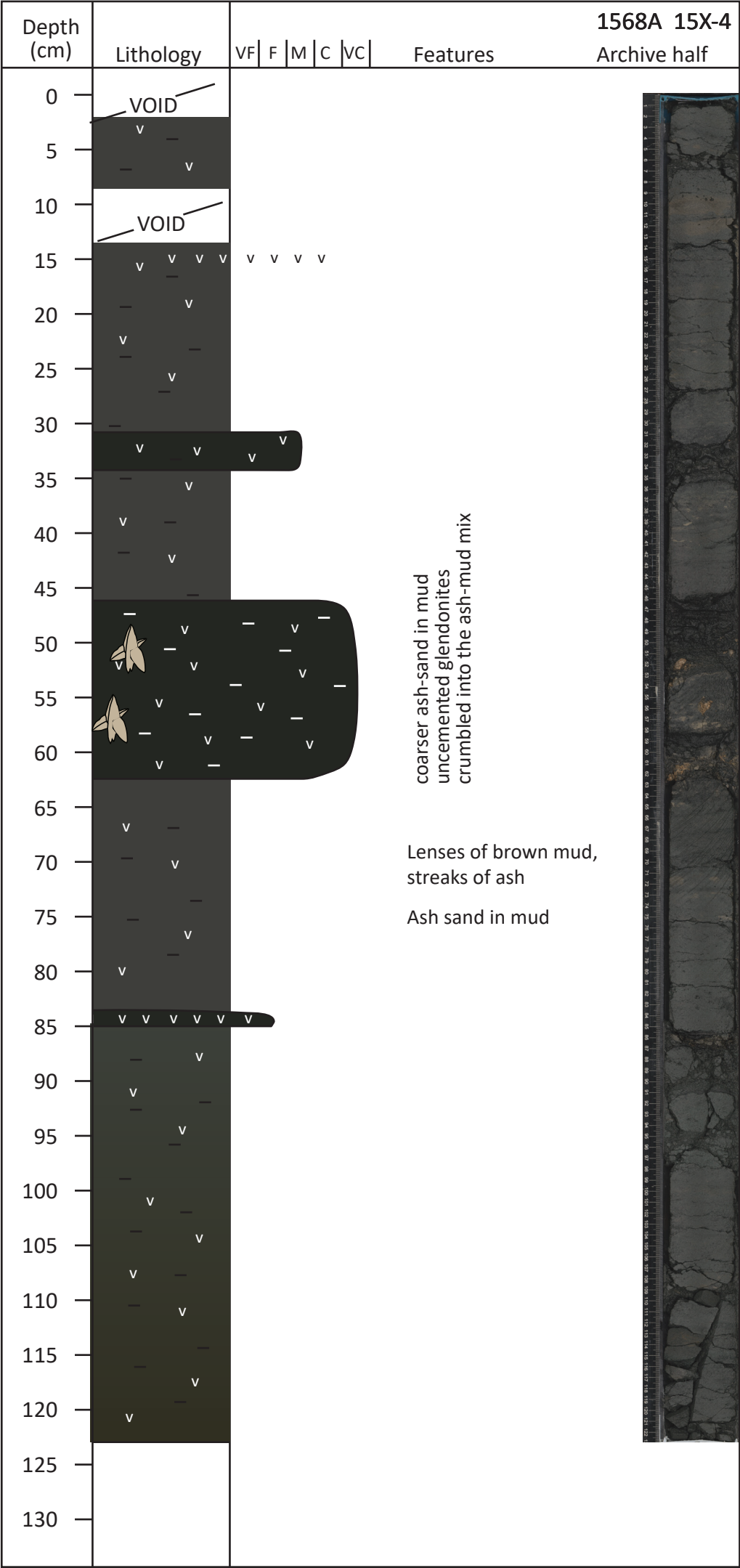
(S1) Fig. S2: High-resolution log of core section U1567C-11X-1.



