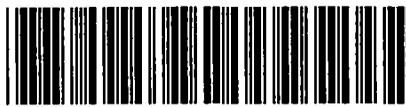


Environment Canada Imaging Cover Page

Report N.:

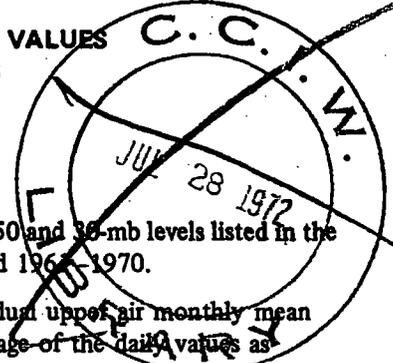


* C D S - 0 2 - 7 2 *

SKP Box Number: 672572447

**1961-1970 MEAN ALTITUDE AND TEMPERATURE VALUES
FOR THE 100, 70, 50 AND 30-MB LEVELS**

by R.L. Titus



Decadal mean altitude and temperature data for the 100, 70, 50 and 30-mb levels listed in the following tables are based on Canadian upper air observations for the period 1961-1970.

A criterion often used to determine the validity of an individual upper air monthly mean value for temperature or altitude for a particular hour is to accept the average of the daily values as representative whenever there are at least 10 such values with no gap of more than four consecutive missing daily values during the month.

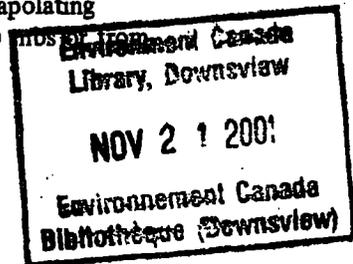
The adherence to this criterion for pressure levels between 100 mbs and 30 mbs results in many missing monthly mean values, especially during the winter months and during the first half of the 1960 decade. Because cold temperatures cause early balloon bursts, it is more often the colder than normal months that lack sufficient data for the computation of a reliable monthly mean. Moreover, since the missing observations tend to occur more frequently during the colder part of any month, the monthly mean values for temperature or altitude tend to be biased on the high side whenever there is not a full complement of daily values, and can be significantly high when there are a considerable number of missing observations.

Simply averaging the available observed values over a 10-year period would result in decadal mean values considerably biased on the high side, particularly in the winter. In order to eliminate this bias insofar as possible, the following procedures were used to derive representative monthly mean values for each month for each of the 10 years. These values were then used to compute the decadal mean.

Because motion in the upper levels is predominantly long-wave, there is less short-term fluctuation in altitude and temperature at pressure levels between 100 mbs and 30 mbs than at levels near the surface. That is to say altitude or temperature values at these upper levels tend to remain steady or continue a downward or an upward trend for periods of several days or more.

The following test was performed on a small sample of data consisting of 30 station winter months of data at random levels between 100 mbs and 30 mbs for which most of the daily altitude values for the month were available. Altitude data for the five consecutive days approximating the coldest period during the month were withdrawn from each station month's data, and the mean of the remaining values for each station month's data was computed. Estimated values obtained by simple interpolation between the terminal values of the five-day gap were then inserted for all five missing values for each station month's data. The mean of each of these complete series consisting of observed and estimated values was then calculated. Altitude differences between the monthly mean of the complete data and the incomplete data averaged 94 metres for the 30 individual cases investigated, with the maximum difference being 167 metres. The corresponding altitude differences between the monthly mean of the complete data and the incomplete data augmented with interpolated values for the five-day gap were 18 metres average difference and 62 metres maximum difference.

Since this test indicated that a mean value calculated from a series of daily values where interpolated values had been inserted for short periods of missing data yielded a much better approximation to the true mean, interpolated values for temperature and altitude were inserted in place of missing data wherever the gap in the daily values for any station month's data for 1200 GMT was five consecutive days or less. Whenever the gap exceeded five consecutive days, various methods were used to estimate sufficient daily values in order to reduce all gaps to five days or less so that the remaining value could be inserted by interpolation. In many cases a missing daily value could be estimated by extrapolating upwards from an observed value at the standard pressure level below, for example, 70 to 50 mbs.



50 to 30 mbs. In other cases missing values could be estimated from observed or extrapolated values available 12 hours before or 12 hours after, taking into account any evident diurnal difference between the 0000 GMT and the 1200 GMT observations. Whenever these methods were not possible, individual daily values were sometimes determined from plotted charts for that day making use of data observed at neighbouring upper air stations. For the relatively few times when there were no daily values or only a few daily values for a particular level during the entire month, monthly mean values for altitude and temperature were determined from plotted monthly mean charts for that month and level based on data from those stations which had sufficient data for the computation of reliable monthly means. When values were read from the plotted charts, care was taken to ensure that the hydrostatic relationship of altitude and temperature between adjacent levels was reasonable.

