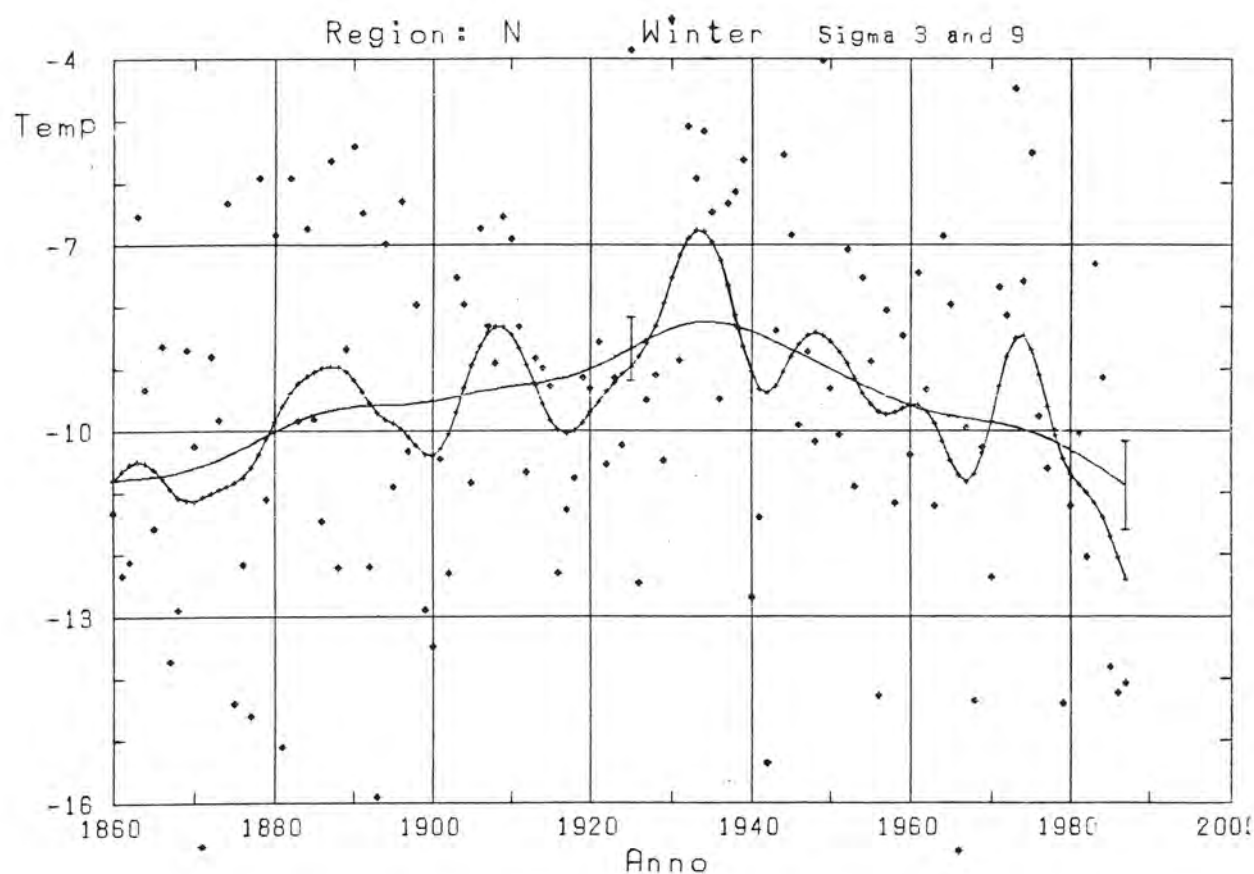




CLIMATE FLUCTUATIONS IN SWEDEN 1860-1987

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Abstract.

We are living in a time when there is a great concern and anxiety on climate changes, induced by man or natural. Figures showing trends or abrupt changes may not seldom be based on rather poor climate records. Thus we have started a climate project at SMHI where we have taken great care to avoid non-homogeneous records and where we have limited our aims to the period of instrumental records (mainly from 1860 in Sweden but a few stations have data from about 1750). Three elements have been studied extensively: temperature, precipitation and air pressure. Two main areas within Sweden were selected. In order to avoid non-homogeneous data the temporal analysis was preceded by a spatial homogeneity test which revealed several discontinuities and artificial trends. Long-term fluctuations were visualized by using a Gaussian low pass filter. One interesting feature is that the pressure difference northern to southern Sweden showed a decrease by about 10% around 1930. The corresponding decrease of the zonal wind may to some extent explain the quite large frequency of cold winters in later decades as high winter temperatures in Scandinavia is strongly connected with westerly and southwesterly inflow of mild and humid Atlantic air-masses. Another interesting but still somewhat questionable feature is the dry early decades.

The data set.

In figure 1 the stations used here are given. They are grouped into two regions, one in the south (or rather southeastern Götaland), one in the north (or rather inner and northeastern Norrland). These two regions are referred to as region S and N respectively. The idea of using two limited regions was to make the homogeneity test as efficient as possible.

In Sweden a net-work of 25 stations was set up in December 1859. In table 1 some basic information for those stations used here is given. It is mainly taken from Andersson (1970).

Table 1. Some of the documented station history. Notations: Hs – height of station (and barometer) above mean sea level (m); Ht – height of thermometer above ground (m); Hp – height of precipitation gauge above ground (m).

5223: Falsterbo 52°23'N 12°49'E

Hs		Ht		Hp	
1880–	5	1880–	2.1–2.3	1880–	1.4–1.5

Wind shield from 1909.

5343: Lund 55°43'N 13°12'E

Hs		Ht		Hp	
–1867	?	–1867	?	–1867	20
1868–1940	38	1868–1940	6	1868–1956	1.5
1941–1974	73	1941–	1.5	1957–	1.6
1975–	50				

During the period 1851–1867 the temperature readings were taken at the house of the Academy. The rain gauge was placed at the roof of the old Astronomical Observatory. The period 1868–1940 the observations were taken at the new Astronomical Observatory. During the year 1941 the meteorological station was moved to the Geographical Institute and 1974 the observations were taken over by personnel at the fire-brigade. No information is found when the window screen was replaced by the Stevenson screen. The precipitation gauge was provided by wind shield in 1948.

6219: Kullen 56°18'N 12°27'E

Hs		Ht		Hp	
–1923	62	–1937	1.9	–1970	1.4–1.6
1923–	72	1939–	1.5–1.8	1970–	1.9

Wind shield from 1880.

6403: Kristianstad 56°02'N 14°10'E

Hs		Ht		Hp
-1965	6	-1886	5.9	1879- 1.0-1.5
1965-1982	3	1886-1897	8.5	
1984-		1897-1899	5.1	
		1899-1903	9.0	
		1903-1914	6.6	
		1914-1943	1.2	
		1943-1967	1.8	
		1967-	1.5	

Wind shield probably from about 1930. The station in Kristianstad was closed 1982 and during about two years values were interpolated. In April 1984 a new station was established just outside the town at Evervd.

6413: Karlshamn 56°11'N 14°52'E

Hs		Ht		Hp
-1919	13	-1875	8.6	-1882 6
1919-1951	7	1875-1900	2.2-2.5	1882-1916 5.5
1951-1972	5	1900-1916	5.7	1916-1917 6.8
1972-	20	1916-1919	7.9	1917- 1.5-1.7
		1919-1957	3.9	
		1957-	1.5	

A new window screen was introduced 1894 and the station was equipped with a Stevenson screen in 1951. Wind shield from 1950 when the old gauge (1000 cm²) was exchanged for the new one (200 cm²).

6452: Växjö 56°53'N 14°48'E

Hs		Ht		Hp
-1861	156	-1881	4.6	-1880 3.5
1861-1871	168	1882-1889	5.4	1881-1900 1.4-1.5
1871-1912	172	1890-1912	6.0	1901-1902 1.2
1913-1949	163	1912-1918	8.5	1902-1939 1.7
1949-	166	1919-1939	9.0	1939- 1.5-1.7
		1939-	1.5-1.6	

Wind shield introduced in 1922 and Stevenson screen in 1939.

6641: Kalmar

56°41'N 16°18'E

Hs		Ht		Hp	
-1877	6	-1877	4.2	-1877	9.7
1877-1891	9	1878-1881	9.2	1877-1878	18.3
1891-1901	7	1882-1889	5.8	1879-1911	1.5-1.6
1901-1927	10	1890-1901	4.7	1912-1922	2.2
1927-1963	7	1901-1927	6.5-6.8	1923-1927	1.5
1963-1979	8	1927-	1.5-1.8	1927-1941	0.8
1979-	15			1941-	1.5

During 1927 the station was moved from a central place in the town to the lighthouse Grimskär, during 1941 to a pilotage. From 1963 until 1979 the observations are from the airfield and after that from a villa district west of the airfield. Wind shield from 1860.

14036: Holmögadd

63°36'N 20°46'E

Hs		Ht		Hp	
1860-	6	1860-	1.3-1.4	1860-	1.4-1.5

Wind shield existed in 1920 but was probably introduced much earlier, about 1894.

14048: Umeå

63°50'N 20°17'E

Hs		Ht		Hp	
-1872	13	-1897	1.4-1.8	-1874	1.3
1872-1908	12	1989-1908	2.6	1875-1881	0.4
1908-1941	17	1908-1909	6.0	1882-1888	1.1
1941-1979	11	1910-1941	6.6	1888-1894	1.3-1.5
1979-1981	7	1941-1967	1.5	1894-1897	0.9
1981-	14	1967-1979	1.8	1897-1929	2.0-2.3
		1979-	1.5	1929-	1.5-1.6

Wind shield introduced about 1930, Stevenson screen in 1941. During 1979 the observations ceased in the town and since then observations are taken from the airfield at 63°48'N, 20°17'E.

15129: Bjuröklubb

64°29'N 21°35'E

Hs		Ht		Hp	
1880-	36	1880-	1.7-1.9	1880-	1.5-1.7

Wind shield from about 1904.

15772: Stensele

65°04'N 17°10'E

Hs		Ht		Hp	
-1931	328	-1880	4.8	-1880	0.7
1931-1945	330	1881-1885	4.2	1881-1885	0.9
1945-1952	327	1886-	1.5-1.8	1886-1910	1.1-1.2
1952-1983	330			1911-	1.5-1.9
1983-	325				

Wind shield from about 1909. Wind screen in 1898, free-standing screen used from 1919 and Stevenson screen since 1940.

16179: Piteå

65°19'N 21°28'E

Hs		Ht		Hp	
-1871	14	-1907	2.7-3.1	-1880	2.5
1872-1944	9	1907-1941	2.0	1881-1907	2.7-2.8
1944-1947	3	1941-	1.5-1.7	1908-1918	3.1-3.3
1947-1957	5			1919-1928	2.5
1957-	6			1929-1941	3.1
				1941-	1.4-1.6

Window screen introduced in 1894 and Stevenson screen in 1941. Probably wind shield until 1920. A new wind shield was mounted later, possibly in 1941.

16395: Haparanda

65°50'N 24°09'E

Hs		Ht		Hp	
-1872	10	-1884	2.1	-1885	0.7-0.9
1872-1942	9	1884-1914	2.8-3.2	1886-1891	2.5
1942-1977	7	1915-1917	3.5	1892-1893	3.1
1977-	5	1918-1942	3.1	1894-1904	2.6
		1942-	1.6-1.7	1905-1942	2.0-2.1
				1942-	1.6-1.7

Wind shield introduced in 1914. A window screen was used 1897-1942 and after that a Stevenson screen. The station was situated at the telegraph station 1859-1942, 1942-1977 at the custom-house and after that in a villa district.

16988: Jokkmokk

66°36'N 19°50'E

Hs		Ht		Hp	
-1871	285	-1931	1.3-1.5	-1881	0.4
1871-1903	282	1931-1947	1.1	1882-1947	1.2-1.4
1903-1933	255	1947-	1.4-1.6	1947-	1.5-1.6
1933-1947	249				
1947-1957	262				
1957-1962	257				
1962-1966	259				
1966-1973	266				
1973-	260				

Wind shield introduced in 1910. Window screen was used 1900-1919, freestanding screen until 1931 and from that the Stevenson screen. The station was removed in 1973 to a new position at 66° 38'N and 19° 39'E.

19283: Karesuando

68°27'N 22°30'E

Hs		Ht		Hp	
-1945	333	-1945	1.8-2.0	-1968	1.5-1.6
1945-	327	1945-	1.5	1968-	1.8

Free-standing shelter was used until 1945 when a Stevenson screen was introduced. Wind shield was used at least from 1915. The observations were performed at the same place 1879-1945 and by the same man 1879-1931.

The theory of the homogeneity test.

The test used here has been described lately (Alexandersson, 1986). The mathematics involved was discussed earlier by Hawkins (1977). Another test has been used by Potter (1981) and more general discussions of homogeneity tests can be found in Gardner (1969) and James et al. (1987). We have collected some of the essential mathematics below.

For each station we have

Y_i – the station series itself

X_i – a reference value formed from surrounding, homogeneous series.

The reference value is obtained through

$$\Sigma(W_{ij} * X_j * \bar{X}_i) / \bar{X}_j / \Sigma W_{ij} \quad \text{– for precipitation}$$

$$\Sigma(W_{ij} * (X_j + (\bar{X}_i - \bar{X}_j))) / \Sigma W_{ij} \quad \text{– for temperature and pressure}$$

where all sums extends from $j=1$ to $j=N$ and where a bar denotes average. The weight W_{ij} is given by a formula which utilizes the distance L_{ij} in km between a pair of stations (i,j):

$$W_{ij} = \exp(-L_{ij}/d)$$

The coefficient d could be chosen to give values on W_{ij} which in magnitude resembles squared correlation coefficients. This is fairly well fulfilled with $d=0.005$ for precipitation and 0.001 for temperature and pressure which vary more smoothly. Explicit calculations can indeed also be used when we have such long series as here. Note that also short and incomplete series can be used to derive reference values thanks to the normalizations. This is an almost necessary trick to handle real geophysical data where incomplete records are frequent.

The next step in the set of mathematical operations is to form a series of ratios or differences

$$Q_i = (Y_i / X_i) \quad \text{– for precipitation}$$

$$Q_i = (Y_i - X_i) \quad \text{– for temperature and pressure.}$$

Then these series are standardized according to

$$Z_i = (Q_i - \bar{Q}_i) / \text{std}(Q_i)$$

Here std denotes standard deviation. In fact the averages here must always be near to one and zero respectively due to the normalizations involved in the reference value. But, anyhow, what we want out of Z_i is a series of values that are close to Gaussian with mean zero and standard deviation one. One could no doubt use the first formula for all variables if temperature data were handled in

Kelvin but we have followed the tradition to compare precipitation data through ratios, the other two through differences. We are now ready to set up a very simple set with null and alternative hypothesis as

H_0 : Z_i is a $(0,1)$ -Gaussian variable throughout the period.

H_1 : Z_i is a $(M_1,1)$ -Gaussian variable for i up to and including K .

Z_i is a $(M_2,1)$ -Gaussian variable for the rest of the series.

This neat mathematical form allows us to derive a test statistic easily as:

$$T = \max(K \cdot \bar{Z}_1^2 + (N-K) \cdot \bar{Z}_2^2)$$

where we have to scan through all possible K 's from 1 to $N-1$ to find this maximum and where $\bar{Z}_1$ and $\bar{Z}_2$ are the averages of the first and second parts of the Z_i -series. The null hypothesis H_0 is then rejected if T exceeds a critical value on a specified significance level. If we prefer the traditional 95% level, which means that there is risk of 5% that a homogeneous series will be considered non-homogeneous by mere chance, the critical level of the long series used here will be 9.25 (Alexandersson, 1986). In figure 2 a graph shows how the critical levels depend upon significance level and the number of values (years).

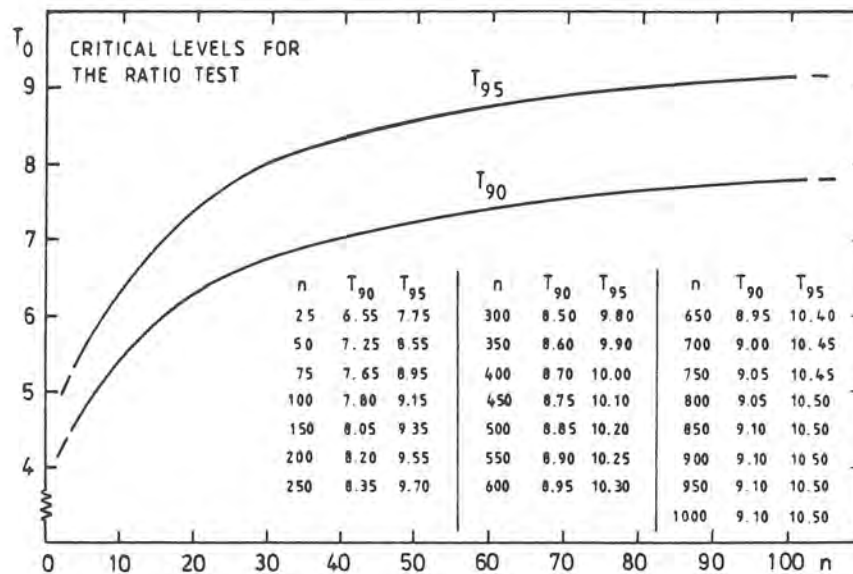


Figure 2. Critical levels for two significance levels, 90 and 95%, and for a number of values from 10 to 1000.

To obtain a reasonable number of accepted series some corrections of the data were made, preferably when the discontinuities detected occurred near the ends and when they looked distinct on Q_i -plots. Although this kind of test gives an answer on the vital questions: When and with how much and on what significance level can a series be considered as non-homogeneous – it is of much value to take a good look at plots of the series of ratios or differences Q_i for each station. We will come to this right now.

Applications of the homogeneity test.

We will illustrate the test by some figures showing the sequence of ratios or differences. For temperature we have chosen Våxjö in southern Sweden and Karesuando in the far north.

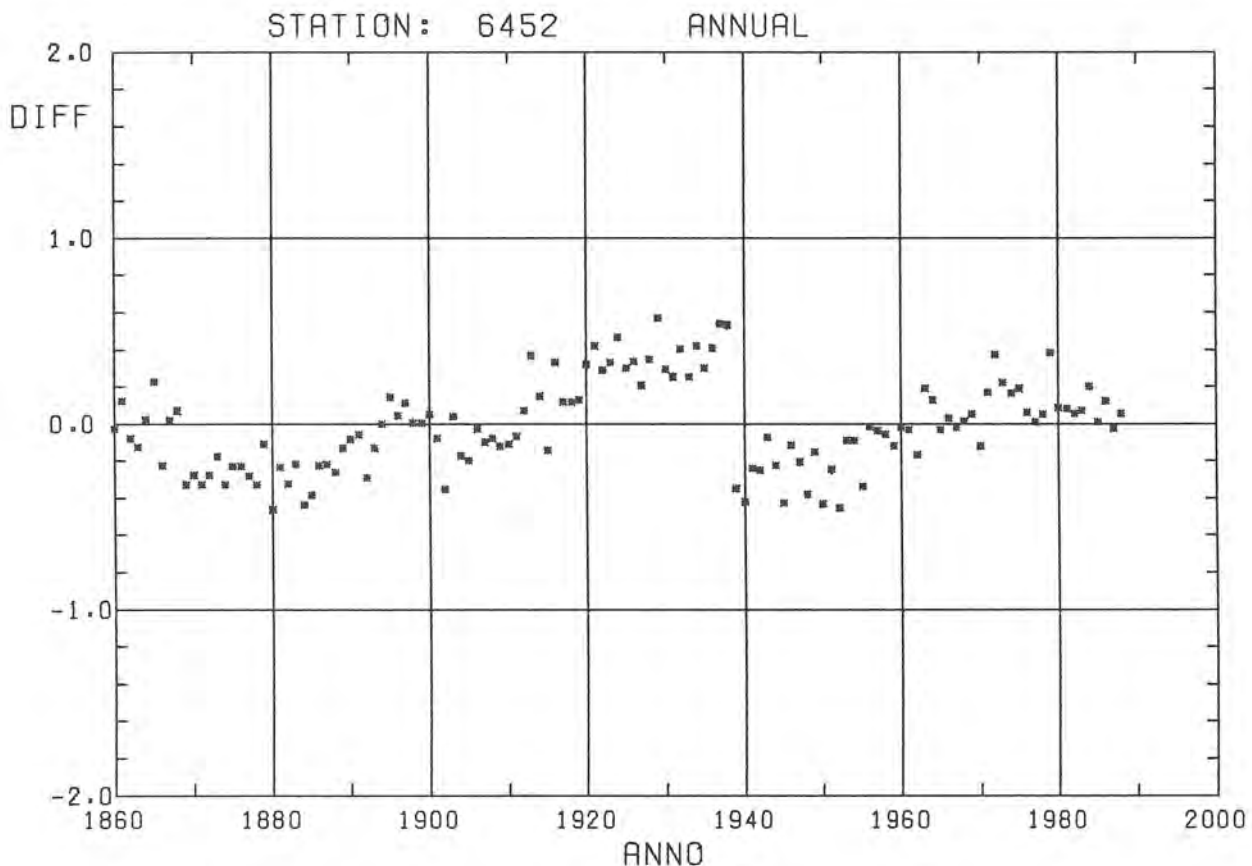


Figure 3. The sequence of differences between the temperature at Våxjö and a reference value, 1860–1987.

We can note a distinct break 1938/1939 for Våxjö and a trend upwards both before and after this discontinuity. Checking with the documented historical events in table 1 shows that the sudden decrease almost certainly is connected with a drastic lowering of the thermometer. This will no doubt give lower minima in inversion conditions which are quite frequent in winter and during nights. The slower upward trend could rather be an urban warming effect. We suspect that "urban" warmings can occur also when the site becomes more and more sheltered by trees, gardens and buildings. Naturally the test quantity T greatly exceeds the critical value 9.25 as it becomes 22.6. Performing the test on individual seasons gave similar results although Våxjö was accepted when summer (June–August) data was used. However, only the test on annual data was used to sort out stations that not are suitable for climate studies or suitable to save by corrections.

Two other stations turned out to have even more pronounced trends: Lund with a relative warming of 0.8 to 0.9°C since 1900 and Umeå with a gradual increase of about 0.9°C since 1860 but with a sudden regress with about 0.5°C in 1979 when it was resited to an airport in the outskirts of the town.

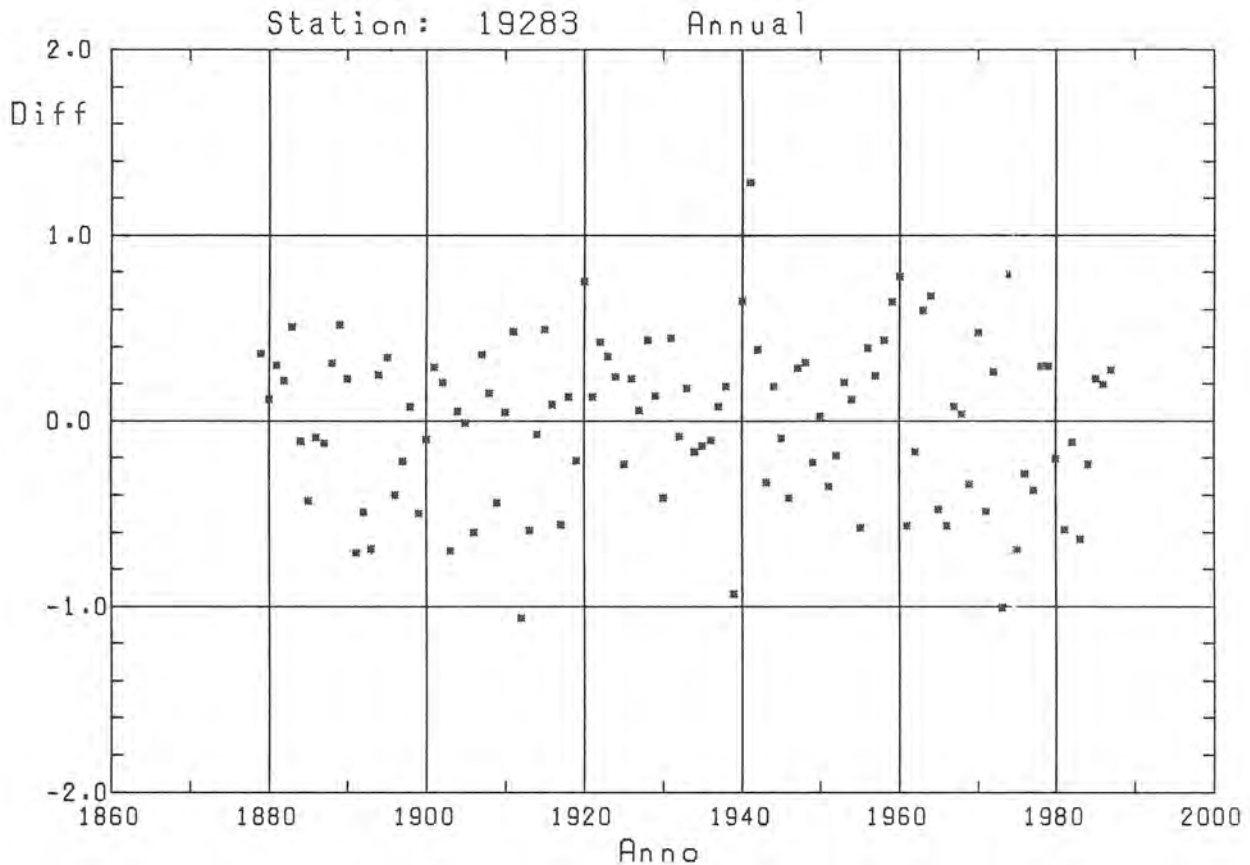


Figure 4. The sequence of differences between the temperature at Karesuando and a reference value, 1860–1987.

Karesuando seems to be a very satisfactory series with no visible signs of trends or breaks. This is, however, somewhat misleading as a slightly significant change has been corrected for (see table 3) in the earlier decades. In fact it must be rare with truly homogeneous records of this length, at least at inland sites where the pattern and development of shallow cold layers is very complex and site dependent.

We can note that we have a much larger spread of the values than for Växjö, mainly because the distances in the northern region between the stations are much longer giving less satisfactory reference values. Especially the 1941 value seems suspicious but no error could be found.

In table 2 we have summarized test results and corrections. After some corrections had been made five series in each region were accepted and used in the temporal analysis. Generally coastal sites were found less problematic than inland sites. In windy climates the exact siting of the thermometer is less sensitive for the measurements.

Table 2. Test results and corrections. Annual temperature.

Falsterbo accepted, no corrections. Data from 1880–1987.
 Lund not accepted. Data from 1860–1987.
 Kullen accepted, no corrections. Data from 1880–1987.
 Kristianstad accepted, correction +0.30 1879–1899. Data from 1879–1987.
 Karlshamn accepted, correction +0.11 1860–1933. Data from 1860–1987.
 Växjö not accepted. Data from 1860–1987.
 Kalmar accepted, corrections −0.15 1860–1887, +0.15 1888–1904,
 +0.40 1963–1972, +0.15 1973–1987. Data from 1860–1987.
 Holmögadd accepted, no corrections. Data from 1860–1987.
 Umeå not accepted. Data from 1860–1987.
 Bjuröklubb accepted, no corrections. Data from 1880–1987.
 Stensele accepted, corrections −0.50 1861–1885, −0.20 1956–1987. Data
 from 1861–1987.
 Piteå not accepted. Data from 1860–1987.
 Haparanda accepted, correction +0.24 1860–1921. Data from 1860–1987.
 Jokkmokk not accepted. Data from 1862–1987.
 Karesuando accepted, correction +0.22 1879–1919. Data from 1879–1987.

Then we turn over to precipitation. As this variable is much less correlated at similar distances than temperature and pressure the test is less useful and strong. We give two more examples of Q_i -plots.

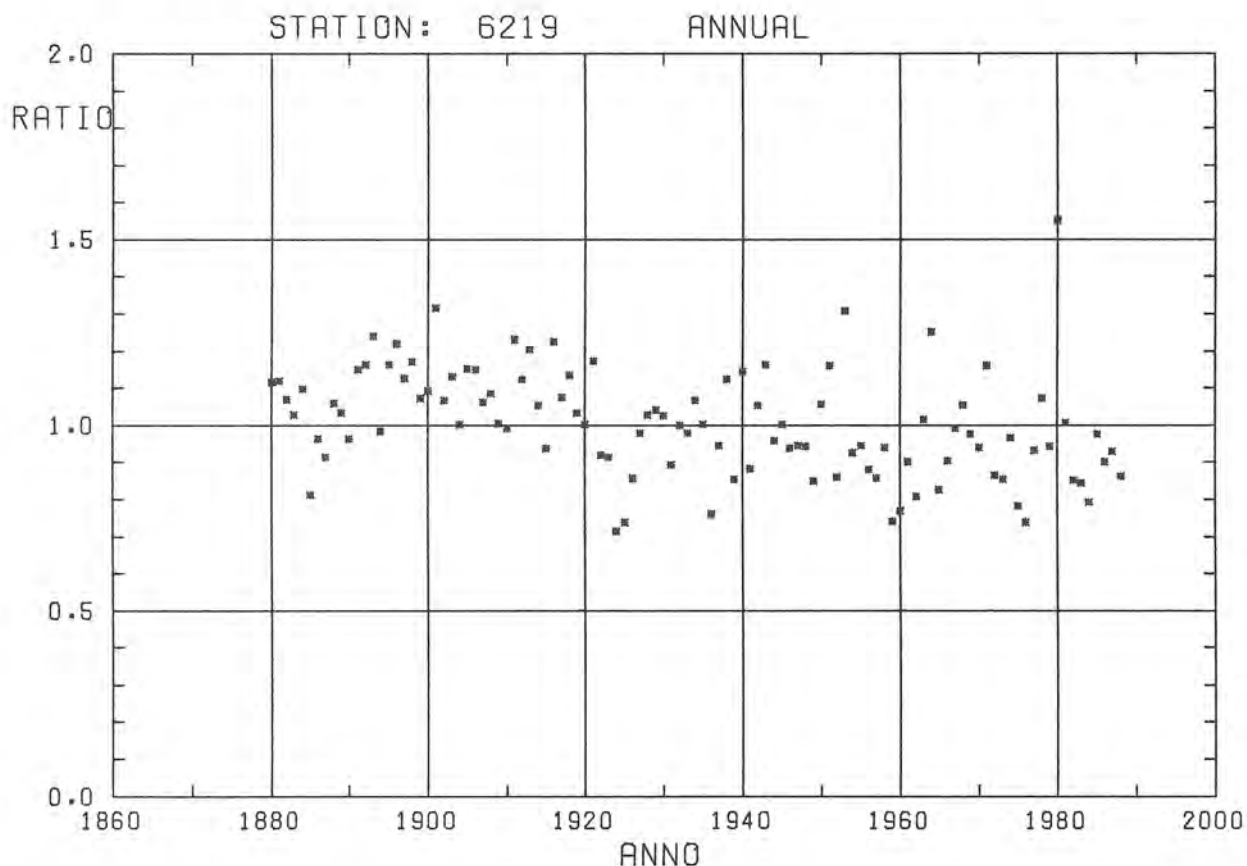


Figure 5. The sequence of ratios between the annual precipitation at Kullen and a reference value, 1880–1987.