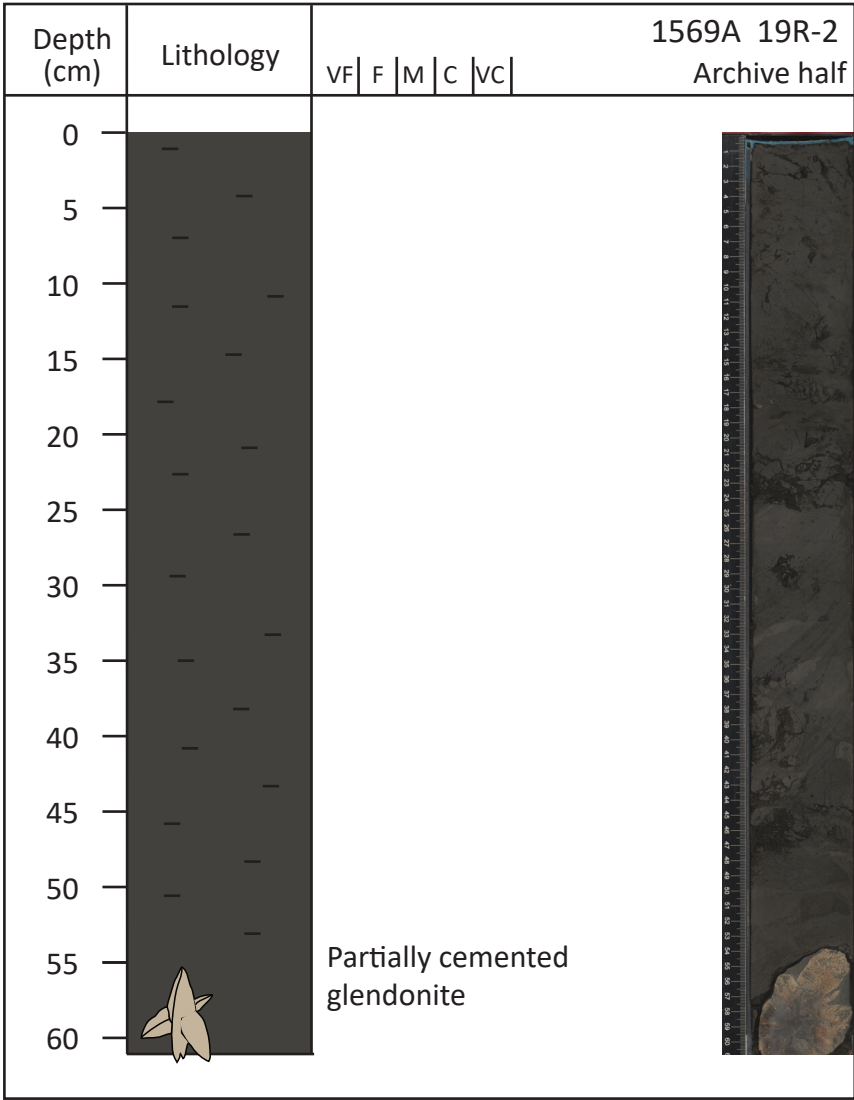


(S1) Fig. S3: High-resolution log of core section U1568A-15X-1.

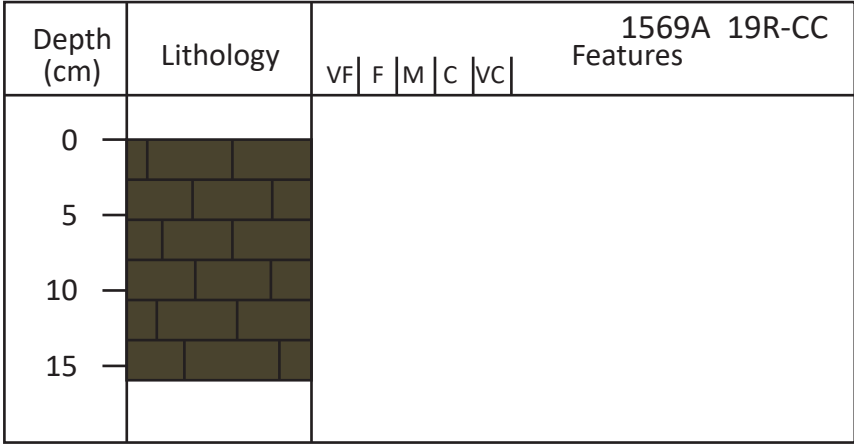




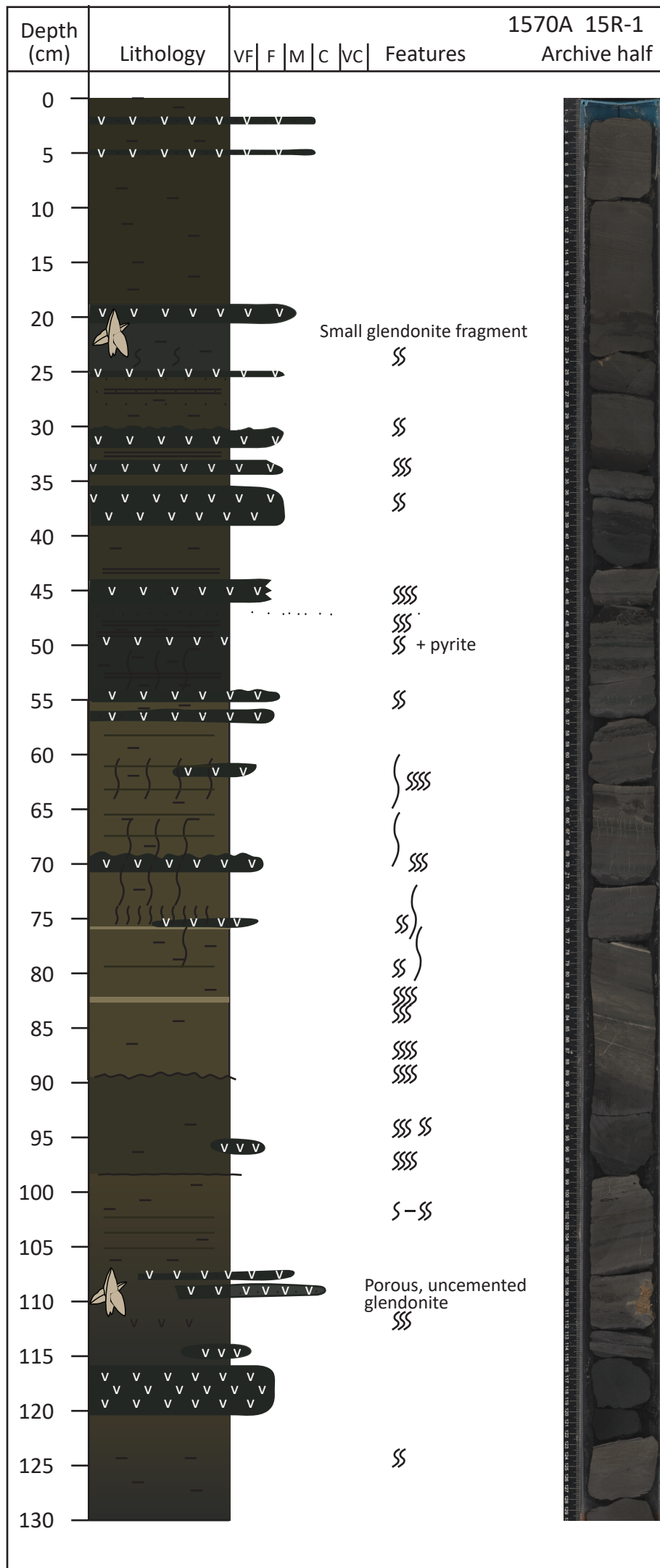
(S1) Fig. S4: High-resolution log of core section U1568A-15X-4.



