**Table S3:** Summary of pore morphology evolution with depth. Abundant = >25% pores, common = 2%-25% pores, rare = 0-2% pores, absent = not observed.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Depth (mbsf)** | **Sample no** | **Clay domain pores** | | | | | | | | **Silt adjacent pores** | | | | | | | |
| **Small pores (<5x105 nm2)** | **Larger pores (>5x105nm2)** | **Small pore** | | | **Larger pore** | | | **Small pores (<5x105 nm2)** | **Larger pores (>5x105 nm2)** | **Small pore** | | | **Larger pore** | | |
| **Elongate linear** | **Elongate crescent** | **Equant** | **Elongate linear** | **Elongate crescent** | **Equant** | **Elongate linear** | **Elongate crescent** | **Equant** | **Elongate linear** | **Elongate crescent** | **Equant** |
| 1.24 | SN-1 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Rare | Abundant | Rare | Rare | Abundant |
| 5.10 | SN-2 | Abundant | Rare | Abundant | Rare | Common | Rare | Rare | Rare | Abundant | Abundant | Common | Rare | Abundant | Common | Common | Abundant |
| 6.25 | SN-34 | Abundant | Rare | Abundant | Rare | Common | Rare | Rare | Rare | Abundant | Abundant | Rare | Rare | Abundant | Rare | Rare | Abundant |
| 7.21 | SN-35 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Abundant | Abundant | Rare | Rare | Abundant | Rare | Common | Abundant |
| 9.18 | SN-3 | Abundant | Rare | Abundant | Common | Common | Rare | Rare | Common | Common | Abundant | Common | Rare | Abundant | Rare | Common | Abundant |
| 10.69 | SN-4 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Common | Abundant | Common | Common | Abundant | Rare | Common | Abundant |
| 14.28 | SN-36 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Rare | Common | Abundant |
| 26.05 | SN-5 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Rare | Common | Abundant |
| 28.00 | SN-6 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Rare | Abundant | Common | Common | Abundant |
| 28.12 | SN-37 | Abundant | Rare | Abundant | Common | Common | Rare | Rare | Common | Abundant | Abundant | Common | Common | Abundant | Common | Common | Abundant |
| 50.82 | SN-38 | Abundant | Rare | Abundant | Rare | Common | Rare | Rare | Rare | Abundant | Common | Common | Rare | Abundant | Common | Common | Abundant |
| 63.24 | SN-7 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Rare | Common | Abundant |
| 74.07 | SN-8 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Abundant | Rare | Common | Common | Common | Abundant |
| 83.02 | SN-39 | Abundant | Rare | Abundant | Common | Common | Common | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Common | Common | Abundant |
| 87.98 | SN-9 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Common | Abundant | Abundant |
| 92.82 | SN-41 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Common | Abundant | Common | Common | Common | Common | Common |
| 98.25 | SN-10 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Rare | Abundant | Rare | Abundant | Abundant |
| 111.10 | SN-11 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Common | Common | Abundant |
| 117.13 | SN-40 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Abundant | Common | Abundant | Rare | Common | Common | Common | Common |
| 176.50 | SN-12 | Abundant | Rare | Abundant | Common | Common | Rare | Rare | Common | Abundant | Abundant | Abundant | Common | Common | Common | Common | Common |
| 182.62 | SN-42 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Common | Common | Abundant |
| 226.70 | SN-13 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Abundant | Common | Common | Common | Common | Common | Common | Abundant |
| 285.51 | SN-43 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Abundant | Common | Abundant | Rare | Common | Common | Common | Common |
| 369.19 | SN-14 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Common | Common | Abundant | Rare | Common | Common | Common | Common |
| 394.01 | SN-44 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Common | Common | Abundant |
| 426.68 | SN-15 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Common | Abundant | Common | Common |
| 486.72 | SN-45 | Abundant | Rare | Abundant | Common | Common | Rare | Rare | Rare | Abundant | Common | Abundant | Rare | Common | Abundant | Common | Common |
| 505.32 | SN-16 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Common | Common | Common | Abundant | Common | Common | Common | Rare | Common |
| 592.42 | SN-17 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Abundant | Common | Common | Rare | Common | Common | Common | Common |
| 621.2 | SN-46 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Abundant | Common | Common |
| 630.55 | SN-18 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Common | Abundant | Rare | Common |
| 737.39 | SN-19 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Common | Common | Rare | Common | Common | Common |
| 737.47 | SN-47 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Rare | Common | Abundant | Common | Common |
| 751.16 | SN-20 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Abundant | Common | Rare |
| 776.17 | SN-21 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Common | Common | Common | Common | Common | Abundant | Common | Rare |
| 802.55 | SN-22 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Common | Common | Abundant | Common |
| 841.56 | SN-48 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Rare | Common | Abundant | Rare | Rare |
| 871.87 | SN-23 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Common | Common | Common |
| 929.81 | SN-24 | Abundant | Rare | Abundant | Common | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Common | Common | Rare | Rare |
| 959.15 | SN-49 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Rare | Common | Common | Rare | Common |
| 971.26 | SN-25 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Rare | Common | Abundant | Common | Common |
| 1026.3 | SN-50 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Common | Common | Common | Common |
| 1027.9 | SN-26 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Abundant | Common | Common |
| 1095.7 | SN-27 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Common | Common | Rare |
| 1119.7 | SN-28 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Rare | Abundant | Common | Common | Common | Rare | Common |
| 1145.9 | SN-51 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Common | Rare | Rare |
| 1172.8 | SN-29 | Abundant | Rare | Abundant | Abundant | Rare | Rare | Rare | Rare | Abundant | Abundant | Common | Common | Abundant | Rare | Common | Abundant |
| 1184.3 | SN-30 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Common | Common | Abundant | Common | Rare | Common | Rare | Rare |
| 1233.1 | SN-31 | Abundant | Rare | Abundant | Rare | Common | Rare | Rare | Rare | Common | Rare | Abundant | Common | Rare | Common | Common | Common |
| 1251.5 | SN-52 | Abundant | Rare | Abundant | Rare | Common | Rare | Rare | Rare | Abundant | Rare | Abundant | Rare | Common | Common | Rare | Rare |
| 1267.1 | SN-32 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Common | Rare | Abundant | Common | Rare | Common | Rare | Rare |
| 1299.3 | SN-33 | Abundant | Rare | Abundant | Common | Common | Rare | Rare | Common | Common | Rare | Abundant | Common | Rare | Common | Rare | Rare |
| 1358.9 | SN-53 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Common | Rare | Abundant | Common | Common | Common | Rare | Common |
| 1432.5 | SN-54 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Common | Rare | Abundant | Rare | Rare | Common | Common | Rare |
| 1.24 | SN-55 | Abundant | Rare | Abundant | Rare | Rare | Rare | Rare | Rare | Common | Rare | Abundant | Rare | Rare | Common | Common | Rare |