The drop occurring in 1921 to 1922 is highly significant ($T=22.6$) and is probably caused by a less sheltered siting at this windy hill near the sea. In rare circumstances may a windy site give excessive amounts of rain and snow but more often will it lead to substantial losses. See e.g. Eriksson (1983) where aerodynamic losses are discussed. In that report the true mean annual value at Kullen is estimated to be 27% higher than the measured amount (710 and 558 mm respectively) while the change given by this test corresponds to a decrease of 12% (from 622 to 543 mm) which points at the difficulties in making assessments of the losses. Note that there was a resiting of the station in 1923 (see table 1).

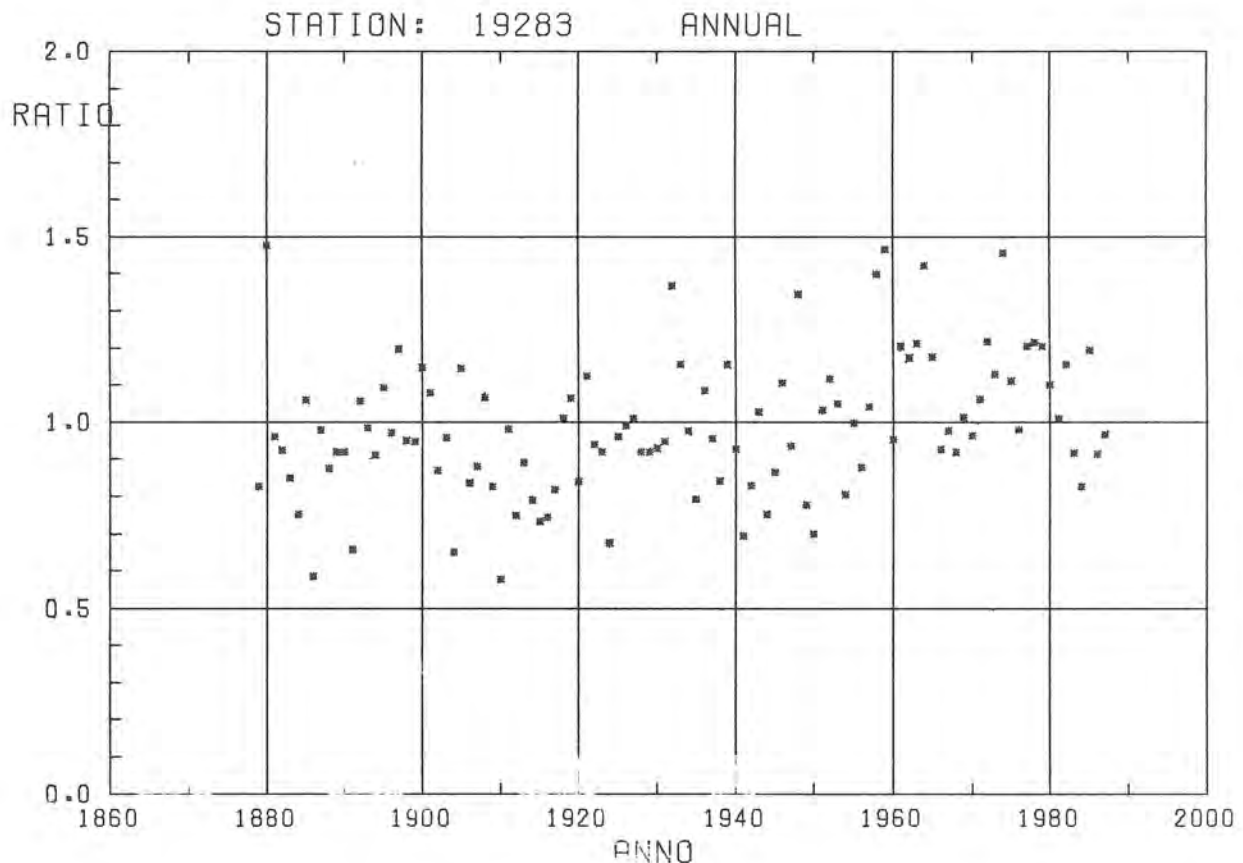


Figure 6. The sequence of ratios between the annual precipitation at Karesuando and a reference value, 1879–1987.

This series was also rejected by the test ($T=20.4$) although a visual inspection gives an impression of a gradual change rather than a distinct break. The reason for this may be that this rather windy site has become somewhat more sheltered as the birches have grown and expanded in this near tundra climate zone. The warming from the late nineteenth century to this century could have contributed to this.

The general tendency for the precipitation records is that inland sites are more homogeneous than windy, coastal sites. In the list of corrections below we can note that some large corrections are made but that they mainly are applied at short parts of the data. A denser network of stations would no doubt give possibilities to detect more non-homogeneities. For precipitation the distances are indeed a bit too long to give efficient tests.

Table 3. Test results and corrections. Annual precipitation.

Falsterbo not accepted. Data from 1880–1987.
 Lund not accepted. Data from 1860–1987.
 Kullen not accepted. Data from 1880–1987.
 Kristianstad accepted, no corrections. Data from 1879–1987.
 Karlshamn accepted, correction factor 1.35 1860–1866. Data from 1860–1987.
 Växjö accepted, no corrections. Data from 1860–1987.
 Kalmar not accepted. Data from 1860–1987.
 Holmögadd not accepted. Data from 1860–1987.
 Umeå accepted, correction factor 0.85 1867–1883. Data from 1860–1987.
 Bjuröklubb not accepted. Data from 1880–1987.
 Stensele accepted, no corrections. Data from 1861–1987.
 Piteå not accepted. Data from 1860–1987.
 Haparanda accepted, correction factors 1.25 1860–1875, 1.08 1940–1987.
 Data from 1860–1987.
 Jokkmokk accepted, correction factor 1.26 1860–1868. Data from 1862–1987.
 Karesuando not accepted. Data from 1879–1987.

Finally the pressure data was processed in the same manner after some quite lengthy standardizations to get the whole data set reduced to mean sea level, 0° C temperature, standard gravity acceleration and hPa. We just give the correction table. Generally inland stations were a bit more problematic, probably due to the sea level reduction problems. Note that the period covered by pressure data is shorter, or 1871–1987.

Table 4. Test results and corrections. Annual pressure.

Kristianstad accepted, no correction. Data from 1901–1960.
 Karlshamn accepted, no correction. Data from 1871–1900.
 Växjö not accepted. Data from 1871–1987.
 Kalmar accepted, correction 0.80 1871–1885. Data from 1873–1987.
 Stensele not accepted. Data from 1871–1987.
 Piteå accepted, correction –1.50 1871–1872. Data from 1871–1960.
 Haparanda accepted, corrections –0.50 1873–1883, –0.54 1976–1987.
 Data from 1873–1987.
 Jokkmokk accepted, correction –0.38 1888–1903. Data from 1888–1987.
 Karesuando accepted, no correction. Data from 1879–1987.

Filtering of the data.

Two types of averaging were performed for the accepted and sometimes corrected series were made. Firstly the data sets were grouped into the two regions mentioned and thus averaged spatially. These averages cannot be considered as true areal means because of the few series used but they will give a reasonable spatial smoothing and some of the (small) non-homogeneities that still exist will be dampened out.

The temporal filtering is somewhat more tricky involving Gaussian weighting coefficients. A time series X_i is then transformed according to

$$G_j = \Sigma(W_{ij} * X_i) / \Sigma W_{ij}$$

$$W_{ij} = \exp(-(i-j)^2 / (2 * \sigma^2))$$

The standard deviation σ must be chosen subjectively but we have used 3 and 9 which very nearly corresponds to 10 and 30 years if one uses the rectangular window ("standard" running averages). Gaussian coefficients give the ideal shape for a low-pass filter. Note that we have allowed the filtering to run through the whole series both in i and j . Near the ends we get G_j -values that are less certain than in the inner parts and averages that will be changed when the series are extended.

In subsequent plots we will give individual values for the two regions along with two filtered curves, the more rapidly varying one revealing more of the accidental clustering of warm or cold or wet or dry "spells" while the more slowly varying curve hopefully will reveal more truly climatic variations.

In each plot is indicated, by vertical bars, the statistical mean error (the most smoothed mean value $\pm$ the standard error of the mean) at the middle and at the end of the series.

Results.

The results are presented as time series in figures 7–41. Every point is an annual or seasonal mean value. Regarding the temperature diagrams each point is also an area mean based upon five stations in region S, which is the southernmost part of Sweden. Also for region N, a northeasterly part of Sweden, five stations were used in the temperature analyses. In the diagrams with annual and seasonal precipitation the values for region S are based upon three stations, in region N upon four stations. The diagrams with air pressure data are based upon four stations in the north and three in the south.

Temperature, annual means.

The large difference between region S and N is that the interannual temperature variability is much higher in northern than in southern Sweden. In both areas there was a trend towards increasing temperatures from 1860 to the middle part of the 1930th. In region N the temperature increase, according to the most smoothed curve, was about 1.5° . In region S the increase was only half that figure. From the temperature optimum there is a decreasing trend in both regions. In the north of Sweden the drop of the annual mean from about 1935 to the 1980th is 0.8°C , while it is 0.3°C in the south.

In region N the warmest year was 1938, the coldest occurred in 1867. The warmest year in region S was 1934. The years 1867, 1871 and 1942 were the coldest ones during the studied period.

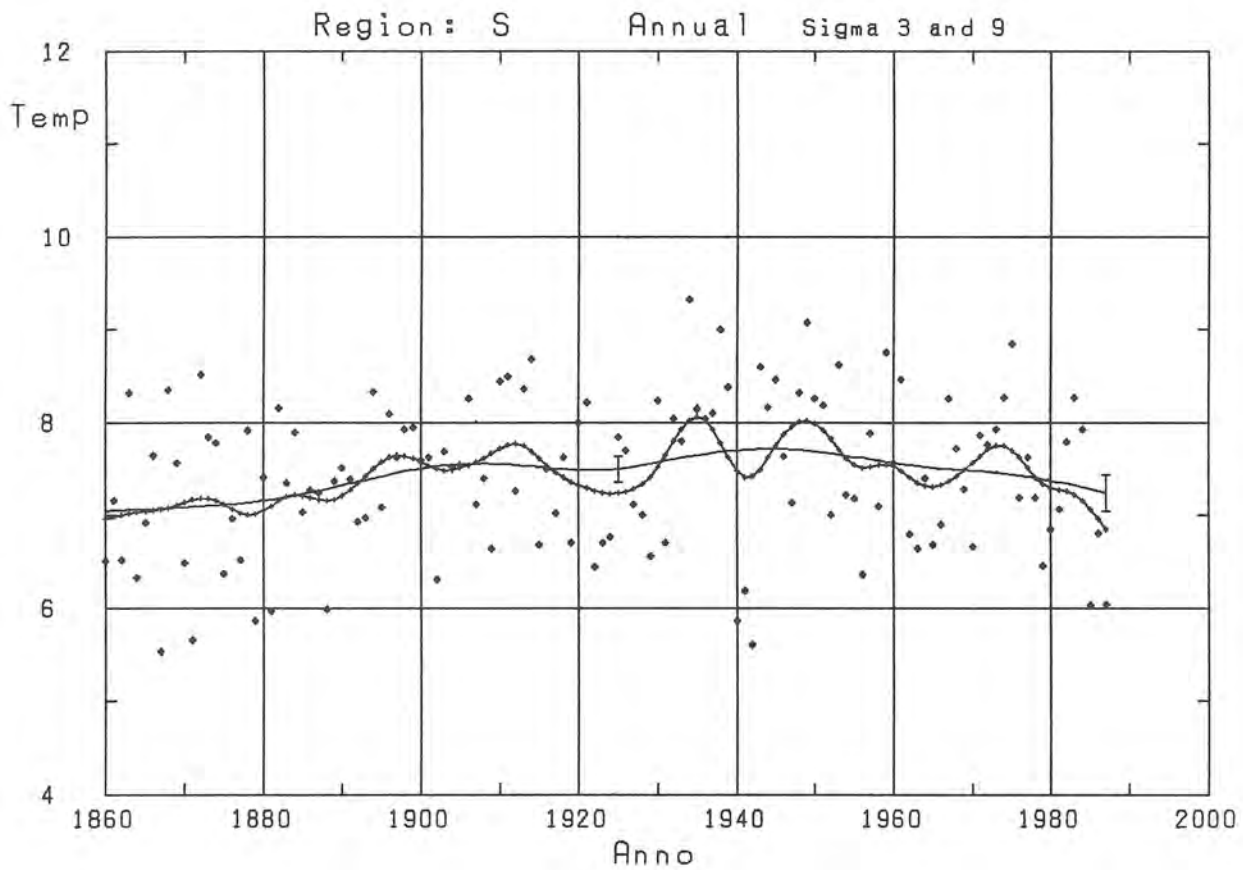


Figure 7. The annual mean temperature 1860–1987 in region S along with two low-pass filtered curves.

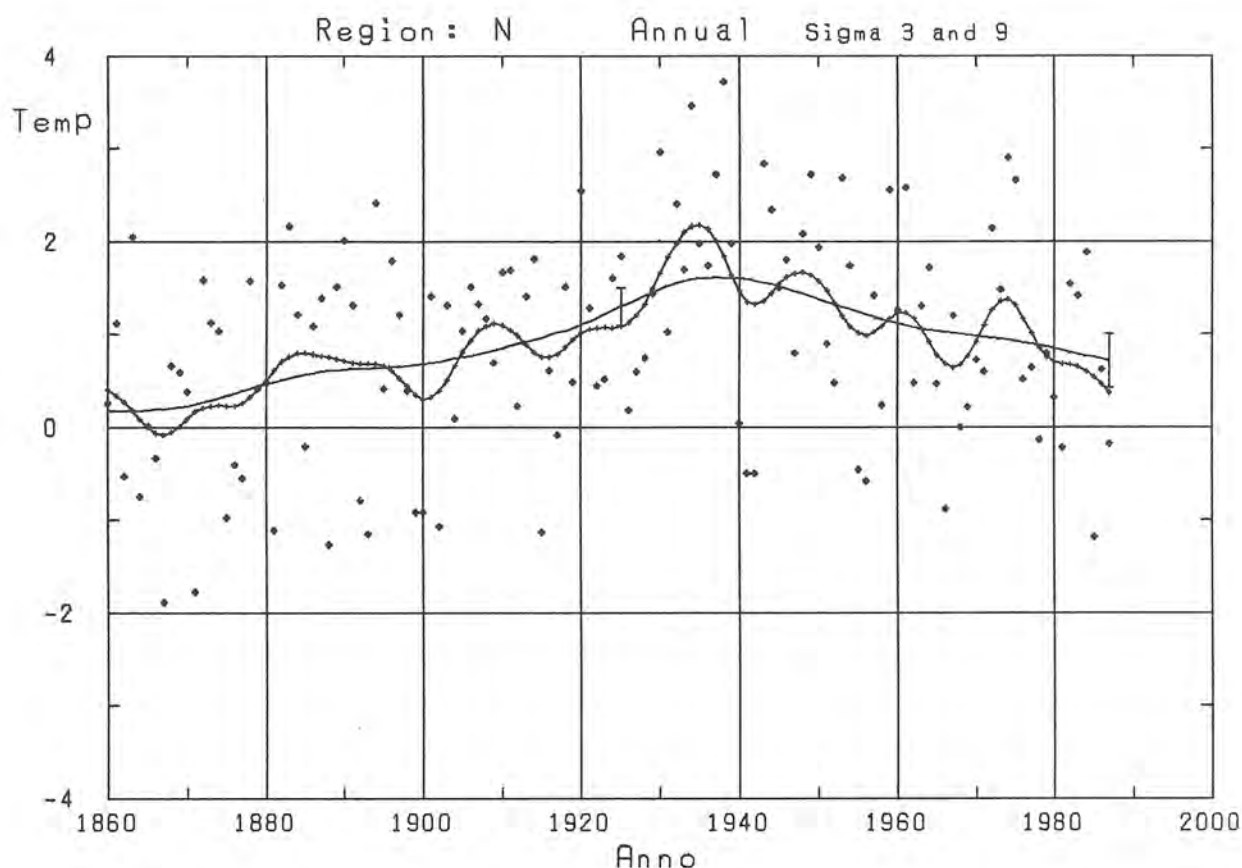


Figure 8. The annual mean temperature 1860–1987 in region N along with two low-pass filtered curves.

Temperature, winter (Dec, Jan, Feb) means.

The amplitude of winter temperatures is large. (Note that the temperature scales are different than in the annual plots.) The temperature climate in region N shows very large fluctuations. In anticyclonic conditions very strong inversions build up and the contrast to cyclonic and windy periods when maritime air penetrates inland becomes large, especially for the northern region in the lee of the fells. The most smoothed curve raised 2.6°C from 1860 to the 1930th, when a cluster of mild winters occurred. From that time the temperature has decreased to the same level as around 1860. In region S the pattern is the same but the amplitude of the fluctuation much lower. At the end of the period the smoothed values are even lower than at the beginning.

In region S the mildest winters were 1924/25 and 1974/75 while the coldest one occurred 1941/42. Region N had its mildest winter 1929/30 (note: a mark outside the frame coinciding with the i in "winter") and the strongest ones were 1870/71 and 1965/66 (also outside of the frame!). A bit remarkable is that the very cold winters 1939/40 to 1941/42, the disreputable "war winters", almost coincide with the long term optimum, but in the less smoothed curve these winters give a pronounced dip both in winter and annual temperatures.

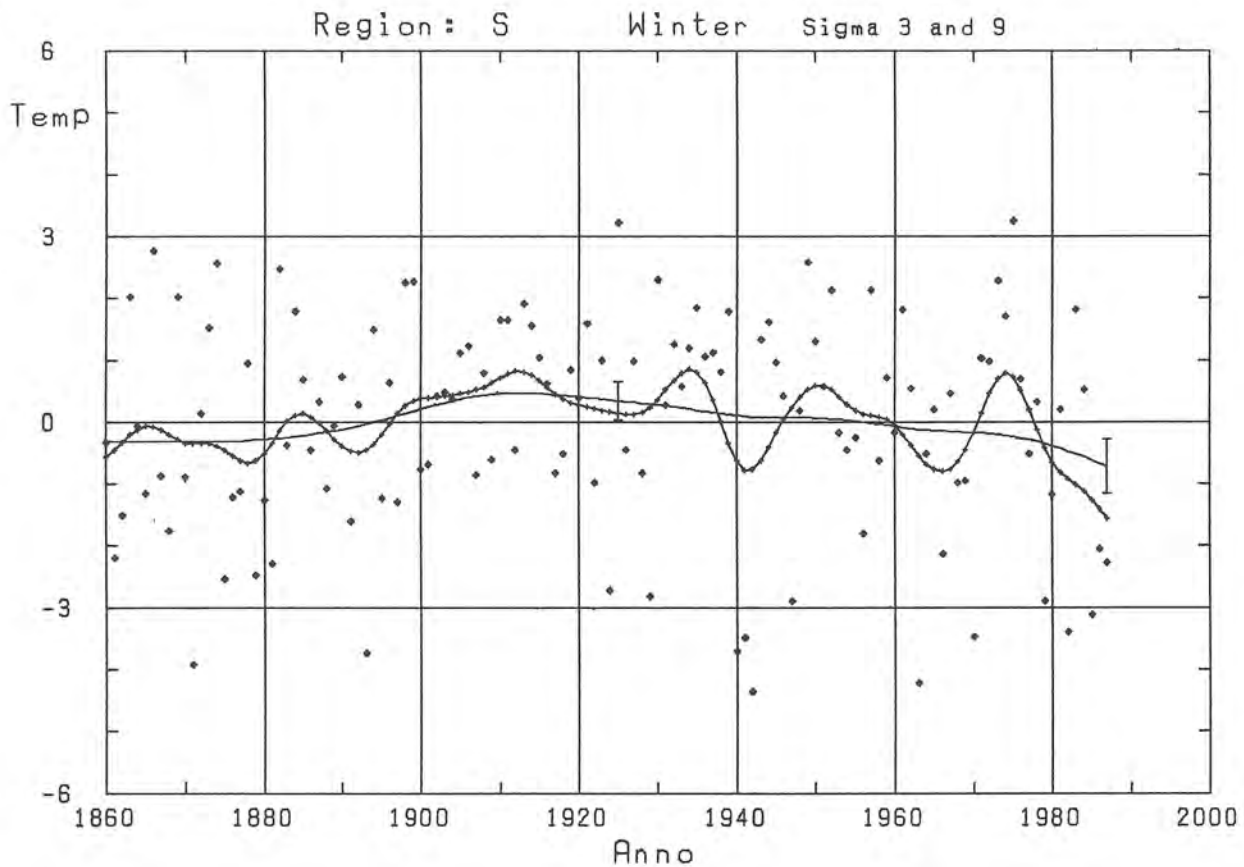


Figure 9. The winter mean temperature 1860–1987 in region S along with two low-pass filtered curves.

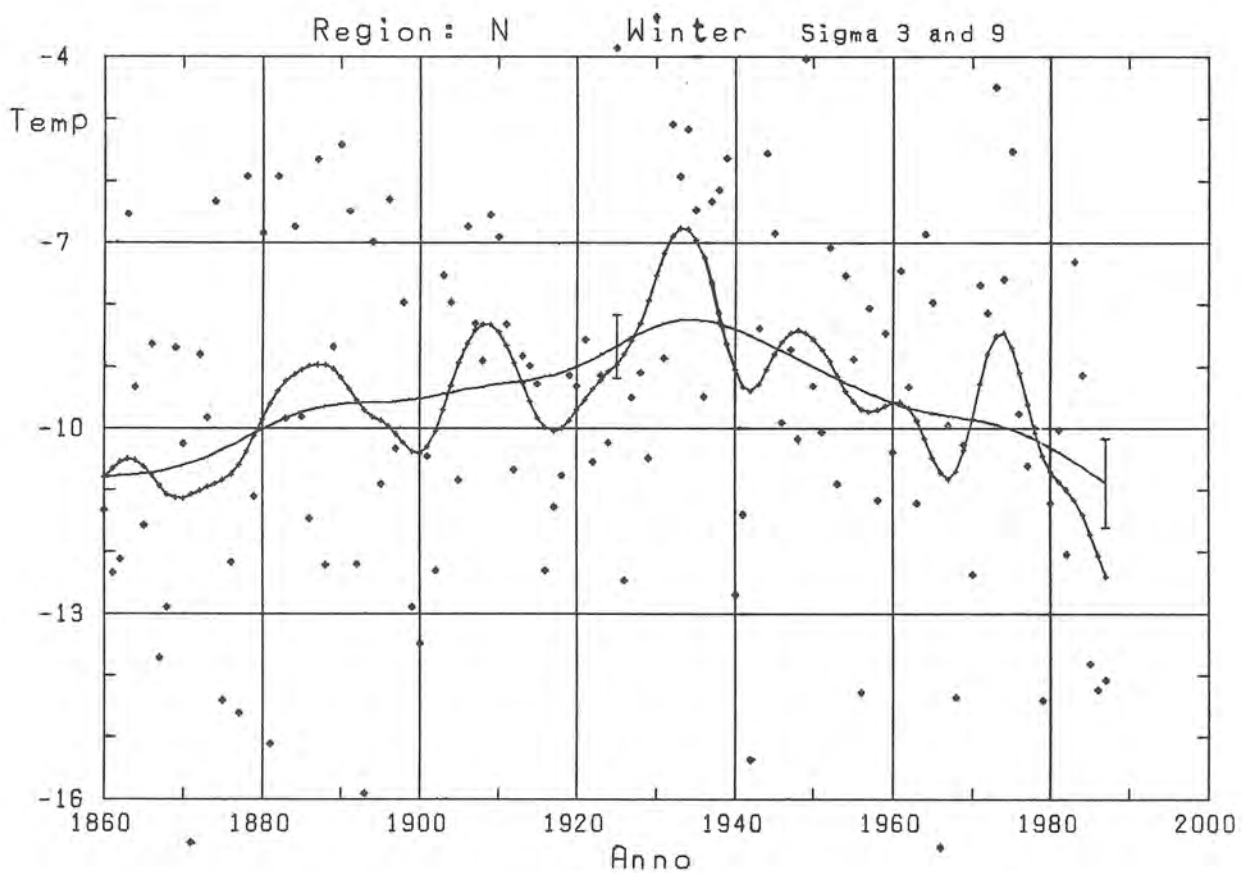


Figure 10. The winter mean temperature 1860–1987 in region N along with two low-pass filtered curves.

Temperature, spring (Mar, Apr, May) means.

The improvement of temperature conditions occurred both in the north and south regions during the last decades of the 19th century and the three first decades of this century. In region S the temperature raised 0.8°C and from about 1930 the most smoothed values have been rather constant. In the north region mean temperatures increased 1.0°C until 1930. From that time the level has not changed very much. During the last years one can see a small raise.

The warmest spring in both regions was 1921 (outside of frame in region N); the coldest in region S was 1942 and in region N 1888.

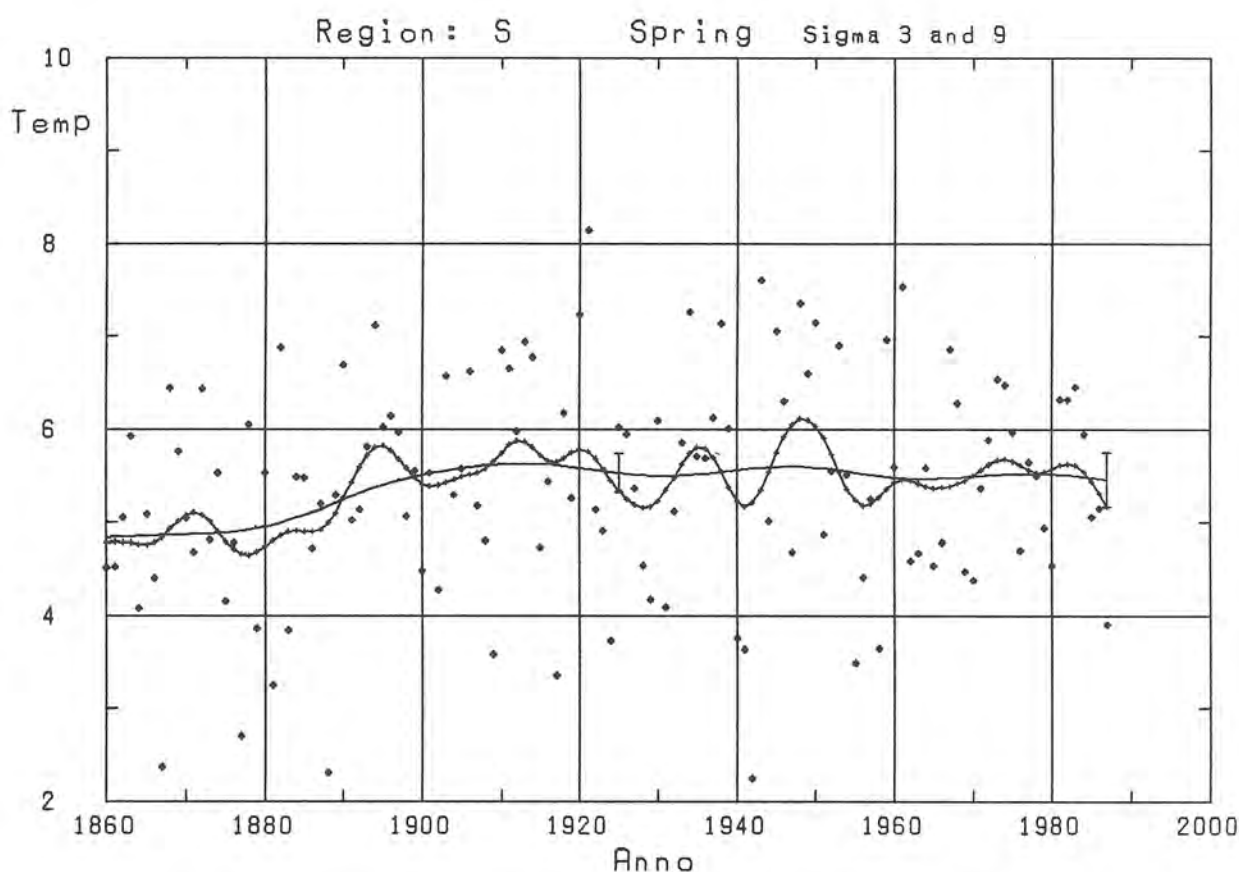


Figure 11. The spring mean temperature 1860–1987 in region S along with two low-pass filtered curves.

