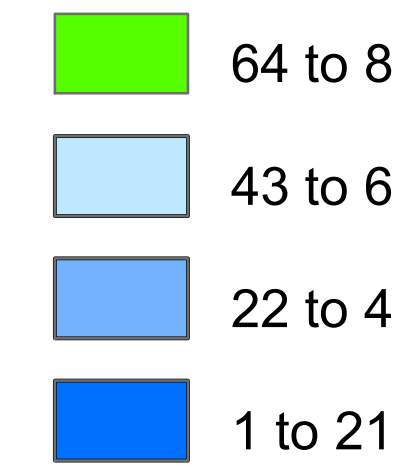


Calculated Solar Radiation

Big Bar-Lillooet-Lytton

Map 2 of 3

October

(kWh/m²)

iButton

 Private Land Agricultural Land Reserve (as of April 30 2011) Indian Reserve

| | |
|--|-------|
| | Water |
|--|-------|

This series of maps was produced by Dave Whiting and Associates pro bono using the Solar Analyst module within the Spatial Analyst Extension of ArcGIS 9.2. This modelling tool calculates the potential radiation in Kilowatt Hours per Square Metre (kWh/m²). The topography of the landscape was incorporated using a Digital Elevation Model at a 25 metre resolution. This map shows potential solar radiation that has been calculated by the model and aggregated for a month. Atmospheric conditions such as cloud and smoke were excluded in the calculations. This map is one of 36 map sheets. (Three map sheets are required to show the geographical extent of the area between Lytton and Big Bar at a 1:50,000 scale; map sheets are available for each month).

These maps products can support a variety of planning and assessment processes associated with agricultural development, solar energy utilization, forestry, environmental assessment and ecological research. They have been produced in support of developing a "Climate and Feasibility Assessment of Growing Wine Grapes in the Lillooet-Lytton Area, British Columbia" - a research partnership that includes the British Columbia Grape Growers' Association, local property owners, Investment Agriculture Foundation of BC, provincial and provincial and federal agencies. Further information on this project including additional long-term climate data, progress reports, specific grape trial information can be found at www.grapegrowers.bc.ca Other web sites that host reports on this project are:

- o www.lillooetbc.com/business.aspx
- o www.lytton.bc.ca/siteengine/activepage?PageID=78
- o www.al.gov.bc.ca/grape/fctsheets/htm
- o www.fraserbasin.bc.ca/publications/fbc.reports.html

The solar radiation maps have been produced by Dave Whiting and Associates. Information on the solar radiation map team and access to free downloadable PDF files of the maps can be found at <http://www.solarradiationmapping.ca>. Special thanks to Steve Losso for providing iButton climate data and John Vielvoye, P.Ag. for his invaluable input and expertise.

