**APPENDIX 1.1.**

**Snow height, density, SWE and salinity data from 2.5 cm snow segments.**

**WSS: Soft wind slab (370 kg/m3).**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date** | **Sample** | **Layer, cm** | **Mass, gr** | **H, cm** | **Vol., cm3** | **P, kg/m3** | **SWE, mm** | **Sal., ppt** | **Snow Condtions** |
| 20/02/24 | A1 | 0-2.5 | 93 | 2.5 | 126 | 740 | 18.51 | 30.2 | slush |
|  |  | 2.5-5 | 53.4 | 2.2 | 111 | 483 | 10.63 | 9.9 | wetted |
|  |  | 5-7.5 | 41.1 | 2.2 | 111 | 372 | 8.18 | 0.03 | no |
|  |  | 7.5-10 | 40.5 | 2.2 | 111 | 366 | 8.06 | 0.03 | no |
|  |  | 10-20 | 191.4 | 9.5 | 477 | 401 | 38.10 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 22/02/24 | A2 | 0 |  |  |  |  |  |  |  |
|  |  | 0-2.5 | 83.3 | 2.2 | 111 | 754 | 16.58 | 25.5 | slush ice |
|  |  | 2.5-5 | 61.25 | 2.3 | 116 | 530 | 12.19 | 13.81 | ice snow |
|  |  | 5-7.5 | 50.1 | 2.5 | 126 | 399 | 9.97 | 2.16 | traces |
|  |  | 7.5-10 | 49 | 2.5 | 126 | 390 | 9.75 | 0.21 | few traces |
|  |  | 10-19 | 160.6 | 8.5 | 427 | 376 | 31.97 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 24/02/24 | A3 | 0 |  |  |  |  |  |  |  |
|  |  | 0-2.5 | 99.4 | 2.6 | 131 | 761 | 19.79 | 20.8 | ice slush |
|  |  | 2.5-5 | 74.9 | 2.3 | 116 | 648 | 14.91 | 13.76 | slush and wetted |
|  |  | 5-7.5 | 44.9 | 2.3 | 116 | 389 | 8.94 | 4.12 | traces |
|  |  | 7.5-10 | 54.9 | 2.5 | 126 | 437 | 10.93 | 0.09 | no |
|  |  | 10-18 | 140 | 7.5 | 377 | 372 | 27.87 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 26/02/24 | A4 | 0 |  |  |  |  |  |  |  |
|  |  | 0-2.5 | 87.6 | 2.3 | 116 | 758 | 17.44 | 18.2 | slush |
|  |  | 2.5-5 | 86.3 | 2.5 | 126 | 687 | 17.18 | 16 | slush and wetted |
|  |  | 5-7.5 | 45.7 | 2 | 100 | 455 | 9.10 | 5.79 | wetted |
|  |  | 7.5-10 | 47.6 | 2.3 | 116 | 412 | 9.47 | 0.33 | traces |
|  |  | 10-18 | 141.4 | 6.8 | 342 | 414 | 28.14 | 0.08 | no |
|  |  |  |  |  |  |  |  |  |  |
| 29/02/24 | A5 | 0 |  |  |  |  |  |  |  |
|  | A5 | 0-2.5 | 86.6 | 2.3 | 116 | 749 | 17.24 | 16.9 | ice |
|  |  | 2.5-5 | 78.1 | 2.2 | 111 | 707 | 15.55 | 16.6 | ice |
|  |  | 5-7.5 | 51.2 | 2.5 | 126 | 408 | 10.19 | 6.62 | wet |
|  |  | 7.5-10 | 47.2 | 2.2 | 111 | 427 | 9.39 | 0.17 | traces |
|  |  | 10-18 | 148.6 | 8 | 402 | 370 | 29.58 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 06/03/24 | A6 | 0 | 13.8 | 0.3 | 14 | 1000 | 2.75 | 29.1 | ice |
|  | A6 | 0-2.5 | 82.8 | 2.2 | 111 | 749 | 16.48 | 16.1 | ice snow porous |