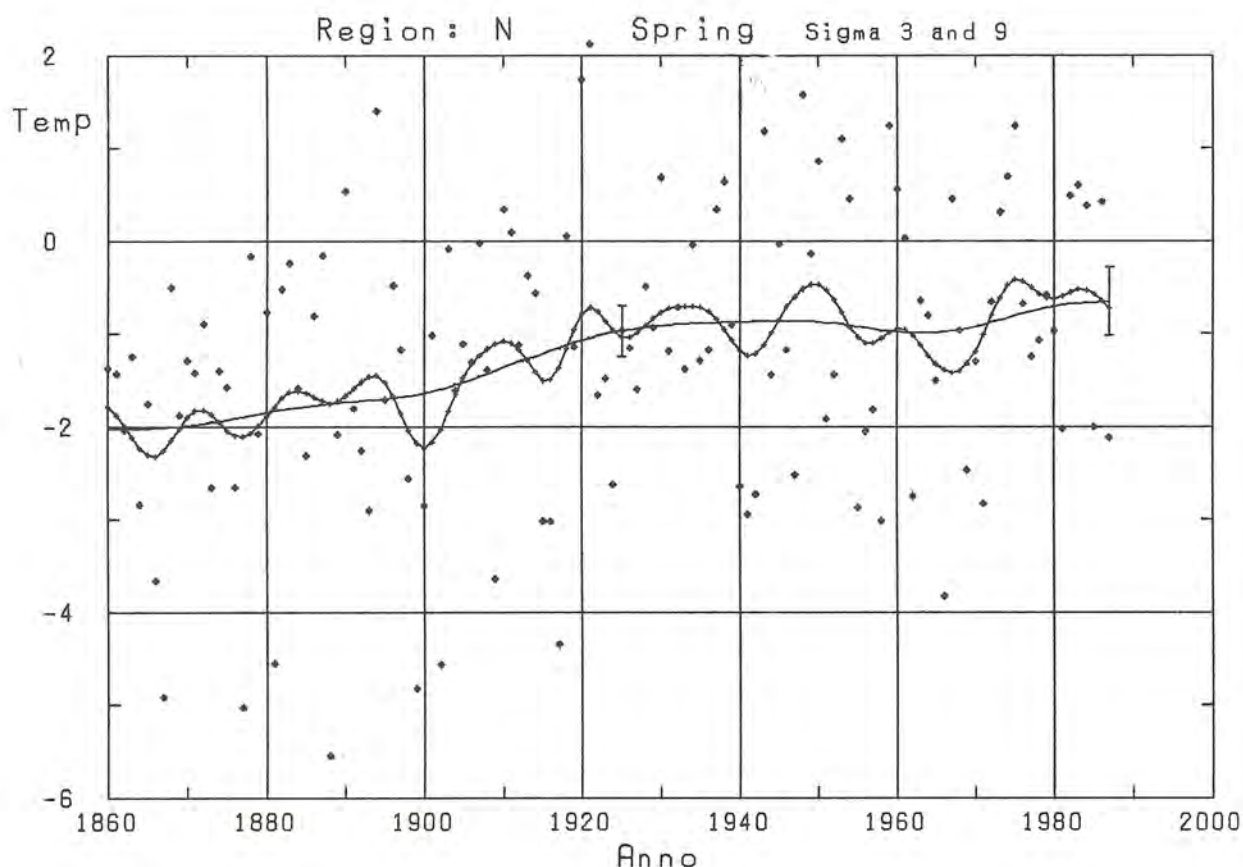


Figure 12. The spring mean temperature 1860–1987 in region N along with two low-pass filtered curves.

Temperature, summer (Jun, Jul, Aug) means.

The trends of summer mean temperatures are somewhat different between the two regions. In the south area there was no distinct trend during the first half of the studied period. In the 1930th there was a lot of warm summers, and the most smoothed curve reached a maximum around 1940. From that timepoint the summers have been chillier with about $0.3\text{--}0.4^{\circ}\text{C}$. In the north several cold summers were grouped together at the end of the 19th century. Mean values increased 1°C towards a maximum during the 1930th, but after that the trend has been negative, so that at the end of the period the mean values have been about 0.6° lower than during the optimum.

The highest summer temperature occurred in 1937 in region N and in region S already in 1868. The summers 1987 and 1928 were the coldest ones in region S and in region N 1902 was extremely cold.

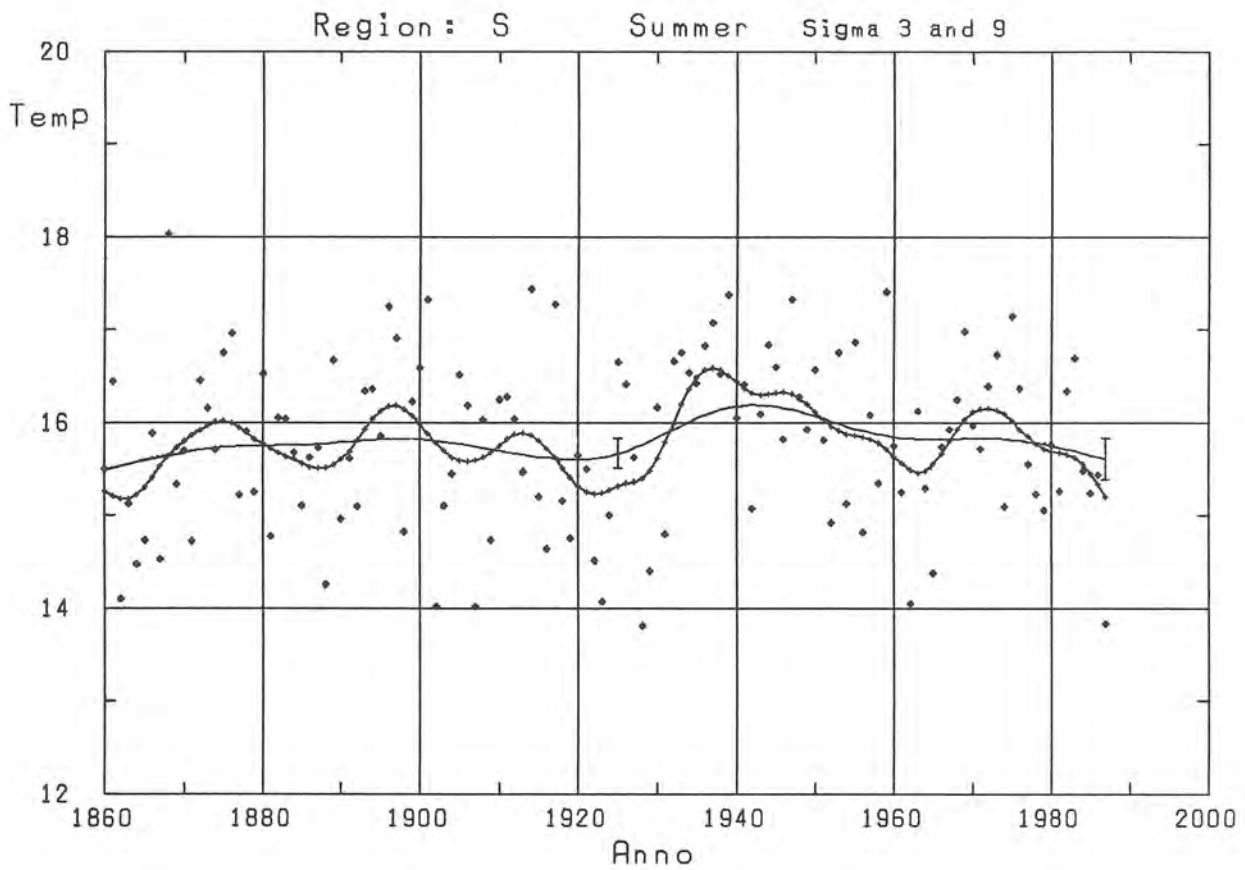


Figure 13. The summer mean temperature 1860–1987 in region S along with two low-pass filtered curves.

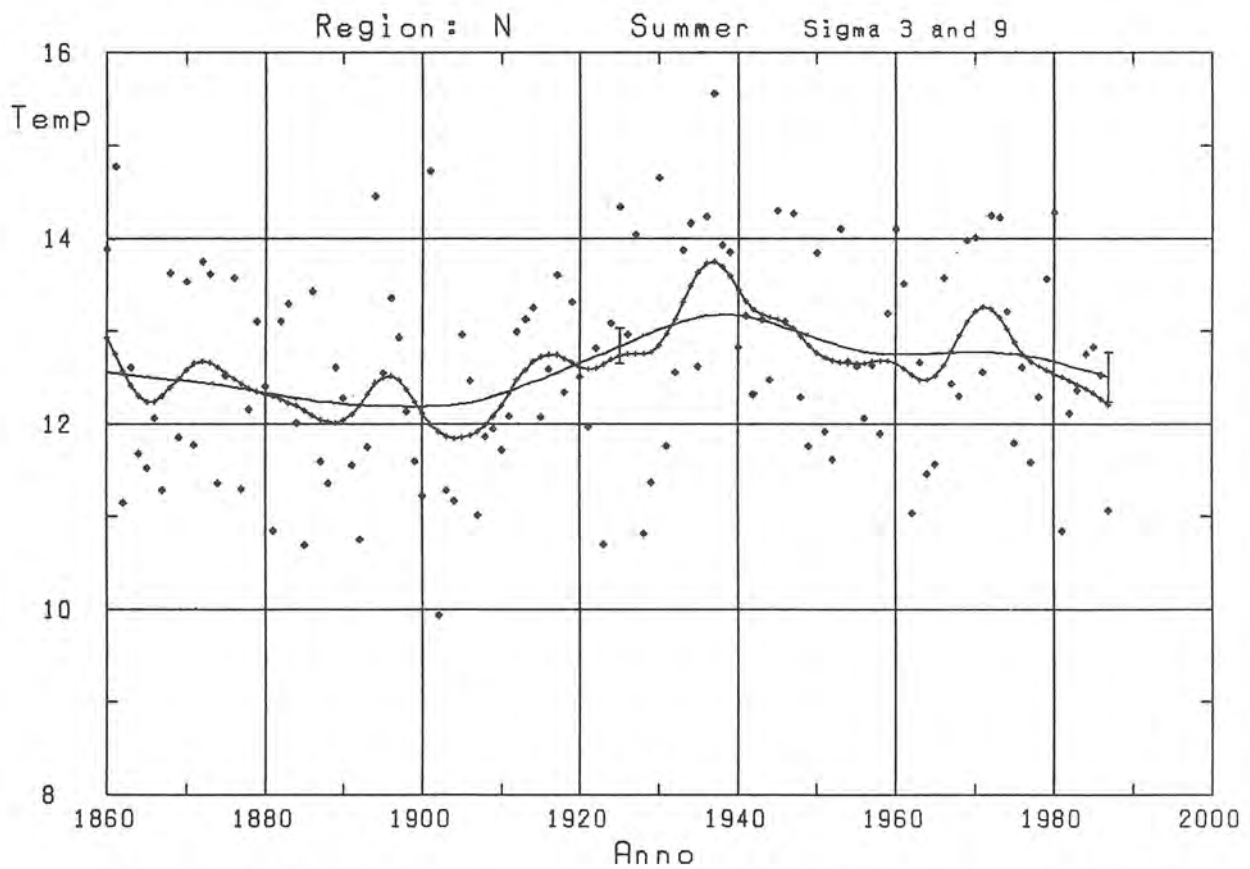


Figure 14. The summer mean temperature 1860–1987 in region N along with two low-pass filtered curves.

Temperature, autumn (Sep, Oct, Nov) means.

The trends for the two regions show the same characteristics. The temperature climate improved from low values during the first years in the series to a maximum around 1940 and after that temperature has deteriorated. In region N the most smoothed curve increased 1.5°C while the decrease amounts to 0.7°C . The corresponding figures in region S are 0.8°C and 0.4°C respectively.

The lowest autumn mean temperature occurred in 1871 in the south area and in 1864 (again outside of frame) in the north area. The mildest autumns were 1934, 1938 and 1949 in region S and 1938 and 1961 in region N.

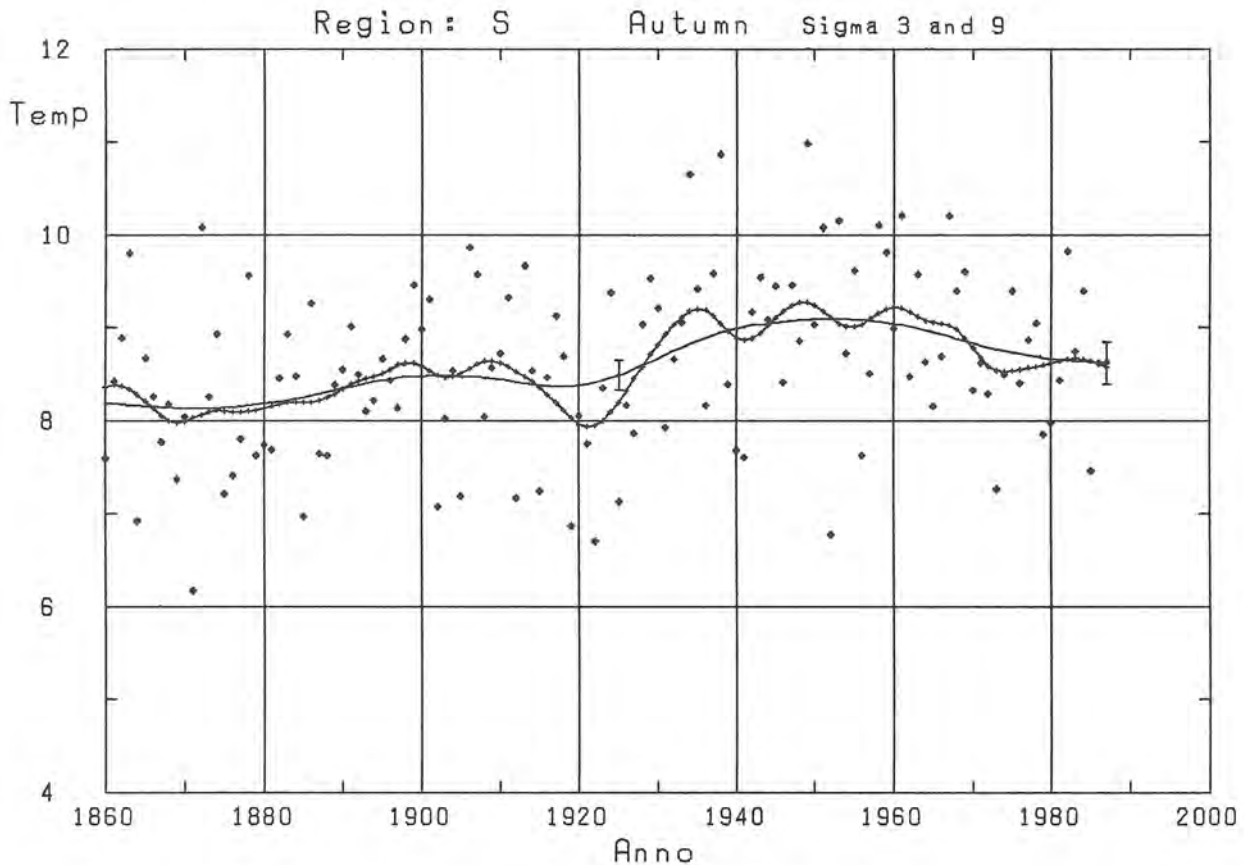


Figure 15. The autumn mean temperature 1860–1987 in region S along with two low-pass filtered curves.

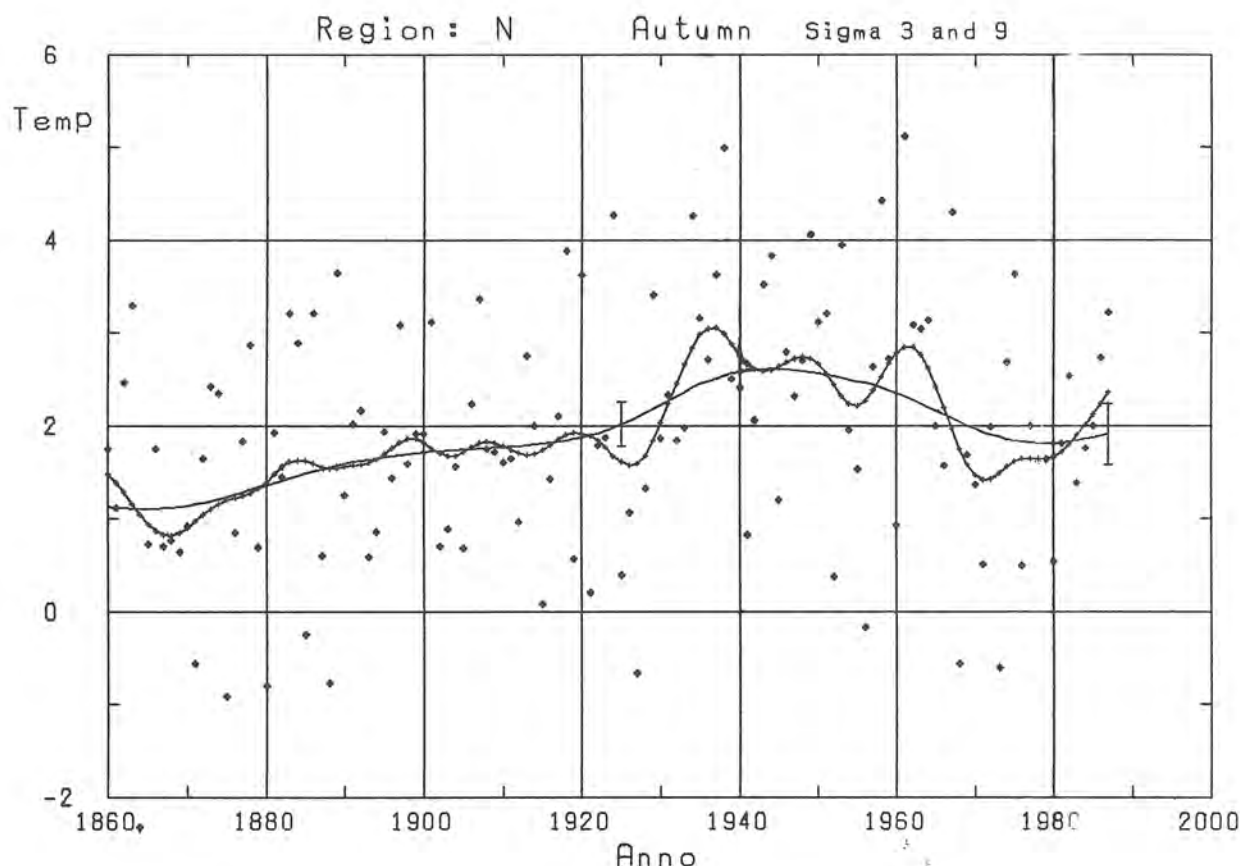


Figure 16. The autumn mean temperature 1860–1987 in region N along with two low-pass filtered curves.

Precipitation, annual amounts.

The instrumentation for measuring precipitation amounts has changed somewhat during the period. The most important improvement was achieved when the gauges were equipped with wind shields. This happened in the south region for the stations used during 1922–1950. In the north region the shield was introduced between the years 1900–1915. The shield had the effect that 25–50% more snow was collected at a field experiment at Särna, but for rain only 2–3% higher amounts fell in the gauge.

Also the less sheltered and often elevated sites used in the earlier years have negative effect on the measured amounts. Although the homogeneity test has detected some of the erroneously low values and corrections have been made there is still a risk of a common underestimation.

The annual mean increase of about 10% in the north part of Sweden and of about 6% in the south can partly (or wholly?) be attributed to these effects. The remaining real part (?) is in a way in accordance with temperature data since the cold winters in the earlier decades should have been mainly anticyclonic. Also the more meridional circulation in later decades and the increase in cloudiness should be favourable for more precipitation in most of Sweden but perhaps less in the western fells.

The uncertainty in earlier precipitation data points at the need for an increased amount of climate records. This is most feasible from 1880 and onwards when many climate stations have been in operation and placed at well sheltered inland sites. Therefore we hope that future extended studies will clarify some of the uncertainties revealed here.

Except for the lower level in the first half of the studied period the precipitation records show very gentle developments in the smoothed presentation. Though the temperature has changed quite notably it is remarkably small changes of the precipitation records from say the temperature optimum in the 1930th to the much less favoured 1980th.

The lowest annual amounts were measured during the early part of the period 1860–1987. In region S the years 1868 and 1886 show the lowest sums and in the north region 1875, quite a cold year, was the driest. The highest amounts were observed in 1945 in the south area and in 1935 in the north area. In the south this is much due to the excessive amounts that poured down over Småland in the month of August when Växjö received 141 mm in one single day the 14. The year 1866 was very wet in both regions.

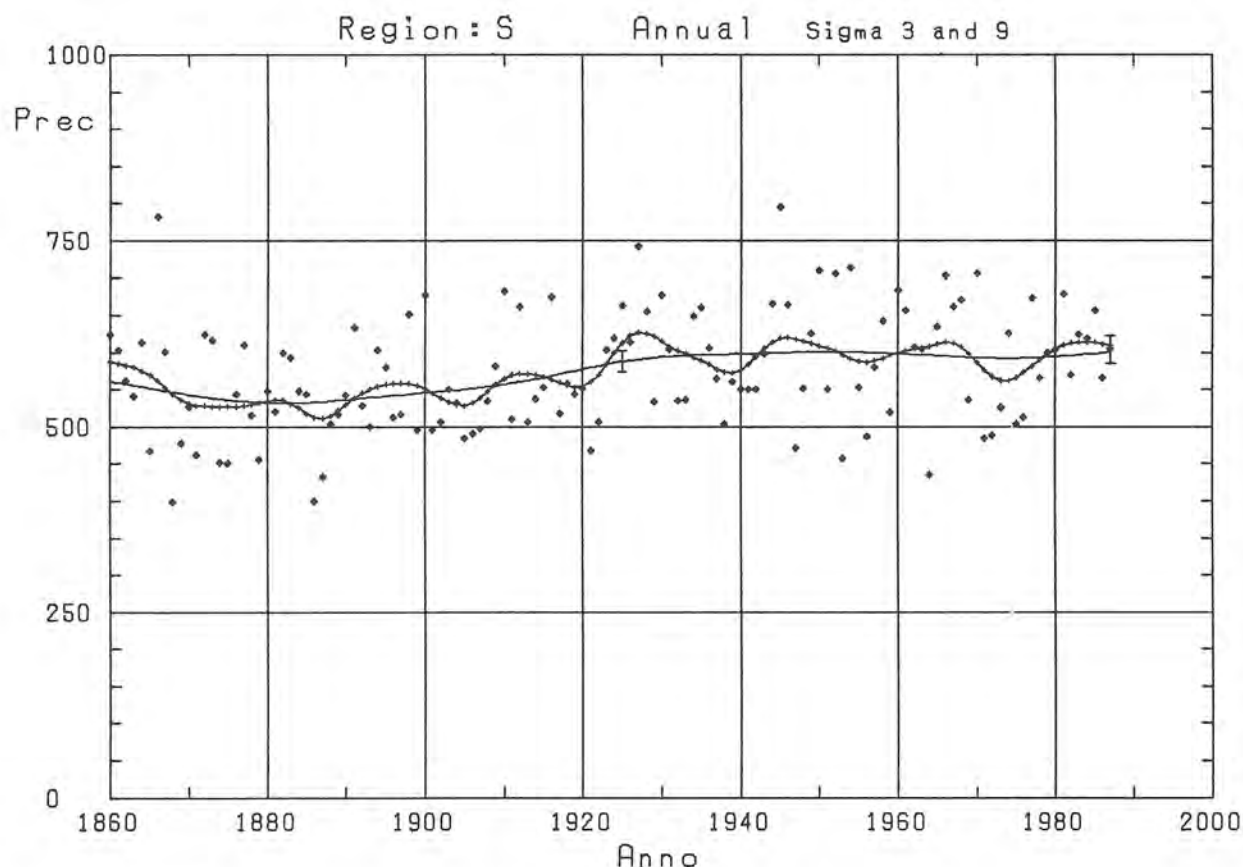


Figure 17. The annual precipitation 1860–1987 in region S along with two low-pass filtered curves.

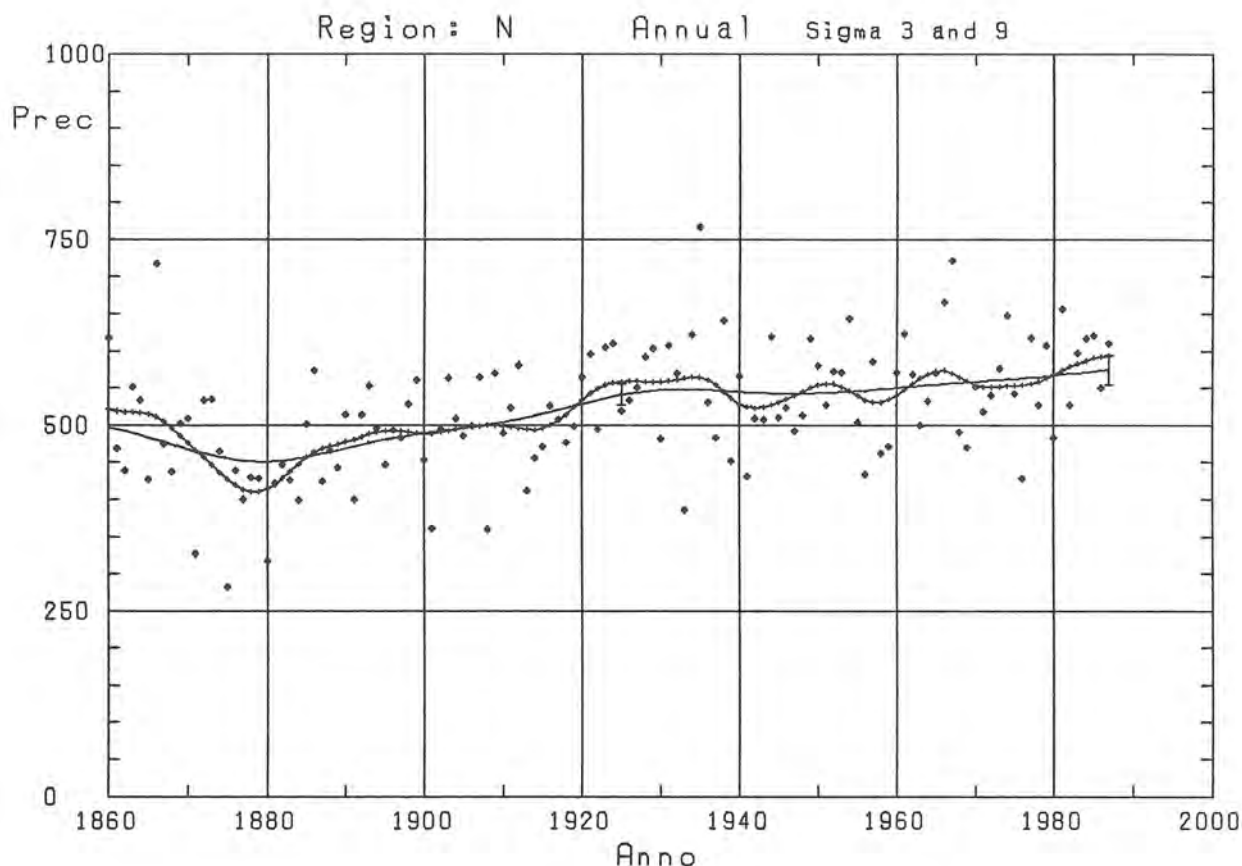


Figure 18. The annual precipitation 1860–1987 in region N along with two low-pass filtered curves.

Precipitation, winter (Dec, Jan, Feb) amounts.

During winter the amounts measured in region S were 20% higher at the beginnings of the 1860th than around 1890. From that time there was a trend towards a level about 40 mm higher, which was achieved in the 1950th. This level has been rather constant during the latest decades. Part of the 40% increase from 1890 until 1950, maybe half of that amount, can be artificial. It is probably a real fact that winter precipitation was somewhat lower during the cold epoch of the first part of the series. In the north region there was a lot of winters with low snow amounts during the period 1870–1900. The measured amounts increased 35%, somewhat less than in the south region, from 1890 to 1960. The small decrease during the latest years may well be accidental.

In region S the smallest amount during the three winter months was received during the season 1963/64 and the highest was reported in 1976/77. In the north region the extremes occurred in 1874/75 and 1966/67 respectively. The difference between the extreme values happens to be the same in the two regions.

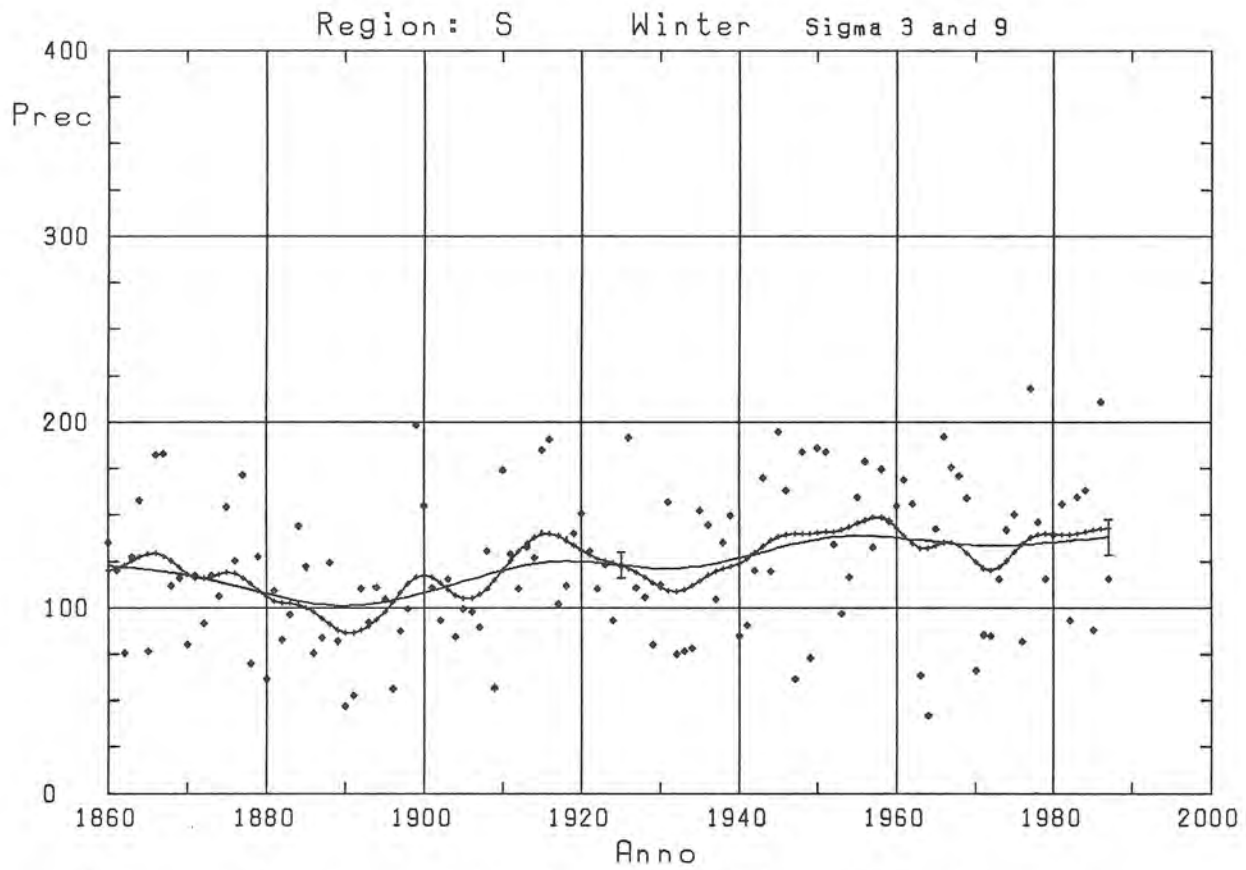


Figure 19. The winter precipitation 1860–1987 in region S along with two low-pass filtered curves.