For each individual month of each of the 10 years, the monthly means of altitude and temperature thus determined for all the Canadian stations were plotted and analyzed. From this analysis it was evident that the computed mean data for certain stations for certain periods, particularly during the earlier part of the decade, were not consistent with the data for neighbouring stations. Inasmuch as the altitude discrepancies invariably increased with ascending height and remained approximately constant throughout a particular period, the most logical explanation for these periodic discrepancies was that the upper air station's ground equipment was slightly off calibration during such periods causing slightly erroneous temperature data to be recorded. Adjustments consistent with the hydrostatic relationship between temperature and altitude were therefore made to the temperature and altitude data for these periods to bring the mean data into proper relationship with that of neighbouring stations. Most temperature adjustments ranged from 0.3 degrees C to 0.7 degrees C, with corresponding altitude adjustments ranging from 20 metres to 45 metres at 100 mbs increasing to 30 metres to 70 metres at 30 mbs.

Decadal means were then computed from each set of 10 individual monthly means. These decadal means were then checked hydrostatically from level to level. Where there were discrepancies of more than 5 metres between adjacent levels, the corresponding individual monthly means were then checked hydrostatically to locate unreasonable relationships between altitude and temperature. The mean values giving rise to any unreasonable relationships were then recomputed to ensure a reasonable hydrostatic relationship. The required corrections were then made to the decadal mean value.

April 18, 1972

Atmospheric Environment Service
4905 Dufferin Street
Downsview, Ontario

ALTITUDE (G.P.M.)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
ALERT, N.W.T.												
100 MB	15193	15179	15333	15715	16083	16290	16394	16294	15988	15665	15435	15270
70	17347	17332	17564	18049	18476	18709	18816	18689	18336	17937	17652	17444
50	19354	19351	19664	20248	20740	20999	21108	20950	20533	20054	19712	19459
30	22376	22410	22860	23593	24187	24486	24594	24377	23848	23224	22795	22474
BAKER LAKE, N.W.T.												
100 MB	15425	15499	15639	15881	16110	16314	16421	16346	16123	15928	15695	15587
70	17674	17776	17941	18215	18464	18679	18793	18706	18453	18233	17981	17847
50	19781	19918	20107	20410	20687	20920	21038	20934	20642	20388	20117	19956
30	22960	23153	23392	23732	24066	24342	24467	24328	23956	23630	23329	23117
CHURCHILL, MAN.												
100 MB	15541	15620	15734	15958	16154	16356	16464	16398	16203	16028	15796	15679
70	17804	17912	18037	18279	18490	18696	18813	18737	18518	18324	18079	17947
50	19931	20064	20206	20461	20693	20914	21040	20950	20696	20475	20214	20065
30	23142	23322	23486	23767	24051	24308	24446	24328	24007	23723	23425	23251
CLYDE, N.W.T.												
100 MB	15309	15319	15512	15820	16100	16273	16390	16303	16057	15827	15573	15465
70	17506	17524	17791	18159	18474	18672	18788	18686	18403	18129	17818	17680
50	19555	19591	19929	20357	20715	20944	21058	20935	20604	20277	19914	19742
30	22634	22716	23163	23686	24122	24402	24517	24352	23930	23497	23044	22820
COPPERMINE, N.W.T.												
100 MB	15497	15546	15663	15874	16117	16339	16425	16339	16101	15879	15701	15598
70	17750	17825	17971	18213	18475	18710	18803	18700	18431	18180	17996	17859
50	19864	19967	20141	20414	20703	20957	21056	20930	20617	20337	20150	19978
30	23066	23216	23428	23743	24093	24388	24496	24325	23919	23583	23392	23161
CORAL HARBOUR, N.W.T.												
100 MB	15378	15424	15611	15869	16105	16287	16403	16322	16109	15912	15662	15548
70	17613	17682	17912	18201	18465	18662	18778	18687	18443	18217	17935	17794
50	19709	19807	20076	20398	20691	20910	21028	20920	20635	20371	20054	19890
30	22852	23016	23348	23720	24076	24341	24462	24318	23956	23613	23240	23025
EDMONTON, ALTA.												
100 MB	15821	15888	15888	16032	16206	16397	16506	16478	16317	16147	15977	15883
70	18088	18168	18175	18327	18509	18701	18817	18774	18596	18416	18249	18153
50	20221	20316	20328	20486	20687	20888	21010	20952	20751	20551	20384	20284
30	23455	23575	23591	23764	24010	24243	24378	24294	24034	23795	23618	23501
EUREKA, N.W.T.												
100 MB	15220	15215	15383	15730	16081	16295	16386	16283	15985	15673	15455	15311
70	17395	17395	17638	18071	18472	18711	18805	18678	18330	17953	17690	17505
50	19425	19436	19761	20280	20733	20998	21094	20938	20529	20078	19773	19544
30	22476	22533	22982	23630	24175	24482	24579	24365	23847	23261	22890	22595
FORT CHIMO, QUE.												
100 MB	15516	15550	15726	15942	16137	16292	16415	16358	16191	16020	15797	15667
70	17772	17827	18029	18267	18476	18648	18773	18710	18514	18320	18063	17924
50	19886	19970	20193	20456	20681	20876	21006	20935	20702	20476	20176	20026
30	23063	23196	23466	23768	24035	24281	24418	24328	24027	23728	23354	23179
FORT NELSON, B.C.												
100 MB	15760	15835	15847	15982	16160	16369	16461	16421	16246	16046	15904	15817
70	18040	18129	18146	18293	18483	18702	18803	18746	18548	18340	18199	18104
50	20179	20290	20310	20464	20678	20911	21019	20945	20718	20496	20355	20247
30	23415	23570	23586	23758	24022	24291	24412	24302	24009	23757	23611	23475

