# Supplementary data

## Late Holocene temperature variability in Tasmania inferred from borehole temperature data

**Table S1: Geologic, geographic and topographic features of the Tasmanian borehole network. *Boreholes located in variable lithologies and formation ** Boreholes with very high model misfit and were not considered for regional average of GSTH. MG = Mathinna Group mudstones and siltstones, PSG = Parmeener Super Group upper (mudstones, siltstone) and lower (tillites) , JD = Jurassic Dolerite, TC = Tertiary Conglomerate.**

| Hole Name | Depth, m | Elevation, m | Distance from coast, km | Ground Cover | Slope | Aspect | Relief | MGA94 Northing | MGA94 Easting | Lithology | Thermal conductivity range | Sum sq misfit | Area misfit | Max dT in last 500 Years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bangor | 251 | 204 | 20 | Cut Forest | 5.0 | 173 | 135 | 5440427 | 508572 | MG | 2.06-3.77 | 0.28 | 3.65 | 1.79 |
| Beaconsfield* | 249 | 90 | 15 | Forest | 5.6 | 14 | 92 | 5439884 | 489244 | JD/PSG | 2.28-2.34 | 0.15 | 1.73 | 1.57 |
| Ben Lomond | 277 | 694 | 60 | Forest | 1.1 | 21 | 318 | 5402059 | 546613 | MG | 3.87-4.41 | 0.16 | 1.09 | 1.3 |
| Bluestone Tier | 253 | 353 | 11 | Forest | 4.4 | 297 | 205 | 5300093 | 571901 | JD | 2.07-2.18 | 0.53 | 4.05 | 1.44 |
| Cambridge | 236 | 43 | 2 | Grass | 4.5 | 61 | 246 | 5261742 | 534378 | TC | 1.93-2.22 | 1.12 | 4.23 | 1.91 |
| Charlton | 251 | 242 | 42 | Grass | 1.0 | 34 | 65 | 5339821 | 545174 | JD | 2.23-2.44 | 2.31 | 16.24 | 1.62 |
| Elizabeth | 299 | 439 | 45 | Forest | 2.2 | 100 | 199 | 5356701 | 549501 | JD | 1.99-2.27 | 0.82 | 8.53 | 1.1 |
| Epping | 289 | 215 | 74 | Grass | 1.7 | 95 | 75 | 5382606 | 533251 | JD | 1.87-2.18 | 1.73 | 16.90 | 1.54 |
| Fingal* | 251 | 577 | 17 | Forest | 6.1 | 87 | 337 | 5380292 | 589312 | JD/uPSG | 0.68-2.53 | 3.61 | 10.18 | 1.85 |
| Frankford* | 249 | 289 | 38 | Forest | 1.0 | 146 | 151 | 5416602 | 490171 | JD/uPSG | 2.17-3.26 | 0.50 | 5.83 | 1.2 |
| Kingston | 236 | 287 | 60 | Grass | 4.5 | 314 | 88 | 5383093 | 547791 | JD | 1.88-1.97 | 0.14 | 2.42 | 0.57 |
| Lake Leake | 302 | 475 | 21 | Forest | 2.5 | 174 | 147 | 5338586 | 568510 | JD | 1.96-2.18 | 0.65 | 4.78 | 1.63 |
| Lemont | 246 | 333 | 36 | Forest | 4.4 | 295 | 151 | 5322898 | 547437 | JD | 2.09-2.31 | 0.60 | 5.38 | 1.73 |