Supplementary iButton* Data

| iButton Number | Elevation (m) | Extreme Minimum Winter Temperature (°C) | | | | Growing Degree Days (Base 10°C) ¹ | | | | Frost Free Period (FFP) ² | | | | | | | | | |
|----------------|---------------|---|-------|-------|-------|--|------|------|-------------------|--------------------------------------|------|--------|--------------------------|--------|--------|-------------------------|--------|------|--|
| | | 2007 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2010 ² | FFP (# Days >0°C) | | | Last Day of Spring Frost | | | First Day of Fall Frost | | | |
| | | | | | | | | | | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | |
| 1 | 340 | -17.3 | -24.1 | -21.0 | -16.6 | 1310 | 1708 | 1420 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 2 | 190 | -18.1 | -22.8 | -18.9 | -15.3 | 1055 | 1302 | 1088 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 3 | 217 | -17.6 | -23.6 | -19.9 | -15.4 | 1206 | 1492 | 1196 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 4 | 341 | -18.0 | -23.5 | -19.9 | -16.1 | 1148 | 1458 | 1179 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 5 | 336 | -18.3 | -23.9 | -20.4 | -16.5 | 1108 | 1398 | 1131 | 169 | 167 | 177 | Apr 26 | Apr 24 | Apr 23 | Oct 12 | Oct 08 | Oct 17 | | |
| 6 | 328 | -19.5 | -24.1 | -19.9 | -16.9 | 1065 | 1338 | 1015 | 166 | 189 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 7 | 309 | -17.8 | -26.3 | -22.4 | -18.1 | 1403 | 1682 | 1381 | 171 | 178 | 189 | Apr 23 | Apr 15 | Apr 11 | Oct 11 | Oct 10 | Oct 17 | | |
| 9 | 340 | -17.7 | -26.5 | -22.4 | -17.5 | 1320 | 1621 | 1310 | 169 | 169 | 190 | Apr 23 | Apr 24 | Apr 10 | Oct 09 | Oct 10 | Oct 17 | | |
| 10 | 315 | -18.5 | -25.5 | -20.9 | -17.6 | 1282 | 1579 | 1239 | 160 | 167 | 188 | May 02 | Apr 26 | Apr 11 | Oct 09 | Oct 10 | Oct 16 | | |
| 11 | 225 | -16.4 | -24.2 | -20.1 | -17.1 | 1301 | 1586 | 1299 | 166 | 165 | 188 | Apr 26 | Apr 26 | Apr 11 | Oct 09 | Oct 08 | Oct 16 | | |
| 12 | 349 | -17.8 | -25.7 | -21.3 | -16.4 | 1306 | 1612 | 1271 | 166 | 169 | 190 | Apr 26 | Apr 24 | Apr 10 | Oct 09 | Oct 10 | Oct 17 | | |
| 13 | 300 | -20.4 | -25.3 | -20.4 | -16.9 | 1175 | 1528 | 1203 | 166 | 152 | 160 | Apr 26 | May 09 | May 09 | Oct 09 | Oct 08 | Oct 16 | | |
| 14 | 271 | -18.2 | -22.2 | -18.9 | -15.3 | 1286 | 1604 | 1312 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 15 | 297 | -18.0 | -22.4 | -19.2 | -15.3 | 1289 | 1580 | M | 166 | 166 | 189 | Apr 26 | Apr 27 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 16 | 263 | -19.2 | -23.7 | -20.1 | -16.9 | 1313 | 1440 | 1153 | 166 | 167 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 17 | 297 | -19.3 | -23.5 | -19.4 | -17.2 | 1197 | 1493 | 1176 | 166 | 167 | 190 | Apr 26 | Apr 26 | Apr 11 | Oct 09 | Oct 10 | Oct 18 | | |
| 18 | 339 | -17.7 | -23.2 | -19.4 | -16.9 | 1247 | 1528 | 1170 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 19 | 316 | -17.7 | -23.5 | -19.7 | -16.6 | 1229 | 1522 | 1205 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 20 | 241 | -17.7 | -22.6 | -18.6 | -15.9 | 1295 | 1654 | M | 166 | 169 | 190 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 18 | | |
