|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Site | Station | Coordinates | | Date | Hour | Depth (m) |
| Long. | Lat. |
| Ouegoa | O-a | 164°18’5.77"E | 20°17’14.65"S | 03/16/2022 | 10:05 | 1.0 |
| O-b | 164°17’26.85"E | 20°16’27.97"S | 03/16/2022 | 11:40 | 0.5 |
| O-c | 164°18’26.34"E | 20°16’45.22"S | 03/16/2022 | 13:30 | 1.2 |
| O-d | 164°19’6.33"E | 20°18’23.79"S | 03/17/2022 | 09:37 | 0.8 |
| O-e | 164°17’57.09"E | 20°17’40.32"S | 03/17/2022 | 11:59 | 0.6 |
| Vavouto | V-a | 164°40’42.61"E | 20°59’27.81"S | 03/09/2022 | 06:30 | 0.5 |
| V-b | 164°41’42.66"E | 21° 0’1.43"S | 03/09/2022 | 08:40 | 0.7 |
| V-c | 164°41’33.71"E | 21° 0’22.19"S | 03/10/2022 | 10:20 | 0.3 |
| V-d | 164°41’17.21"E | 20°59’55.60"S | 03/10/2022 | 07:15 | 0.3 |
| V-e | 164°41’30.94"E | 20°59’41.45"S | 03/10/2022 | 09:07 | 0.3 |
| Dumbéa | D-a | 166°24’58.53"E | 22°11’39.51"S | 03/23/2022 | 07:00 | 0.5 |
| D-b | 166°26’7.68"E | 22°12’0.30"S | 03/23/2022 | 08:26 | 0.7 |
| D-c | 166°25’43.43"E | 22°11’34.47"S | 03/23/2022 | 10:05 | 1.6 |
| D-d | 166°24’34.25"E | 22°10’38.06"S | 03/24/2022 | 07:27 | 1.1 |
| D-e | 166°25’31.94"E | 22°12’0.41"S | 03/24/2022 | 09:47 | 1.5 |
| Coulée | C-a | 166°33’50.57"E | 22°15’1.20"S | 04/12/2022 | 10:56 | 0.5 |
| C-b | 166°33’18.53"E | 22°14’35.52"S | 04/12/2022 | 13:05 | 0.6 |
| C-c | 166°33’50.04"E | 22°15’6.48"S | 04/12/2022 | 14:24 | 1.0 |
| Pirogues | P-a | 166°40’51.17"E | 22°19’5.97"S | 04/13/2022 | 10:03 | 0.9 |
| P-b | 166°40’47.98"E | 22°18’41.00"S | 04/13/2022 | 12:07 | 0.5 |
| P-c | 166°41’0.66"E | 22°18’47.74"S | 04/13/2022 | 13:43 | 0.2 |

**Table S1:** Summary of sampling data of the 21 stations.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Coulée | | | Pirogues | | | Dumbéa | | | | | Vavouto | | | | | Ouegoa | | | | |
|  |  | a | b | c | a | b | c | a | b | c | d | e | a | b | c | d | e | a | b | c | d | e |
| Primary minerals | Quartz | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| **Albite** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| Muscovite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Labrador | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Enstatite | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Bytownite | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hornblende | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Diopside | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Forstérite | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Magnétite | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chromite | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Metamorphic minerals | Clinochlore | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| Phengite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| Antigorite | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| Trémolite | 2 | 1 | 3 | 2 | 3 | 1 | 2 | 1 | 0 | 3 | 3 | 0 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| Pargasite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 |
| **Glaucophane** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 |
| Lawsonite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Chlorite | 3 | 2 | 3 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Zoïsite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 3 |
| Secondary surface alteration minerals | Chabazite-Ca | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 1 |
| **Laumontite** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| Epidote | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| **Goethite** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kaolinite | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Willemseite** | 3 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Gibbsite | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Illite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ferrierite-Mg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Secondary marine minerals | **Halite** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 1 | 1 | 3 | 2 | 2 | 3 | 3 |
| Pyrite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| Aragonite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 2 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Calcite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| gypse | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| Brushite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 |

**Table S2:** Presence/Absence of the 35 minerals in each station (from 0 =absent in all replicates to 3 = present in each replicate). In bold are indicated key selected minerals used to discriminate the mineralogy of the sediments of the sampling sites.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coulée | sd | 8632 | 6606 | 1752 | 499 | 288 | 31345 | 75.6 | 951 | 422 | 794 | 612 | 4.66 | 76.6 | 21507 | 32.6 | 8.75 | 0.34 |
| Mean | 17555 | 39943 | 7733 | 1398 | 1455 | 267947 | 562.33 | 18973 | 2736 | 5347 | 38741 | 19.0 | 229 | 126032 | 329 | 39.26 | 2.08 |
| Pirogues | sd | 6929 | 1473 | 963 | 62.5 | 108 | 8753 | 36.5 | 3580 | 206 | 484 | 1244 | 4.39 | 34.9 | 4126 | 151 | 5.16 | 0.28 |
| Mean | 12363 | 32394 | 6542 | 734 | 1481 | 258844 | 491 | 20064 | 2986 | 4960 | 54844 | 22.2 | 108 | 126586 | 286 | 28.9 | 2.06 |
| Dumbéa | sd | 28479 | 23499 | 4252 | 1936 | 521 | 17500 | 48.7 | 2745 | 205 | 824 | 7641 | 3.55 | 110 | 12897 | 26.7 | 2.45 | 0.47 |
| Mean | 38772 | 65520 | 15996 | 5604 | 2470 | 97329 | 156 | 6882 | 798 | 2081 | 37696 | 9.26 | 406 | 256775 | 126 | 9.39 | 1.44 |
| Vavouto | sd | 3920 | 1937 | 1735 | 744 | 427 | 7400 | 9.38 | 535 | 49.7 | 223 | 3381 | 4.05 | 60.2 | 57313 | 8.76 | 1.46 | 0.46 |
| Mean | 21930 | 24365 | 21000 | 7139 | 4383 | 56624 | 69.4 | 1971 | 593 | 820 | 55418 | 14.0 | 450 | 414988 | 67.7 | 7.60 | 1.33 |
| Ouegoa | sd | 3074 | 1012 | 1066 | 2551 | 120 | 5858 | 1.72 | 8.81 | 42.7 | 4.96 | 7660 | 8.90 | 104 | 41015 | 11.8 | 4.36 | 0.60 |
| Mean | 10103 | 10341 | 23156 | 10424 | 4592 | 35503 | 17.2 | 63.0 | 340 | 28.8 | 66045 | 26.0 | 404 | 465906 | 61.0 | 10.31 | 1.56 |
|  |  | Ca | Mg | Na | K | Ti | Fe | Co | Cr | Mn | Ni | Al | Cu | P | Si | Zn | Pb | Cd |

**Table S3:** Replicatemean of total metal concentrations (µg.g -1) at our sampling sites. Some values were above or below the detection thresholds; for these, the threshold values were used for the mean calculations (Si: 3 samples in Vavouto and 5 in Ouegoa >510 000 µg.g -1; Cu: 1 sample <11.3 µg.g -1 in Dumbéa; Pb: 5 samples in Vavouto, 5 in Ouegoa and 4 in Dumbéa <6.0 µg.g -1; Cd: 1 sample in Vavouto and 3 in Ouegoa <0.4 µg.g -1)