|  |  | 2.5-5 | 81.1 | 2.3 | 116 | 702 | 16.14 | 14.04 | ice snow more porous |
|  |  | 5-7.5 | 43.9 | 2.2 | 111 | 397 | 8.74 | 3.8 | wetted |
|  |  | 7.5-10 | 44.2 | 2.1 | 106 | 419 | 8.80 | 0.08 | no |
|  |  | 10-17 | 141 | 7.2 | 362 | 390 | 28.07 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 11/03/24 | A7 | 0 | 49.7 | 1.0 | 50 | 1000 | 9.89 | 27.2 | liquid brine |
|  |  | 0-2.5 | 102.4 | 2.5 | 126 | 815 | 20.38 | 11.9 | slush |
|  |  | 2.5-5 | 48.5 | 1.5 | 75 | 644 | 9.65 | 8.9 | slush |
|  |  | 5-7.5 | 50.2 | 2.2 | 111 | 454 | 9.99 | 1.93 | pink snow wetted |
|  |  | 7.5-10 | 47.9 | 2.4 | 121 | 397 | 9.53 | 0.13 | few traces |
|  |  | 10-17 | 122 | 6.5 | 327 | 374 | 24.28 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | A8 | 0 | 66.5 | 1.3 | 67 | 1000 | 13.24 | 23 | brine |
|  |  | 0-2.5 | 96.4 | 2.3 | 116 | 834 | 19.19 | 10.64 | slush |
|  |  | 2.5-5 | 72.9 | 2.2 | 111 | 660 | 14.51 | 6.88 | slush |
|  |  | 5-7.5 | 49.1 | 2 | 100 | 489 | 9.77 | 1.96 | slush + wetted |
|  |  | 7.5-10 | 52 | 2.4 | 121 | 431 | 10.35 | 0.09 | no |
|  |  | 10-15 | 82.3 | 4.5 | 226 | 364 | 16.38 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | A9 | 0-5 | 91.8 | 5 | 251 | 365 | 18.27 |  | no |
|  |  | 5-10 | 92 | 5 | 251 | 366 | 18.31 |  | no |
|  |  | 10-15 | 98.1 | 5 | 251 | 391 | 19.53 |  | no |
|  |  | 15-20 | 103.4 | 5 | 251 | 412 | 20.58 |  | no |

**WSH: hard wind slab (430 kg/m3)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date** | **Sample** | **Layer, cm** | **Mass, gr** | **H, cm** | **Vol., cm3** | **P, kg/m3** | **SWE, mm** | **Sal., ppt** | **Snow Condtions** |
| 20/02/24 | B1 | 0-2.5 | 92.5 | 2 | 111 | 837 | 18.41 | 25.6 | ice |
|  |  | 2.5-5 | 55.7 | 2 | 100 | 554 | 11.09 | 12.72 | wetted |
|  |  | 5-7.5 | 45.9 | 2 | 111 | 415 | 9.14 | 0.69 | traces |
|  |  | 7.5-10 | 45.9 | 2 | 116 | 397 | 9.14 | 0.69 | few traces |
|  |  | 10-17 | 174.4 | 8 | 402 | 434 | 34.71 | 0.06 | no |
|  |  |  |  |  |  |  |  |  |  |
| 22/02/24 | B2 | 0-2.5 | 113.3 | 3 | 131 | 867 | 22.55 | 22.4 | ice |
|  |  | 2.5-5 | 53.8 | 2 | 116 | 466 | 10.71 | 11.01 | ice snow |
|  |  | 5-7.5 | 58.7 | 3 | 126 | 467 | 11.68 | 4.55 | ice snow wetted |
|  |  | 7.5-10 | 59.8 | 3 | 136 | 441 | 11.90 | 0.17 | no |
|  |  | 10-17 | 150.6 | 6 | 317 | 476 | 29.98 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 24/02/24 | B3 | 0-2.5 | 110.6 | 3 | 126 | 881 | 22.01 | 19 | slush porous |
|  |  | 2.5-5 | 79.3 | 2 | 116 | 686 | 15.78 | 13.03 | slush and wetted |
|  |  | 5-7.5 | 61.1 | 2 | 121 | 507 | 12.16 | 4.73 | wetted snow |
