

Southern Alps equilibrium line altitudes: four decades of observations show coherent glacier-climate responses and a rising snowline trend

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Supplementary Materials – RAW EOSS ELEVATIONS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
MT. FRANKLIN		1802	1936	1773	1740		1666			1796
ROLLESTON GL.	1755	1770	1755	1769	1760	1773	1640	1755	1755	1776
MT. CARRINGTON		1670		1693	1628	1740	1565	1600		1705
MT. AVOCA		1910				1950		1870	1910	1960
MARMADUKE GL.	1788	1795	1908	1832	1803	1860	1694	1708	1780	1839
RETREAT GL		1738		1780	1692	1756	1490		1738	1762
BROWNING RA		1605		1608	1564	1605	1485		1596	1615
SOUTH CAMERON GL						2290	2150	2130	2150	
MT. BUTLER	1785	1952	1895	1806	1800	1868	1640	1775	1770	1850
DAINTY GL	1922	1990		1947	1877	2047	1855		1873	1881
KEA GL		1885		1864	1735	1954	1590		1700	1738
SIEGE GL	1672	1712		1660	1666	1690	1468		1642	1771
VERTEBRAE #12		1871		1900	1813	1850	1800		1808	1820
VERTEBRAE #25		1870		1865	1802		1778		1790	1813
RIDGE GL.		2305			2228	2236	2211	2085	2194	2217
LANGDALE GL.	2220	2275			2265	2305	2185	1960	1965	2200
TASMAN GL.	1780	1875	1700	1810	1755	1760	1710	1695	1700	1780
SALISBURY GL	1827	1827		1842	1752	1827	1718	1760	1734	1809
JALF GL	1775	1780		1758	1725	1795	1560	1712	1644	1770
CHANCELLOR DOME	1852	1851		1833	1663	1848	1545		1609	1678
GLENMARY GL.		2232		2080	2130	2181	2135	2020	2108	
BLAIR GL.		2012		1863	1925	1887	1812	1858	1853	
MT MCKENZIE		1950		1910	1888	1902	1720	1842	1780	1917
JACKSON GL.		2098		2050		2075	2032	1990	2014	
JACK GL.		1938		1930	1885	1951	1750	1828	1875	1935
THURNEYSON GL	1930			1926	1943		1865	1882	1905	1938
BREWSTER GL.		1960		1846	1855	1971	1794	1800	1796	1842
MT. STUART	1587	1730		1650	1606	1676	1538		1620	1660
LINDSAY GL		1738		1652	1681	1781	1560		1666	1768
FOG PK				1916		2022		1891		1930
SNOWY CK		2156		2024	2158	2038	2033	2024	2020	2036
FINDLAY GL.					1604	1735	1582		1629	1725
PARK PASS GL.		1903		1808	1778	1858	1762	1765	1702	1863
MT. LARKINS								1870		1870
BRYANT GL.	1740	1884			1763	1780	1620	1620	1610	1770
AILSA MTS.		1643					1560	1595	1595	1649
MT. GUNN	1615	1638		1529	1531	1610	1478		1540	
MT. GENDARME					1570	1573	1480		1522	1675
LLAWRENNY PKS.		1480			1408	1472	1344		1440	
BARRIER PK.		1712		1545	1523	1565	1378		1524	
MT. IRENE		1700					1407		1526	

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MT. FRANKLIN	1760	1849	1866				1650	1705	1658	1732
ROLLESTON GL.	1778	1762	1770				1620	1745	1620	1750
MT. CARRINGTON	1760	1770	1720				1545	1587	1557	1590
MT. AVOCA		1975	1971				1850	1940	1910	1977
MARMADUKE GL.	1825	1895	1818				1655	1755	1675	1748
RETREAT GL			1778				1669	1622	1465	1758