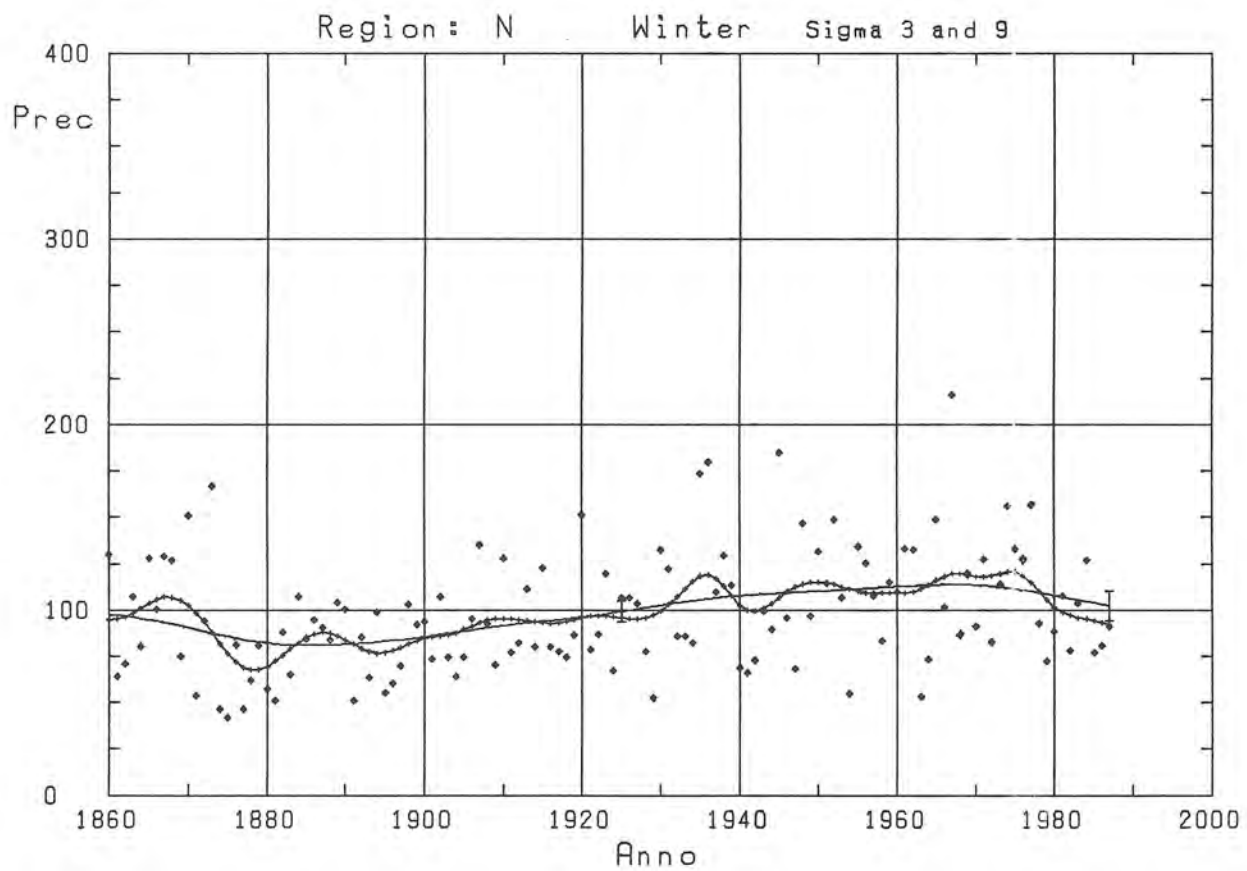


Figure 20. The winter precipitation 1860–1987 in region N along with two low-pass filtered curves.

Precipitation, spring (Mar, Apr, May) amounts.

The precipitation amounts in region S have increased 20% from 1860 to 1987 if one looks upon the long term trend. But some part of this is, as pointed out earlier, due to the measuring technique. In region N the increase is about 30%. A greater part of the amounts falls as snow in region N than in region S. Of that reason one can conclude that the underestimate of the true amounts is larger in region N.

In region S the driest spring season was 1865 and the wettest was 1924. The variability of precipitation amounts was higher in the south region than in the north. The driest spring in region N occurred in 1974 and those years with highest precipitation were 1926, 1973 and 1977.

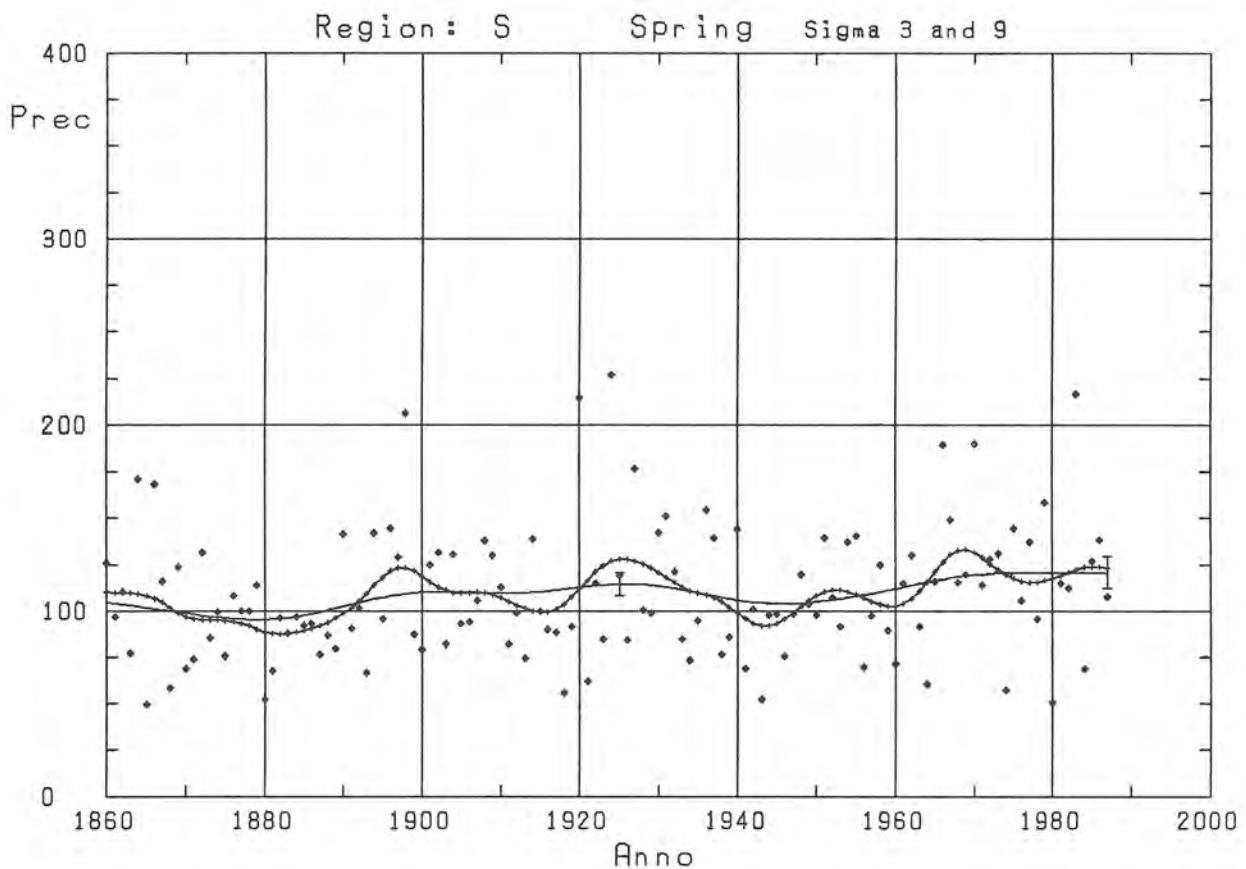


Figure 21. The spring precipitation 1860–1987 in region S along with two low-pass filtered curves.

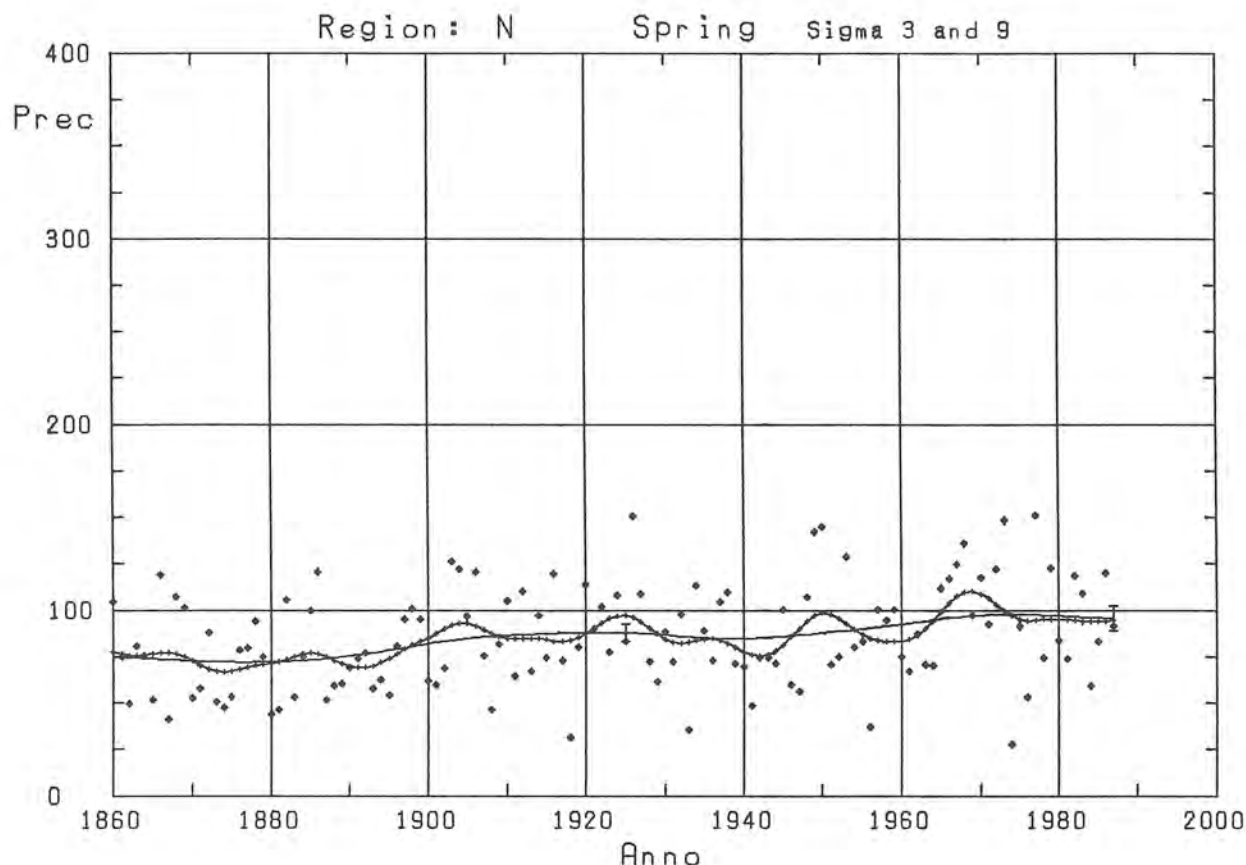


Figure 22. The spring precipitation 1860–1987 in region N along with two low-pass filtered curves.

Precipitation, summer (Jun, Jul, Aug) amounts.

In the south region there occurred a lot of dry summers around 1870 and also a century later. From 1940 there has been a trend towards less summer precipitation amounts and the smoothed curves give lower values at the end than in the beginning of the time period studied. The decrease from the maximum 1949 to 1970 is almost 40% in the sigma 3 curve. The most smoothed curve gives a drop of about 20%. Even the north region had some dry summers during the 1870th and the 1970th. A difference from region S is that the earlier drop is the most pronounced one. The mean level was higher during the time span 1930–1950.

The wettest summer in the south area was 1945 and the driest were 1868, 1973 and 1983. The range is 280 mm. In the north both the extreme values occurred in the 1860th, namely in 1866 (max) and in 1868 (min). The range is 240 mm.

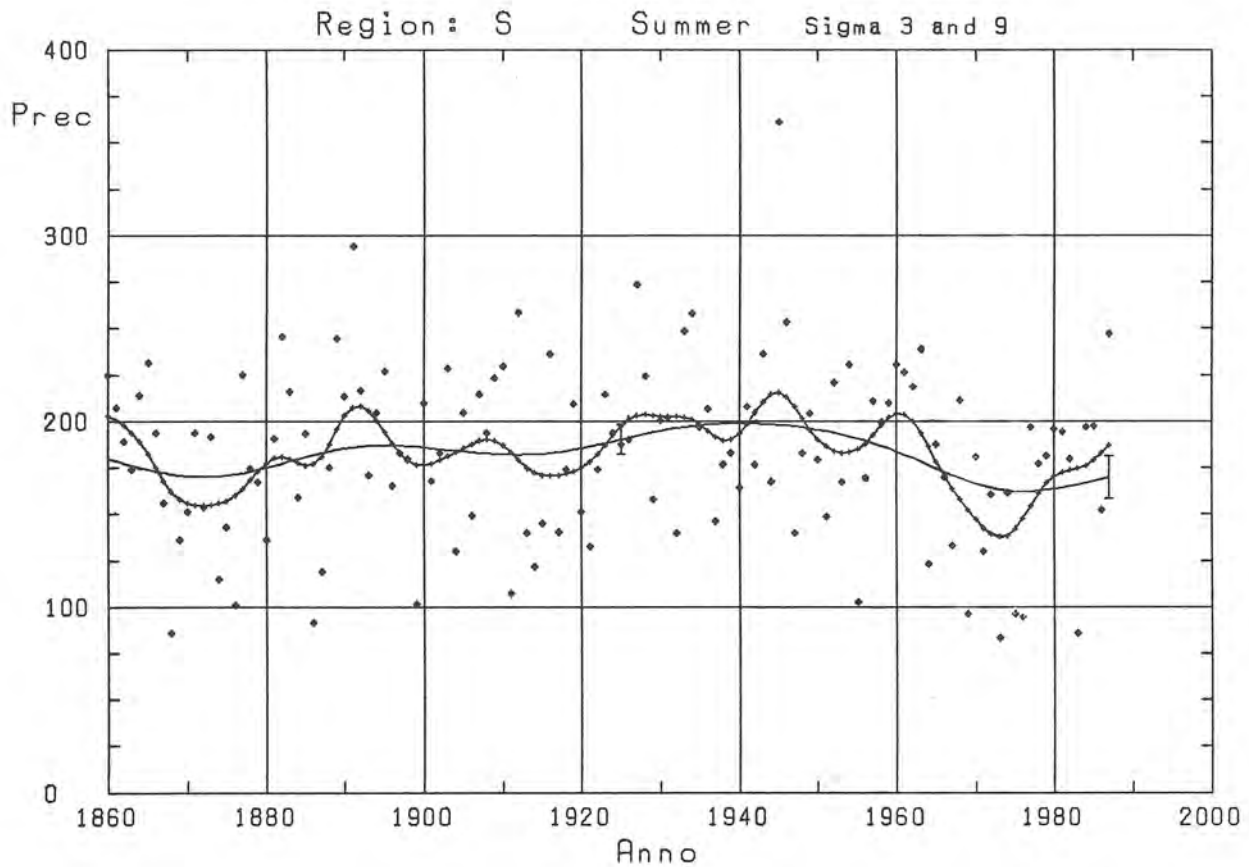


Figure 23. The summer precipitation 1860–1987 in region S along with two low-pass filtered curves.

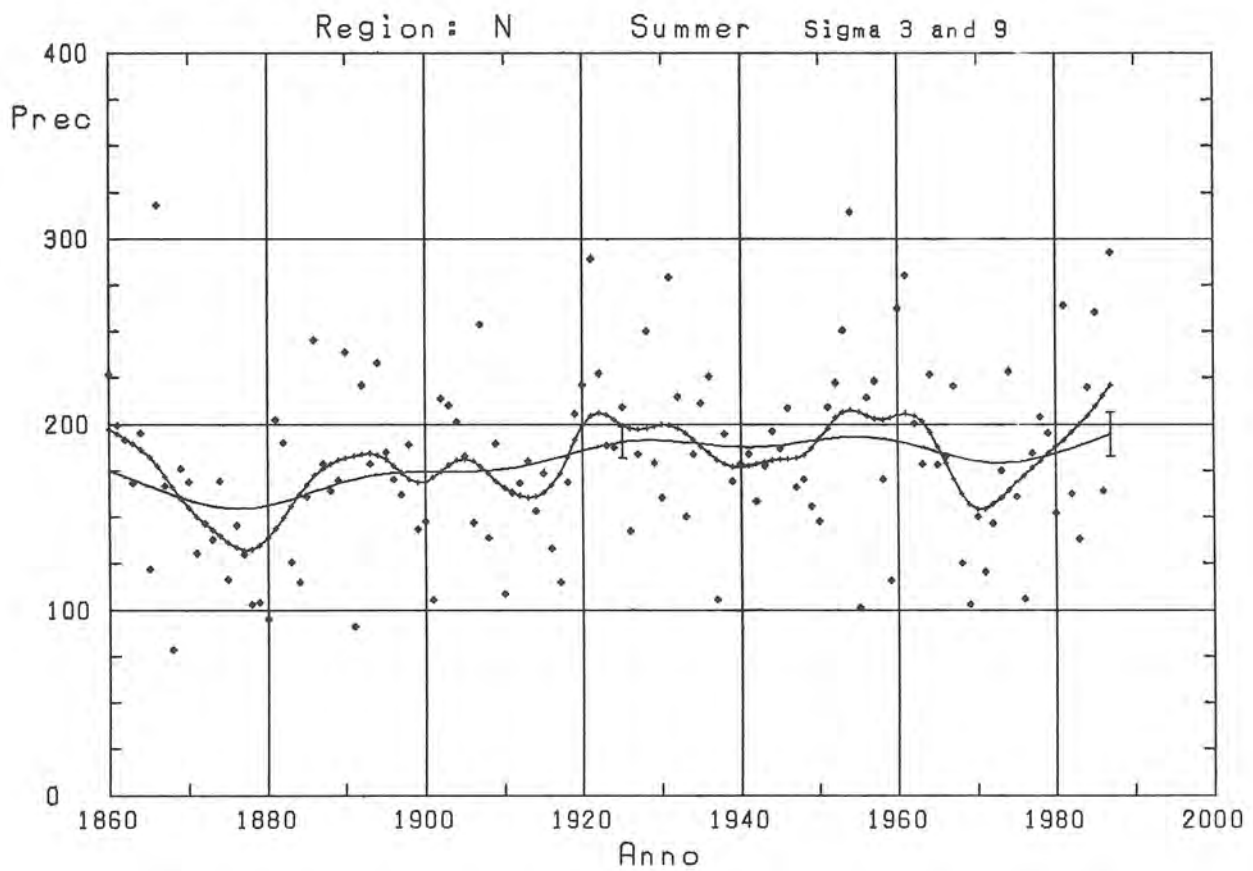


Figure 24. The summer precipitation 1860–1987 in region N along with two low-pass filtered curves.

Precipitation, autumn (Sep, Oct, Nov) amounts.

In region S there was a trend towards less autumn precipitation during the 19th century, but after 1900 there has been a slow upward trend. At the end of the time series the filtered mean value is 15 mm higher than at the start of the period and 30 mm higher than at the minimum point. Also in region N the autumn precipitation showed a downward trend during the last decades of the 19th century. The precipitation sums increased 1890–1930. Some dry autumns during the 1950th caused a minimum in the long term trend. The trend from 1960 shows a significant increase of about 20% (30 mm).

The driest autumn in region S was 1907 and the seasons with highest precipitation were 1930, 1950, 1952 and 1970. In the north region 1882 was the driest and 1935 the wettest.

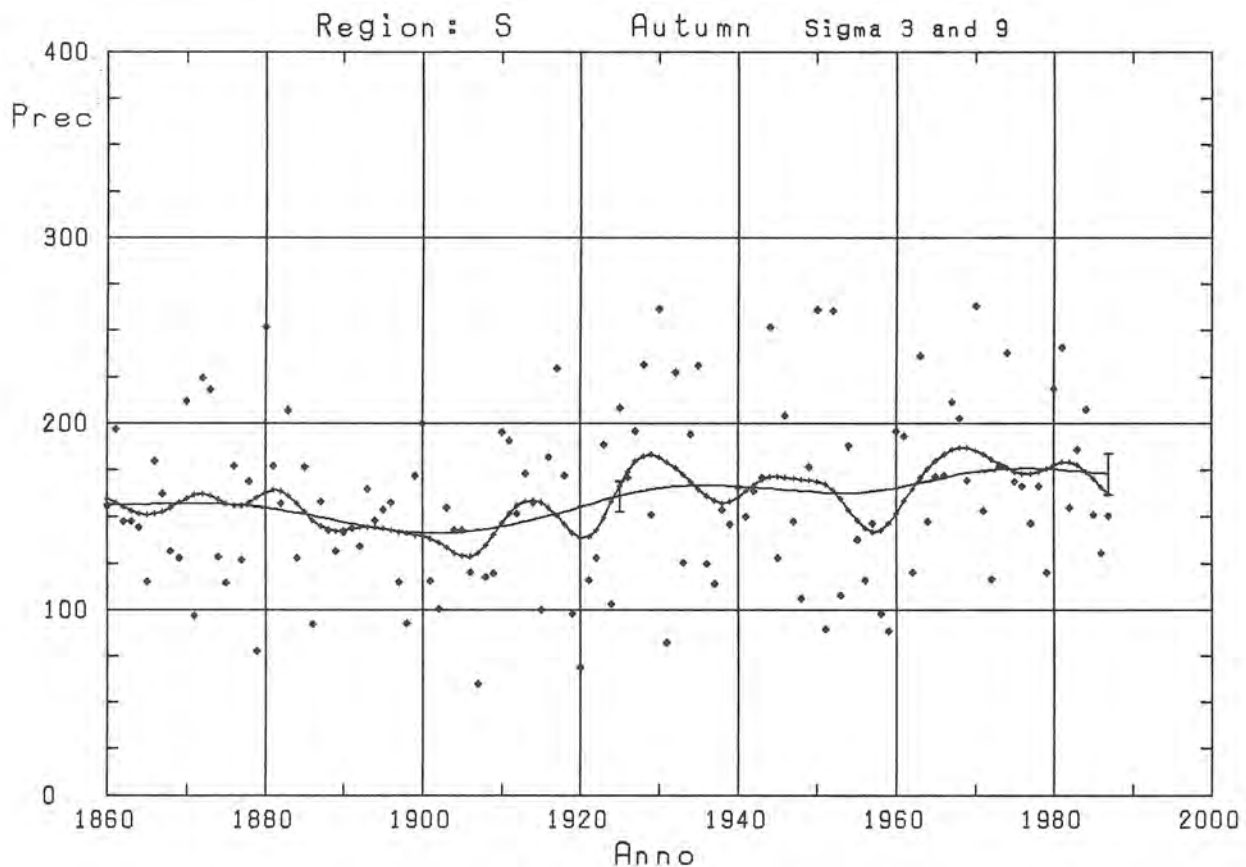


Figure 25. The autumn precipitation 1860–1987 in region S along with two low-pass filtered curves.

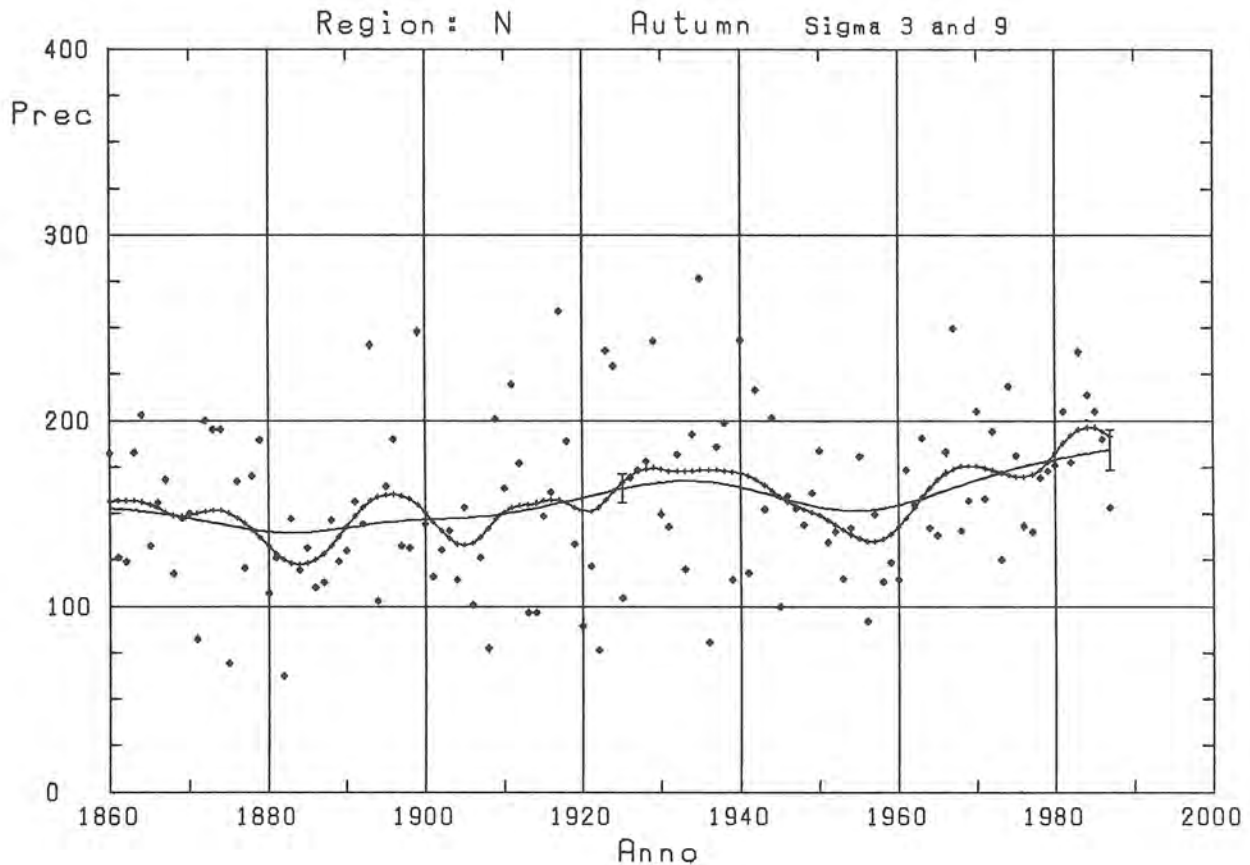


Figure 26. The autumn precipitation 1860–1987 in region N along with two low-pass filtered curves.

Pressure, annual values.

The variations in temperature and precipitation climate are closely related to changes of the general circulation and the patterns of air pressure. By studying the time series of air pressure one may possibly draw some physical explanations of causes for the climate changes. However, one can not expect to find so much information in monthly air pressure means. More information would be available if daily pressure values or certain indexes (zonal versus meridional flow, vorticity etc) could be analysed. But such long series of daily values are so far not available on data media.

Figures 27 and 28 show that there has been no marked trends in annual pressure during the period 1860–1987.