TEMPERATURE (°C)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
ALERT, N.W.T.												
100 MB	-65.4	-65.4	-59.3	-49.8	-44.4	-42.1	-41.7	-44.0	-48.1	-54.3	-59.3	-63.1
70	-68.4	-67.9	-60.0	-50.0	-43.8	-41.2	-40.9	-43.8	-49.3	-57.1	-62.6	-66.8
50	-70.4	-69.1	-60.1	-49.8	-43.1	-40.5	-40.4	-43.9	-50.7	-59.8	-65.3	-70.2
30	-72.0	-69.0	-58.7	-49.2	-42.3	-39.7	-39.8	-43.8	-51.9	-62.7	-68.6	-73.5
BAKER LAKE, N.W.T.												
100 MB	-57.2	-54.9	-52.5	-49.5	-47.9	-47.1	-46.6	-47.5	-49.7	-51.9	-53.3	-56.0
70	-58.9	-55.7	-53.0	-50.2	-47.8	-46.4	-45.9	-47.2	-50.6	-53.7	-55.6	-58.1
50	-60.3	-56.5	-53.6	-50.6	-47.4	-45.3	-44.8	-46.9	-51.6	-55.4	-57.5	-60.3
30	-61.4	-57.5	-54.2	-51.3	-46.9	-43.6	-42.9	-45.4	-51.5	-57.4	-59.9	-63.6
CHURCHILL, MAN.												
100 MB	-55.6	-53.4	-52.5	-50.7	-49.7	-49.4	-48.6	-49.5	-51.5	-52.9	-53.8	-55.3
70	-57.2	-54.5	-53.1	-51.3	-49.5	-48.7	-47.9	-49.1	-51.9	-54.0	-55.7	-57.5
50	-58.3	-55.2	-53.5	-51.8	-49.3	-47.4	-46.7	-48.4	-52.4	-55.5	-57.5	-59.2
30	-59.4	-56.3	-54.2	-52.4	-48.4	-45.1	-44.1	-46.1	-51.4	-86.5	-59.7	-62.0
CLYDE, N.W.T.												
100 MB	-61.8	-61.4	-54.4	-49.0	-45.8	-43.9	-44.0	-45.2	-48.1	-51.7	-56.6	-59.3
70	-64.2	-63.1	-55.7	-50.0	-46.0	-43.2	-43.2	-45.0	-49.2	-54.1	-59.7	-62.7
50	-66.3	-64.5	-56.7	-50.3	-45.7	-42.4	-42.5	-44.9	-50.4	-56.8	-62.2	-65.9
30	-67.8	-64.9	-57.1	-50.8	-45.1	-41.4	-41.1	-44.2	-50.8	-59.2	-65.6	-69.4
COPPERMINE, N.W.T.												
100 MB	-56.6	-54.8	-52.1	-49.2	-47.6	-46.7	-46.0	-47.4	-49.9	-52.1	-52.5	-55.5
70	-58.1	-55.5	-52.7	-49.7	-47.3	-45.8	-45.1	-46.9	-50.8	-53.6	-54.1	-57.4
50	-59.4	-56.1	-53.3	-50.2	-46.9	-44.7	-44.1	-46.9	-52.0	-55.4	-55.7	-59.2
30	-60.2	-56.5	-54.3	-50.6	-46.1	-43.1	-42.4	-45.6	-52.6	-57.3	-57.8	-61.7
CORAL HARBOUR, N.W.T.												
100 MB	-58.3	-56.3	-52.5	-49.5	-47.3	-46.2	-46.2	-46.9	-49.4	-51.7	-54.4	-56.9
70	-60.5	-57.4	-53.3	-50.2	-47.3	-45.5	-45.4	-46.7	-50.1	-53.7	-57.0	-59.5
50	-61.9	-58.0	-54.0	-50.6	-47.2	-44.7	-44.4	-46.5	-51.2	-55.5	-59.2	-62.0
30	-63.3	-59.0	-54.8	-51.4	-46.7	-43.0	-42.7	-45.3	-51.0	-57.5	-62.0	-65.3
EDMONTON, ALTA												
100 MB	-55.2	-54.7	-53.9	-53.1	-52.7	-52.6	-52.2	-53.9	-55.3	-56.1	-55.4	-55.2
70	-56.5	-55.2	-54.6	-54.0	-52.7	-52.2	-51.6	-53.0	-54.8	-56.2	-56.1	-56.4
50	-57.2	-55.4	-54.9	-54.1	-51.8	-50.4	-49.6	-51.4	-54.3	-56.6	-56.9	-57.4
30	-57.6	-55.4	-55.5	-54.1	-50.2	-47.5	-46.3	-47.9	-52.8	-56.2	-57.2	-59.3
EUREKA, N.W.T.												
100 MB	-63.6	-63.4	-56.9	-48.9	-44.6	-42.3	-42.0	-44.2	-48.2	-53.8	-57.7	-61.3
70	-66.2	-65.5	-57.7	-49.2	-44.1	-41.5	-41.2	-43.9	-49.3	-56.4	-60.8	-64.8
50	-68.3	-66.5	-57.9	-49.2	-43.5	-40.8	-40.6	-44.0	-50.7	-58.9	-63.4	-67.7
30	-69.4	-66.4	-57.7	-49.2	-42.7	-39.9	-39.8	-43.9	-51.8	-61.7	-66.4	-71.1
FORT CHIMO, QUE.												
100 MB	-56.5	-54.7	-52.4	-50.3	-48.9	-47.8	-47.8	-48.2	-50.7	-52.4	-55.2	-55.9
70	-58.2	-55.8	-53.3	-51.0	-49.5	-47.4	-47.1	-47.8	-51.0	-53.8	-57.7	-58.8
50	-59.9	-56.9	-54.0	-51.4	-49.3	-46.7	-46.2	-47.2	-51.4	-55.3	-59.8	-61.1
30	-61.5	-58.6	-54.8	-52.1	-48.2	-44.8	-44.1	-45.6	-50.3	-56.2	-62.2	-64.2
FORT NELSON, B.C.												
100 MB	-54.5	-53.6	-52.8	-51.7	-51.0	-49.9	-49.2	-51.1	-52.9	-53.4	-53.2	-54.0
70	-55.7	-53.9	-53.4	-52.6	-50.7	-49.7	-48.8	-50.4	-52.9	-53.9	-53.9	-55.0
50	-56.4	-54.1	-53.9	-52.9	-50.2	-48.4	-47.7	-49.9	-53.3	-54.9	-54.9	-56.5
30	-57.5	-54.5	-54.8	-53.5	-49.1	-45.9	-44.8	-47.5	-52.8	-55.5	-55.9	-58.6