BROWNING RA			1612				1482	1527	1480	1570
SOUTH CAMERON GL		2275	2340				2150		2130	
MT. BUTLER	1831	1882	1806			1745	1704	1812	1650	1780
DAINTY GL	1870	1942	1922			1851	1778	1881	1843	1942
KEA GL	1737	1762	1784				1590	1728	1570	1900
SIEGE GL		1666	1672			1413	1350	1620	1340	1664
VERTEBRAE #12		1871	1825			1768	1778	1807	1778	1807
VERTEBRAE #25		1843	1820			1746	1756	1786	1756	1786
RIDGE GL.		2285	2277				2100	2170	2132	2138
LANGDALE GL.	2185	2190	2255			1960	1955	2200	1960	2185
TASMAN GL.	1761	1840	1760			1690	1682	1770	1666	1755
SALISBURY GL	1775	1729	1744			1681	1710	1772	1645	1752
JALF GL	1739	1758	1759			1580	1570	1752	1550	1782
CHANCELLOR DOME	1728	1808	1678				1550	1609	1545	1720
GLENMARY GL.		2180	2180			2160	2107	2145	2140	2130
BLAIR GL.	1870	1955	1876				1953	1865	1853	1940
MT MCKENZIE	1890		1912				1782	1912	1805	1910
JACKSON GL.	2061		2075				1992	2045	2018	2072
JACK GL.	1905	1875	1898			1817	1765	1880	1755	1958
THURNEYSON GL	1918	1950				1930	1910	1904	1868	1938
BREWSTER GL.	1828		1918			1851	1750	1790	1777	1962
MT. STUART	1678		1663				1535	1640	1515	1712
LINDSAY GL	1615	1772	1764				1555	1610	1550	1775
FOG PK	1902	2022	2032				1894	1900	1888	1894
SNOWY CK	2025	2037	2103				2058	2034	2030	2057
FINDLAY GL.	1622	1685	1642				1575	1634	1561	1632
PARK PASS GL.	1843		1794					1783	1635	1808
MT. LARKINS			2025				1870	1870	1870	1870
BRYANT GL.	1763		1753				1675	1728	1630	1680
AILSA MTS.	1625		1612				1564	1596	1555	1584
MT. GUNN	1555		1534				1485	1529	1471	1507
MT. GENDARME	1650		1580				1502	1552	1418	1516
LLAWRENNY PKS.	1454		1429				1360	1408	1300	1461
BARRIER PK.	1555		1525				1428	1478	1360	1470
MT. IRENE	1526		1537				1407	1512	1400	1498

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MT. FRANKLIN		1936	1978	1950	1710	1935	1744		1708	1940
ROLLESTON GL.	1640	1803	1850	1868	1755	1860	1669	1762	1740	1800
MT. CARRINGTON	1578	1676	1900	1952	1580	1945	1631	1595	1578	1850
MT. AVOCA	1890	2035	2080	2030	1913	2053	1913	1945	1912	2000
MARMADUKE GL.	1701	1973	1994	1983	1773	1970	1713	1803	1700	1975
RETREAT GL	1645	1789	1888	1875	1682	1835	1664	1760	1610	1790
BROWNING RA	1490	1628			1568	1660	1521	1570	1488	1610
SOUTH CAMERON GL	2135	2340	2400	2365	2220	2300		2275	2220	2340
MT. BUTLER	1664	1908	1938	1988	1745	1930	1693	1760	1664	1915
DAINTY GL	1862	2052	2130	2028	1896	2080	1887	1910	1860	1945
KEA GL	1668	1898	2020	2010	1670	2015	1661	1730	1665	1898
SIEGE GL	1533	1950	2150	2015	1610	1975	1576	1620	1533	1664
VERTEBRAE #12	1791	1855	2085	1985	1805	1995	1816	1807	1790	1830
VERTEBRAE #25	1770	1835	1965	1910	1807	1920	1789	1795	1765	1834
RIDGE GL.	2090	2235	2335	2305	2110	2300	2163	2228	2165	2310