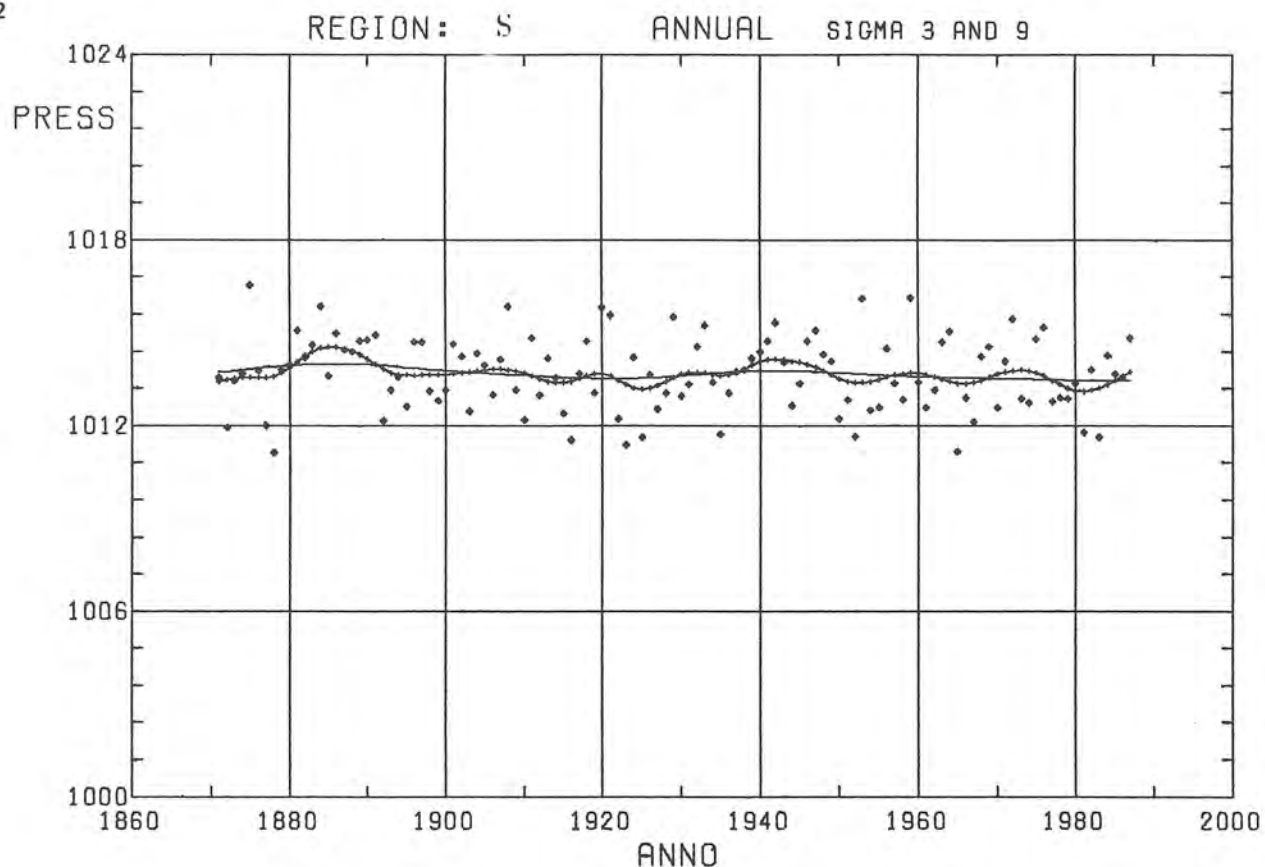


Figure 27. The annual pressure 1860–1987 in region S along with two low-pass filtered curves.

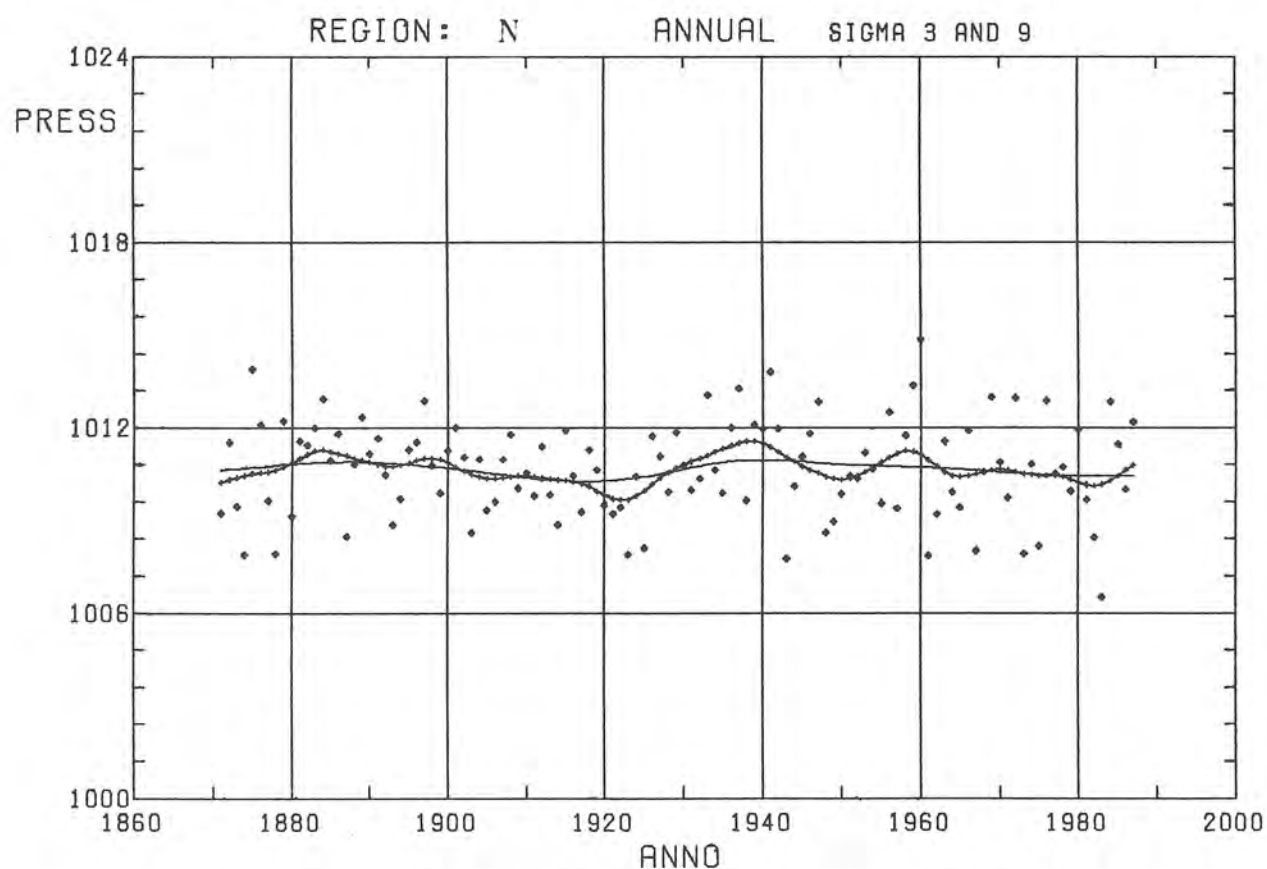


Figure 28. The annual pressure 1860–1987 in region N along with two low-pass filtered curves.

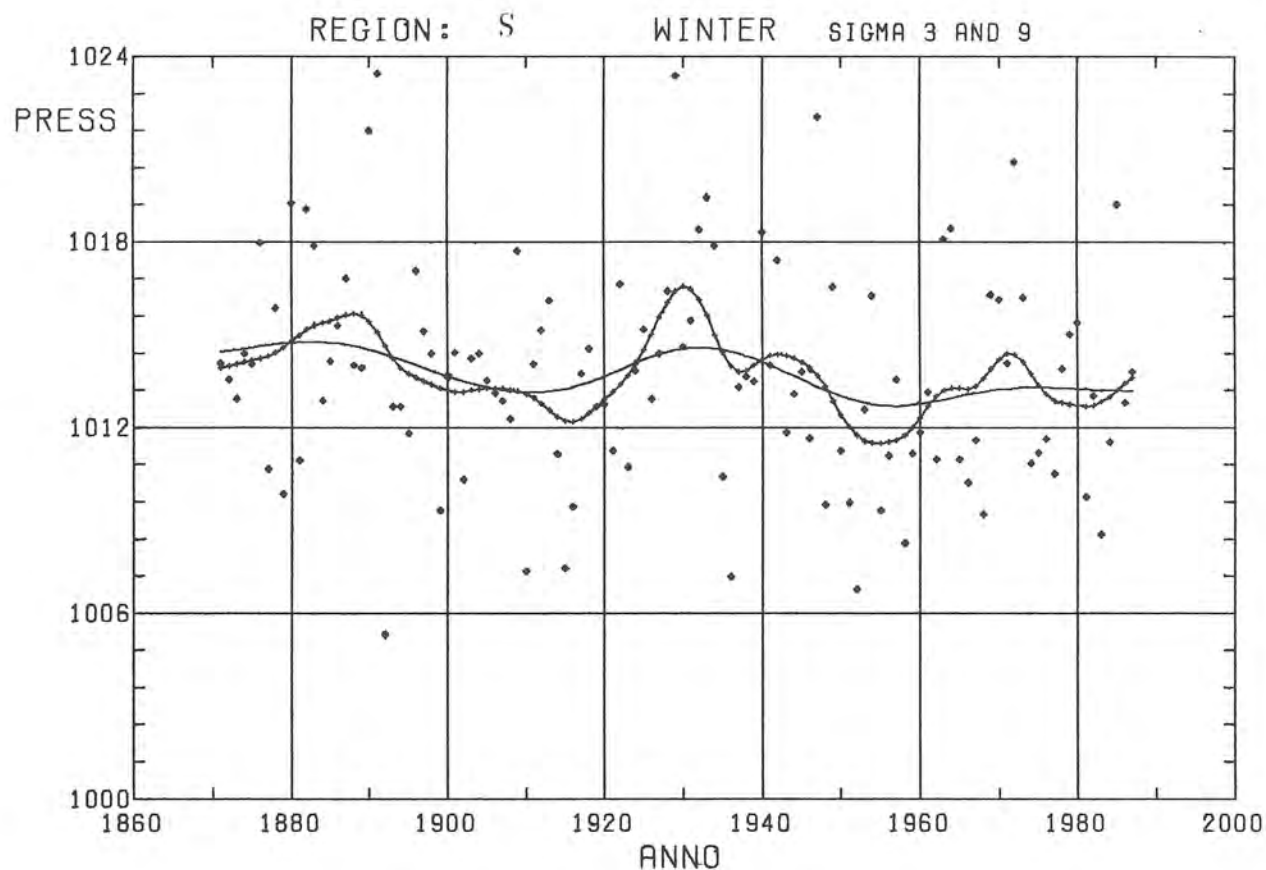


Figure 29. The pressure during winter 1860–1987 in region S along with two low-pass filtered curves.

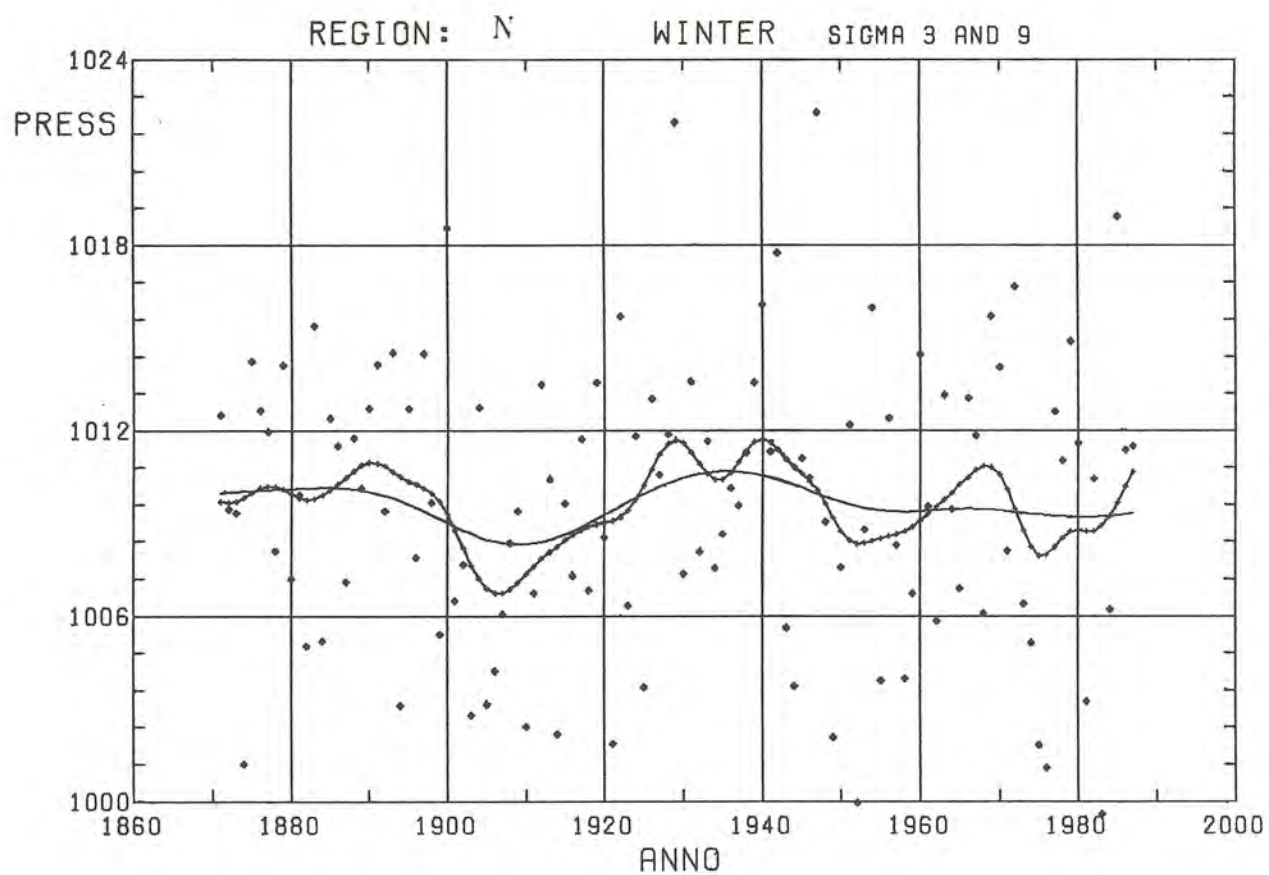


Figure 30. The pressure during winter 1860–1987 in region N along with two low-pass filtered curves.

Pressure, winter (Dec, Jan, Feb) values.

High pressure during winter in Sweden ought to give temperature and precipitation values below normal. Region S shows the lowest pressure mean values during the last years when temperature generally has been low, which is contrary to the foregoing sentence. In both regions the pressure had a maximum in the 1930th when temperature had an optimum. The conclusion is that it is not the pressure itself that is of main importance for the temperature but rather the advection of air masses with maritime or continental origin. This advection is closely coupled to pressure gradients.

Pressure, spring (Mar, Apr, May) and summer (Jun, Jul, Aug) values.

There has been no long term trends of any significance during spring and summer seasons.

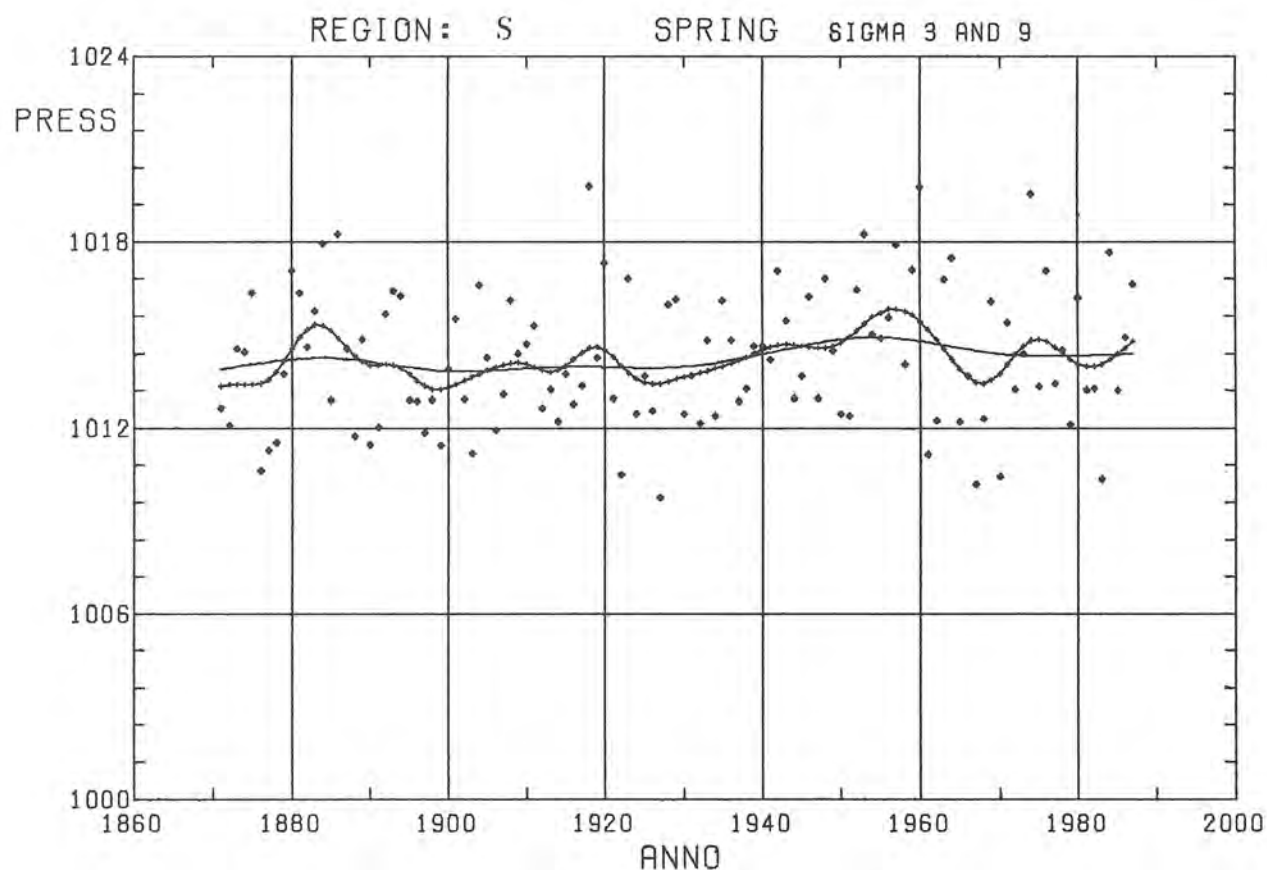


Figure 31. The pressure during spring 1860–1987 in region S along with two low-pass filtered curves.

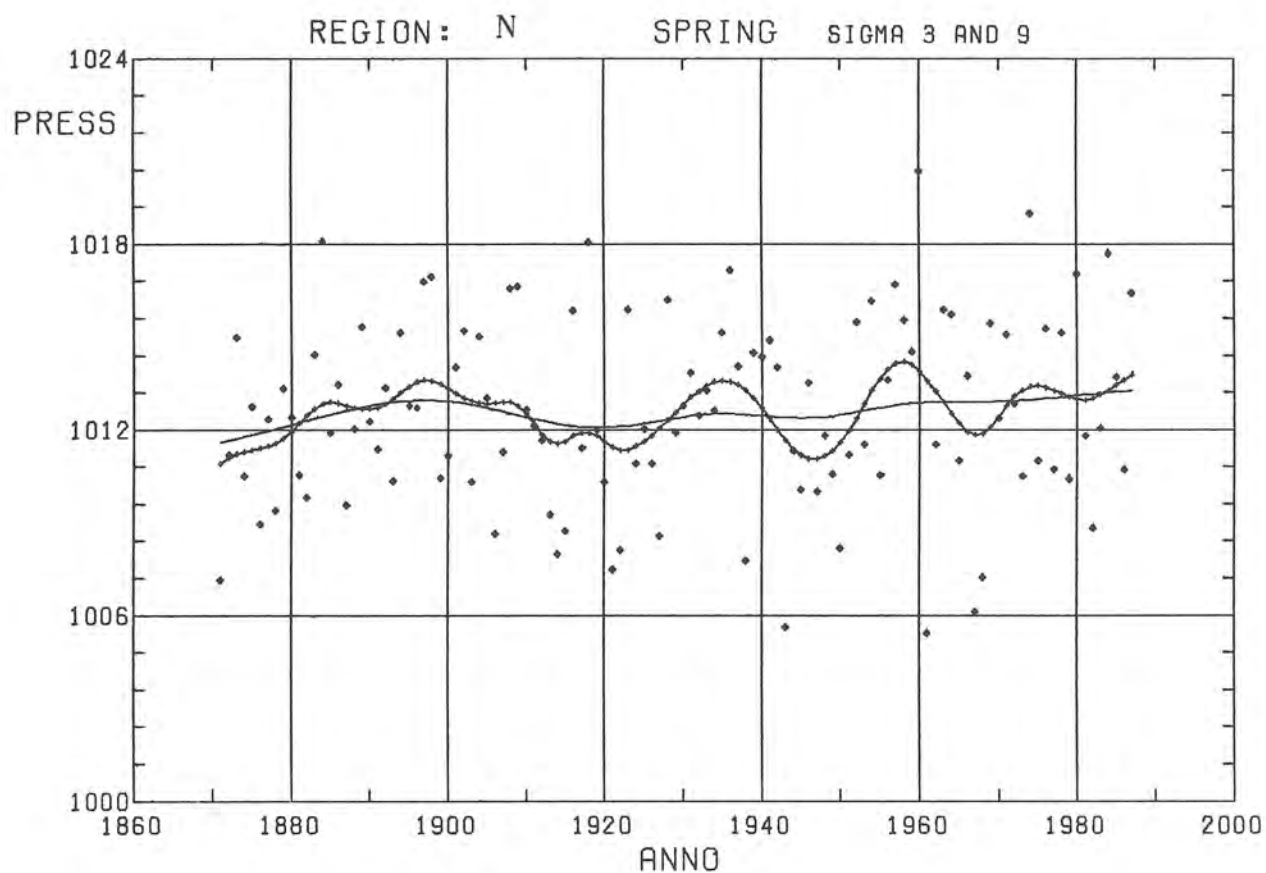


Figure 32. The pressure during spring 1860–1987 in region N along with two low-pass filtered curves.

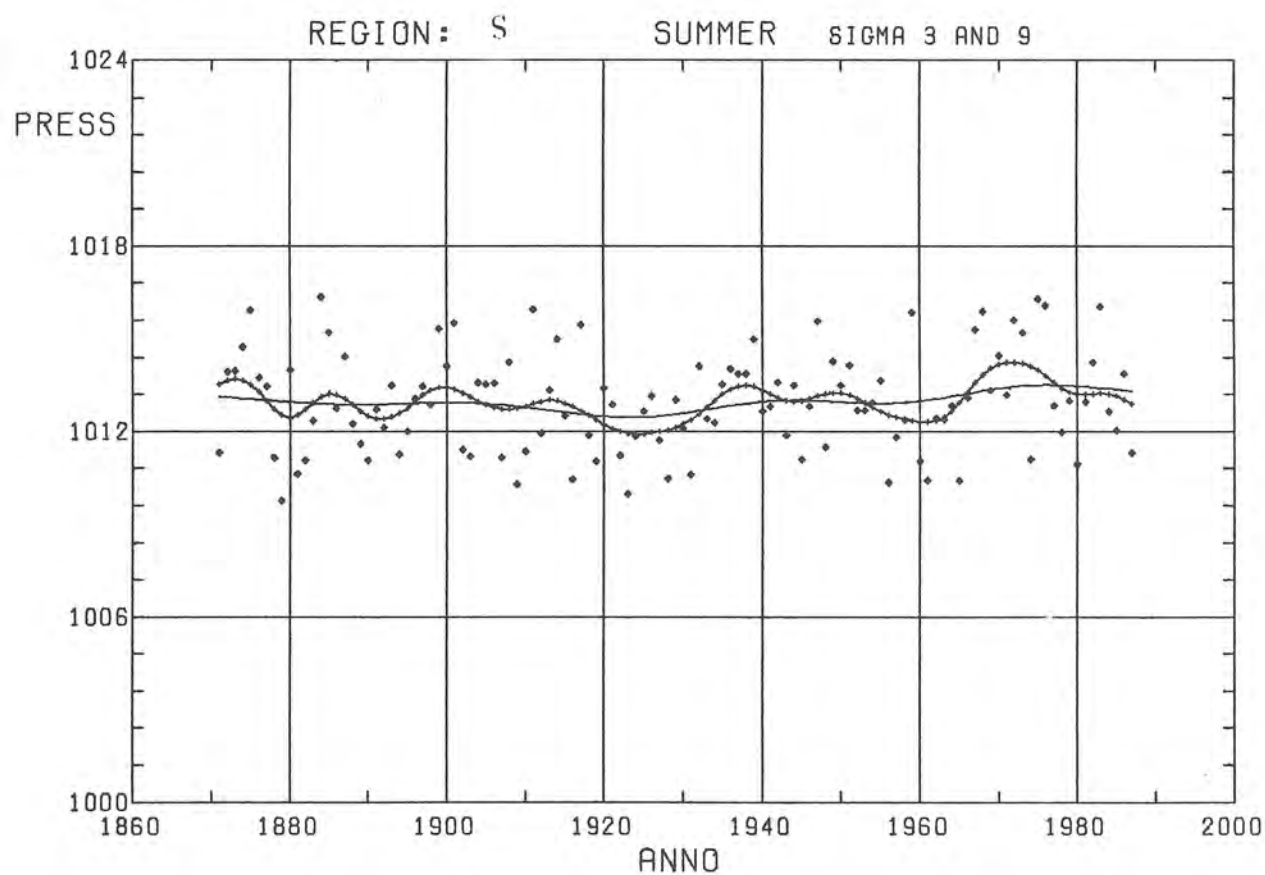


Figure 33. The pressure during summer 1860–1987 in region S along with two low-pass filtered curves.

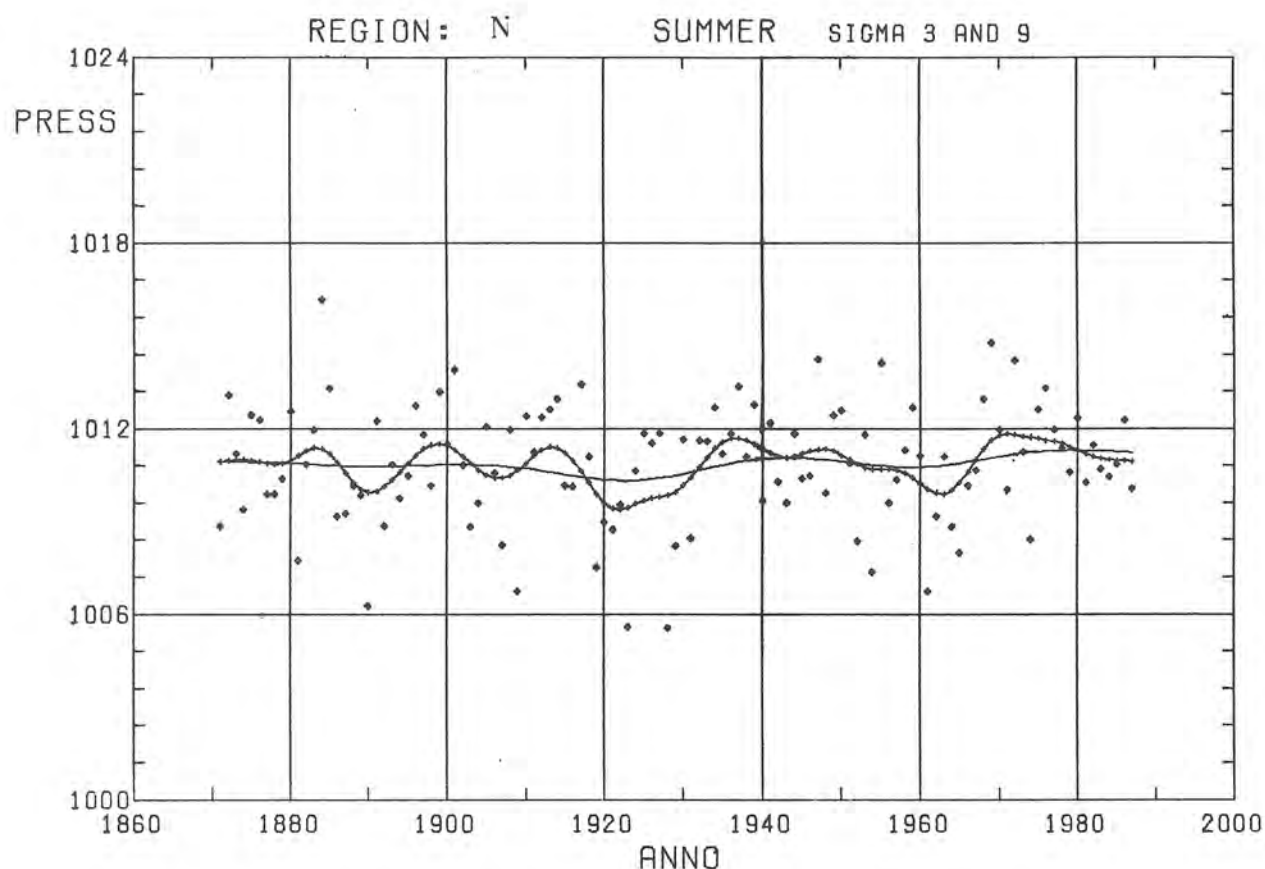


Figure 34. The pressure during summer 1860–1987 in region N along with two low-pass filtered curves.

Pressure, autumn (Sep, Oct, Nov) values.

The variability of seasonal pressure means is much larger during autumn and winter than during the warmer half of the year. In both regions there has been a tendency during the latest decades towards lower values. The frequency of lows passing Sweden has been higher leading also to greater precipitation sums, which can be seen in figures 25 and 26.

