**Bio-albedo Logsheet: ASD Field Spec**

Standardized metadata for pairing spectral reflectance with biological and glaciological measurements on ice surfaces. Designed for use with the ASD Field Spec with naturally illuminated sample surface. A new sheet with new general conditions will be required for each new site or new procedure.

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| **General Conditions** | | | |
| Site: | GRIS: S6 | Mode: | RAW DN |
| Date: | 13 July 2017 | Illumination Type: | Natural, solar noon +/- 2hr |
| Operator: | JC, AT, SH | Filename: Root | C:/ProgramFiles/ASD/JC2017 |
| Instrument On time: | 8.15 – 9.55 mains, 10.05 battery | Sample surface area (m2) |  |
| Reference Panel: | Sheffield WR | Sensor height (m) |  |
| Fore-optic | RCR/8degree | Bio/dust sample dimensions (x,y,z: cm) | 100 x 100 x 20 mm |
| Fo-jumper | Sheffield 1.5m | Bio/dust sample volume: (cm3) | 200 cm3 |

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| **Time** | **Opt** | **DC** | **WR** | **Filename (root\...)** | **Description** | **Cloud (1/8)** | **Surf Type** | **Grain Size (mm)** | **Viewing angle (°)** | **Surf Img #** | **Bio/dust Smpl #** |
| 10:32 | Y | Y | Y | 13\_7\_site1\_ALUP | Height 50 cm. clean ice, coarse grains | 1 | CI |  | UP |  | As per filenames |
|  | Y | Y | Y | 13\_7\_SITE1\_ALDN |  | 1 | CI |  | dn |  |  |
|  | Y | Y | Y | 13\_7\_site1\_alup2 |  | 1 | Ci |  | up |  |  |
|  | Y | Y | Y | 13\_7\_SITE1\_ALDN2 |  |  |  |  |  |  |  |
| 10:55 | Y | Y | Y | 13\_7\_site1\_hcrf |  | 1 | Ci |  | nadir | 110\_4248 |  |
| 11:08 | Y | Y | N | 13\_7\_site2\_ALUP1 | SMALL CRYO HOLES PRESENT  HEIGHT 30CM FOR ALL 4 | 1 | LA W |  |  |  |  |
| 11:09 | Y | Y | N | 13\_7\_S2\_ALDN1 |  | 1 | LA W |  |  |  |  |
| 11:11 | Y | Y | N | 13\_7\_S2‑ALUP2 |  | 1 | LA W |  |  |  |  |
| 11:12 | Y | Y | N | 13\_7\_S2\_ALDN2 |  | 1 | LA W |  |  |  |  |
| 11;18 | Y | Y | Y | 13\_7\_S2\_HCRF | HEIGHT 54 C M | 1 | LA W |  |  | 110-4249 |  |
| 11:26 | Y | Y | N | 13\_7\_S3\_ALUP1 | HEIGHT 50 CM | 3 | CI | 1 MM |  |  |  |
|  |  |  |  | ALDN1 |  | 3 |  |  |  |  |  |
| 1129 |  |  |  | ALUP2 |  | 3 |  |  |  |  |  |
| 1130 |  |  |  | ALDN2 |  | 3 |  |  |  |  |  |
| 1136 |  |  |  | S3 HCRF | HEIGHT 50CM | 3 |  |  |  | 110-4250 |  |
| 1143 | Y | Y | N | S4 ALUP1 |  | 3 | SNOW | 1 MM |  |  |  |
| 1145 | Y | Y | N | S4 ALDN1 |  | 3 |  |  |  |  |  |
| 1146 | Y | Y | N | S4 ALUP2 |  | 3 |  |  |  |  |  |
| 1147 | Y | Y | N | S4 ALDN2 |  | 3 |  |  |  |  |  |
| 1154 | Y | Y | Y | S4 HCRF | THIN CIRRUS CLOUD  HEIGHT 45CM |  |  |  |  | 110-4251 |  |
| 1202 | Y | Y | N | S5 ALUP1 | DISC OBSCURED | 4 | LA |  |  |  |  |
| 1203 | Y | Y | N | S5 ALDN1 | DISC OBSCURED | 4 |  |  |  |  |  |
| 1205 | Y | Y | N | S5 ALUP2 | DISC OBSCURED | 4 |  |  |  |  |  |
| 1206 | Y | Y | N | S5 ALDN2 | DISC OBSCURED | 4 |  |  |  |  |  |
| 1211 | Y | Y | Y | S5 HCRF | DISC OBSCURED  VERY THIN CLOUD  HEIGHT 50 CM | 4 |  |  | NADIR | 110-4252 |  |
| 1234 | Y | Y | N | 13\_7\_SB1\_ALUP1 | JC Wp6  HEIGHT 50 CM  DISC OBSCURED | 5 |  |  |  |  |  |