ALTITUDE (G.P.M.)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
FORT SMITH, N.W.T.												
100 MB	15644	15738	15779	15956	16154	16362	16460	16406	16206	16021	15833	15735
70	17919	18033	18082	18270	18482	18697	18805	18738	18514	18315	18125	18009
50	20047	20189	20248	20450	20684	20912	21027	20944	20685	20469	20273	20139
30	23271	23457	23527	23751	24037	24299	24427	24311	23977	23719	23513	23344
FROBISHER BAY, N.W.T.												
100 MB	15403	15415	15618	15872	16105	16262	16384	16308	16108	15917	15676	15566
70	17629	17658	17912	18204	18464	18642	18762	18677	18446	18223	17935	17805
50	19710	19764	20068	20400	20688	20894	21014	20913	20643	20379	20039	19886
30	22842	22946	23324	23723	24070	24326	24448	24315	23970	23618	23194	22997
GOOSE, NFLD												
100 MB	15681	15714	15840	16009	16182	16338	16461	16422	16287	16127	15952	15804
70	17955	18003	18142	18326	18504	18669	18793	18751	18592	18411	18206	18067
50	20082	20149	20306	20507	20695	20878	21005	20958	20770	20559	20316	20179
30	23297	23388	23581	23813	24035	24254	24392	24331	24095	23813	23492	23355
HALL BEACH, N.W.T.												
100 MB	15313	15337	15534	15824	16092	16275	16391	16302	16056	15840	15588	15478
70	17529	17566	17826	18163	18462	18666	18783	18678	18398	18143	17851	17711
50	19606	19660	19978	20363	20699	20928	21047	20921	20594	20291	19960	19787
30	22731	22831	23233	23693	24099	24379	24500	24327	23916	23519	23125	22888
INOUCDJOUAC, QUE.												
100 MB	15495	15533	15710	15937	16140	16308	16419	16362	16190	16007	15772	15647
70	17750	17813	18015	18261	18481	18660	18776	18713	18511	18307	18044	17908
50	19861	19955	20184	20449	20689	20887	21008	20935	20696	20462	20165	20013
30	23042	23195	23462	23764	24051	24288	24419	24325	24011	23713	23356	23172
INUVIK, N.W.T.												
100 MB	15627	15672	15735	15890	16119	16344	16434	16342	16113	15858	15753	15647
70	17897	17975	18049	18228	18474	18712	18811	18703	18442	18163	18062	17929
50	20031	20146	20229	20429	20702	20957	21064	20932	20627	20325	20228	20066
30	23257	23438	23521	23763	24092	24384	24501	24323	23930	23584	23494	23279
ISACHSEN, N.W.T.												
100 MB	15266	15268	15432	15746	16081	16299	16383	16284	15989	15685	15490	15349
70	17460	17472	17703	18091	18471	18710	18801	18677	18331	17969	17740	17561
50	19510	19544	19838	20303	20732	20994	21088	20934	20527	20097	19840	19618
30	22603	22685	23075	23659	24173	24471	24568	24359	23840	23289	22988	22692
MANIWAKI, QUE.												
100 MB	15816	15828	15933	16098	16256	16431	16526	16504	16408	16232	16030	15897
70	18081	18106	18217	18382	18538	18705	18809	18786	18664	18488	18279	18151
50	20207	20250	20367	20534	20699	20874	20988	20962	20814	20621	20391	20262
30	23433	23504	23637	23811	24010	24213	24344	24309	24119	23875	23594	23457
MOOSONEE, ONT.												
100 MB	15674	15708	15841	16034	16205	16386	16480	16445	16321	16144	15921	15788
70	17951	18001	18137	18337	18513	18691	18794	18757	18607	18421	18186	18053
50	20084	20155	20297	20504	20693	20880	20991	20950	20771	20564	20305	20170
30	23306	23413	23573	23790	24018	24239	24360	24311	24078	23818	23504	23357
MOULD BAY, N.W.T.												
100 MB	15350	15369	15512	15775	16079	16309	16388	16287	16003	15715	15548	15418
70	17564	17608	17799	18121	18462	18709	18796	18673	18339	18005	17819	17646
50	19636	19714	19951	20331	20714	20983	21075	20925	20530	20143	19942	19725
30	22765	22915	23207	23686	24141	24449	24546	24342	23835	23353	23134	22841