LANGDALE GL.	1960	2328	2320	2315	1960	2285	1960	2185	1965	2295
TASMAN GL.	1688	1853	1976	1900	1710	1895	1710	1750	1750	1850
SALISBURY GL	1726	1852	2030	1982	1715	1860	1715	1732	1715	1850
JALF GL	1599	1787	2050	2055	1705		1600	1620	1600	1785
CHANCELLOR DOME	1580	1848	1965	1960	1570	1860	1570	1605	1575	1850
GLENMARY GL.	2045	2195	2290	2245	2138	2210	2115	2145	2110	2205
BLAIR GL.		1972	2090	2085	1842	2005	1845	1850	1850	1960
MT MCKENZIE	1715	1935	2078	2052	1805	1960	1770	1782	1772	1910
JACKSON GL.	2016	2075	2165	2115	2016	2103	2015	2016	2014	2085
JACK GL.	1805	1940	2008	1992	1798	1985	1760		1795	1935
THURNEYSON GL	1900	1965	2112	2132	1878	2105	1873	1935	1900	1980
BREWSTER GL.	1779	1982	2280	2155	1770	2050	1794	1780	1780	1870
MT. STUART	1567	1656	1805	1850	1590	1815	1570	1565	1565	1725
LINDSAY GL	1645	1800	1875	1870	1640	1872	1607	1608	1612	1780
FOG PK	1890	2098	2135	2125	1895	2120	2055	1892	1890	2032
SNOWY CK	2020	2158	2240	2160	2004	2120	2041	2034	2020	2160
FINDLAY GL.	1580	1780	1890	1845	1620	1825	1612	1578	1580	1690
PARK PASS GL.	1745	1880	1955	1943	1748	1910	1661	1665	1670	1900
MT. LARKINS	1870	2205	2200	2185	1870	2165	1935	1870	1870	2160
BRYANT GL.	1670	1778	2030	1965	1665	1870	1666	1675	1665	1800
AILSA MTS.	1593	1621	1820	1785	1593	1685	1583	1590	1580	1645
MT. GUNN	1520	1559	1802	1810	1515	1635	1525	1485	1485	1610
MT. GENDARME	1490	1648	1804	1775	1485	1650	1520	1483	1487	1648
LLAWRENNY PKS.	1321	1478	1670	1657	1405	1613	1376	1380	1400	1485
BARRIER PK.	1464	1682	1900	1803	1488	1790	1448	1465	1465	1700
MT. IRENE	1460	1612	1658	1663	1401	1733	1417	1433	1403	1633

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MT. FRANKLIN	1791	1940	1938	1825	1980	1938	1850	1805	1860	1945
ROLLESTON GL.	1795	1815	1814	1768	1865	1813	1765	1800	1765	1865
MT. CARRINGTON	1670	1870	1870	1625	1960	1870	1595	1625	1850	1870
MT. AVOCA	1968	2050	1975	1970	2070	2030	1948	1948	1975	
MARMADUKE GL.	1843	1990	1970	1810	1994	1980	1810	1803	1839	1995
RETREAT GL	1720	1810	1805	1760		1800	1760	1760	1760	1925
BROWNING RA	1619	1625	1620	1600		1620	1610	1600	1620	1660
SOUTH CAMERON GL	2260	2400	2290	2365	2550	2300	2270		2280	2450
MT. BUTLER	1862	1960	1925	1807	2055	1960	1807	1780	1807	2050
DAINTY GL	1942	2070	1995	1920	2170	2070	1920	1920	1922	2080
KEA GL	1784	1970	2020	1737		1960	1737	1736	1885	2020
SIEGE GL	1718	2130	1960	1664	2180	2130	1664	1662	1664	2130
VERTEBRAE #12	1856	2030	1924	1840	2090	2020	1840	1830	1870	2030
VERTEBRAE #25	1824	1950	1859	1834	1995	1940	1834	1834	1860	1950
RIDGE GL.	2256	2325	2305	2280		2325	2235	2230	2235	
LANGDALE GL.	2260	2580	2315	2262		2400	2262	2185	2185	2580
TASMAN GL.	1796	2025	1965	1770	2110	2000	1755	1755	1840	2025