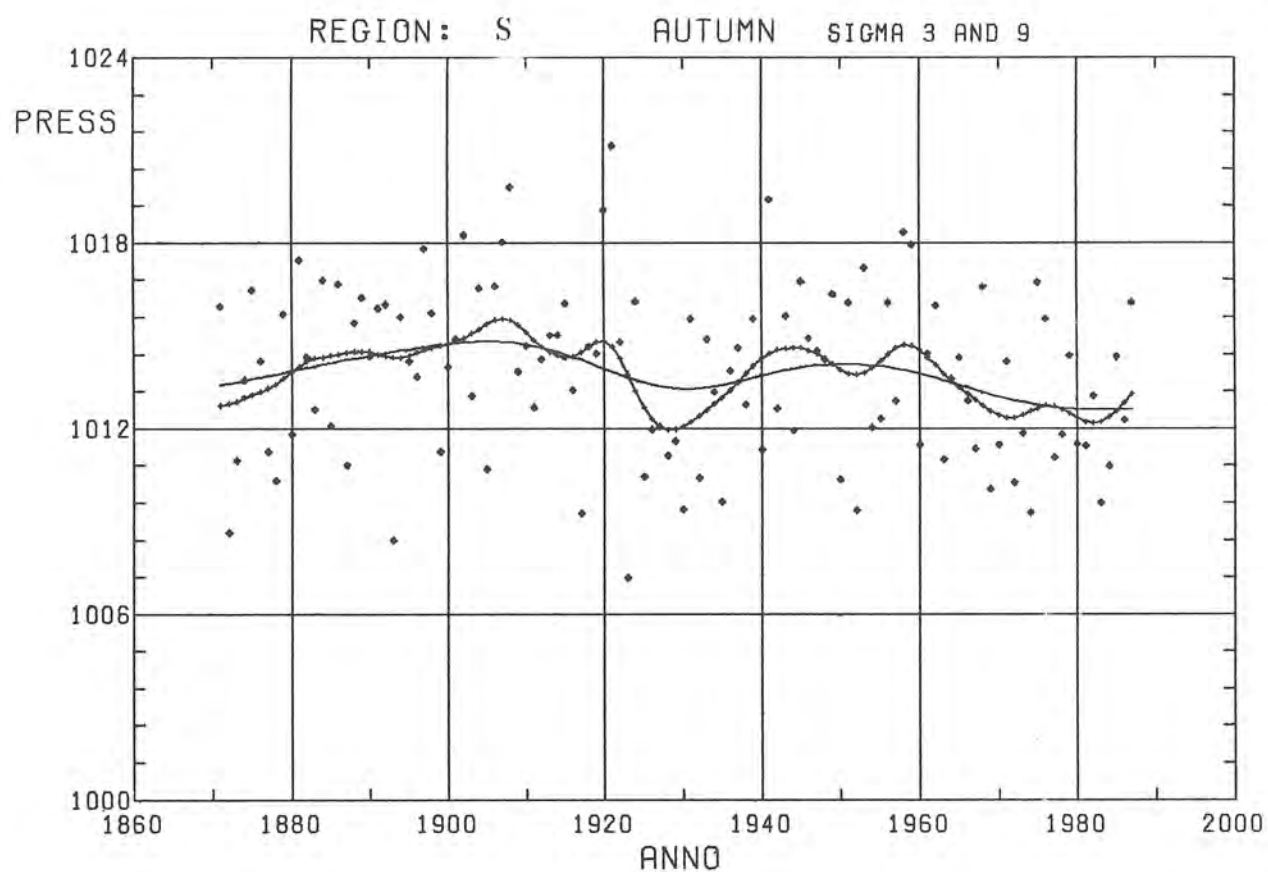


Figure 35. The pressure during autumn 1860–1887 in region S along with two low-pass filtered curves.

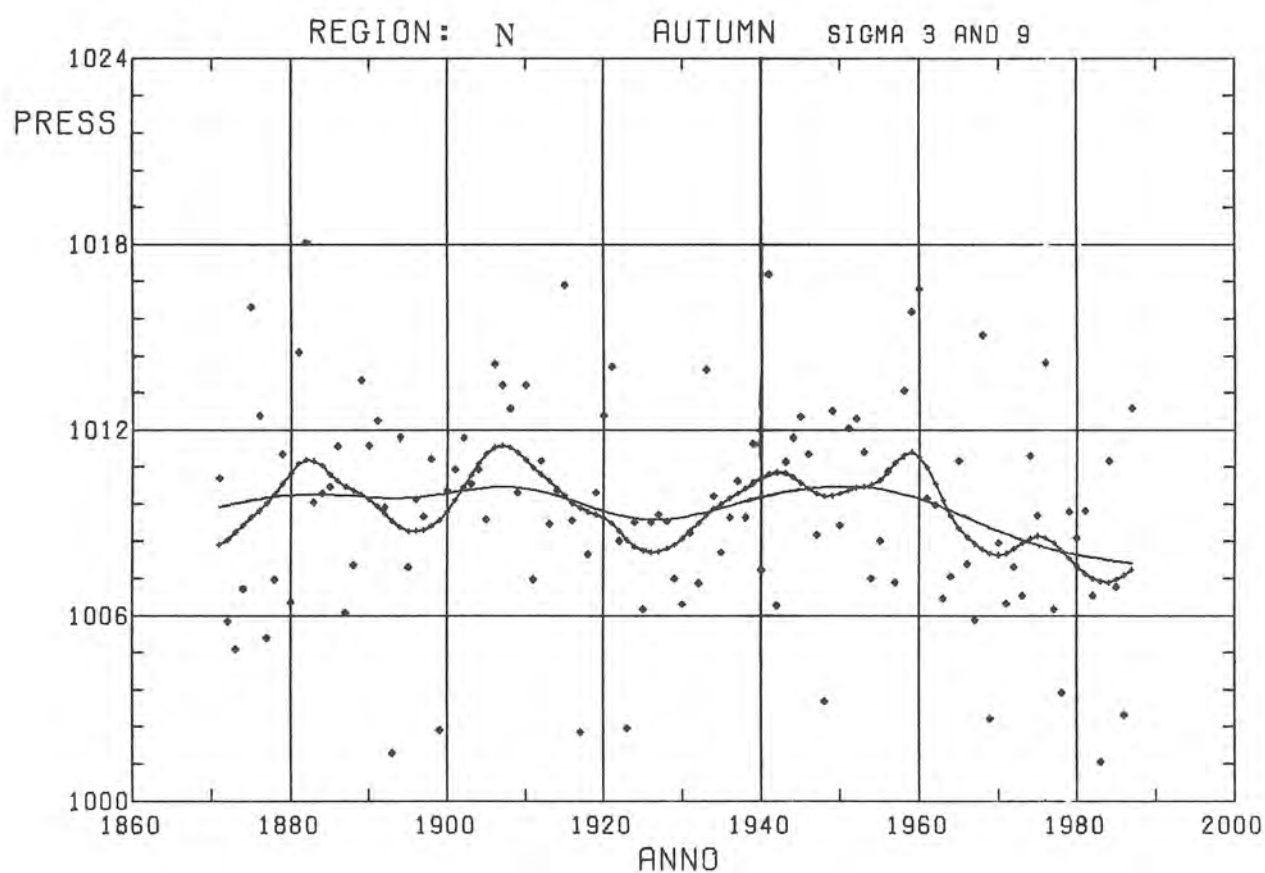


Figure 36. The pressure during autumn 1860–1887 in region N along with two low-pass filtered curves.

Pressure gradient (N-S), annual values.

The difference between mean pressure in region S and N gives a measure of the zonal wind component over Sweden and Scandinavia. The zonal or west wind component was strongest during the 1910th. At the end of the 1930th the general circulation became weaker and the amplitude of the Rossby waves became higher leading to a change in the frequency of the cyclone tracks. The weather in Sweden became more influenced by lows from south, some of which is of so called VB-type. The weakening of the zonal wind between the decades 1870–1920 and 1930–1987 is about 10%.

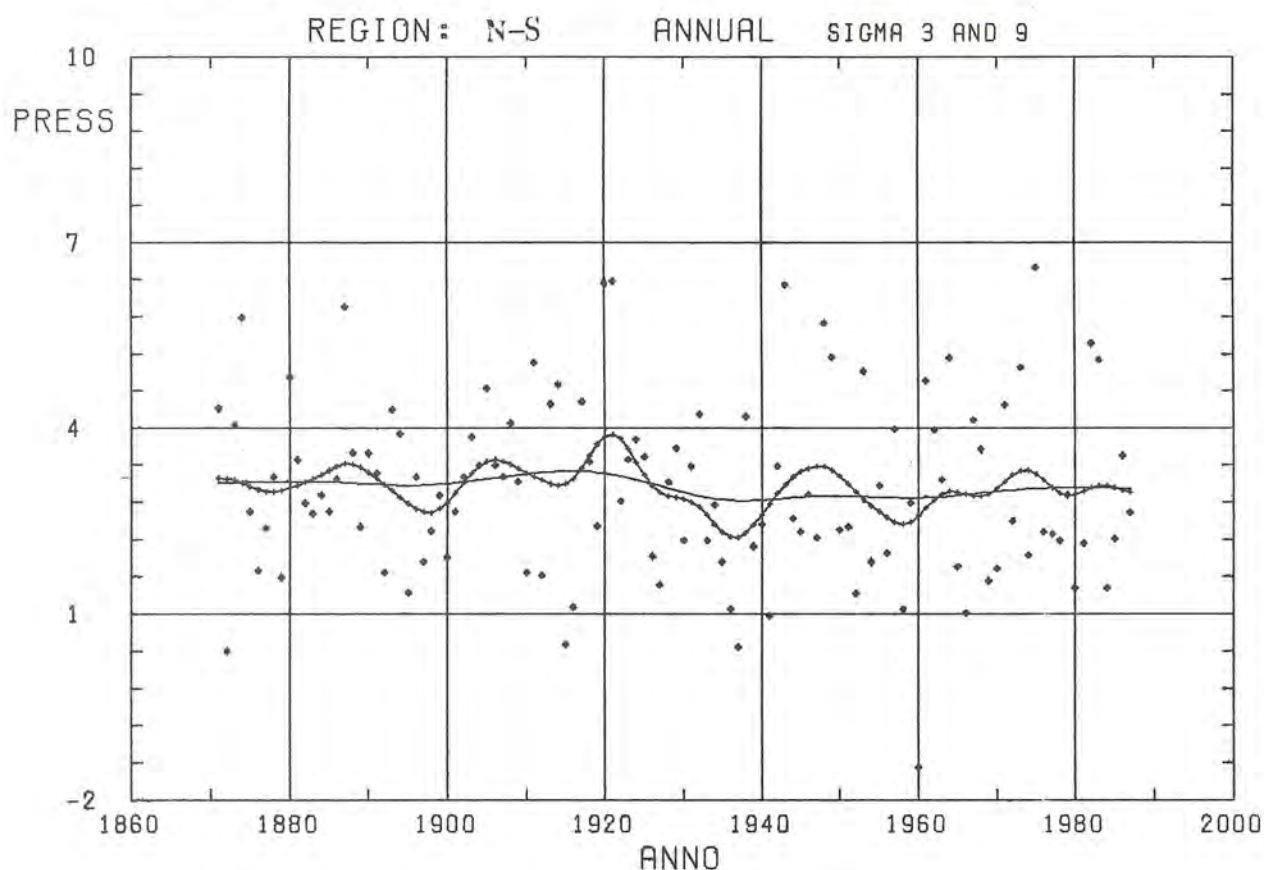


Figure 37. The annual pressure gradient during 1860–1987 given as a difference between region N and S along with two low-pass filtered curves.

Pressure gradient (N-S), winter (Dec, Jan, Feb) values.

The west wind component was highest around 1910 and then corresponds to a mean value of 2.7 m/s. In around 1950 a minimum was reached and the gradient corresponds to a west wind component of 1.8 m/s. This means that the minimum value is only 2/3 of the maximum value. The advection of mild Atlantic air masses was weakened and cold air from north and east could invade Sweden more often than during the first decades of the 20th century. During the latest years one can notice a slight increase of the west wind component, but still it has continued quite cold, at least in northern Sweden.

The three most zonal winters with largest gradients are 1874, 1882 and 1949. All these were also warm or very warm winters in both regions. In region N the 1949 winter temperature value tangents the frame.

The three winters with lowest gradients 1879, 1892 and 1900 (they are even negative which corresponds to an easterly average flow) are somewhat below normal temperature except for 1892 in region S.

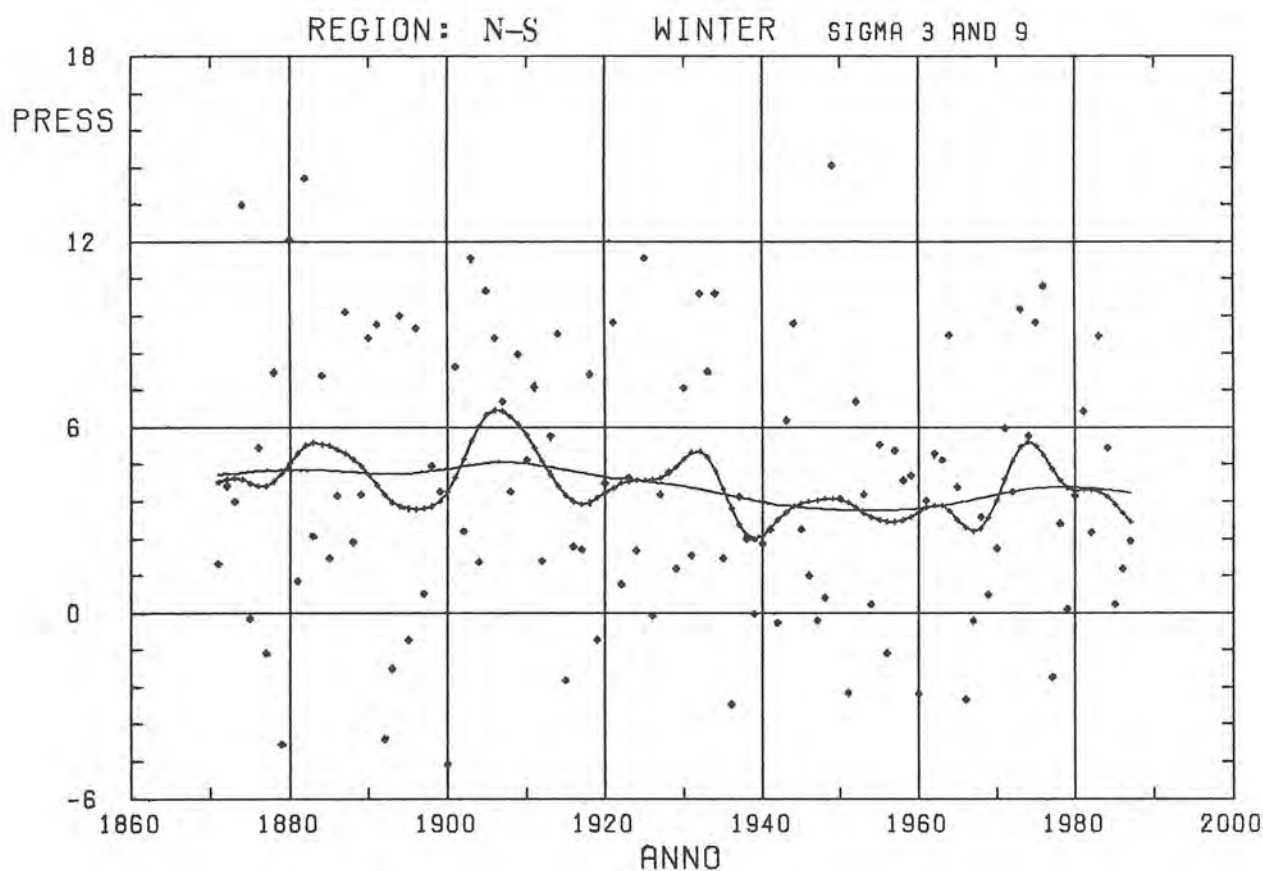


Figure 38. The winter pressure gradient during 1860–1987 given as a difference between region N and S along with two low-pass filtered curves.

Pressure gradient (N-S), spring (Mar, Apr, May) values.

The filtered curves show somewhat higher values around 1880, 1920 and during the 1940th. The lowest N-S pressure gradients occurred at the end of the 19th century and during the most recent years.

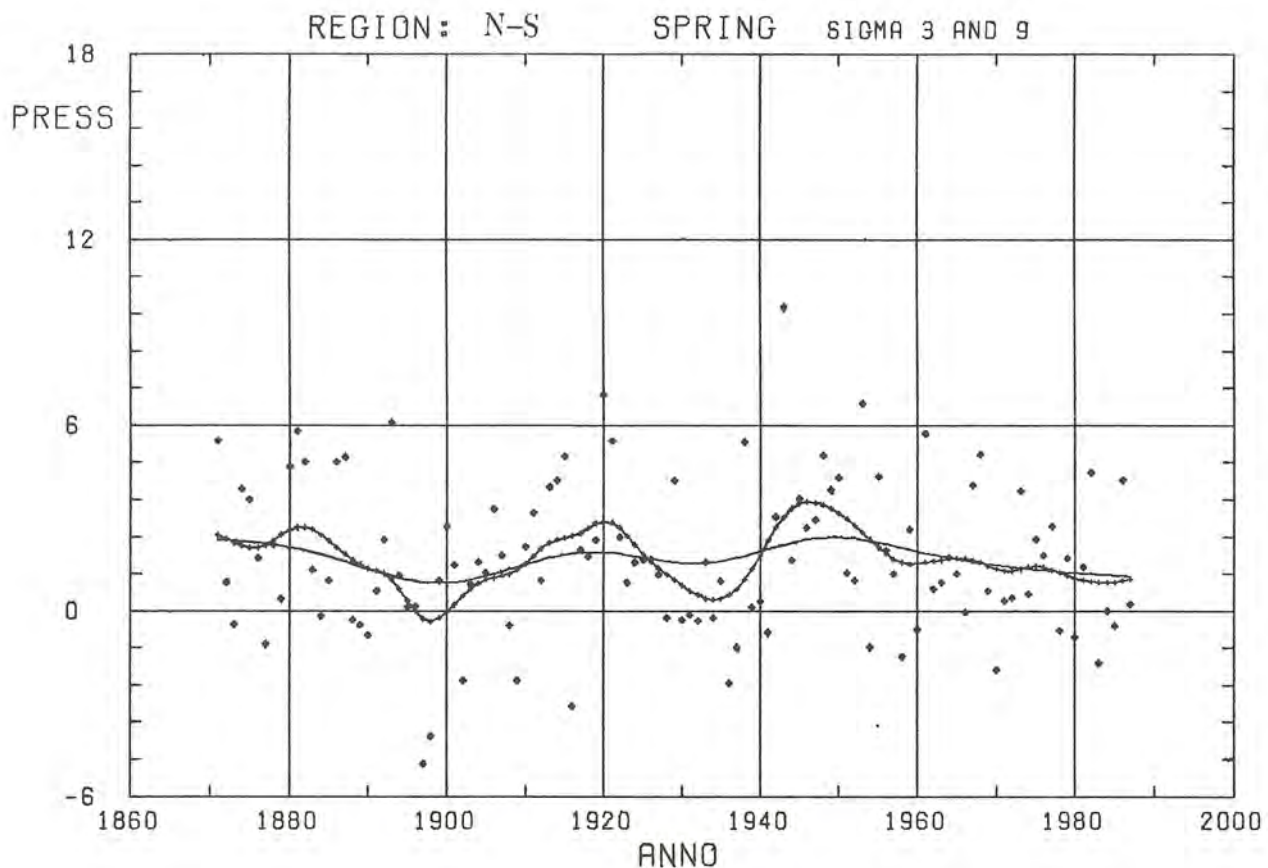


Figure 39. The spring pressure gradient during 1860–1987 given as a difference between region N and S along with two low-pass filtered curves.

Pressure gradient (N–S), summer (Jun, Jul, Aug) values.

There is no visible long term trend in the mean north–south gradient. The causes of deteriorating summer temperatures can not be coupled to changes of the mean zonal flow. Perhaps increased cloud amounts, as indicated by preliminary studies, play a more important role than the pressure gradient and advection in summer.

In summer one would perhaps expect that a large zonal gradient would correspond to low temperatures in Sweden. The three largest values occurred 1874, 1954 and 1983. No clear relationship with summer temperatures were found for this set of years. Also one could mention that the summer of 1954 was exceptionally wet in southwest Sweden while the summer of 1983 was exceptionally dry in large parts of Sweden except the western fells.

The lowest gradients in summer were found in 1899, 1969 and 1980 with easterly flow on average. These summers were generally warm in both regions.

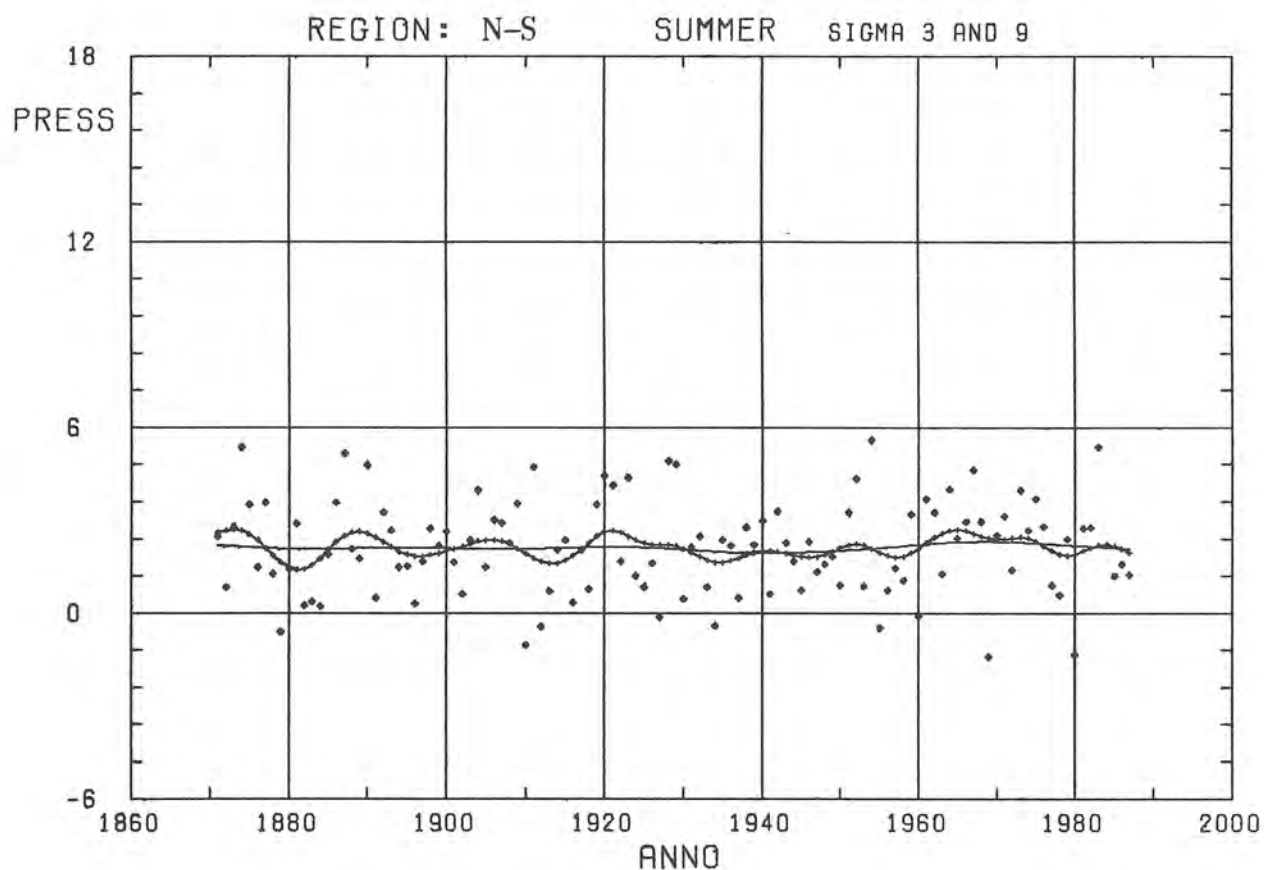


Figure 40. The summer pressure gradient during 1860–1987 given as a difference between region N and S along with two low-pass filtered curves.

Pressure gradient (N–S), autumn (Sep, Oct, Nov) values.

The long term trend of the pressure difference between the north and south region has changed from 4.8 hPa around 1900 and 1987 to the minimum value 3.9 hPa during the period 1940–1960. The low values are correlated with high temperatures. This would imply that strong zonal flows in autumn generally acts to reduce temperature, something that rather would be expected as a summer phenomenon.

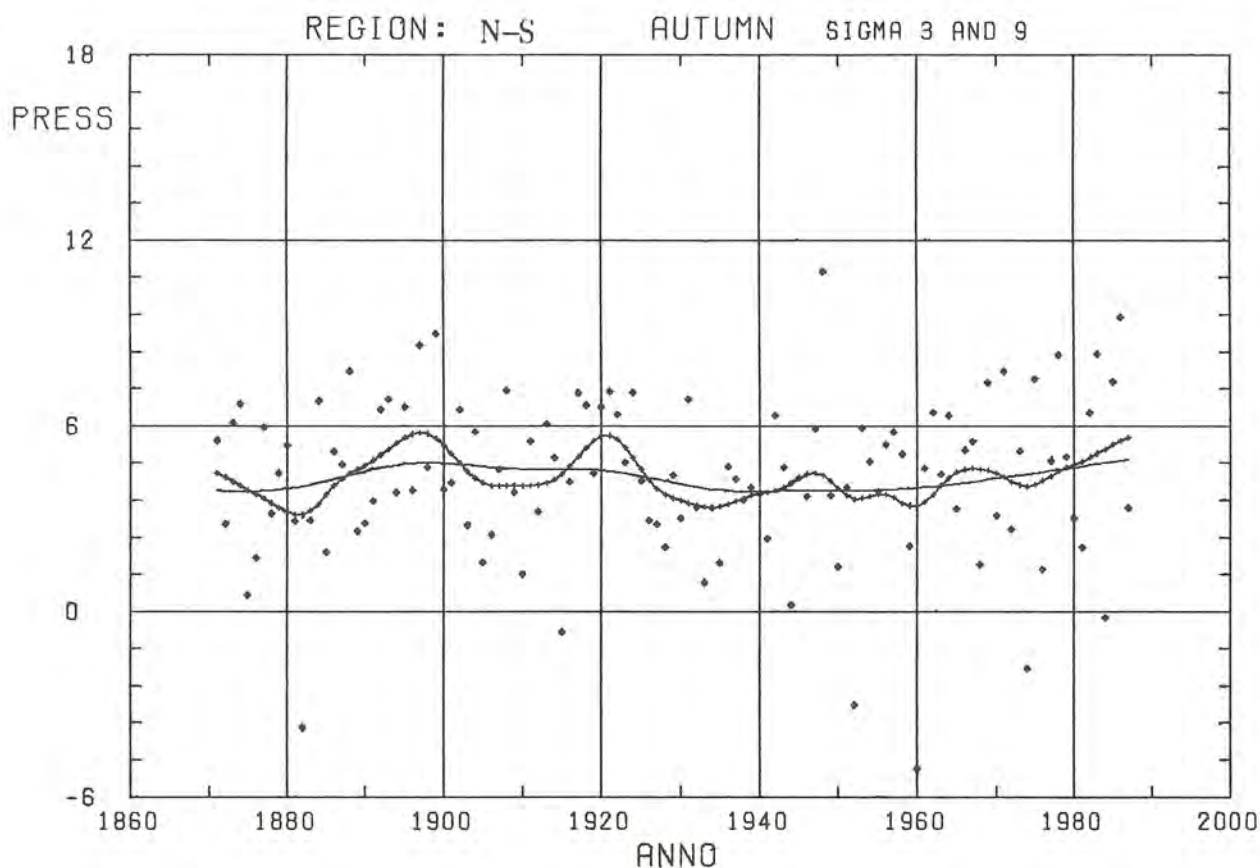


Figure 41. The autumn pressure gradient during 1860–1987 given as a difference between region N and S along with two low-pass filtered curves.

Temperature climate changes in Sweden and in the Northern Hemisphere.

Climate changes during the latest 100 years have been investigated by many authors. It is mainly and most often the temperature records that have been analysed. Climate changes can hit large areas of the globe in the same manner. But it can also happen that certain areas experience a warming at the same time as there is a cooling elsewhere. Such contrary trends are probably more frequent for precipitation.

During the last part of the 19th century the temperature recovered from the cold periods during the so called little ice age. The warming was global and corresponds to the temperature curves presented in this report. Three estimates of the Northern Hemisphere temperature changes is reproduced in figure 42.

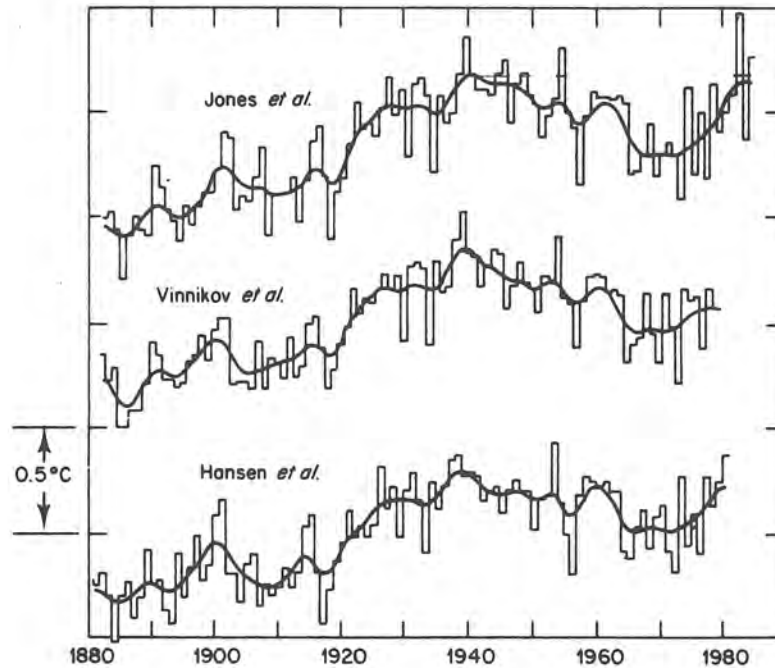


Figure 42. Three estimates of the temperature average over the Northern Hemisphere given in Bolin et al.(1986)

Of course the amplitude of the changes becomes smaller when means are calculated for a whole hemisphere then for small regions. Also temperature changes are larger in regions near the pole than near the equator since the variance is larger at higher latitudes.

It is often claimed that something happened with the climate around 1940 and at least the upward trend of the Northern Hemisphere temperature was broken around that time and for some decades a downward trend was observed. The physical reasons for this has not yet been explained. During the latest years the trend for the Northern Hemisphere has once again changed according to calculations made by Jones et al (1982 and 1986) and by Hansen et al (1981) while Vinnikov et al (1980) just reports a very slight warming. The latest news is that the 1980th continues unusually warm. From a Scandinavian point of view this is surprising. In Sweden the temperature shows a downward trend even during the latest years and the temperature is back to almost the same values as around 1900. However, the two winters 1987/88 and most probably also 1988/89, have been mild in Sweden, especially the southern part.

In figure 43 reproduced from Jones et al (1987) the temperature trends 1947–86 are analysed for the whole Northern Hemisphere. The values given represents the change in °C over the whole period after the adaptation of the data to a straight line. The North Atlantic and adjacent continental regions have had a pronounced decrease as well as the North Pacific. The value -0.5°C for the middle part of Sweden is in good agreement with the results presented in figures 7 and 8. They give -0.4° for the south region and -0.8° for the north when the most smoothed series are consulted.