TEMPERATURE (°C)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
FORT SMITH, N.W.T.												
100 MB	-55.1	-53.5	-52.5	-51.2	-50.3	-49.7	-48.9	-50.4	-52.3	-53.3	-53.2	-54.8
70	-56.4	-54.0	-53.2	-51.9	-50.2	-49.3	-48.4	-49.7	-52.6	-54.1	-54.6	-56.2
50	-57.3	-54.6	-53.8	-52.3	-49.7	-47.8	-47.1	-49.1	-53.2	-55.3	-56.0	-58.0
30	-58.3	-55.3	-54.6	-52.7	-48.6	-45.5	-44.6	-46.8	-52.7	-56.4	-57.4	-60.5
FROBISHER BAY, N.W.T.												
100 MB	-58.9	-57.9	-53.1	-49.5	-47.2	-45.6	-45.9	-46.6	-49.1	-51.6	-55.7	-57.4
70	-61.2	-59.2	-54.1	-50.2	-47.5	-45.2	-45.2	-46.5	-50.0	-53.5	-58.4	-60.5
50	-62.9	-60.2	-54.9	-50.7	-47.4	-44.5	-44.3	-46.3	-50.7	-55.6	-61.0	-63.2
30	-64.6	-61.3	-55.6	-51.5	-46.7	-43.0	-42.6	-45.0	-50.3	-57.6	-63.5	-66.4
GOOSE, NFLD.												
100 MB	-54.8	-53.6	-52.3	-51.0	-50.7	-50.4	-50.4	-50.8	-53.0	-54.5	-56.5	-55.5
70	-56.3	-54.9	-53.4	-51.8	-51.1	-49.6	-49.5	-49.8	-52.4	-55.0	-58.3	-57.8
50	-57.8	-56.1	-53.9	-52.1	-50.6	-48.6	-48.0	-48.7	-51.9	-55.6	-60.1	-59.7
30	-59.0	-57.9	-54.3	-52.2	-49.4	-46.2	-45.5	-46.5	-49.7	-55.5	-61.8	-62.2
HALL BEACH, N.W.T.												
100 MB	-60.0	-59.1	-53.3	-48.9	-46.1	-44.6	-44.7	-45.9	-48.6	-51.7	-55.3	-58.0
70	-62.4	-60.4	-54.4	-49.6	-46.3	-44.0	-43.9	-45.6	-49.7	-53.9	-58.0	-61.2
50	-64.1	-61.1	-55.2	-50.2	-46.1	-43.1	-43.0	-45.6	-50.9	-56.3	-60.4	-64.0
30	-65.3	-61.6	-55.7	-50.8	-45.6	-42.0	-41.5	-44.9	-51.2	-58.5	-63.2	-67.4
INOUCDJOUAC, QUE.												
100 MB	-56.3	-54.2	-52.2	-50.2	-48.9	-48.1	-47.9	-48.3	-50.7	-52.4	-54.6	-55.7
70	-58.2	-55.3	-52.9	-51.1	-49.3	-47.7	-47.2	-48.0	-51.2	-53.7	-57.1	-58.3
50	-59.5	-56.0	-53.5	-51.2	-49.0	-46.7	-46.1	-47.4	-51.7	-55.3	-59.2	-60.6
30	-61.5	-57.8	-54.4	-51.9	-48.0	-44.8	-43.9	-45.5	-50.6	-56.4	-61.2	-63.5
INUVIK, N.W.T.												
100 MB	-55.1	-52.5	-51.3	-49.3	-47.9	-46.6	-45.9	-47.4	-50.0	-52.0	-51.8	-54.0
70	-56.4	-52.9	-52.0	-49.6	-47.5	-45.9	-45.1	-47.0	-50.8	-53.1	-52.8	-55.6
50	-57.1	-53.0	-52.5	-50.1	-46.9	-44.9	-44.1	-46.9	-52.0	-54.5	-54.1	-57.1
30	-57.8	-53.7	-53.5	-50.6	-46.1	-43.4	-42.5	-45.9	-52.5	-56.1	-55.7	-59.8
ISACHSEN, N.W.T.												
100 MB	-62.0	-61.3	-55.6	-48.5	-44.6	-42.9	-42.3	-44.4	-48.4	-53.5	-56.5	-59.9
70	-64.4	-62.9	-56.2	-48.8	-44.1	-41.9	-41.5	-44.1	-49.7	-56.0	-59.0	-63.2
50	-66.0	-63.6	-56.8	-48.8	-43.5	-41.1	-40.9	-44.2	-51.0	-58.4	-61.3	-66.0
30	-67.2	-63.3	-56.9	-49.0	-42.8	-40.3	-40.0	-44.1	-52.1	-61.2	-63.9	-69.2
MANTWAKI, QUE.												
100 MB	-55.8	-54.4	-54.1	-54.0	-54.7	-56.2	-55.5	-55.9	-58.2	-57.9	-57.6	-56.7
70	-57.1	-55.7	-55.1	-55.1	-54.6	-54.6	-53.5	-53.6	-56.2	-57.0	-58.6	-58.4
50	-57.7	-55.8	-55.0	-54.6	-53.1	-51.8	-50.8	-51.1	-54.1	-56.5	-59.2	-59.5
30	-57.6	-55.7	-54.3	-53.6	-50.6	-48.2	-47.1	-47.7	-50.3	-54.7	-58.8	-59.7
MOOSONEE, ONT.												
100 MB	-54.9	-53.3	-53.0	-52.5	-52.2	-52.9	-52.3	-52.5	-54.6	-55.2	-55.7	-55.4
70	-56.2	-54.5	-53.8	-53.4	-52.3	-52.0	-51.1	-51.4	-53.9	-55.5	-57.5	-57.5
50	-57.3	-55.2	-54.0	-53.4	-51.7	-50.2	-49.4	-49.9	-53.3	-55.8	-59.0	-59.2
30	-58.5	-55.8	-54.1	-53.3	-50.1	-47.3	-46.4	-47.1	-50.8	-55.3	-59.8	-61.2
MOULD BAY, N.W.T.												
100 MB	-60.1	-58.4	-53.9	-48.6	-45.4	-43.9	-43.2	-44.9	-49.1	-53.0	-54.9	-58.4
70	-62.2	-59.3	-54.5	-48.7	-44.9	-42.9	-42.3	-44.7	-50.2	-55.3	-56.9	-61.2
50	-63.4	-59.6	-55.3	-48.8	-44.3	-42.0	-41.6	-44.8	-51.6	-57.4	-48.8	-63.6
30	-64.3	-59.6	-55.5	-49.3	-43.6	-41.0	-40.5	-44.4	-52.5	-59.8	-61.2	-66.4