| 21 | 267 | -17.0 | -23.6 | -19.6 | -15.9 | 1278 | 1615 | 1288 | 169 | 167 | 189 | Apr 23 | Apr 26 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 22 | 284 | -20.1 | -26.3 | -20.9 | -17.2 | 1220 | 1530 | 1221 | 160 | 165 | 164 | May 02 | Apr 26 | May 06 | Oct 09 | Oct 08 | Oct 17 | | |
| 23 | 200 | -18.2 | -24.2 | -19.6 | -16.1 | 1252 | 1573 | 1341 | 166 | 167 | 189 | Apr 26 | Apr 26 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 24 | 369 | -17.1 | -23.7 | -19.9 | -16.7 | 1296 | 1596 | 1264 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 25 | 375 | -17.3 | -24.4 | -20.5 | -16.7 | 1291 | 1563 | 1230 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 26 | 352 | -17.8 | -23.5 | -19.5 | -16.5 | 1266 | 1546 | 1223 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 27 | 318 | -17.6 | -23.4 | -19.9 | -16.5 | M | 1588 | 1282 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 28 | 375 | -22.5 | -29.1 | -22.5 | -22.9 | 1141 | 1423 | 1135 | 160 | 159 | 160 | May 02 | Apr 29 | May 09 | Oct 09 | Oct 05 | Oct 16 | | |
| 29 | 385 | -21.9 | -28.6 | -22.1 | M | 1131 | 1442 | 1124 | 159 | 160 | 160 | May 02 | Apr 28 | May 09 | Oct 08 | Oct 05 | Oct 16 | | |
| 30 | 405 | -18.6 | -27.6 | -23.2 | -18.7 | 1202 | 1493 | 1165 | 168 | 169 | 163 | Apr 26 | Apr 24 | May 06 | Oct 09 | Oct 10 | Oct 16 | | |
| 31 | 413 | -18.8 | -28.2 | -23.5 | -18.7 | 1291 | 1557 | 1283 | 169 | 169 | 160 | Apr 23 | Apr 24 | May 09 | Oct 09 | Oct 10 | Oct 16 | | |
| 32 | 238 | -17.2 | -24.7 | -20.6 | -16.8 | 1324 | 1639 | 1354 | 166 | 165 | 190 | Apr 26 | Apr 26 | Apr 10 | Oct 09 | Oct 08 | Oct 17 | | |
| 33 | 255 | -16.6 | -22.2 | -18.6 | -15.2 | 1247 | 1534 | 1243 | 168 | 169 | 175 | Apr 26 | Apr 24 | Apr 25 | Oct 11 | Oct 10 | Oct 17 | | |
| 34 | 264 | -16.3 | -22.5 | -18.3 | -15.0 | 1321 | 1605 | 1321 | 168 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 11 | Oct 10 | Oct 17 | | |
| 35 | 310 | -16.3 | -23.2 | -19.2 | -15.6 | 1318 | 1613 | 1272 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 36 | 415 | -16.9 | -24.1 | -20.0 | -17.5 | 1222 | 1471 | 1218 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 37 | 352 | -16.5 | -23.5 | -19.5 | -17.2 | 1249 | 1537 | 1218 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 45 | 412 | -18.0 | -24.3 | -20.8 | -16.3 | 1184 | 1477 | 1180 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 46 | 285 | -18.1 | -24.6 | -20.7 | -15.9 | 1166 | 1510 | 1181 | 166 | 167 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 08 | Oct 17 | | |
| 47 | 256 | -17.0 | -23.4 | -19.6 | -15.6 | 1285 | 1609 | 1310 | 171 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 11 | Oct 10 | Oct 17 | | |
| 48 | 210 | -16.8 | -23.2 | -19.2 | -15.0 | 1220 | 1549 | 1261 | 171 | 167 | 189 | Apr 23 | Apr 26 | Apr 11 | Oct 11 | Oct 10 | Oct 17 | | |