| Lisle | 247 | 307 | 24 | Forest | 1.3 | 28 | 468 | 5437495 | 528218 | MG | 2.32-4.8 | 0.10 | 1.37 | 1.03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Macquarie* | 221 | 295 | 68 | Grass | 5.6 | 33 | 234 | 5359621 | 526048 | JD/uPSG | 2.44-4.96 | 0.91 | 5.55 | 1.63 |
| Marion Bay* | 250 | 81 | 2 | Grass | 0.3 | 132 | 200 | 5260030 | 568645 | Tb, JD, uPSG | 2.02-2.93 | 2.55 | 10.59 | 1.78 |
| Mt Nicholas* | 248 | 398 | 20 | Forest | 7.0 | 335 | 471 | 5401440 | 587962 | lPSG/MG | 1.85-4.8 | 3.40 | 14.99 | 1.8 |
| Murdunna** | 245 | 139 | 5 | Forest | 8.0 | 344 | 161 | 5242021 | 573413 | JD | 2.13-2.42 | 62.15 | 51.94 | 6.49 |
| Native Hut* | 249 | 378 | 25 | Forest | 5.0 | 87 | 249 | 5284634 | 530061 | uPSG/JD | 2.19-4.48 | 8.91 | 16.77 | 1.85 |
| Nunamara* | 236 | 727 | 47 | Forest | 7.3 | 151 | 410 | 5415737 | 528262 | JD/lPSG | 2.17-2.47 | 0.09 | 0.79 | 1.21 |
| Oatlands** | 249 | 526 | 52 | Grass | 5.0 | 23 | 115 | 5319896 | 531347 | JD | 1.96-3.18 | 33.50 | 60.22 | 4.55 |
| Perth | 253 | 200 | 61 | Grass | 3.1 | 114 | 91 | 5399080 | 513500 | JD | 2.07-2.41 | 1.73 | 10.31 | 1.86 |
| Rheban | 241 | 79 | 4 | Grass | 3.0 | 165 | 226 | 5279380 | 573260 | JD | 2.05-2.23 | 0.85 | 3.09 | 1.71 |
| Rocherlea | 250 | 49 | 40 | Grass | 5.0 | 273 | 178 | 5420496 | 509171 | JD | 1.97-2.25 | 0.67 | 7.68 | 0.9 |
| Runnymede | 248 | 247 | 17 | Grass | 2.7 | 224 | 85 | 5280238 | 546175 | JD | 2.17-2.63 | 2.00 | 10.04 | 1.49 |
| Snow Hill | 280 | 749 | 26 | Forest | 3.7 | 158 | 162 | 5358389 | 572873 | JD | 1.99-2.25 | 0.51 | 3.42 | 1.59 |
| Sorell* | 248 | 50 | 1 | Grass | 1.7 | 90 | 81 | 5260122 | 550181 | lPSG/JD | 2.2-3.76 | 3.20 | 14.79 | 1.92 |
| Swan | 189 | 126 | 20 | Forest | 3.5 | 134 | 207 | 5359271 | 588108 | JD | 1.98-2.13 | 0.14 | 1.16 | 1.5 |
| Temple Bar | 296 | 353 | 57 | Forest | 5.2 | 289 | 162 | 5403592 | 530426 | JD | 2.28-2.49 | 0.76 | 4.51 | 0.92 |
| Tiberias* | 253 | 437 | 38 | Grass | 0.5 | 266 | 119 | 5301300 | 531690 | uPSG | 1.7-4.5 | 1.35 | 5.97 | 1.91 |
| Tooms** | 263 | 414 | 16 | Forest | 0.3 | 8 | 177 | 5319894 | 567354 | JD | 1.8-2.07 | 9.27 | 30.43 | 2.64 |
| Tower Hill | 253 | 584 | 33 | Forest | 2.2 | 2 | 178 | 5399699 | 573964 | MG | 4.06-5.23 | 0.16 | 3.72 | 0.83 |
| Tunbridge* | 252 | 252 | 57 | Grass | 2.5 | 134 | 27 | 5339428 | 529875 | JD, uPSG, JD | 1.83-2.39 | 0.72 | 5.90 | 1.03 |
| Westbury | 252 | 233 | 56 | Forest | 4.2 | 305 | 61 | 5396730 | 485940 | JD | 2.07-2.21 | 0.53 | 6.64 | 0.84 |
| Weymouth | 250 | 102 | 4 | Forest | 4.7 | 318 | 52 | 5457196 | 508409 | MG | 2.95-4.02 | 0.21 | 3.36 | 0.7 |
| Woodsdale* | 252 | 365 | 22 | Forest | 1.7 | 70 | 146 | 5296499 | 552007 | uPSG/JD | 2.28-4.54 | 3.39 | 17.07 | 1.81 |