ALTITUDE (G.P.M.)

	JAN.	FFB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
NITCHEQUON, QUE.												
100 MB	15635	15665	15810	15999	16180	16347	16452	16406	16280	16107	15898	15762
70	17909	17957	18111	18311	18500	18673	18785	18734	18580	18392	18160	18027
50	20041	20111	20276	20488	20692	20879	20997	20938	20752	20540	20277	20142
30	23259	23362	23555	23789	24028	24251	24379	24310	24070	23792	23463	23321
NORMAN WELLS, N.W.T.												
100 MB	15653	15721	15767	15928	16136	16354	16444	16365	16153	15926	15799	15701
70	17927	18024	18079	18260	18483	18713	18811	18714	18475	18233	18107	17988
50	20061	20196	20253	20453	20701	20946	21053	20933	20657	20396	20270	20130
30	23292	23481	23542	23775	24077	24358	24479	24314	23957	23657	23533	23349
PORT HARDY, B.C.												
100 MB	15965	15996	15971	16064	16205	16383	16487	16483	16369	16186	16054	15986
70	18231	18266	18247	18348	18501	18684	18790	18771	18633	18445	18319	18257
50	20367	20409	20392	20499	20670	20859	20972	20939	20780	20580	20455	20394
30	23614	23667	23648	23756	23974	24196	24321	24264	24058	23832	23699	23628
PRINCE GEORGE, B.C.												
100 MB	15879	15938	15927	16035	16191	16381	16483	16464	16322	16135	15994	15914
70	18150	18217	18215	18330	18496	18692	18802	18763	18601	18408	18271	18191
50	20288	20368	20368	20488	20675	20880	20996	20940	20755	20549	20411	20331
30	23533	23635	23632	23758	23996	24236	24364	24274	24037	23800	23659	23564
RESOLUTE, N.W.T.												
100 MB	15269	15296	15469	15773	16077	16292	16388	16287	16008	15740	15517	15391
70	17476	17516	17754	18120	18458	18696	18794	18675	18351	18033	17778	17611
50	19534	19596	19900	20329	20709	20973	21073	20928	20548	20171	19886	19678
30	22648	22757	23149	23674	24135	24443	24546	24349	23867	23378	23049	22768
SABLE ISLAND, N.S.												
100 MB	15962	15959	16020	16135	16288	16452	16562	16561	16470	16318	16155	16017
70	18217	18222	18296	18413	18558	18715	18827	18819	18711	18548	18381	18257
50	20340	20355	20438	20564	20714	20877	20995	20981	20857	20670	20482	20363
30	23570	23603	23700	23849	24021	24208	24340	24316	24165	23921	23678	23564
SACHS HARBOUR, N.W.T.												
100 MB	15469	15512	15619	15825	16091	16324	16409	16311	16059	15796	15655	15534
70	17710	17788	17926	18167	18458	18709	18801	18683	18391	18094	17949	17792
50	19814	19932	20092	20374	20697	20968	21068	20924	20579	20246	20097	19901
30	22994	23182	23367	23716	24106	24412	24523	24330	23883	23485	23328	23073
SEPT ILES, QUE.												
100 MB	15732	15752	15870	16033	16203	16370	16481	16451	16338	16173	15982	15832
70	18005	18045	18169	18339	18511	18680	18796	18762	18623	18445	18237	18096
50	20139	20198	20331	20511	20692	20873	20995	20956	20789	20586	20349	20211
30	23364	23452	23608	23806	24023	24233	24368	24317	24108	23838	23540	23403
STEPHENVILLE, NFLD.												
100 MB	15833	15849	15932	16074	16235	16397	16519	16501	16391	16234	16070	15921
70	18103	18130	18223	18374	18530	18692	18817	18793	18664	18492	18310	18177
50	20234	20273	20379	20541	20703	20875	21004	20978	20826	20625	20418	20290
30	23456	23515	23649	23831	24022	24223	24365	24328	24138	23876	23600	23477
THE PAS, MAN.												
100 MB	15697	15771	15832	16019	16203	16400	16507	16463	16293	16121	15919	15798
70	17971	18060	18125	18320	18512	18706	18820	18768	18584	18396	18194	18068
50	20102	20212	20283	20488	20693	20896	21015	20954	20749	20536	20327	20194
30	23329	23469	23559	23772	24017	24257	24387	24309	24047	23780	23545	23394