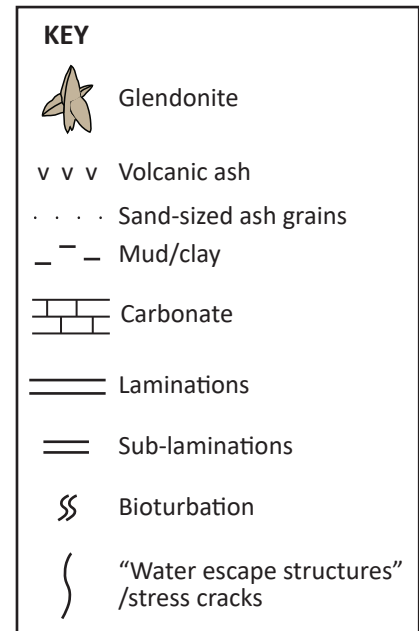
(S1) Fig. S5: High-resolution log of core section U1569A-19R-2.

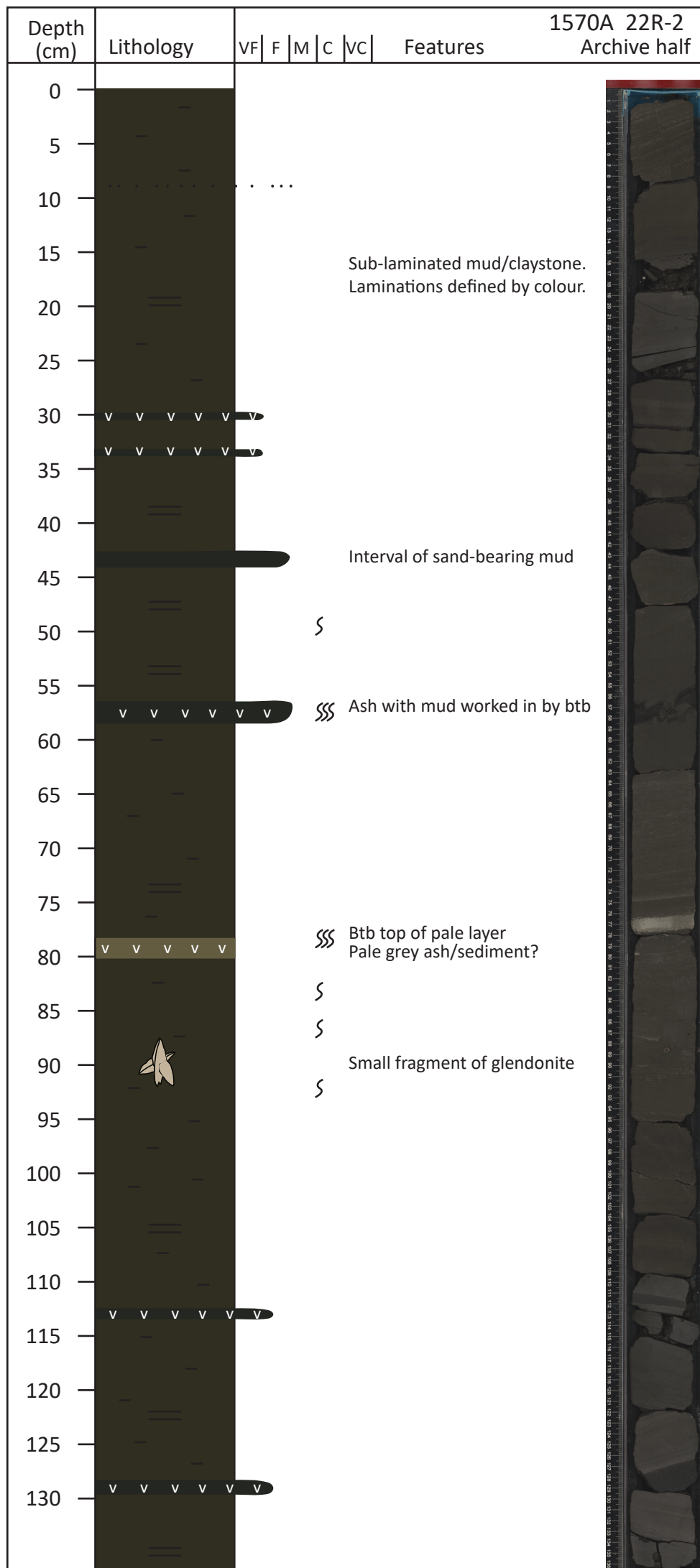


(S1) Fig. S6: High-resolution log of core section U1569A-19R-CC.