|  |  | 7.5-10 | 53.6 | 3 | 126 | 427 | 10.67 | 0.14 | no |
|  |  | 10-17 | 144.1 | 7 | 327 | 441 | 28.68 | 0.04 | no |
|  |  |  |  |  |  |  |  |  |  |
| 26/02/24 | B4 | 0-2.5 | 96 | 2 | 111 | 869 | 19.11 | 15.7 | slush |
|  |  | 2.5-5 | 99.6 | 3 | 131 | 762 | 19.82 | 15.2 | slush |
|  |  | 5-7.5 | 64.8 | 2 | 116 | 561 | 12.90 | 4.03 | wetted |
|  |  | 7.5-10 | 51.1 | 2 | 111 | 462 | 10.17 | 0.61 | traces half |
|  |  | 10-17 | 147.4 | 7 | 327 | 451 | 29.34 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 29/02/24 | B5 | 0-2.5 | 92.4 | 2 | 111 | 836 | 18.39 | 13.9 | ice porous |
|  |  | 2.5-5 | 95.6 | 3 | 126 | 761 | 19.03 | 14.42 | ice porous |
|  |  | 5-7.5 | 58.2 | 2 | 111 | 527 | 11.58 | 3.87 | wetted hard snow |
|  |  | 7.5-10 | 51.2 | 2 | 116 | 443 | 10.19 | 0.18 | traces |
|  |  | 10-17 | 157.6 | 7 | 352 | 448 | 31.37 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 06/03/24 | B6 | 0-2.5 | 95.8 | 2 | 116 | 829 | 19.07 | 15 | ice porous |
|  |  | 2.5-5 | 92.9 | 2 | 121 | 770 | 18.49 | 14.23 | ice porous |
|  |  | 5-7.5 | 59.3 | 3 | 126 | 472 | 11.80 | 4.35 | wetted snow |
|  |  | 7.5-10 | 60.1 | 3 | 126 | 479 | 11.96 | 0.19 | traces |
|  |  | 10-16 | 124.1 | 6 | 276 | 449 | 24.70 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 11/03/24 | B7 | 0-2.5 | 110.6 | 3 | 126 | 881 | 22.01 | 15.3 | slush |
|  |  | 2.5-5 | 88.5 | 2 | 121 | 734 | 17.62 | 12.5 | slush |
|  |  | 5-7.5 | 64.4 | 2 | 106 | 610 | 12.82 | 4 | wetted snow |
|  |  | 7.5-10 | 54.5 | 2 | 111 | 493 | 10.85 | 0.88 | wetted half |
|  |  | 10-15 | 138.9 | 6 | 311 | 446 | 27.65 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | B8 | 0 | 53.7 | 1.1 | 54 | 1000 | 10.69 | 20.5 | brine |
|  |  | 0-2.5 | 113.3 | 3 | 126 | 902 | 22.55 | 10.1 | slush |
|  |  | 2.5-5 | 102 | 3 | 126 | 812 | 20.30 | 9.9 | slush |
|  |  | 5-7.5 | 64.6 | 2 | 111 | 584 | 12.86 | 2.7 | Slush + wetted |
|  |  | 7.5-10 | 57.6 | 2 | 116 | 498 | 11.46 | 0.16 | traces |
|  |  | 10-15 | 58.8 | 2 | 113 | 520 | 11.70 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | B9 | 0-5 | 111.5 | 5 | 251 | 444 | 22.19 | 0.05 | no |
|  |  | 5-10 | 109.6 | 5 | 251 | 436 | 21.82 | 0.03 | no |
|  |  | 10-15 | 111.6 | 5 | 251 | 444 | 22.21 | 0.05 | no |
|  |  | 15-18 | 71.6 | 3 | 141 | 509 | 14.25 | 0.0357 | no |

**FC: faceted crystals (305 kg/m3)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date** | **Sample** | **Layer, cm** | **Mass, gr** | **H, cm** | **Vol., cm3** | **P, kg/m3** | **SWE, mm** | **Sal., ppt** | **Snow Condtions** |
| 20/02/24 | C1 | 0-2.5 | 83.6 | 2 | 100 | 832 | 16.64 | 29 | slush |