| 1237 | Y | Y | N | 13\_7\_SB1\_ALDN1`` |  | 5 |  |  |  |  |  |
| 1239 | Y | Y | N | 13\_7\_SB1\_ALUP2 | AS ABOVE |  |  |  |  |  |  |
| 1240 | Y | Y | N | 13\_7\_SB1\_ALDN2 | AS ABOVE |  |  |  |  |  |  |
| 1249 | Y | Y | Y | 13\_7\_SB1\_HCRF | THICKER CLOUD  FILES START AT 20  HEIGHT 55 CM | 6 |  |  |  | 110-4253 |  |
| 1255 | Y | Y | N | 13\_7\_SB2\_ALUP1 | 2ND ATTEMPT START AT 20, 1257  HEAVY ALGAE  SOLID ICE  SMALL CRYOH  WP7 | 7 |  |  |  |  |  |
| 1258 | Y | Y | N | 13\_7\_SB2\_ALDN1 |  | 7 |  |  |  |  |  |
| 1300 | Y | Y | N | 13‑7\_SB2\_ALUP2 |  |  |  |  |  |  |  |
| 1302 | Y | Y | N | ALDN2 | CLOUD THICKNING |  |  |  |  |  |  |
| 1306 | Y | Y | Y | HCRF |  |  |  |  |  | 110-4254 |  |
| 1311 | Y | Y | N | SB3 ALUP1 | WP8  CLEAN ICE  HETEROGENEOUS  FINE GRAIN AND CORAL/CRYOCONITE | 7 |  |  |  |  |  |
| 1313 | Y | Y | N | SB3 ALDN1 |  |  |  |  |  |  |  |
| 1315 | Y | Y | N | SB3 ALUP2 |  |  |  |  |  |  |  |
| 1316 | Y | Y | N | SB3 ALDN2 |  |  |  |  |  |  |  |
| 1322 | Y | Y | Y | SB3 HCRF |  |  |  |  |  | 110-4255 |  |
| 1328 | Y | Y | N | SB4 ALUP1 | WP 9  HEAVY ALGAE  THICK CLOUD | 7 |  |  |  |  |  |
| 1329 | Y | Y | N | SB4 ALDN1 |  |  |  |  |  |  |  |
| 1331 |  |  |  |  | FILES ARE SB4 ALUP1 20-40 |  |  |  |  |  |  |
| 1332 | Y | Y | N | SB4 ALDN2 |  |  |  |  |  |  |  |
| 1336 | Y | Y | Y | SB4 HCRF | 50 CM HEIGHT |  |  |  |  | 110-4256 |  |
| 1341 | Y | Y | N | SB5 ALUP1 | WP10  SNOW  MEDIUM GRAIN  HEIGHT 30 CM | 7 | 2-3MM GRAIN |  |  |  |  |
| 1342 | Y | Y | N | SB5 ALDN1 |  |  |  |  |  |  |  |
| 1343 | Y | Y | N | SB5 ALUP2 |  |  |  |  |  |  |  |
|  | Y | Y | N | SB5 ALDN2 |  |  |  |  |  |  |  |
| 1349 | Y | Y | Y | SB5 HRCF | 50 CM HEIGHT |  |  |  |  | 110-4257 |  |
| 1353 | Y | Y | N | SB6 ALUP1 | WP11  HEAVYISH ALGAE  SOLIOD ICE  SOME CHOLES  30CM HEIGHT | 7 |  |  |  |  |  |
| 1354 | Y | Y | N | SB6 ALDN1 |  |  |  |  |  |  |  |
| 1356 | Y | Y | N | SB6 ALUP2 |  |  |  |  |  |  |  |
| 1357 | Y | Y | N | SB6 ALDN2 |  |  |  |  |  |  |  |
| 1400 | Y | Y | Y | SB6 HCRF |  |  |  |  |  | 110-4258 |  |
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**Bio-albedo Logsheet: Pyranometry**

Standardized metadata for pairing albedo measurements from pyranometery with biological and glaciological measurements on ice surfaces. Designed for use with naturally illuminated sample surfaces. A new sheet with new general conditions will be required for each new site or new procedure.

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| **General Conditions** | | | |
| Site: |  | Sample surface area (m2) |  |
| Date: |  | Sensor height (m) |  |
| Operator: |  | Bio/dust sample dimensions (x,y,z: cm) |  |
| Pyranometer model: |  | Bio/dust sample volume: (cm3) |  |
| Illumination Type: |  | Filename: Root |  |
| FOV (°) |  |  |  |

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| **Time** | **Filename (root\...)** | **Description** | **Cloud (1/8)** | **Surf Type** | **Grain Size (mm)** | **Tilt angle (°)** | **Surf Img #** | **Bio/dust Smpl #** |
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