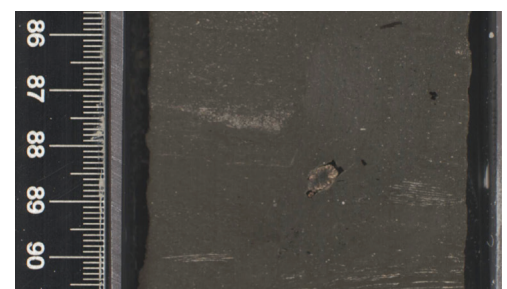


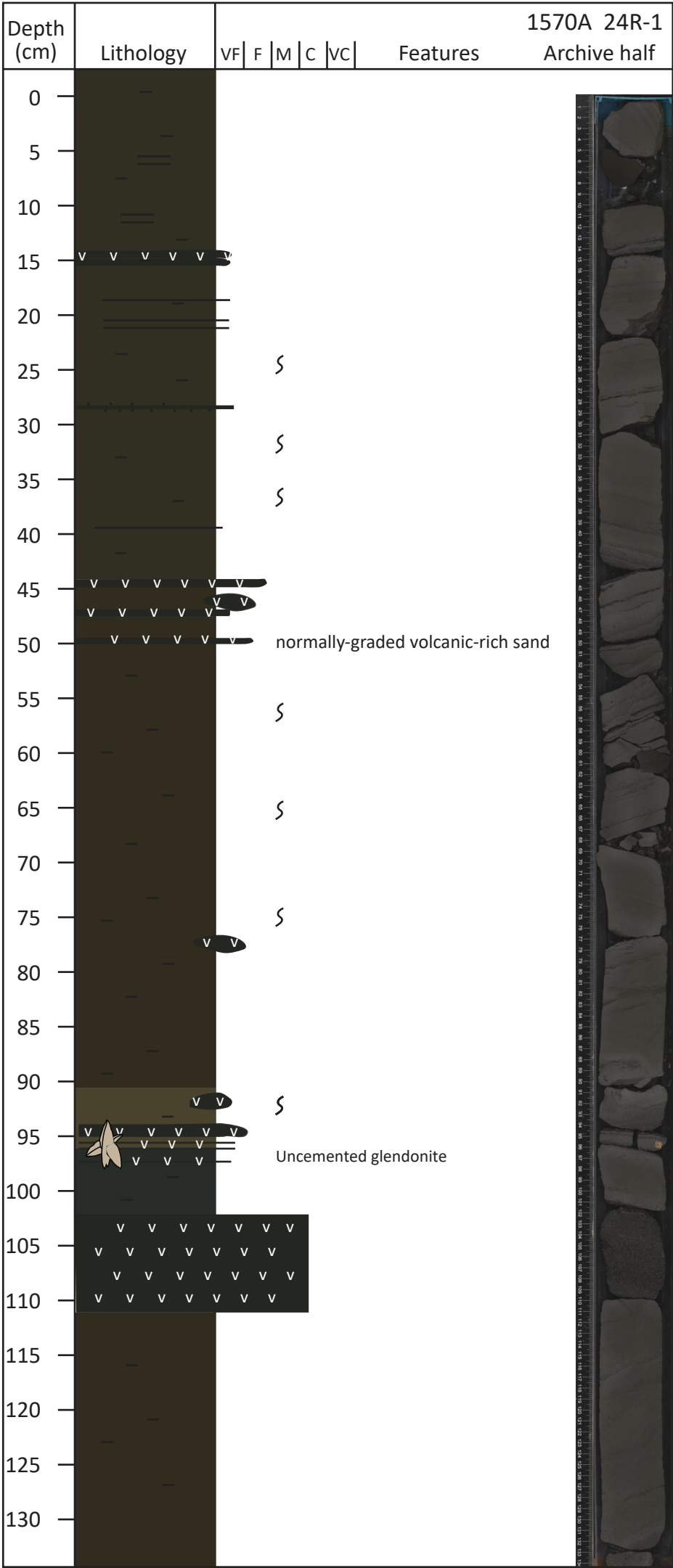
(S1) Fig. S7: High-resolution log of core section U1570A-15R-1.



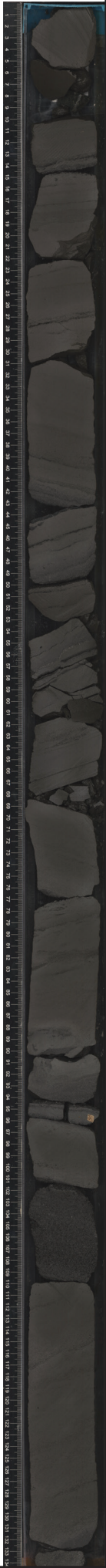


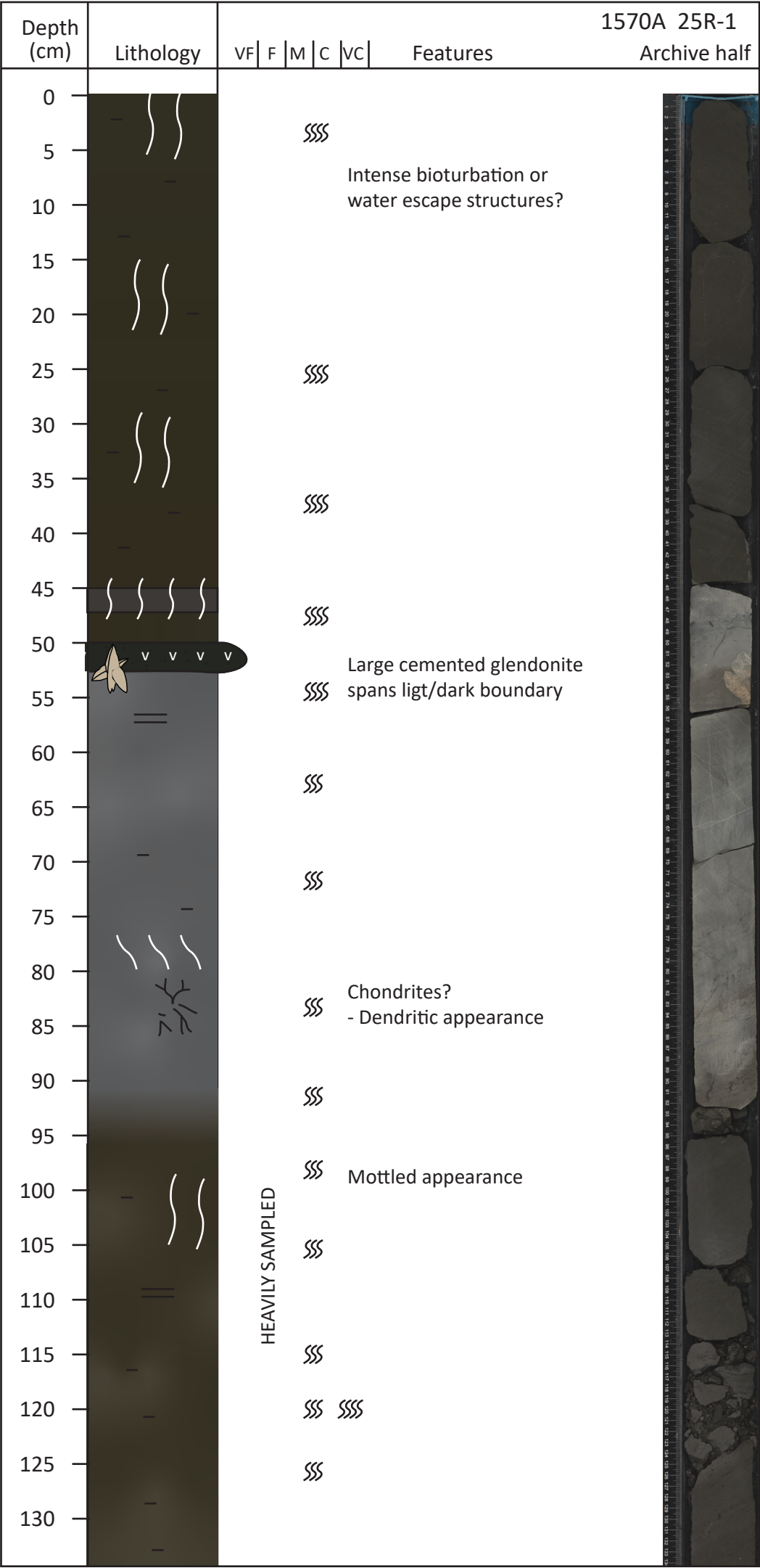
S1 Fig. S8: High-resolution log of core-section U1570A-22R-2