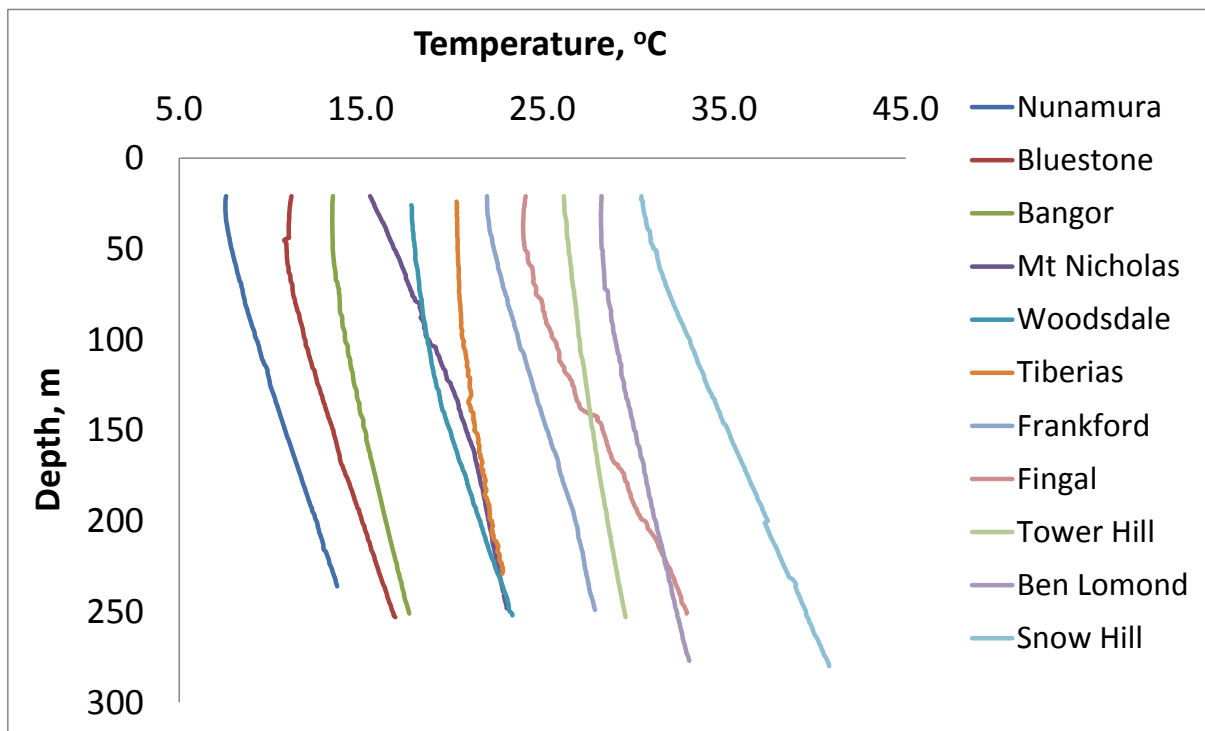
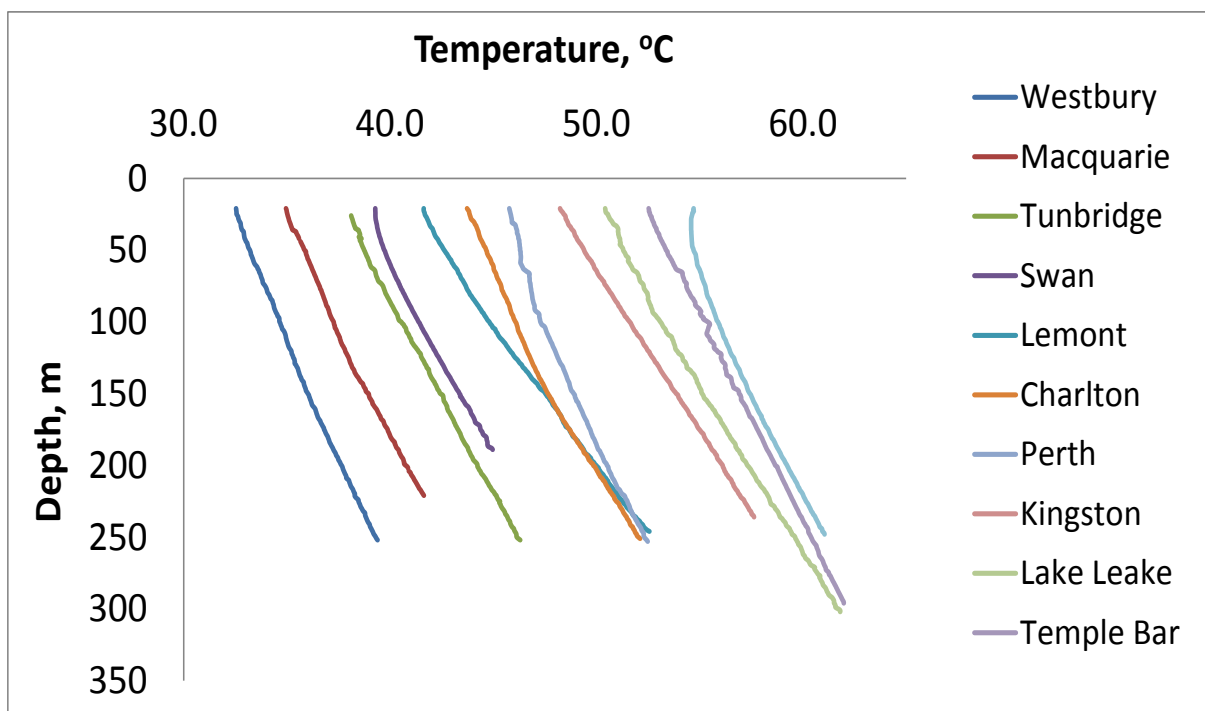
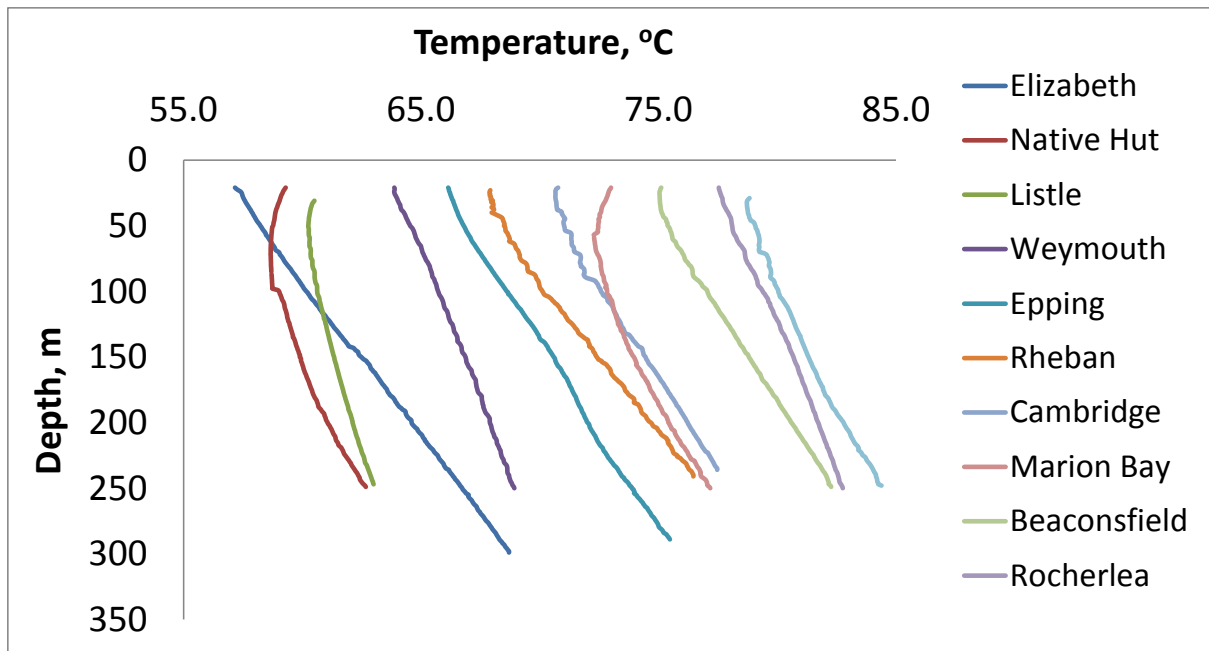
Temperature vs depth profile of 33 boreholes with high quality data:

(a)

(b)

(c)

Fig. S1 (a-c) Downhole temperature depth profiles of thirty three boreholes, which are categorised as having high quality data. Profiles are offset by 2°C at the top for clarity. Variation in temperature gradient within and between boreholes is largely a function of thermal conductivity, with the exception of the reduction in temperature rise.