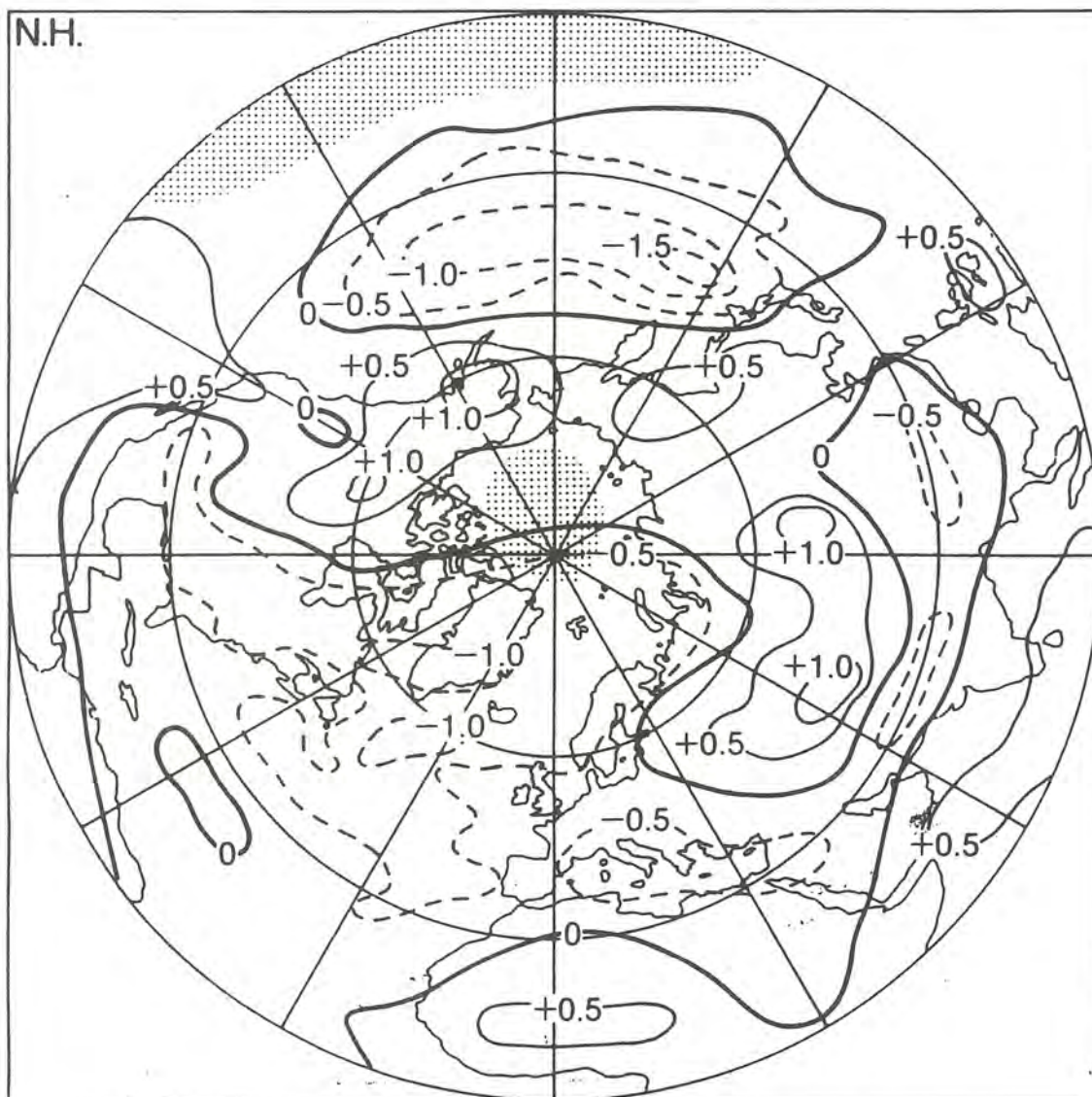


Figure 43. Spatial patterns in recent worldwide temperature trends (1947–86). From Jones et al (1987).

The physical causes of the temperature changes 1947–86 cannot yet be explained in a coherent way. However, one may suggest that it can depend upon random (?) anomalous general circulation patterns with high frequencies of cold troughs over the North Atlantic and Pacific regions and warm ridges over the western parts of North America and Russia. Another suggestion is that the cooling of the oceans is a result of a greater exchange between surface water and cold water masses in deeper layers.

Summary.

The different behaviour of the Northern Hemisphere and the Swedish temperature in the latest decades is a surprising result that is illustrated by this report. The lowering of the Swedish temperature series seems to be coupled to the decrease of the zonal flow during winter, which also has been pointed out by Lamb (1972) for the British region. In fact a general and global increase of the temperature at high latitudes should give a decrease of the zonal flow as the need for poleward transport of warm air is reduced. Then such zonal flow favoured areas as Sweden will not experience a marked warming or it will even be cooler. We could also add that this balancing effect of the dynamics of the atmosphere acts in an opposite way to the feedback effect of an increase or decrease of the area of ice or snow covered land (the albedo effect). A decrease of the zonal flow over the northeastern Atlantic region will also affect the ocean currents which in turn affects the atmosphere.

For Sweden we have also noted a rather marked increase in precipitation around 1920 but it is probable that part of the increase of 5–10% can be attributed to better instrumentation and a greater awareness of a sheltered siting. After 1920 our curves indicate a quite stable behaviour of the precipitation climate for the year as a whole. Considering individual seasons many dry summers lately have given a minimum around 1970 (perhaps broken) while the other seasons have remained high. The lower values before 1920, especially during winter, are, however, in accordance with analyses of sunshine and cloud amounts made at SMHI by Weine Josefsson and Bengt Dahlström. Thus the cloud amount observations at Stensele showed a pronounced increase during this century.

We hope that further studies of a more complete data set will give a better understanding of the important temporal changes in the climate of Sweden and that the physical system as a whole will be more fully understood. This is definitely necessary when different scenarios for the future are set up and when the results and implications of climate simulations are discussed.

References.

- Alexandersson, H., 1986: A homogeneity test applied to precipitation data. *J of Climatol.*, vol 6, 661–675.
- Andersson, T., 1970: Swedish temperature and precipitation records since the middle of the 19th century. Report D4:1970, 167 pp, National Swedish Building Research.
- Bolin, B., Bo Döös, R.A. Warrick & J. Jäger, 1986: The greenhouse effect, climatic change and ecosystems, scope 29. John Wiley & sons, 541 pp.
- Eriksson, B., 1983: Data concerning the precipitation climate of Sweden. Normal values for the period 1951–80. Report 1983:28, SMHI, Norrköping, 92 pp.
- Gardner, L.A., 1969: On detecting changes in the mean normal variates. *Ann. Math. Stat.*, vol 40, 116–126.
- Hansen, J.E., D. Johnson, A. Lacis, S. Lebedeff, P. Lee, D. Rind & G. Russell, 1981: Climatic impact of increasing atmospheric carbon dioxide. *Science*, vol 213, 957–966.
- Hawkins, P.M., 1977: Testing a sequence of observations for a shift in location. *JASA*, vol 72, 180–186.
- James, B., K.L. James & D. Siegmund, 1987: Tests for a change-point. *Biometrika*, vol 74, 71–83.
- Jones, P.D., T.M. Wigley & P.M. Kelly ,1982: Variations in surface air temperature part 1, Northern Hemisphere 1881–1980. *Mon. Wea. Rev.*, vol 110, 59–70.
- Jones, P.D., S.C.B. Raper, R.S. Bradley, H.F. Diaz, P.M. Kelly & T.M.L. Wigley: Northern Hemisphere surface air temperature variations: 1851–1984, 1986. *J of Clim. and Appl. Met.*, vol 25, 161–179.
- Jones, P.D., T.M. Wigley, C.K. Folland & D.E. Parker ,1987: Spatial patterns in recent worldwide temperature trends. *Clim. Monitor*, vol 5, 175–185.
- Lamb, H.H., 1972: *Climate, present, past and future*, vol 1. Methuen & Co Ltd, London, 613 pp.
- Potter, K.W., 1981: Illustration of a new test for detecting a shift in mean in precipitation series. *Mon. Wea. Rev.*, vol 109, 2040–2045.
- Vinnikov, K., G.V. Gruza, V.F. Zakharov, A.A. Kirillov, N.P. Kovyneva & E.Y. Ranikova, 1980. Contemporary variations of the Northern Hemisphere climate. *Met. Gidrol.*, vol 6, 5–17, (in Russian).

Appendix: Examples of individual station data.

Two complete records of temperature and precipitation from one station in the south and one in the north are given below. Please check the notes given at the ends! Interpolated data for individual months and years are naturally of less value than measured data, especially for precipitation. However, interpolated data are of substantial value to obtain comparable averages.

Temperature Station: 6403 Kristianstad													
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1860	1.1	-3.4	-0.3	5.0	10.0	14.6	17.0	15.0	12.2	6.7	2.6	-2.6	6.5
1861	-4.5	0.6	1.9	4.6	8.2	16.2	17.8	15.5	11.4	8.9	3.7	1.3	7.1
1862	-3.0	-3.3	-0.7	5.5	11.0	15.0	14.2	15.6	12.2	9.5	3.9	0.2	6.5
1863	-3.7	-2.3	1.3	7.7	10.5	15.2	14.8	15.5	12.5	10.2	4.4	1.1	6.3
1864	-0.1	0.1	-1.4	4.4	7.7	12.4	16.4	14.4	12.6	6.6	5.5	2.1	6.3
1865	-0.6	-4.5	-1.1	5.6	11.8	12.6	17.4	14.4	12.6	6.9	5.8	2.3	6.9
1866	3.8	1.8	-1.0	6.4	9.1	17.0	15.8	15.4	14.2	7.1	2.2	0.5	7.7
1867	-4.0	0.8	-1.8	3.9	6.2	13.7	14.3	16.0	12.2	8.3	1.6	-5.0	5.5
1868	-2.0	1.8	-2.2	6.0	3.3	13.5	18.7	19.3	12.8	8.4	2.3	1.8	8.3
1869	0.9	3.1	0.8	7.2	10.5	13.5	17.4	15.5	12.5	7.2	1.3	1.3	7.6
1870	0.2	-4.9	-0.7	6.0	10.9	14.3	17.2	15.8	11.9	6.4	4.6	-4.8	6.4
ave	-0.7	-0.5	0.3	5.5	9.9	14.7	16.5	15.4	12.4	7.8	3.2	-0.2	7.0

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1871	-3.0	-4.1	2.6	3.8	8.8	12.0	16.6	15.9	10.3	5.9	1.0	-2.0	5.7
1872	-3.4	0.6	1.9	6.6	12.2	13.9	18.3	15.9	12.2	10.0	6.1	-1.1	8.6
1873	-3.4	-0.4	1.8	6.4	9.4	15.3	17.7	15.7	12.4	7.7	3.4	1.1	7.8
1874	-3.4	-3.1	-2.9	5.5	11.8	15.4	17.6	15.0	12.7	10.0	1.9	-1.1	7.7
1875	-2.9	-3.3	-1.6	4.0	11.2	15.6	17.9	17.9	12.6	6.3	1.7	-2.0	6.4
1876	-1.4	-0.5	-1.0	6.2	8.4	16.7	18.0	16.7	11.7	8.4	0.8	-2.1	7.0
1877	-1.4	-1.0	-1.1	6.2	7.4	16.5	18.0	16.7	11.7	8.4	0.8	-2.1	7.0
1878	-1.4	-1.3	-1.1	6.2	7.4	16.5	18.0	16.7	11.7	8.4	0.8	-2.1	7.0
1879	-1.4	-1.3	-1.1	6.2	7.4	16.5	18.0	16.7	11.7	8.4	0.8	-2.1	7.0
1880	-2.1	0.5	1.4	6.8	10.2	15.1	17.2	17.0	14.1	4.6	2.9	0.6	7.3
1881	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1882	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1883	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1884	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1885	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1886	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1887	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1888	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1889	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1890	-1.5	-3.1	-1.1	6.2	10.9	14.9	16.6	14.3	11.5	6.0	5.5	-2.6	6.2
1891	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1892	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1893	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1894	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1895	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1896	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1897	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1898	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1899	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
1900	-1.3	0.3	0.8	4.8	10.6	14.5	17.7	14.8	13.6	10.0	2.6	-2.5	7.4
ave	-0.7	-0.7	1.0	5.2	10.3	15.1	16.9	15.7	12.4	7.8	3.7	0.5	7.3

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1901	-2.5	-4.0	0.4	6.0	11.1	14.9	19.8	17.5	13.3	10.5	2.4	0.3	7.5
1902	-2.5	-4.0	0.4	6.0	11.1	14.9	19.8	17.5	13.3	10.5	2.4	0.3	7.5
1903	-2.5	-4.0	0.4	6.0	11.1	14.9	19.8	17.5	13.3	10.5	2.4	0.3	7.5
1904	-2.5	-4.0	0.4	6.0	11.1	14.9	19.8	17.5	13.3	10.5	2.4	0.3	7.5
1905	-2.5	-4.0	0.4	6.0	11.1	14.9	19.8	17.5	13.3	10.5	2.4	0.3	7.5
1906	-1.1	-1.1	1.7	7.4	11.8	16.3	17.0	16.2	13.2	9.2	7.2	-0.9	8.4
1907	-1.1	-1.1	1.7	7.4	11.8	16.3	17.0	16.2	13.2	9.2	7.2	-0.9	8.4
1908	-1.1	-1.1	1.7	7.4	11.8	16.3	17.0	16.2	13.2	9.2	7.2	-0.9	8.4
1909	-1.1	-1.1	1.7	7.4	11.8	16.3	17.0	16.2	13.2	9.2	7.2	-0.9	8.4
1910	-1.1	-1.1	1.7	7.4	11.8	16.3	17.0	16.2	13.2	9.2	7.2	-0.9	8.4
1911	-1.2	-0.9	2.7	6.2	12.5	14.4	16.5	17.9	13.8	7.8	5.5	3.3	8.6
1912	-1.2	-0.9	2.7	6.2	12.5	14.4	16.5	17.9	13.8	7.8	5.5	3.3	8.6
1913	-1.2	-0.9	2.7	6.2	12.5	14.4	16.5	17.9	13.8	7.8	5.5	3.3	8.6
1914	-1.2	-0.9	2.7	6.2	12.5	14.4	16.5	17.9	13.8	7.8	5.5	3.3	8.6
1915	-1.2	-0.9	2.7	6.2	12.5	14.4	16.5	17.9	13.8	7.8	5.5	3.3	8.6
1916	-2.4	0.1	0.7	6.6	10.2	12.5	16.6	14.9	11.1	7.4	5.7	2.1	7.5
1917	-2.4	0.1	0.7	6.6	10.2	12.5	16.6	14.9	11.1	7.4	5.7	2.1	7.5
1918	-2.4	0.1	0.7	6.6	10.2	12.5	16.6	14.9	11.1	7.4	5.7	2.1	7.5
1919	-2.4	0.1	0.7	6.6	10.2	12.5	16.6	14.9	11.1	7.4	5.7	2.1	7.5
1920	-2.4	0.1	0.7	6.6	10.2	12.5	16.6	14.9	11.1	7.4	5.7	2.1	7.5
1921	-2.2	1.1	5.1	8.1	12.8	14.6	17.1	15.2	11.8	9.1	0.5	1.1	8.2
1922	-2.2	1.1	5.1	8.1	12.8	14.6	17.1	15.2	11.8	9.1	0.5	1.1	8.2
1923	-2.2	1.1	5.1	8.1	12.8	14.6	17.1	15.2	11.8	9.1	0.5	1.1	8.2
1924	-2.2	1.1	5.1	8.1	12.8	14.6	17.1	15.2	11.8	9.1	0.5	1.1	8.2
1925	-2.2	1.1	5.1	8.1	12.8	14.6	17.1	15.2	11.8	9.1	0.5	1.1	8.2
1926	0.1	-0.1	2.4	6.4	10.3	14.9	18.3	16.1	12.4	5.5	5.5	0.4	7.7
1927	0.1	-0.1	2.4	6.4	10.3	14.9	18.3	16.1	12.4	5.5	5.5	0.4	7.7
1928	0.1	-0.1	2.4	6.4	10.3	14.9	18.3	16.1	12.4	5.5	5.5	0.4	7.7
1929	0.1	-0.1	2.4	6.4	10.3	14.9	18.3	16.1	12.4	5.5	5.5	0.4	7.7
1930	0.1	-0.1	2.4	6.4	10.3	14.9	18.3	16.1	12.4	5.5	5.5	0.4	7.7
ave	0.0	-0.3	1.9	5.5	10.6	14.4	17.0	15.6	12.3	8.1	3.7	1.1	7.5

Temperature				Station: 6403			Kristianstad						
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
19331	-1.0	-1.1	-3.0	3.5	12.4	13.3	15.9	15.3	10.0	7.2	5.4	0.8	6.6
19332	2.7	-0.5	-0.5	3.8	11.9	14.0	18.6	17.7	12.9	7.5	4.5	2.9	8.1
19333	-0.8	-0.4	-0.3	4.4	10.8	15.8	18.3	16.5	12.7	9.5	3.8	-0.7	7.9
19334	1.3	2.9	3.3	6.9	12.2	15.3	18.1	16.4	14.9	10.0	5.4	4.9	8.3
19335	-0.7	1.1	2.1	6.6	9.9	16.0	17.3	16.4	12.8	8.6	5.9	2.0	8.2
19336	-2.3	-1.5	1.9	5.1	11.4	16.7	17.8	16.2	11.4	5.8	5.3	3.3	8.0
19337	-0.4	-0.1	0.5	6.4	12.6	14.9	18.2	18.3	13.5	9.7	2.8	-0.8	8.0
19338	1.1	0.5	0.6	6.0	10.6	14.6	17.1	18.2	13.8	10.0	7.3	1.0	8.1
19339	1.5	3.5	1.7	6.6	10.7	16.7	17.8	18.6	13.0	5.8	4.7	-0.1	8.4
19340	-4.9	-7.9	-1.7	3.9	11.6	17.2	17.5	14.6	11.0	6.4	5.0	-0.9	6.0
19411	-8.1	-3.0	0.5	3.2	8.8	15.3	19.2	15.3	12.1	6.9	2.4	1.2	6.2
19412	-8.8	-6.7	-0.7	4.6	9.8	13.1	15.8	16.6	13.8	9.2	3.6	2.4	5.6
19413	-2.3	-0.8	0.8	8.2	12.0	15.3	17.3	16.0	11.1	10.0	3.8	1.1	8.1
19414	-2.0	0.6	4.9	7.3	10.6	14.8	17.7	17.2	12.5	9.1	4.3	2.1	8.1
19415	-0.4	-0.5	1.4	8.0	11.3	13.9	18.1	15.4	13.3	6.4	4.4	0.2	7.6
19416	-2.9	-0.2	-2.3	6.7	12.0	16.8	17.6	18.3	15.2	8.1	3.6	0.6	7.2
19417	-0.6	-0.7	4.0	7.7	11.8	15.1	16.7	16.4	13.4	7.9	3.7	2.9	8.2
19418	-1.5	2.2	3.3	7.5	12.3	14.5	17.6	15.3	15.5	9.9	5.7	3.7	8.9
19419	-1.4	1.5	3.9	6.8	12.3	16.2	16.4	17.0	13.0	8.4	4.4	0.2	8.3
19511	0.5	0.7	-0.1	6.5	9.7	15.3	16.1	16.9	13.7	7.8	6.6	4.2	8.2
19512	-0.4	-0.5	-0.2	7.9	10.6	13.6	16.2	16.0	10.5	6.7	1.9	0.0	7.0
19513	-0.5	-0.9	-3.9	7.5	11.2	17.6	17.6	16.2	12.7	10.6	6.2	2.9	8.8
19514	-2.1	-3.4	-1.2	4.9	12.1	15.5	15.3	15.2	13.1	8.8	3.8	3.3	7.3
19515	-1.4	-4.7	-2.0	4.4	9.1	13.8	19.3	18.5	14.2	8.4	4.2	0.6	7.0
19561	-0.7	-7.0	0.5	3.4	11.2	14.6	16.8	13.9	11.9	7.8	0.9	3.0	6.4
19562	1.8	-2.2	-2.0	5.4	9.7	15.7	17.5	16.2	10.7	9.5	4.4	0.7	8.0
19563	-2.0	-2.5	-3.1	4.1	10.7	14.7	17.3	15.5	13.7	9.7	5.4	1.0	7.1
19564	-0.7	-0.7	-3.6	6.9	11.5	15.6	19.0	17.7	13.0	8.1	5.4	2.5	7.6
19565	-1.7	-2.5	1.5	5.2	11.3	16.2	19.0	16.1	12.7	7.8	5.4	2.6	7.5
ave	-0.9	-0.8	1.2	5.9	11.1	15.2	17.4	16.5	12.9	8.4	4.5	1.6	7.8

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
1961	-0.1	2.8	5.5	7.5	10.8	16.2	15.7	14.9	14.0	11.5	4.1	-1.1	8.5		
1962	1.7	0.5	-0.9	6.6	9.0	13.8	14.9	14.1	12.0	8.7	4.0	-2.7	6.9		
1963	-7.7	-4.6	11.8	5.2	11.8	15.4	17.0	16.2	13.1	8.7	6.3	-1.4	6.6		
1964	0.2	-0.5	6.9	12.1	15.5	16.0	15.5	15.5	12.1	7.7	4.8	0.8	7.5		
1965	0.4	-2.1	0.4	5.6	8.5	15.0	13.8	14.7	13.6	8.4	0.7	-0.4	6.6		
1966	-3.6	-2.9	2.2	2.5	11.1	16.3	16.4	15.1	12.4	8.9	3.5	0.6	6.9		
1967	-1.1	-1.3	5.1	5.6	11.0	14.0	17.1	16.3	13.9	10.7	4.7	-0.3	8.2		
1968	-2.3	-1.8	3.4	7.1	9.4	16.2	15.6	17.1	13.6	8.6	4.9	-0.6	7.6		
1969	-0.8	-3.8	-0.7	5.1	10.3	15.9	17.7	17.4	13.8	9.7	4.0	-3.4	7.2		
1970	-3.9	-5.1	-0.1	3.9	10.8	16.8	15.5	16.2	11.8	8.2	3.5	1.4	6.6		
1971	-0.7	1.1	0.0	5.7	11.5	13.7	17.4	16.4	11.7	9.1	3.4	4.2	7.8		
1972	-1.8	0.3	1.6	6.1	10.7	14.9	18.4	16.1	10.7	7.5	5.3	3.7	7.8		
1973	0.4	2.1	4.5	5.1	11.1	16.0	18.3	16.5	12.9	5.9	1.9	0.5	7.9		
1974	2.4	2.5	2.9	7.0	10.3	14.5	15.5	16.3	13.3	6.2	5.0	4.2	8.4		
1975	4.5	1.1	2.4	1.1	11.1	14.6	18.2	19.1	14.5	8.7	4.1	3.4	8.9		
1976	-1.4	-0.7	-0.8	5.2	10.7	15.6	17.8	16.8	11.8	8.0	4.5	-1.2	7.2		
1977	-0.3	-0.9	2.8	4.5	11.4	16.0	16.2	15.9	11.2	9.5	4.9	-2.4	7.8		
1978	-0.7	-2.8	2.1	4.8	11.1	15.3	15.3	15.9	11.2	8.7	7.2	-1.8	7.3		
1979	-3.9	-2.7	-0.9	4.9	11.3	15.9	15.0	15.6	12.4	6.5	4.5	1.4	6.9		
1980	-2.5	-2.3	-0.4	5.8	9.4	15.9	16.7	15.7	13.0	7.4	2.7	1.6	6.9		
1981	-1.7	0.3	2.3	5.5	12.2	14.3	16.2	15.7	13.1	7.3	4.0	-5.2	7.0		
1982	-4.7	-1.8	3.0	6.3	11.0	13.8	18.2	17.2	13.0	9.7	6.1	-2.2	7.8		
1983	3.8	-3.3	3.1	5.9	10.6	14.7	18.4	17.4	13.3	8.7	3.5	0.3	8.1		
1984	-0.6	-0.3	0.7	6.6	10.7	13.5	15.6	16.2	11.2	10.7	5.7	1.9	7.7		
1985	-6.1	-6.5	0.2	3.9	10.7	14.1	15.8	15.1	11.4	9.9	1.5	1.8	6.0		
1986	-2.1	-6.5	0.6	4.2	11.0	14.8	16.8	14.5	10.1	8.6	6.9	1.5	6.7		
1987	-7.2	-2.0	-2.5	5.7	11.9	12.0	14.9	14.3	11.6	8.8	4.8	2.1	8.0		
1988	2.8	2.0	0.4	5.3	11.3	16.8	17.2	15.7	13.3	7.4	1.8	2.6	8.0		
ave	-1.3	-1.3	1.4	5.5	10.7	15.0	16.5	16.0	12.5	8.6	4.2	0.7	7.4		

Statistics for the whole period.													Station: 6403		Kristianstad	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year			
num	129	129	129	129	129	129	129	129	129	129	129	129	129			
ave	-0.7	-0.5	-0.3	-0.1	1.0	14.9	16.9	15.9	12.5	8.1	4.0	0.9	7.4			
std	1.7	1.6	1.7	1.4	1.5	1.3	1.9	1.7	1.3	1.4	1.7	1.1	1.5			
min	-8.8	-7.9	-6.7	-4.1	-1.6	1.1	1.8	1.3	1.1	1.8	-0.1	-4.9	-5.5			
max	4.5	4.6	6.6	8.4	13.0	19.0	20.0	19.5	15.5	11.8	7.3	4.9	9.5			
Interpolated													Jan 1860 - Dec 1878			
Corrected													Jan 1879 - Dec 1900 +0.30			

Temperature					Station:15772			Stenselse						
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	
1860	-14.5	-15.9	-6.1	-1.4	4.8	12.9	15.8	12.2	6.4	0.2	-5.4	-16.0	-0.6	
1861	-15.8	-10.4	-6.3	-1.3	2.8	14.7	15.5	11.5	5.3	3.1	-9.9	-5.7	0.3	
1862	-17.4	-14.2	-11.3	-0.1	2.4	11.1	10.8	9.7	6.5	0.5	-2.3	-10.8	-0.8	
1863	-7.9	-4.6	-6.8	-0.6	3.3	14.3	12.0	10.3	7.7	1.6	-2.4	-11.7	1.1	
1864	-10.1	-14.2	-9.4	-0.8	3.9	10.2	14.3	8.7	5.8	-5.7	-12.6	-13.0	-1.9	
1865	-11.8	-17.1	-10.0	0.5	5.9	7.9	14.4	9.2	6.7	-4.5	-5.5	-5.9	-0.8	
1866	-10.5	-14.1	-12.7	-1.6	3.4	12.0	12.4	12.1	8.1	1.1	-10.1	-15.7	-1.3	
1867	-22.4	-19.0	-16.9	-4.7	0.0	10.2	13.3	12.0	7.1	1.2	-8.0	-15.2	-2.4	
1868	-10.4	-12.0	-9.9	-1.1	3.9	10.4	13.6	13.9	10.0	-0.1	-7.1	-11.8	-0.1	
1869	-11.1	-13.2	-8.6	-0.2	4.9	10.4	13.0	10.9	10.0	-0.1	-7.0	-11.8	-0.1	
1870	-12.5	-13.3	-8.6	1.6	4.4	13.1	14.1	12.2	7.8	-1.7	-8.1	-10.6	-0.5	
ave	-13.1	-12.1	-8.6	-0.9	4.1	11.4	13.6	11.1	6.6	-0.4	-7.3	-12.1	-0.6	

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1871	-17.6	-24.7	-1.3	-4.5	4.1	9.9	15.0	11.2	4.4	0.5	-14.1	-13.9	-2.6
1872	-18.6	-20.7	-6.0	-1.0	6.0	14.9	15.9	10.0	3.5	2.3	-10.0	-15.3	1.0
1873	-10.0	-15.9	-3.7	-0.7	4.0	13.1	14.5	10.9	6.8	2.3	-11.8	-16.0	0.5
1874	-22.6	-13.3	-7.3	-2.7	3.2	11.3	14.6	10.7	5.4	-2.5	-11.6	-16.5	-2.0
1875	-11.3	-16.8	-8.6	-1.1	3.5	15.9	14.1	12.3	6.7	0.0	-9.5	-16.5	-1.1
1876	-11.3	-15.8	-12.3	-3.4	3.3	15.9	14.3	12.3	4.3	-1.3	-3.3	-16.9	-1.2
1877	-10.8	-16.0	-7.0	-0.9	5.5	11.6	11.9	12.2	7.8	-2.3	-7.7	-17.6	-0.3
1878	-12.3	-15.6	-8.1	-1.0	4.0	10.8	15.0	14.1	7.8	-0.8	-8.6	-19.9	-0.4
1879	-6.3	-7.0	-4.2	-0.3	4.8	10.3	12.5	13.3	7.9	-5.8	-9.9	-17.7	-0.2
1880	-14.8	-20.9	-11.6	-4.2	3.8	10.1	12.0	11.0	6.2	-0.5	-4.3	-8.6	-1.8
1881	-6.3	-7.6	-5.7	-1.7	6.1	11.7	13.7	13.5	8.4	1.1	-11.5	-14.4	0.7
1882	-13.5	-10.2	-7.5	-2.2	6.6	13.8	14.7	11.3	5.9	-1.1	-7.5	-17.7	1.3
1883	-9.7	-9.3	-4.4	-1.7	2.8	8.5	14.1	12.5	8.0	3.9	-6.7	-12.8	0.3
1884	-14.9	-7.3	-7.1	-1.6	2.8	8.4	13.0	10.1	4.5	-3.3	-7.1	-11.2	-1.1
1885	-15.9	-11.1	-5.9	0.4	4.5	11.9	12.3	11.7	6.3	2.2	-1.4	-14.0	0.1
1886	-7.6	-4.7	-1.5	-1.4	5.6	10.4	12.4	10.2	7.3	-1.5	-8.2	-14.2	0.1
1887	-10.4	-16.8	-11.5	-5.0	3.7	10.9	11.9	10.2	5.3	-3.1	-14.0	-15.2	-2.3
1888	-8.4	-7.2	-4.3	-1.4	5.2	14.4	11.7	9.9	6.6	-1.2	-6.5	-18.4	0.5
1889	-7.9	-14.3	-4.3	-0.7	7.5	11.5	11.4	10.6	6.8	-1.9	-6.5	-12.3	0.6
1890	-12.2	-3.0	-8.3	-1.6	4.8	9.1	14.9	9.2	5.7	2.5	-4.3	-8.5	0.7
1891	-19.8	-17.1	-6.2	-2.7	3.3	10.0	12.5	9.7	5.9	-0.2	-3.7	-13.4	-1.9
1892	-19.5	-17.1	-6.2	-2.7	4.4	10.3	14.1	10.2	3.1	-0.2	-6.7	-7.8	-1.9
1893	-13.5	-11.3	-3.1	-2.7	6.4	15.3	15.1	11.4	4.3	-2.1	-3.8	-6.7	1.3
1894	-18.2	-14.8	-11.0	-0.4	9.0	13.3	12.7	10.7	6.1	-0.1	-3.8	-11.4	-0.7
1895	-7.7	-6.9	-5.0	-0.6	4.4	11.6	16.0	10.4	6.8	-1.3	-6.1	-12.2	0.8
1896	-13.3	-13.4	-11.6	-1.1	7.9	11.3	14.2	11.2	7.0	-2.5	-14.0	-18.8	-0.4
1897	-6.5	-11.9	-11.6	-1.1	5.3	12.1	12.2	10.9	6.5	-0.1	-5.8	-13.3	-0.4
1898	-15.5	-12.1	-13.0	-3.2	1.9	10.5	15.7	8.9	5.7	-0.7	-4.5	-14.2	-1.6
1899	-15.3	-19.9	-8.3	-2.0	4.2	12.0	10.5	10.9	5.0	1.1	-4.1	-13.3	-1.6
ave	-12.5	-12.1	-7.9	-1.2	5.0	11.4	13.6	11.0	6.1	0.0	-6.3	-11.9	-0.4