|  |  | 2.5-5 | 54.3 | 3 | 126 | 432 | 10.81 | 18 | wetted |
|  |  | 5-7.5 | 27.1 | 2 | 100 | 270 | 5.39 | 0.04 | no |
|  |  | 7.5-10 | 27.1 | 2 | 100 | 270 | 5.39 | 0.04 | no |
|  |  | 10-19 | 126.3 | 9 | 452 | 279 | 25.14 | 0.025 | no |
|  |  |  |  |  |  |  |  |  |  |
| 22/02/24 | C2 | 0-2.5 | 108.6 | 3 | 131 | 831 | 21.62 | 26.2 | slush |
|  |  | 2.5-5 | 37.7 | 2 | 90 | 417 | 7.50 | 4.93 | pink wetted |
|  |  | 5-7.5 | 32.6 | 1.8 | 90 | 360 | 6.49 | 0.14 | no |
|  |  | 7.5-10 | 37.8 | 2 | 106 | 358 | 7.52 | 0.04 | no |
|  |  | 10-17.5 | 109.6 | 7 | 352 | 312 | 21.82 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 24/02/24 | C3 | 0-2.5 | 105.6 | 2.4 | 121 | 876 | 21.02 | 22.6 | slush bubbles |
|  |  | 2.5-5 | 52.9 | 2 | 111 | 479 | 10.53 | 14.5 | slush and wetted |
|  |  | 5-7.5 | 39.2 | 2 | 121 | 325 | 7.80 | 0.9 | traces |
|  |  | 7.5-10 | 46.8 | 3 | 141 | 333 | 9.32 | 0.14 | no |
|  |  | 10-16 | 89 | 6 | 291 | 305 | 17.71 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 26/02/24 | C4 | 0 | 27.3 | 0.5 | 27 | 1000 | 5.43 | 32.3 | brine |
|  |  | 0-2.5 | 77.5 | 2 | 95 | 812 | 15.43 | 20.3 | slush |
|  |  | 2.5-5 | 53.3 | 2 | 111 | 482 | 10.61 | 14.38 | slush and wetted |
|  |  | 5-7.5 | 39.6 | 2 | 111 | 358 | 7.88 | 1.94 | wetted |
|  |  | 7.5-10 | 42.7 | 2 | 121 | 354 | 8.50 | 0.17 | no |
|  |  | 10-17 | 101.3 | 6.5 | 327 | 310 | 20.16 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 29/02/24 | C5 | 0 | 15.1 | 0.3 | 15 | 1000 | 3.01 | 35.6 | ice |
|  |  | 0-2.5 | 109.7 | 3 | 126 | 873 | 21.84 | 15.6 | ice |
|  |  | 2.5-5 | 56.1 | 3 | 126 | 447 | 11.17 | 13 | wetted snow |
|  |  | 5-7.5 | 43.2 | 2.6 | 131 | 331 | 8.60 | 0.94 | traces |
|  |  | 7.5-10 | 38.6 | 3 | 126 | 307 | 7.68 | 0.03 | clean snow |
|  |  | 10-14.5 | 67.8 | 5 | 226 | 300 | 13.50 | 0.07 | clean snow |
|  |  |  |  |  |  |  |  |  |  |
| 06/03/24 | C6 | 0 | 15.2 | 0.3 | 15 | 1000 | 3.03 | 33.4 | ice |
|  |  | 0-2.5 | 100.2 | 2.4 | 121 | 831 | 19.94 | 14.2 | ice hard |
|  |  | 2.5-5 | 55.3 | 2.2 | 111 | 500 | 11.01 | 13.2 | wetted snow |
|  |  | 5-7.5 | 35.5 | 2 | 106 | 336 | 7.07 | 0.52 | traces half |
|  |  | 7.5-10 | 38.8 | 2 | 100 | 386 | 7.72 | 0.4 | few traces |
|  |  | 10-14 | 58.6 | 4 | 201 | 292 | 11.66 | 0.08 | no |
|  |  |  |  |  |  |  |  |  |  |
| 11/03/24 | C7 | 0-2.5 | 125.4 | 2.6 | 131 | 960 | 24.96 | 18.3 | slush |