| 49 | 196 | -17.7 | -23.6 | -19.1 | -15.2 | 1311 | 1642 | 1379 | 166 | 167 | 189 | Apr 26 | Apr 28 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 53 | 348 | -18.9 | -25.4 | -20.7 | -16.4 | 1089 | 1439 | 1066 | 165 | 169 | 189 | Apr 26 | Apr 26 | Apr 11 | Oct 09 | Oct 08 | Oct 17 | | |
| 54 | 353 | -18.2 | -24.7 | -20.6 | -16.5 | 1130 | 1698 | 1252 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 55 | 364 | -17.6 | -24.8 | -21.1 | -16.8 | 1164 | 1579 | 1162 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 56 | 364 | -17.3 | -25.3 | -21.5 | -16.5 | M | 1516 | 1163 | 166 | 169 | 190 | Apr 26 | Apr 24 | Apr 10 | Oct 09 | Oct 10 | Oct 17 | | |
| 57 | 416 | -17.4 | -25.1 | -21.3 | -16.5 | 1166 | 1450 | 1160 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 58 | 382 | -17.3 | -24.6 | -20.9 | -16.6 | 1225 | 1561 | 1259 | 169 | 189 | 190 | Apr 23 | Apr 04 | Apr 10 | Oct 09 | Oct 10 | Oct 17 | | |
| 59 | 302 | -20.0 | -24.8 | -20.0 | -17.8 | 1154 | 1476 | 1127 | 166 | 160 | 163 | Apr 26 | May 01 | May 06 | Oct 09 | Oct 08 | Oct 16 | | |
| 60 | 402 | -22.5 | -28.9 | -23.4 | -19.2 | 1128 | 1423 | 1073 | 158 | 160 | 160 | May 02 | May 01 | May 09 | Oct 07 | Oct 08 | Oct 16 | | |
| 62 | 250 | -16.2 | -22.5 | -18.3 | -15.2 | 1272 | 1566 | 1240 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 63 | 275 | -16.2 | -22.8 | -18.4 | -15.7 | 1250 | 1537 | 1240 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 66 | 200 | -16.6 | -22.9 | -18.8 | -15.7 | 1315 | 1609 | 1323 | 122 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Aug 26 | Oct 10 | Oct 17 | | |
| 67 | 275 | -16.9 | -22.9 | -18.7 | -16.0 | 1258 | 1579 | 1344 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 68 | 302 | -16.7 | -23.6 | -19.1 | -16.0 | M | 1540 | 1346 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 69 | 288 | M | -25.4 | -20.6 | -18.3 | 1224 | 1555 | 1206 | 166 | 160 | 160 | Apr 26 | May 01 | May 09 | Oct 09 | Oct 08 | Oct 16 | | |
| 70 | 277 | -18.4 | -24.4 | -19.6 | -17.5 | 1160 | 1449 | 1105 | 160 | 165 | 163 | May 02 | Apr 26 | May 06 | Oct 09 | Oct 08 | Oct 16 | | |
| 71 | 318 | -17.1 | -23.6 | -19.7 | -16.0 | M | 1594 | 1253 | 169 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 80 | 222 | -17.4 | -22.1 | -18.5 | -15.5 | 1345 | 1686 | 1359 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 81 | 182 | -17.3 | -21.4 | -17.8 | -15.0 | 1302 | 1611 | 1306 | 171 | 169 | 189 | Apr 23 | Apr 24 | Apr 11 | Oct 11 | Oct 10 | Oct 17 | | |
| 82 | 300 | -17.0 | -24.7 | -20.7 | -18.7 | 1240 | 1578 | 1266 | 161 | 160 | 160 | May 02 | May 01 | May 09 | Oct 10 | Oct 08 | Oct 16 | | |
| 84 | 304 | -18.0 | -24.9 | -20.8 | -18.2 | 1304 | 1613 | 1323 | 160 | 160 | 160 | May 02 | May 01 | May 09 | Oct 09 | Oct 08 | Oct 16 | | |
| 85 | 210 | -16.4 | -24.0 | -19.3 | -16.2 | 1268 | 1607 | 1312 | 160 | 167 | 189 | May 02 | Apr 26 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 86 | 308 | -19.2 | -24.8 | -19.5 | -17.1 | 1292 | 1621 | 1248 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |
| 87 | 400 | -16.7 | -23.9 | -20.0 | -18.1 | 1269 | 1553 | 1225 | 166 | 169 | 189 | Apr 26 | Apr 24 | Apr 11 | Oct 09 | Oct 10 | Oct 17 | | |