S1: Fig. S9: High-resolution log of core section U1570A-24R-1.



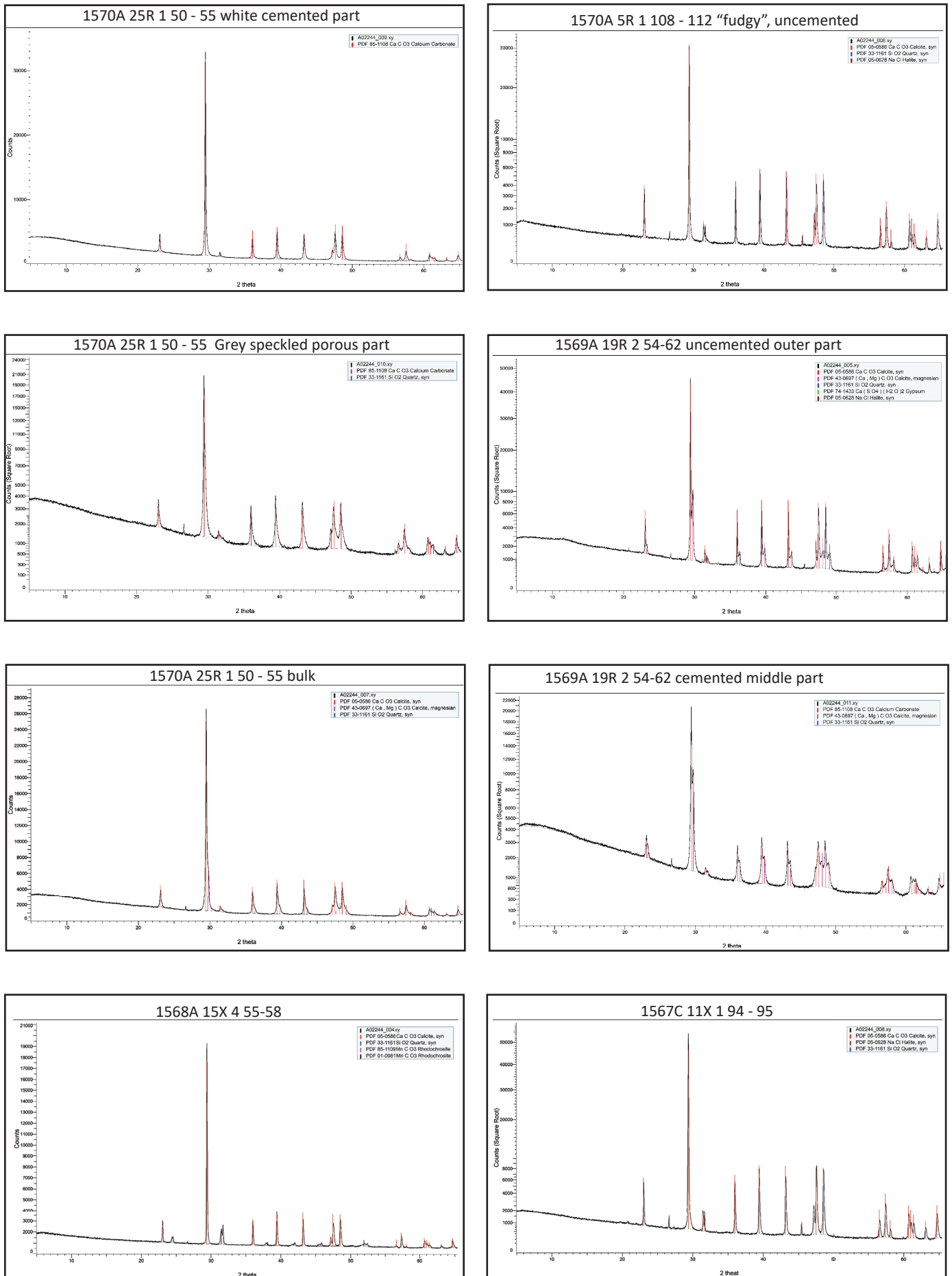


S1 Fig. S10: High resolution log of core-section U1570A-25R-1.