|  |  | 2.5-5 | 64.4 | 3 | 126 | 513 | 12.82 | 15 | slush |
|  |  | 5-7.5 | 34.7 | 2 | 100 | 345 | 6.91 | 0.24 | traces |
|  |  | 7.5-10 | 37.6 | 2 | 100 | 374 | 7.48 | 0.05 | traces few |
|  |  | 10-14 | 71.4 | 4 | 201 | 355 | 14.21 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | C8 | 0 | 73 | 1.5 | 73 | 1000 | 14.53 | 19.3 | brine |
|  |  | 0-2.5 | 126.6 | 3 | 136 | 933 | 25.20 | 13.7 | slush |
|  |  | 2.5-5 | 46.4 | 2 | 100 | 462 | 9.24 | 1.9 | wetted |
|  |  | 5-7.5 | 38.4 | 2 | 121 | 318 | 7.64 | 0.11 | traces |
|  |  | 7.5-10 | 42 | 3 | 126 | 334 | 8.36 | 0.05 | no |
|  |  | 10-15 | 27.8 | 1.5 | 75 | 369 | 5.53 | 0.04 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | C9 | 0-5 | 84.6 | 5 | 251 | 337 | 16.84 | 0.01 | no |
|  |  | 5-10 | 78.3 | 4.4 | 221 | 354 | 15.59 | 0.01 | no |
|  |  | 10-15 | 72.6 | 4.3 | 216 | 336 | 14.45 | 0.01 | no |
|  |  | 15-20 | 75.6 | 4.4 | 221 | 342 | 15.05 | 0.01 | no |

**MF: melt freeze clusters 455 kg/m3**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date** | **Sample** | **Layer, cm** | **Mass, gr** | **H, cm** | **Vol., cm3** | **P, kg/m3** | **SWE, mm** | **Sal., ppt** | **Snow Condtions** |
| 20/02/24 | D1 | 0-2.5 | 95.1 | 2.5 | 126 | 757 | 18.93 | 20.7 | slush |
|  |  | 2.5-5 | 89.1 | 2.6 | 131 | 682 | 17.73 | 10.94 | slush and wetted |
|  |  | 5-7.5 | 40.9 | 2 | 100 | 407 | 8.14 | 0.18 | no |
|  |  | 7.5-10 | 40.9 | 2 | 100 | 407 | 8.14 | 0.18 | no |
|  |  | 10-20 | 198.2 | 9 | 452 | 438 | 39.45 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 22/02/24 | D2 | 0-2.5 | 92.1 | 2.3 | 116 | 797 | 18.33 | 19 | slush |
|  |  | 2.5-5 | 106.5 | 3 | 151 | 707 | 21.20 | 14.18 | slush + wetted snow |
|  |  | 5-7.5 | 73.1 | 2.6 | 131 | 560 | 14.55 | 0.735 | wet half |
|  |  | 7.5-10 | 55.2 | 2.5 | 126 | 439 | 10.99 | 0.151 | few traces |
|  |  | 10-18 | 167.8 | 8 | 402 | 417 | 33.40 | 0.04 | no |
|  |  |  |  |  |  |  |  |  |  |
| 24/02/24 | D3 | 0-2.5 | 94.6 | 2.3 | 116 | 819 | 18.83 | 17.5 | slush ice porous |
|  |  | 2.5-5 | 78.6 | 2.3 | 116 | 680 | 15.64 | 14.9 | slush ice porous |
|  |  | 5-7.5 | 80.6 | 3 | 151 | 535 | 16.04 | 5.7 | wetted snow icy |
|  |  | 7.5-10 | 45.1 | 2.2 | 111 | 408 | 8.98 | 0.24 | no |
|  |  | 10-19 | 184.6 | 8 | 402 | 459 | 36.74 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 26/02/24 | D4 | 0 | 23.3 | 0.5 | 23 | 1000 | 4.64 | 34.1 | brine |
|  |  | 0-2.5 | 96.9 | 2.5 | 126 | 771 | 19.29 | 15.5 | slush |