SALISBURY GL		1950	1950	1780	2095	1980	1780	1780	1780	1980
JALF GL	1792	2050	2040	1755	2160	2050	1755	1755	1785	2055
CHANCELLOR DOME	1735	1865	1865	1735	2000	1865	1609	1735	1750	1965
GLENMARY GL.	2190	2280	2210	2180	2305	2245	2170	2150	2210	2305
BLAIR GL.	1972	2070	1972	1953	2160	2060	1950	1950	1972	2070
MT MCKENZIE	1919	2015	1935	1902	2085	1950	1890	1890	1935	2078
JACKSON GL.	2084	2145	2082	2072	2230	2140	2072		2075	2220
JACK GL.	1923	1990	1980	1898	2200	1980	1898	1880	1940	2180
THURNEYSON GL	1963	2110	2100	1975	2150	2110	1938	1915	2080	2120
BREWSTER GL.	1815	2270	1990	1930	2285	2140	1918	1950	2010	2285
MT. STUART	1607	1800	1790	1677	1858	1848	1606	1677	1765	1848
LINDSAY GL	1700	1860	1810	1710	1878	1815	1666	1710	1815	1815
FOG PK	2000	2105	2032	2032	2135	2130	2015	2015	2090	
SNOWY CK	2090	2158	2156	2156		2158	2060		2156	
FINDLAY GL.	1661	1832	1805	1632	1855	1790		1685	1805	1832
PARK PASS GL.	1850	1910	1910	1880	2005	1940	1850	1843	1910	1943
MT. LARKINS	2165	2170	2170	2160	2200	2170	2150	1870	2170	2225
BRYANT GL.	1775	1950	1775	1755	2090	1965	1775	1670	1775	1950
AILSA MTS.	1613	1670	1675	1615	1780	1615	1615	1615	1675	1685
MT. GUNN	1550	1645	1790	1515	1810	1785	1540	1530	1785	1790
MT. GENDARME	1576	1649	1650	1570	1800	1650	1560	1570	1648	1650
LLAWRENNY PKS.	1439	1580	1600	1408	1600	1472	1408	1470	1600	1600
BARRIER PK.	1579	1715	1818	1555	1855	1715		1680	1818	1850
MT. IRENE	1478	1613	1631	1473	1733	1628		1631	1603	1583

	2017	2018	2019	2020
MT. FRANKLIN	1855	1978	1978	1880
ROLLESTON GL.	1765	1868	1875	1810
MT. CARRINGTON	1628	1945	1965	1870
MT. AVOCA				
MARMADUKE GL.	1810	2105	2110	1973
RETREAT GL	1760			1805
BROWNING RA	1600			1640
SOUTH CAMERON GL		2550	2555	2270
MT. BUTLER	1807	2055	2058	1860
DAINTY GL	1896	2170	2175	1995
KEA GL	1736			1960
SIEGE GL	1662			1960
VERTEBRAE #12	1830	2090	2085	2020
VERTEBRAE #25	1834	1995	1965	1940
RIDGE GL.	2230	2480		2280
LANGDALE GL.	2262			2262
TASMAN GL.	1755	2120	2215	1850
SALISBURY GL	1780	1982	2060	1950
JALF GL	1755	2055	2160	2040
CHANCELLOR DOME	1735	2000	2000	1860
GLENMARY GL.	2170	2320	2360	2210
BLAIR GL.	1950	2160	2160	1972
MT MCKENZIE	1890	2095	2098	1935
JACKSON GL.		2290	2230	2072
JACK GL.	1815	2300	2200	1940
THURNEYSON GL	1938	2190	2290	2080
BREWSTER GL.	1918	2360	2285	1990
MT. STUART	1606	1859	1850	1677
LINDSAY GL	1666		1872	1810
FOG PK	2015	2158	2135	2090
SNOWY CK	2060		2205	2156
FINDLAY GL.	1680	1895	1855	1805
PARK PASS GL.	1843	2040	2030	1910
MT. LARKINS	2020	2235	2235	2170
BRYANT GL.	1670	2090	2100	1775
AILSA MTS.	1615	1800	1685	1675
MT. GUNN	1530	1820	1795	1785
MT. GENDARME	1560	1804	1800	1648
LLAWRENNY PKS.	1470		1600	1472
BARRIER PK.	1524	1900	1880	1690
MT. IRENE	1473		1633	