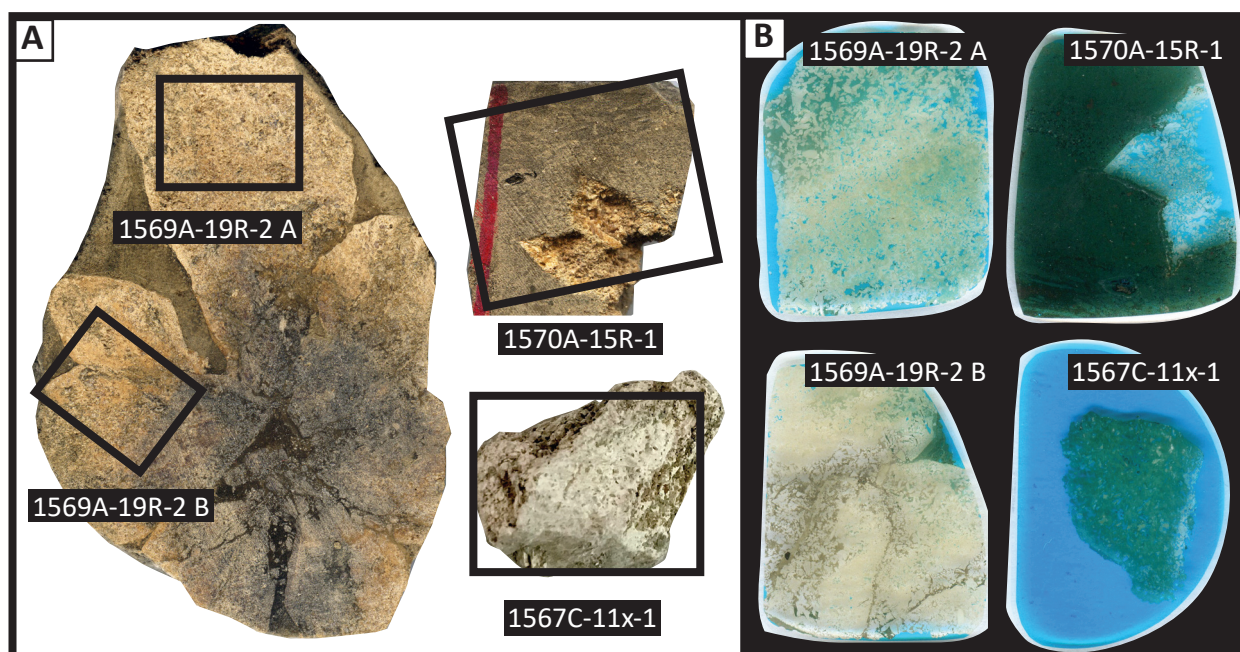


SUPPLEMENTARY 1

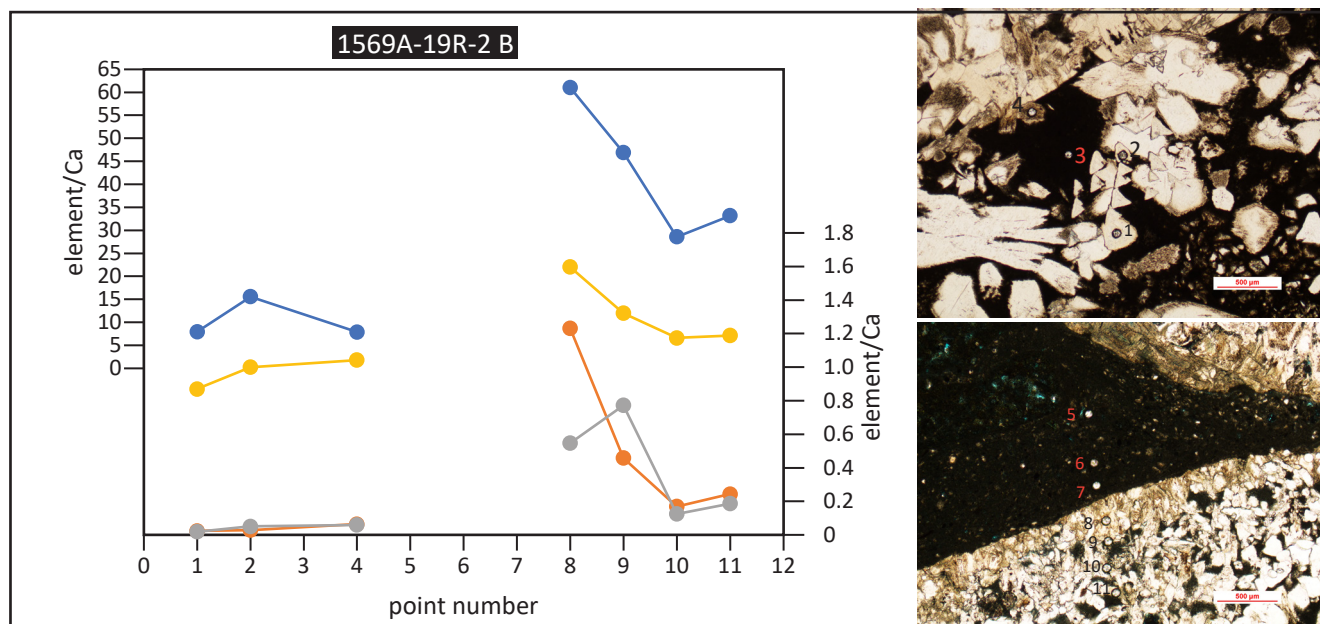
(S2) Fig. S2.1: Powder X-Ray diffraction patterns for powdered bulk glendonite samples