TEMPERATURE (°C)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
NITCHEQUON, QUE.												
100 MB	-54.8	-53.3	-52.4	-51.4	-50.8	-50.8	-50.4	-50.7	-53.3	-54.1	-55.6	-55.2
70	-56.3	-54.3	-53.3	-52.2	-51.2	-50.1	-49.4	-50.0	-52.7	-54.8	-57.5	-57.6
50	-57.6	-55.0	-53.8	-52.4	-50.6	-48.8	-48.1	-48.9	-52.5	-55.7	-59.2	-59.6
30	-59.1	-56.7	-54.4	-52.6	-49.5	-46.4	-45.6	-46.8	-50.4	-55.9	-60.8	-61.8
NORMAN WELLS, N.W.T.												
100 MB	-54.7	-52.7	-51.7	-49.7	-48.7	-47.6	-47.0	-48.6	-50.7	-51.9	-51.8	-53.9
70	-55.9	-53.2	-52.4	-50.3	-48.3	-47.1	-46.2	-48.1	-51.2	-53.0	-53.0	-55.3
50	-57.0	-53.3	-52.9	-50.9	-47.8	-45.9	-45.2	-47.8	-52.4	-54.5	-54.4	-56.9
30	-57.4	-53.8	-53.9	-51.4	-46.9	-44.2	-43.3	-46.4	-52.7	-55.9	-55.7	-59.3
PORT HARDY, B.C.												
100 MB	-56.0	-56.0	-55.0	-54.3	-53.6	-53.1	-52.7	-54.6	-57.3	-57.3	-56.2	-55.4
70	-56.4	-56.2	-55.5	-54.8	-53.3	-53.2	-52.5	-53.6	-55.9	-56.7	-56.4	-56.1
50	-56.7	-55.8	-55.6	-55.2	-52.9	-51.7	-51.1	-52.5	-55.0	-56.5	-56.8	-56.7
30	-56.5	-55.0	-55.7	-55.2	-51.4	-48.5	-47.5	-49.0	-52.8	-55.5	-56.1	-57.5
PRINCE GEORGE, B.C.												
100 MB	-55.1	-54.8	-54.0	-53.1	-52.6	-51.9	-51.3	-53.4	-55.5	-55.9	-55.1	-54.9
70	-56.2	-55.1	-54.5	-54.0	-52.5	-52.0	-51.2	-52.9	-54.8	-55.9	-55.7	-55.8
50	-56.3	-54.9	-54.7	-54.4	-51.9	-50.4	-49.6	-51.8	-54.4	-56.1	-56.2	-56.5
30	-57.0	-55.0	-55.2	-54.7	-50.4	-47.3	-46.3	-48.6	-53.0	-55.8	-56.3	-58.2
RESOLUTE, N.W.T.												
100 MB	-60.9	-60.1	-54.1	-48.2	-45.3	-43.5	-43.3	-44.8	-48.3	-52.5	-55.5	-58.8
70	-63.4	-61.6	-55.0	-48.9	-45.1	-42.7	-42.4	-44.6	-49.5	-55.0	-58.0	-62.0
50	-65.0	-62.3	-55.9	-49.2	-44.6	-41.8	-41.6	-44.6	-50.9	-57.4	-60.4	-64.6
30	-66.2	-62.2	-56.0	-49.6	-43.6	-40.6	-40.4	-44.1	-51.5	-60.0	-63.2	-68.1
SABLE ISLAND, N.S.												
100 MB	-56.8	-55.9	-54.7	-54.7	-56.1	-57.8	-58.0	-58.6	-60.2	-60.8	-60.1	-58.1
70	-57.8	-56.7	-55.8	-55.3	-55.4	-55.1	-54.8	-55.3	-56.9	-58.7	-60.1	-59.0
50	-57.7	-56.7	-55.6	-54.4	-53.4	-52.6	-51.7	-52.4	-54.2	-57.2	-59.9	-59.6
30	-57.0	-56.1	-54.7	-53.1	-50.8	-48.6	-47.5	-48.3	-50.2	-54.5	-59.2	-59.1
SACHS HARBOUR, N.W.T.												
100 MB	-57.7	-55.1	-52.4	-49.0	-46.8	-45.4	-44.7	-46.2	-49.4	-52.4	-53.0	-56.1
70	-59.3	-55.6	-53.0	-49.1	-46.3	-44.4	-43.7	-45.8	-50.5	-54.1	-54.5	-58.2
50	-60.3	-55.9	-53.7	-49.5	-45.8	-43.5	-42.9	-45.7	-51.8	-56.0	-56.1	-60.1
30	-61.0	-56.3	-54.8	-49.9	-45.0	-42.3	-41.7	-45.2	-52.6	-57.9	-58.1	-62.7
SEPT ILES, QUE.												
100 MB	-54.6	-53.3	-52.7	-52.1	-52.0	-52.8	-52.2	-52.7	-55.2	-55.8	-56.8	-55.5
70	-56.0	-54.3	-53.6	-52.8	-52.3	-51.6	-50.9	-51.4	-54.1	-55.8	-58.1	-57.7
50	-57.3	-55.0	-54.0	-52.9	-51.4	-49.9	-49.2	-49.9	-52.8	-56.0	-59.5	-59.4
30	-57.8	-56.2	-54.3	-52.8	-49.8	-47.2	-46.2	-47.1	-50.0	-55.1	-60.5	-60.4
STEPHENVILLE, NFLD.												
100 MB	-54.9	-54.0	-53.2	-52.5	-53.3	-53.9	-54.0	-54.5	-56.4	-57.3	-58.0	-56.2
70	-56.4	-55.2	-54.3	-53.3	-53.1	-52.5	-52.3	-52.3	-54.6	-56.7	-59.0	-58.1
50	-57.3	-56.1	-54.6	-53.3	-52.2	-50.8	-50.2	-50.6	-53.2	-56.6	-60.1	-59.5
30	-57.8	-56.8	-54.6	-52.9	-50.4	-47.7	-46.8	-47.6	-50.1	-55.2	-60.6	-60.4
THE PAS, MAN.												
100 MB	-55.1	-53.8	-53.3	-52.5	-52.1	-52.6	-52.2	-53.1	-54.2	-55.3	-54.8	-55.4
70	-56.4	-54.7	-54.1	-53.2	-52.2	-51.9	-51.2	-52.2	-53.8	-55.7	-56.2	-57.0
50	-57.4	-55.4	-54.2	-53.4	-51.4	-50.0	-49.4	-50.5	-53.6	-56.5	-57.4	-58.5
30	-57.9	-56.1	-54.7	-53.5	-50.0	-46.9	-46.0	-47.1	-51.8	-56.3	-58.4	-60.3