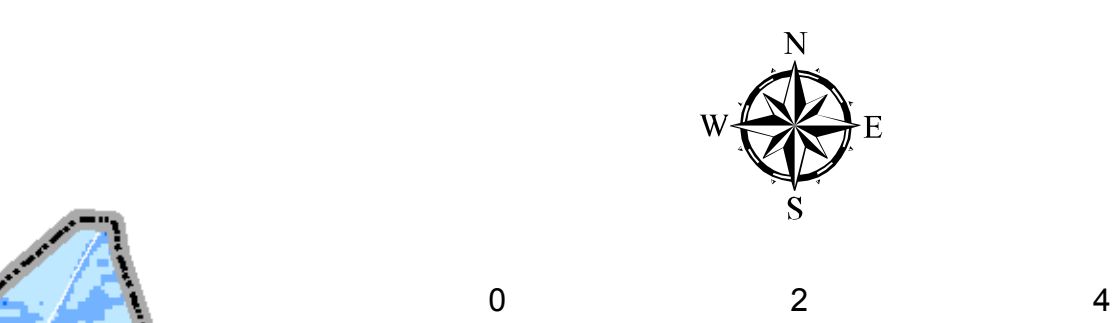
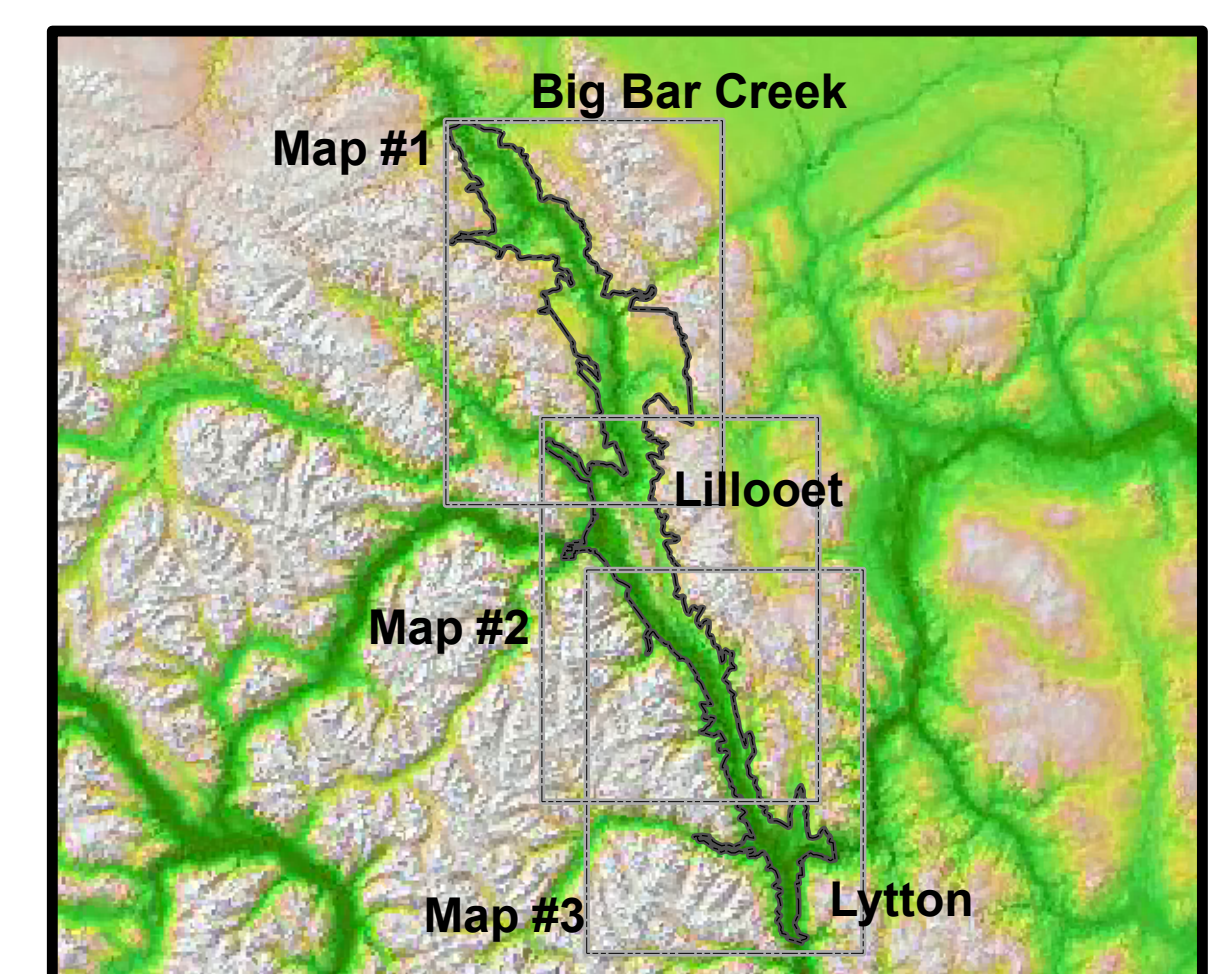
Notes:
The table contain data based on annual summaries while the maps are based on monthly data.

*IButtons are portable data loggers designed to withstand harsh environments
M = Missing due to incomplete data

1 Growing degree days (GDD) are calculated as total GDD and may include GDD units outside the period April 1st to October 31st. GGD are not available for 2007

2 Growing degree days for 2010 were calculated using the average hourly temperature over a 24-hour period instead of the daily mean temperature

3 Frost free period is calculated as the difference between the Julian date of first Fall frost and the Julian date of the last Spring frost. FFP is not available for 2007



1:50,000

Date: July 10 2011
Projection: BC Albers
Datum: NAD 83

British Columbia Grapegrowers' Association
<http://www.grapegrowers.bc.ca>

Dave Whiting and Associates
<http://www.solarradiationmapping.ca>