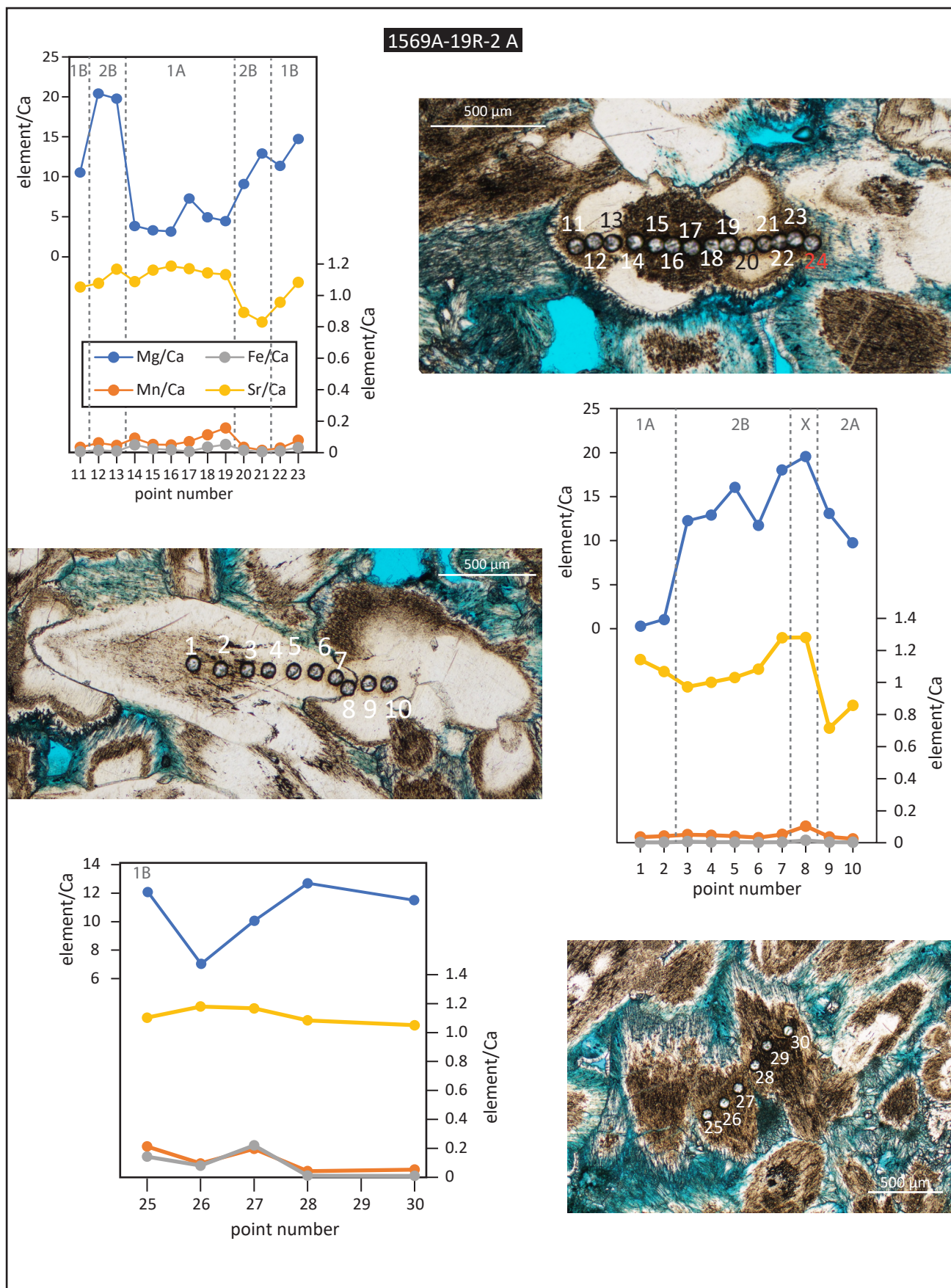
SUPPLEMENTARY 3



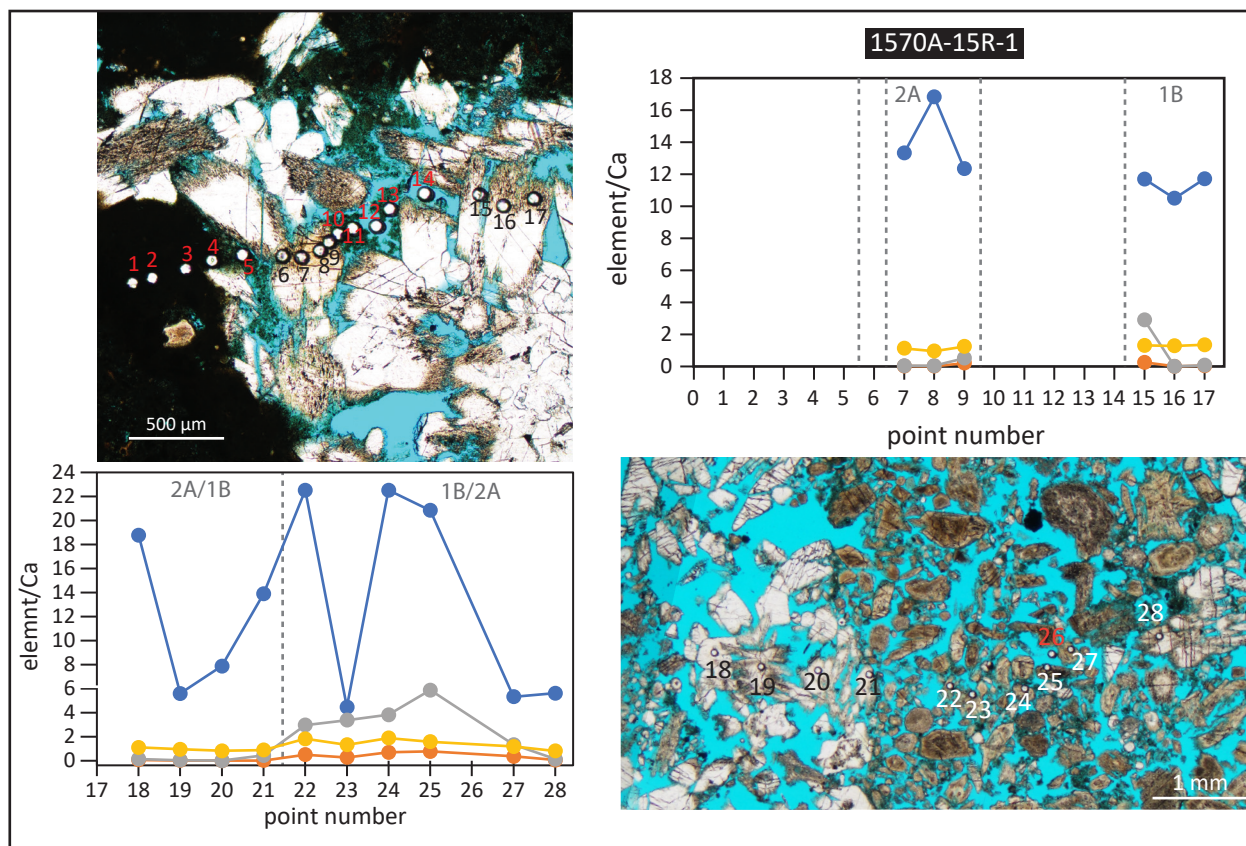
(S3) Fig. S3.1: (A) Overview of where thin sections were made from 3 selected glendonites. **(B)** Scans of the entire thin sections.