|  |  | 2.5-5 | 79.9 | 2.4 | 121 | 663 | 15.90 | 11.92 | slush and wetted |
|  |  | 5-7.5 | 64 | 2.4 | 121 | 531 | 12.74 | 1 | pink |
|  |  | 7.5-10 | 57 | 2.2 | 111 | 516 | 11.35 | 0.10 | no |
|  |  | 10-18 | 177.3 | 8 | 402 | 441 | 35.29 | 0.03 | no |
|  |  |  |  |  |  |  |  |  |  |
| 29/02/24 | D5 | 0 | 17.6 | 0.4 | 18 | 1000 | 3.50 | 36.4 | ice |
|  |  | 0-2.5 | 95.6 | 2.3 | 116 | 827 | 19.03 | 13.82 | ice snow |
|  |  | 2.5-5 | 82.1 | 2.4 | 121 | 681 | 16.34 | 11.7 | ice snow |
|  |  | 5-7.5 | 63.7 | 2.4 | 121 | 528 | 12.68 | 4.3 | pink ice snow |
|  |  | 7.5-10 | 66.4 | 2.4 | 121 | 551 | 13.22 | 0.35 | traces |
|  |  | 10-18 | 182.05 | 8 | 402 | 453 | 36.24 | 0.026 | no |
|  |  |  |  |  |  |  |  |  |  |
| 06/03/24 | D6 | 0 | 16.4 | 0.3 | 16 | 1000 | 3.26 | 36.8 | ice |
|  |  | 0-2.5 | 101.8 | 2.5 | 126 | 811 | 20.26 | 14.58 | snow ice hard |
|  |  | 2.5-5 | 75.9 | 2.3 | 116 | 657 | 15.11 | 10.95 | icy wetted snow |
|  |  | 5-7.5 | 58.1 | 2.2 | 111 | 526 | 11.56 | 2.42 | wetted snow |
|  |  | 7.5-10 | 65.6 | 2.5 | 126 | 522 | 13.06 | 0.21 | few traces |
|  |  | 10-18 | 161.1 | 7.3 | 367 | 439 | 32.07 | 0.05 | no |
|  |  |  |  |  |  |  |  |  |  |
| 11/03/24 | D7 | 0-2.5 | 117.4 | 2.5 | 126 | 935 | 23.37 | 11.85 | slush |
|  |  | 2.5-5 | 54.6 | 1.8 | 90 | 604 | 10.87 | 5.9 | wetted snow |
|  |  | 5-7.5 | 53.6 | 2.3 | 116 | 464 | 10.67 | 2.16 | wetted snow |
|  |  | 7.5-10 | 59.4 | 2.5 | 126 | 473 | 11.82 | 0.431 | traces half |
|  |  | 10-18 | 175.6 | 7.5 | 377 | 466 | 34.95 | 0.0275 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | D8 | 0-2.5 | 124.54 | 2.6 | 131 | 953 | 24.79 | 9.77 | slush |
|  |  | 2.5-5 | 65.24 | 2 | 100 | 649 | 12.99 | 3.9 | slush grains |
|  |  | 5-7.5 | 58.64 | 2.5 | 126 | 467 | 11.67 | 1.58 | slush wetted |
|  |  | 7.5-10 | 59.24 | 2.5 | 126 | 472 | 11.79 | 0.21 | traces |
|  |  | 10-18 | 170.6 | 8 | 402 | 424 | 33.96 | 0.02 | no |
|  |  |  |  |  |  |  |  |  |  |
| 12/03/24 | D9 | 0-5 | 144.24 | 5 | 251 | 574 | 28.71 |  | no |
|  |  | 5-10 | 128.24 | 5 | 251 | 511 | 25.53 |  | no |
|  |  | 10-15 | 111.24 | 4.5 | 226 | 492 | 22.14 |  | no |
|  |  | 15-20 | 104.24 | 4.8 | 241 | 432 | 20.75 |  | no |

**APPENDIX 1.2**

**Snow height, density, salinity and SWE of the snow layers.**

Snow properties in the snow-ice, brine-wetted, and non-saline (fresh) snow layers were calculated for each date and snow type, based on 2.5 cm segment data (Appendix 1.1). The fraction of each layer within these 2.5 cm segments was used to determine its bulk density.