ALTITUDE (G.P.M.)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
TROUT LAKE, ONT.												
100 MB	15644	15701	15810	16016	16194	16389	16493	16447	16288	16109	15888	15765
70	17916	17994	18107	18322	18508	18703	18816	18763	18585	18391	18163	18031
50	20050	20147	20270	20493	20693	20899	21021	20959	20755	20535	20291	20150
30	23273	23409	23544	23784	24026	24264	24404	24325	24061	23784	23500	23343
WHITEHORSE, Y.T.												
100 MB	15801	15846	15864	15973	16142	16341	16438	16385	16210	15972	15887	15810
70	18091	18154	18173	18292	18472	18687	18788	18718	18520	18278	18197	18109
50	20239	20329	20347	20472	20675	20904	21012	20922	20695	20446	20365	20266
30	23497	23627	23632	23770	24029	24294	24416	24283	23990	23719	23645	23520

TEMPERATURE (°C)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
TROUT LAKE, ONT.												
100 MB	-54.9	-53.1	-52.9	-52.0	-51.4	-51.9	-51.3	-51.8	-53.6	-54.4	-54.6	-55.2
70	-56.4	-54.4	-53.5	-52.8	-51.8	-51.2	-50.2	-51.0	-53.2	-55.1	-56.4	-57.3
50	-57.3	-55.2	-54.0	-53.1	-51.1	-49.4	-48.6	-49.7	-53.1	-55.9	-58.0	-58.9
30	-58.4	-55.9	-54.3	-53.2	-49.7	-46.7	-45.3	-46.5	-51.0	-55.7	-59.5	-61.1
WHITEHORSE, Y.T.												
100 MB	-53.4	-52.2	-51.9	-50.9	-50.3	-48.8	-48.4	-50.2	-52.0	-52.0	-51.9	-52.6
70	54.6	-52.3	-52.4	-51.6	-49.9	-48.6	-47.9	-49.6	-52.2	-53.0	-52.8	-53.7
50	-55.2	-52.6	-53.2	-52.3	-49.4	-47.6	-46.9	-49.4	-52.8	-54.0	-53.7	-54.9
30	-55.7	-53.4	-54.0	-53.1	-48.4	-45.3	-44.3	-47.6	-52.7	-54.7	-54.6	-57.0