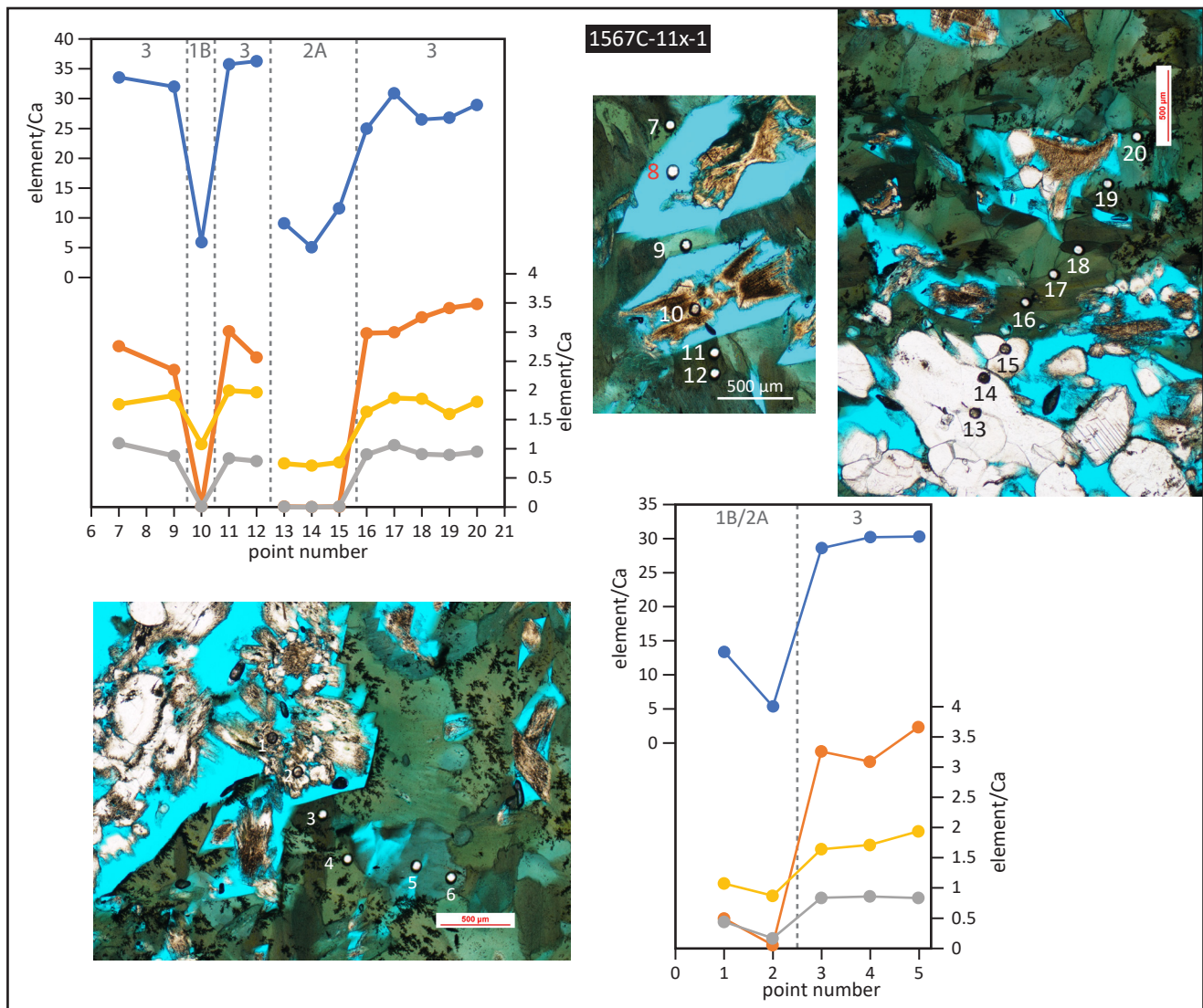
(S3) Fig. S3.2: (Left) Element/Ca profiles measured by LA-ICPMS across two areas of thin section B of the glendonite from U1569A-19R-2. **(Right)** Photomicrographs of the areas analysed, with labelled sample points, under plane polarised light.



(S3) Fig. S3.3: Element/Ca profiles measured by LA-ICPMS across areas of thin section A of the glendonite from U1569A-19R-2, shown next to photomicrographs of the sections with labelled sample points, under plane polarised light.



(S3) Fig. S3.4: Element/Ca profiles measured by LA-ICPMS across two areas of thin section of the glendonite from U1570A-15R-1, shown next to photomicrographs of the sections with labelled sample points, under plane polarised light.



(S3) Fig. 3.5: Element/Ca profiles measured by LA-ICPMS across two areas of thin section of the glendonite from U1567C-11X-1, shown next to photomicrographs of the sections with labelled sample points, under plane polarised light.