**Snow layers thickness. cm**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSS** | Snow-ice | 2.0 | 2.6 | 3.0 | 3.7 | 4.3 | 4.0 | 4.0 | 5.0 |
| Brine-wetted snow | 2.1 | 2.3 | 3.2 | 2.7 | 2.5 | 3.1 | 3.2 | 2.0 |
| Fresh snow | 15.9 | 14.9 | 12.6 | 11.7 | 11.1 | 10.6 | 9.8 | 9.0 |
| All | 20.0 | 19.8 | 18.8 | 18.1 | 17.9 | 17.7 | 17.0 | 16.0 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSH** | Snow-ice | 2.2 | 2.0 | 2.8 | 3.7 | 4.8 | 4.3 | 3.8 | 5.0 |
| Brine-wetted snow | 2.5 | 3.6 | 4.3 | 4.4 | 3.5 | 4.3 | 5.2 | 3.5 |
| Fresh snow | 15.5 | 13.9 | 11.9 | 10.5 | 10.0 | 9.5 | 9.0 | 6.9 |
| All | 20.2 | 19.5 | 19.0 | 18.6 | 18.4 | 18.1 | 17.9 | 15.4 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **FC** | Snow-ice | 2.0 | 2.2 | 2.4 | 2.5 | 2.9 | 3.1 | 2.8 | 3.5 |
| Brine-wetted snow | 2.5 | 2.7 | 3.0 | 3.3 | 3.0 | 3.4 | 3.7 | 2.0 |
| Fresh snow | 15.8 | 14.2 | 12.7 | 11.7 | 11.3 | 10.7 | 10.3 | 10.0 |
| All | 20.3 | 19.1 | 18.1 | 17.5 | 17.2 | 17.2 | 16.8 | 15.5 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **MF** | Snow-ice | 2.5 | 2.3 | 2.6 | 3.4 | 3.6 | 3.3 | 2.8 | 1.5 |
| Brine-wetted snow | 2.8 | 4.3 | 4.4 | 3.8 | 3.8 | 4.0 | 4.2 | 5.5 |
| Fresh snow | 14.7 | 13.4 | 12.7 | 12.0 | 11.6 | 11.3 | 11.2 | 10.6 |
| All | 19.9 | 20.0 | 19.6 | 19.2 | 19.0 | 18.6 | 18.1 | 17.6 |

**Snow density. kg/m3**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSS** | Snow-ice | 788 | 754 | 807 | 758 | 749 | 749 | 815 | 747 |
| Brine-wetted snow | 541 | 528 | 517 | 551 | 463 | 472 | 520 | 511 |
| Fresh snow | 380 | 388 | 404 | 413 | 398 | 404 | 385 | 398 |
| Bulk | 438 | 452 | 488 | 504 | 492 | 494 | 512 | 521 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSH** | Snow-ice | 881 | 940 | 881 | 869 | 836 | 829 | 881 | 902 |
| Brine-wetted snow | 534 | 549 | 593 | 586 | 510 | 505 | 583 | 551 |
| Fresh snow | 416 | 458 | 434 | 451 | 448 | 449 | 446 | 520 |
| Bulk | 481 | 525 | 536 | 565 | 562 | 553 | 576 | 651 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **FC** | Snow-ice | 915 | 879 | 876 | 812 | 873 | 831 | 960 | 933 |
| Brine-wetted snow | 475 | 417 | 460 | 449 | 362 | 355 | 401 | 448 |
| Fresh snow | 273 | 335 | 319 | 332 | 304 | 339 | 365 | 352 |
| Bulk | 362 | 410 | 416 | 424 | 411 | 431 | 472 | 495 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **MF** | Snow-ice | 757 | 797 | 819 | 771 | 827 | 811 | 935 | 953 |
| Brine-wetted snow | 682 | 707 | 626 | 559 | 539 | 549 | 513 | 568 |
| Fresh snow | 417 | 447 | 434 | 478 | 502 | 481 | 469 | 448 |
| Bulk | 497 | 543 | 527 | 547 | 572 | 554 | 551 | 528 |

**SWE. mm**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSS** | Snow-ice | 15.8 | 19.3 | 24.5 | 28.0 | 32.2 | 30.0 | 32.6 | 41.7 |
| Brine-wetted snow | 11.5 | 12.2 | 15.5 | 15.1 | 12.6 | 15.9 | 17.7 | 11.7 |
| Fresh snow | 60.2 | 57.9 | 51.1 | 48.2 | 44.2 | 42.7 | 37.8 | 35.8 |
| All | 87.6 | 89.4 | 91.0 | 91.4 | 89.1 | 88.6 | 88.1 | 89.2 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSH** | Snow-ice | 19.2 | 19.1 | 24.5 | 31.8 | 40.4 | 35.9 | 33.0 | 45.1 |
| Brine-wetted snow | 13.5 | 19.9 | 25.7 | 27.1 | 20.5 | 23.1 | 30.8 | 24.4 |
| Fresh snow | 64.2 | 67.5 | 51.6 | 50.1 | 44.2 | 45.9 | 44.1 | 34.2 |
| All | 96.9 | 106.5 | 101.8 | 108.9 | 105.2 | 104.9 | 108.0 | 103.8 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **FC** | Snow-ice | 18.6 | 19.7 | 21.0 | 20.6 | 25.6 | 25.8 | 26.9 | 32.7 |
| Brine-wetted snow | 11.6 | 11.1 | 12.6 | 13.8 | 10.8 | 11.9 | 14.4 | 7.7 |
| Fresh snow | 43.0 | 48.7 | 40.5 | 38.9 | 34.2 | 36.1 | 37.6 | 35.2 |
| All | 73.2 | 79.5 | 74.1 | 73.4 | 70.6 | 73.7 | 78.8 | 75.5 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **MF** | Snow-ice | 18.9 | 18.1 | 21.1 | 26.5 | 30.0 | 27.0 | 26.2 | 14.3 |
| Brine-wetted snow | 18.8 | 30.1 | 27.1 | 21.2 | 20.8 | 22.1 | 21.2 | 30.7 |
| Fresh snow | 61.3 | 60.1 | 54.9 | 57.4 | 58.0 | 54.3 | 52.5 | 47.6 |
| All | 99.0 | 108.3 | 103.1 | 105.1 | 108.8 | 103.5 | 99.8 | 92.6 |

**Salinity.** ppt

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSS** | Brine runoff |  |  |  |  |  | 29.1 | 30.2 | 23.0 |
| Snow-ice | 33.9 | 25.5 | 20.8 | 18.2 | 16.9 | 16.1 | 11.9 | 8.8 |
| Brine-wetted snow | 15.0 | 13.9 | 10.6 | 11.8 | 11.0 | 6.6 | 2.9 | 2.4 |
| Fresh snow | 0.02 | 0.80 | 0.06 | 0.20 | 0.10 | 0.05 | 0.08 | 0.06 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **WSH** | Brine runoff |  |  |  |  |  |  |  | 19.5 |
| Snow-ice | 27.2 | 25.0 | 19.0 | 15.7 | 13.9 | 15.0 | 15.1 | 10.1 |
| Brine-wetted snow | 14.4 | 12.3 | 9.0 | 7.1 | 3.6 | 4.6 | 4.8 | 2.0 |
| Fresh snow | 0.48 | 0.10 | 0.09 | 0.03 | 0.02 | 0.02 | 0.03 | 0.03 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **FC** | Brine runoff |  |  |  |  |  | 33.4 | 26.3 | 19.3 |
| Snow-ice | 30.5 | 27.6 | 22.6 | 20.3 | 15.6 | 14.2 | 18.3 | 13.7 |
| Brine-wetted snow | 22.7 | 14.0 | 13.2 | 12.1 | 9.5 | 7.5 | 8.8 | 1.5 |
| Fresh snow | 0.03 | 0.03 | 0.09 | 0.10 | 0.05 | 0.25 | 0.04 | 0.05 |
|  |  |  |  |  |  |  |  |  |  |
|  | Date | 20/02/24 | 22/02/24 | 24/02/24 | 26/02/24 | 29/02/24 | 06/03/24 | 11/03/24 | 12/03/24 |
| **MF** | Brine runoff |  |  |  | 34.1 | 36.4 | 36.8 | 30.1 | 23.3 |
| Snow-ice | 20.7 | 19.0 | 17.5 | 15.5 | 13.8 | 14.6 | 11.9 | 9.8 |
| Brine-wetted snow | 10.9 | 14.2 | 11.5 | 4.7 | 6.4 | 5.3 | 3.9 | 3.0 |
| Fresh snow | 0.13 | 0.31 | 0.14 | 0.07 | 0.19 | 0.13 | 0.23 | 0.12 |