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1901	-9.3	-17.4	-8.2	0.6	6.2	13.0	17.7	12.8	7.7	-4.8	-6.1	-15.1	0.6
1902	-12.9	-13.5	-11.1	-2.1	3.3	9.1	10.6	19.9	5.3	-1.0	-4.6	-10.7	-1.0
1903	-13.3	-16.4	-2.8	-1.8	4.4	9.6	11.7	10.9	6.8	-2.2	-5.4	-16.5	-0.9
1904	-6.9	-9.4	-5.0	-0.7	5.4	12.7	13.2	10.5	6.8	-1.5	-9.2	-17.3	-1.2
1905	-16.1	-9.4	-5.9	-2.5	5.4	12.7	13.2	10.5	6.0	-3.9	-5.2	-17.3	-0.2
1906	-10.5	-9.4	-9.1	1.6	5.7	11.7	14.2	10.1	6.6	1.4	-3.3	-10.5	0.7
1907	-11.7	-18.2	-8.3	-0.3	3.3	11.1	14.2	12.3	5.8	3.3	-10.6	-17.4	0.7
1908	-9.2	-19.4	-3.4	-0.4	3.3	12.0	14.2	10.7	6.3	-1.5	-7.1	-17.1	-0.5
1909	-11.2	-15.1	-3.6	-0.3	2.2	11.1	13.5	11.8	6.9	0.6	-10.1	-11.6	-0.9
1910	-10.6	-11.5	-6.9	-0.9	7.5	10.4	12.7	13.5	7.5	-0.6	-7.6	-5.3	0.7
1911	-14.7	-14.0	-4.1	-1.2	5.5	12.7	15.4	12.5	6.1	-0.8	-6.1	-8.9	0.0
1912	-6.1	-9.5	-5.4	-0.5	4.8	12.2	14.4	11.4	7.0	-0.5	-3.2	-14.3	0.3
1913	-10.6	-9.5	-7.9	-1.2	4.4	12.2	16.5	11.5	7.1	-0.1	-5.8	-11.1	1.0
1914	-6.1	-10.8	-11.3	-0.8	3.0	8.8	14.1	10.7	5.0	-0.8	-9.6	-22.9	-2.6
1915	-11.6	-11.0	-9.0	-0.4	3.8	10.6	16.4	10.1	5.2	-3.0	-2.8	-10.2	-0.2
1916	-11.6	-14.6	-11.0	-3.6	3.1	13.2	15.4	15.4	6.0	-1.2	-1.1	-12.1	-1.3
1917	-10.9	-13.4	-4.6	-0.7	5.9	11.3	15.3	10.3	5.3	2.1	-10.3	-19.9	-0.6
1918	-10.0	-13.6	-8.7	-1.9	8.4	11.3	15.3	10.9	6.8	0.1	-10.0	-14.8	-0.6
1919	-10.6	-7.2	-0.5	-1.0	7.6	10.8	13.7	10.9	8.0	1.5	-2.7	-12.2	-1.7
1920	-10.6	-11.0	-9.0	-0.4	3.8	10.6	16.4	10.1	5.2	-3.0	-2.8	-10.2	-0.2
1921	-11.6	-14.6	-11.0	-3.6	3.1	13.2	15.4	15.4	6.0	-1.2	-1.1	-12.1	-1.3
1922	-10.9	-13.4	-4.6	-0.7	5.9	11.3	15.3	10.3	5.3	2.1	-10.3	-19.9	-0.6
1923	-10.0	-13.6	-8.7	-1.9	8.4	11.3	15.3	10.9	6.8	0.1	-10.0	-14.8	-0.6
1924	-10.6	-7.2	-0.5	-1.0	7.6	10.8	13.7	10.9	8.0	1.5	-2.7	-12.2	-1.7
1925	-10.6	-11.0	-9.0	-0.4	3.8	10.6	16.4	10.1	5.2	-3.0	-2.8	-10.2	-0.2
1926	-11.6	-14.6	-11.0	-3.6	3.1	13.2	15.4	15.4	6.0	-1.2	-1.1	-12.1	-1.3
1927	-10.9	-13.4	-4.6	-0.7	5.9	11.3	15.3	10.3	5.3	2.1	-10.3	-19.9	-0.6
1928	-10.0	-13.6	-8.7	-1.9	8.4	11.3	15.3	10.9	6.8	0.1	-10.0	-14.8	-0.6
1929	-10.6	-7.2	-0.5	-1.0	7.6	10.8	13.7	10.9	8.0	1.5	-2.7	-12.2	-1.7
1930	-10.6	-11.0	-9.0	-0.4	3.8	10.6	16.4	10.1	5.2	-3.0	-2.8	-10.2	-0.2
ave	-11.9	-11.2	-6.7	-0.7	5.2	10.8	14.0	11.4	6.5	0.4	-6.0	-10.7	0.1

Temperature				Station:15772				Stensele							
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
1933	-12.4	-13.3	-8.9	-0.6	6.8	7.3	15.0	11.1	4.6	-0.1	-0.5	-6.8	0.2		
1934	-10.8	-10.4	-8.9	-0.2	6.9	10.3	14.6	11.4	5.7	-1.1	-2.6	-3.4	1.9		
1935	-10.8	-10.4	-8.9	-0.2	6.9	10.3	14.6	11.4	5.7	-1.1	-2.6	-3.4	1.9		
1936	-12.7	-13.3	-7.8	-1.4	7.4	14.1	14.8	11.9	6.9	-0.2	-2.8	-2.7	1.2		
1937	-10.8	-10.4	-8.9	-0.2	6.9	10.3	14.6	11.4	5.7	-1.1	-2.6	-3.4	1.9		
1938	-10.8	-10.4	-8.9	-0.2	6.9	10.3	14.6	11.4	5.7	-1.1	-2.6	-3.4	1.9		
1939	-10.8	-10.4	-8.9	-0.2	6.9	10.3	14.6	11.4	5.7	-1.1	-2.6	-3.4	1.9		
1940	-10.8	-10.4	-8.9	-0.2	6.9	10.3	14.6	11.4	5.7	-1.1	-2.6	-3.4	1.9		
1941	-18.4	-13.1	-8.0	-2.2	5.5	10.3	16.5	10.6	6.3	-1.6	-6.4	-15.9	-1.4		
1942	-20.7	-17.4	-11.5	-1.2	4.4	10.6	13.1	12.0	6.4	0.9	-3.8	-10.4	-1.4		
1943	-14.3	-10.7	-5.9	-0.4	6.1	12.6	13.9	11.1	6.9	2.9	-3.7	-3.6	1.0		
1944	-14.3	-10.7	-5.9	-0.4	6.1	12.6	13.9	11.1	6.9	2.9	-3.7	-3.6	1.0		
1945	-14.3	-10.7	-5.9	-0.4	6.1	12.6	13.9	11.1	6.9	2.9	-3.7	-3.6	1.0		
1946	-9.1	-14.1	-7.9	0.8	6.3	11.2	15.0	12.5	8.3	1.2	-4.0	-4.9	1.2		
1947	-17.7	-13.4	-12.6	-0.8	7.7	13.7	14.6	13.3	8.5	0.2	-6.4	-11.4	0.1		
1948	-17.7	-13.4	-12.6	-0.8	7.7	13.7	14.6	13.3	8.5	0.2	-6.4	-11.4	0.1		
1949	-17.7	-13.4	-12.6	-0.8	7.7	13.7	14.6	13.3	8.5	0.2	-6.4	-11.4	0.1		
1950	-16.5	-10.9	-4.7	1.3	5.5	11.4	13.3	13.7	7.6	1.9	-5.1	-11.3	0.5		
1951	-17.3	-10.8	-10.5	-0.4	3.5	11.4	11.1	13.9	8.4	3.1	-6.9	-7.2	-0.3		
1952	-17.3	-10.8	-10.5	-0.4	3.5	11.4	11.1	13.9	8.4	3.1	-6.9	-7.2	-0.3		
1953	-17.3	-10.8	-10.5	-0.4	3.5	11.4	11.1	13.9	8.4	3.1	-6.9	-7.2	-0.3		
1954	-14.3	-12.9	-7.4	-0.7	8.6	10.5	14.5	12.1	6.7	-0.4	-6.3	-18.0	-1.2		
1955	-14.3	-12.9	-7.4	-0.7	8.6	10.5	14.5	12.1	6.7	-0.4	-6.3	-18.0	-1.2		
1956	-15.9	-15.2	-6.5	-2.9	6.1	10.5	13.7	9.7	7.0	0.5	-10.8	-12.4	-1.4		
1957	-17.4	-11.7	-8.4	-0.0	4.2	10.5	14.7	11.1	5.8	1.1	-3.1	-8.2	-0.5		
1958	-17.4	-11.7	-8.4	-0.0	4.2	10.5	14.7	11.1	5.8	1.1	-3.1	-8.2	-0.5		
1959	-17.4	-11.7	-8.4	-0.0	4.2	10.5	14.7	11.1	5.8	1.1	-3.1	-8.2	-0.5		
1960	-14.5	-15.2	-5.9	0.4	7.7	12.5	14.5	12.4	7.6	-3.4	-6.6	-10.5	-0.1		
ave	-12.2	-11.1	-6.8	-0.3	5.9	11.1	14.3	12.2	7.1	1.0	-4.2	-8.4	0.7		

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
1961	-13.8	-15.6	-13.1	-1.6	5.4	12.3	13.6	11.5	8.0	6.0	-1.9	-12.4	1.5		
1962	-11.1	-11.1	-11.1	0.3	4.4	12.3	13.6	11.5	8.0	6.0	-1.9	-12.4	1.5		
1963	-11.1	-11.1	-11.1	0.3	4.4	12.3	13.6	11.5	8.0	6.0	-1.9	-12.4	1.5		
1964	-12.4	-11.1	-11.1	0.2	4.4	12.3	13.6	11.5	8.0	6.0	-1.9	-12.4	1.5		
1965	-12.4	-11.1	-11.1	0.2	4.4	12.3	13.6	11.5	8.0	6.0	-1.9	-12.4	1.5		
1966	-19.1	-21.9	-9.1	-3.2	5.0	14.7	13.1	10.7	4.7	0.5	-4.6	-8.5	-1.5		
1967	-19.1	-21.9	-9.1	-3.2	5.0	14.7	13.1	10.7	4.7	0.5	-4.6	-8.5	-1.5		
1968	-19.1	-21.9	-9.1	-3.2	5.0	14.7	13.1	10.7	4.7	0.5	-4.6	-8.5	-1.5		
1969	-19.1	-21.9	-9.1	-3.2	5.0	14.7	13.1	10.7	4.7	0.5	-4.6	-8.5	-1.5		
1970	-19.1	-21.9	-9.1	-3.2	5.0	14.7	13.1	10.7	4.7	0.5	-4.6	-8.5	-1.5		
1971	-9.2	-9.8	-11.9	-1.8	5.2	10.8	12.7	11.3	6.2	0.8	-8.3	-6.1	0.0		
1972	-9.2	-9.8	-11.9	-1.8	5.2	10.8	12.7	11.3	6.2	0.8	-8.3	-6.1	0.0		
1973	-9.2	-9.8	-11.9	-1.8	5.2	10.8	12.7	11.3	6.2	0.8	-8.3	-6.1	0.0		
1974	-9.2	-9.8	-11.9	-1.8	5.2	10.8	12.7	11.3	6.2	0.8	-8.3	-6.1	0.0		
1975	-9.2	-9.8	-11.9	-1.8	5.2	10.8	12.7	11.3	6.2	0.8	-8.3	-6.1	0.0		
1976	-16.9	-7.6	-8.0	-0.8	8.2	10.8	13.0	12.6	3.8	-0.3	-4.5	-11.4	-0.1		
1977	-16.9	-7.6	-8.0	-0.8	8.2	10.8	13.0	12.6	3.8	-0.3	-4.5	-11.4	-0.1		
1978	-16.9	-7.6	-8.0	-0.8	8.2	10.8	13.0	12.6	3.8	-0.3	-4.5	-11.4	-0.1		
1979	-16.9	-7.6	-8.0	-0.8	8.2	10.8	13.0	12.6	3.8	-0.3	-4.5	-11.4	-0.1		
1980	-16.9	-7.6	-8.0	-0.8	8.2	10.8	13.0	12.6	3.8	-0.3	-4.5	-11.4	-0.1		
1981	-11.2	-11.6	-11.3	-0.2	8.2	9.5	13.5	11.1	7.3	0.7	-7.8	-18.5	-0.9		
1982	-11.2	-11.6	-11.3	-0.2	8.2	9.5	13.5	11.1	7.3	0.7	-7.8	-18.5	-0.9		
1983	-11.2	-11.6	-11.3	-0.2	8.2	9.5	13.5	11.1	7.3	0.7	-7.8	-18.5	-0.9		
1984	-11.2	-11.6	-11.3	-0.2	8.2	9.5	13.5	11.1	7.3	0.7	-7.8	-18.5	-0.9		
1985	-11.2	-11.6	-11.3	-0.2	8.2	9.5	13.5	11.1	7.3	0.7	-7.8	-18.5	-0.9		
1986	-18.7	-11.5	-2.3	-2.2	7.4	14.3	13.5	9.0	4.3	2.8	-2.6	-12.9	0.1		
1987	-20.4	-13.0	-9.1	-0.2	5.0	10.7	12.3	9.1	6.0	4.8	-3.6	-9.4	-0.6		
1988	-9.2	-10.3	-7.6	-2.4	6.5	13.6	15.6	11.2	7.9	0.4	-6.4	-10.2	0.8		
ave	-13.4	-11.5	-6.4	-0.6	6.0	11.7	13.3	11.4	6.5	1.5	-6.0	-10.7	0.2		

Statistics for the whole period.													Station:15772		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
num	129	129	129	129	129	129	129	129	129	129	129	129	129		
ave	-12.6	-11.6	-7.1	-0.7	5.4	11.2	13.8	11.4	6.6	0.6	-5.8	-10.6	0.1		
std	4.1	4.4	3.1	1.6	1.8	1.9	1.5	1.4	1.2	2.2	3.0	4.1	1.2		
min	-22.6	-24.7	-15.5	-5.0	0.3	7.0	10.5	8.7	3.1	-5.8	-14.1	-22.9	-2.6		
max	-4.0	-3.0	-0.5	3.1	10.2	15.9	17.7	15.7	10.0	6.0	0.3	-1.6	2.8		
Interpolated															
Corrected															
Corrected															
Interpolated															
Corrected															
Corrected															

Precipitation				Station: 6403				Kristianstad					
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1860	51	23	22	30	69	88	30	97	61	58	26	38	593
1861	30	46	48	18	27	62	60	72	75	9	102	22	572
1862	25	31	23	32	50	73	69	47	26	86	29	61	551
1863	30	31	26	38	9	51	71	56	82	33	25	64	516
1864	20	52	76	27	58	59	64	92	53	40	50	6	597
1865	41	24	20	5	26	51	78	96	28	37	45	4	455
1866	64	108	32	46	97	30	78	77	84	13	67	56	752
1867	79	41	20	67	24	53	82	22	48	73	27	40	577
1868	24	43	29	21	7	14	23	47	61	38	26	51	386
1869	29	29	11	50	66	58	23	46	37	39	36	26	451
1870	37	11	14	20	35	51	51	53	51	99	54	39	515
ave	39	40	29	32	42	54	57	64	55	48	44	37	542
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1871	33	39	16	32	25	74	92	29	48	13	25	20	447
1872	42	25	49	41	36	69	52	29	97	59	25	44	596
1873	48	21	6	20	38	83	36	67	68	53	58	45	583
1874	41	12	39	25	30	17	44	46	65	22	33	47	422
1875	86	10	35	15	25	60	33	44	17	50	43	14	434
1876	22	84	49	30	31	24	31	44	83	36	45	43	523
1877	73	50	37	26	36	43	82	95	28	30	36	30	588
1878	26	9	49	14	30	27	54	46	45	30	33	34	437
1879	44	60	15	79	52	24	87	61	21	39	10	50	501
1880	4	48	9	28	9	63	63	39	68	113	89	57	590
1881	29	36	24	7	20	28	85	100	71	59	39	30	528
1882	21	17	35	28	30	101	69	73	64	51	60	48	617
1883	21	17	35	28	30	101	69	73	64	51	60	48	617
1884	27	14	15	32	44	47	83	46	39	59	54	46	473
1885	11	31	24	26	43	54	58	92	57	88	22	16	522
1886	42	18	29	23	36	33	33	25	23	58	12	73	405
1887	11	36	12	21	22	33	26	28	35	55	12	72	418
1888	35	36	20	35	26	36	100	28	35	55	12	72	418
1889	12	3	20	16	26	30	100	28	35	55	12	72	418
1890	24	2	20	74	40	37	65	91	5	47	63	16	484
1891	29	4	37	21	35	44	62	124	17	52	59	56	540
1892	26	14	26	47	38	99	36	66	54	69	37	33	537
1893	26	51	15	6	33	21	76	46	39	73	37	38	448
1894	26	26	34	56	60	28	80	91	28	77	30	35	560
1895	37	21	34	16	47	37	60	97	8	68	34	36	535
1896	7	8	67	30	45	38	39	70	48	69	14	18	453
1897	44	9	67	31	25	30	123	66	63	11	21	18	498
1898	20	38	89	46	28	61	57	59	40	113	43	81	626
1899	56	34	19	42	18	32	49	28	82	38	30	38	456
1900	52	59	33	26	15	32	47	125	33	105	41	60	628
ave	34	27	33	31	36	43	65	63	47	54	42	37	512
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1901	21	13	40	41	50	93	32	28	20	29	60	41	468
1902	34	4	45	20	73	28	103	66	31	29	41	8	510
1903	38	30	11	35	14	44	111	28	40	50	48	50	438
1904	13	32	30	40	10	67	10	46	46	59	30	4	457
1905	19	15	30	44	17	31	55	107	46	59	30	4	457
1906	62	31	29	13	30	48	36	74	15	14	80	22	454
1907	22	26	24	38	38	35	70	51	15	17	80	22	449
1908	30	26	35	38	38	35	53	46	46	15	44	14	482
1909	30	40	58	35	34	34	110	59	23	24	45	35	522
1910	28	67	60	60	34	54	123	62	109	5	38	35	683
1911	33	53	26	24	10	57	47	16	19	78	94	43	500
1912	33	30	40	38	35	90	44	114	33	33	69	68	619
1913	33	13	42	35	4	48	42	60	40	57	86	57	505
1914	33	35	51	40	51	20	22	32	63	53	39	48	474
1915	89	36	18	21	52	9	113	42	41	33	39	82	575
1916	62	36	24	33	28	73	17	128	42	92	53	60	648
1917	77	10	40	35	20	22	71	81	56	88	94	14	535
1918	44	43	10	32	1	62	112	39	112	22	33	69	565
1919	59	26	27	67	26	67	55	79	33	18	33	69	532
1920	55	24	28	97	126	63	64	49	30	3	17	52	608
1921	76	16	22	24	13	22	21	90	36	33	48	57	458
1922	30	17	40	68	17	41	79	49	77	21	32	45	516
1923	42	46	11	41	39	41	46	113	32	49	37	37	563
1924	39	22	59	61	33	31	60	59	31	20	18	38	561
1925	37	44	48	34	35	55	72	58	117	40	65	64	669
1926	49	91	17	23	33	97	47	43	61	68	42	40	611
1927	55	16	65	67	56	102	69	152	72	76	27	25	782
1928	30	40	9	19	22	75	30	89	38	57	97	16	582
1929	32	35	25	41	56	46	73	24	27	80	36	73	548
1930	20	32	31	68	54	39	120	61	120	102	74	24	745
ave	38	30	31	41	42	51	61	69	48	45	51	44	549

Precipitation Station: 6403 Kristianstad													
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1931	81	63	19	64	66	44	112	66	34	25	19	35	628
1932	21	4	17	48	60	21	82	52	70	139	18	38	640
1933	26	37	29	20	40	144	60	37	40	177	11	12	543
1934	22	39	32	6	30	117	118	69	46	93	29	62	609
1935	43	50	9	51	41	117	77	28	105	75	48	42	686
1936	57	46	31	67	49	11	118	66	35	47	27	16	570
1937	26	42	81	28	50	45	42	21	47	13	51	19	525
1938	36	10	12	24	44	34	101	24	54	53	35	66	493
1939	96	17	30	50	15	24	68	63	52	78	42	40	575
1940	24	20	78	27	50	11	43	100	62	26	46	23	510
1941	12	42	36	19	11	26	178	97	31	127	17	57	653
1942	38	18	39	16	47	81	56	40	57	43	52	38	525
1943	75	37	12	24	4	57	54	138	57	30	39	13	540
1944	70	16	33	7	61	28	46	38	97	57	50	38	631
1945	102	54	24	34	21	100	69	162	38	37	50	65	756
1946	22	56	34	20	24	102	74	70	119	26	72	32	651
1947	27	12	61	35	20	18	89	7	59	14	83	50	475
1948	92	40	10	36	81	44	37	89	37	30	32	11	539
1949	27	20	26	43	38	36	171	48	66	34	102	70	671
1950	42	53	15	50	30	23	96	79	71	67	104	65	695
1951	65	30	81	30	44	31	46	58	40	10	42	52	529
1952	50	25	19	20	50	64	81	39	49	115	79	44	635
1953	34	22	20	28	37	18	39	43	38	24	26	46	375
1954	32	50	46	32	61	55	138	50	60	65	40	85	714
1955	38	40	50	13	68	37	37	66	79	38	7	83	556
1956	66	25	14	47	16	48	50	81	27	42	31	30	477
1957	21	40	37	22	21	25	71	93	47	34	22	38	471
1958	42	84	43	21	59	40	66	97	27	33	44	67	623
1959	60	6	14	55	6	22	173	55	6	37	31	69	534
1960	60	32	11	27	26	37	121	78	23	81	81	98	675
ave	47	34	32	32	39	48	84	65	52	52	46	48	580

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1961	40	27	30	13	52	33	151	47	52	60	46	52	603
1962	51	45	30	44	57	40	93	47	36	39	39	28	602
1963	19	21	26	49	22	66	66	103	44	49	114	7	560
1964	13	12	16	31	24	29	34	29	40	30	29	53	380
1965	44	16	13	39	78	29	100	29	82	20	64	63	577
1966	39	63	37	95	56	74	73	49	47	66	45	55	699
1967	58	33	23	69	34	26	29	42	90	71	32	50	607
1968	69	37	23	17	41	59	125	27	61	73	49	57	622
1969	82	27	23	47	67	10	15	45	21	15	93	23	463
1970	14	27	67	68	45	20	86	82	82	78	100	27	696
1971	38	17	46	32	31	77	32	33	43	31	64	21	465
1972	31	25	49	40	31	28	70	67	29	4	56	18	448
1973	39	49	27	50	37	23	35	9	105	22	54	42	502
1974	50	38	12	6	22	53	54	61	48	117	55	57	573
1975	56	11	28	56	50	22	55	16	74	27	29	18	442
1976	49	7	22	33	44	34	44	22	53	91	35	100	534
1977	81	53	65	43	16	70	94	26	30	32	64	54	628
1978	45	61	53	15	7	50	64	67	94	20	27	42	545
1979	39	31	63	43	53	15	49	82	24	8	23	79	559
1980	45	34	9	18	13	54	47	70	37	98	77	56	558
1981	34	50	68	11	26	74	53	67	32	121	78	44	658
1982	46	4	57	10	46	93	19	84	18	124	43	58	602
1983	52	32	68	54	83	25	18	24	71	41	74	53	595
1984	88	27	11	12	49	105	72	19	96	54	33	24	590
1985	56	11	40	42	42	36	47	57	61	46	9	118	565
1986	77	25	31	45	30	46	50	59	56	51	33	66	569
1987	28	35	28	31	47	86	110	50	68	15	68	24	590
1988	133	62	34	39	16	63	123	30	63	57	19	52	691
ave	50	32	35	37	43	48	65	50	56	53	54	47	569

Statistics for the whole period. Station: 6403 Kristianstad													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
num	129	129	129	129	129	129	129	129	129	129	129	129	129
ave	42	32	32	35	40	48	68	62	51	50	48	43	551
std	22	19	19	18	23	26	34	30	25	30	25	22	84
min	4	2	3	5	1	2	10	7	5	3	6	4	375
max	133	108	89	97	126	144	178	162	120	139	114	118	782

Interpolated Jan 1860 - Dec 1878

Precipitation				Station:15772				Stenselo					
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1860	55	15	30	10	74	57	41	107	43	63	44	17	556
1861	14	21	9	7	42	2	261	120	43	20	48	18	605
1862	17	8	12	36	4	39	140	36	2	26	49	23	392
1863	49	8	17	35	17	43	34	120	155	19	4	22	523
1864	8	24	33	18	19	113	56	52	158	35	59	36	611
1865	86	35	10	17	28	24	82	26	57	55	30	8	458
1866	28	37	18	46	66	62	119	193	89	3	45	41	747
1867	49	20	16	26	1	106	38	45	11	88	21	19	440
1868	22	38	53	19	31	39	7	18	17	25	18	35	322
1869	9	32	7	4	69	13	74	66	56	21	45	25	421
1870	59	65	4	1	30	71	29	61	70	27	61	44	522
ave	36	28	19	20	35	52	80	77	64	35	39	26	509

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1871	9	4	7	23	4	35	110	10	17	26	14	15	274
1872	27	16	9	21	44	37	17	63	55	54	30	35	427
1873	11	9	21	19	26	24	34	96	57	27	19	35	393
1874	21	1	0	19	12	13	133	120	49	14	19	35	335
1875	11	0	7	12	28	36	50	21	18	15	50	39	267
1876	4	3	35	22	2	45	55	59	85	15	16	12	353
1877	12	0	19	23	25	57	38	3	13	21	39	19	359
1878	8	0	19	15	80	30	24	38	58	39	53	13	376
1879	2	24	19	43	30	62	16	60	65	48	31	37	397
1880	6	15	5	6	25	46	36	27	91	10	26	32	325
1881	16	5	4	3	15	50	77	101	34	45	29	21	400
1882	63	54	47	31	36	26	67	90	4	11	33	17	469
1883	24	8	5	4	42	22	19	98	31	36	33	33	325
1884	33	12	17	13	46	34	111	0	43	52	13	37	401
1885	18	46	11	45	48	24	50	59	38	35	33	34	441
1886	22	8	4	29	84	53	175	118	54	13	37	34	631
1887	27	3	5	12	31	11	40	75	36	25	18	35	308
1888	26	7	1	11	25	0	116	56	60	89	27	26	444
1889	15	16	14	6	21	40	126	59	36	62	18	20	433
1890	30	6	11	45	30	75	107	64	29	31	20	14	462
1891	22	5	20	12	51	12	48	64	74	42	13	25	388
1892	23	15	17	27	25	73	28	154	77	19	12	24	494
1893	6	24	15	17	23	61	52	73	81	73	20	32	477
1894	33	23	14	8	35	45	58	167	30	26	26	24	489
1895	7	5	11	14	9	68	58	80	59	81	27	17	436
1896	15	13	44	22	14	44	61	52	46	101	14	19	445
1897	20	20	37	18	35	35	58	52	84	44	12	24	439
1898	16	12	25	3	41	43	68	78	44	11	20	42	403
1899	29	24	29	39	15	22	89	30	77	45	38	23	460
1900	26	26	13	14	9	33	71	71	8	61	29	27	388
ave	21	13	16	19	30	38	67	68	49	43	24	24	412

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1901	19	18	13	19	6	64	17	61	14	69	11	34	345
1902	52	18	32	2	26	22	38	126	51	8	16	9	400
1903	32	23	44	34	54	46	85	119	66	31	17	24	575
1904	16	13	11	18	53	60	31	116	48	41	23	30	460
1905	22	17	13	27	36	34	61	95	69	26	39	11	450
1906	29	23	46	12	82	24	68	31	30	16	32	25	418
1907	28	26	14	30	40	77	101	143	24	55	18	9	565
1908	24	39	24	17	17	39	59	44	17	23	23	16	324
1909	20	10	40	19	8	16	65	151	65	120	19	36	569
1910	39	20	16	49	29	49	34	4	27	27	88	30	412
1911	18	8	11	43	2	56	49	36	79	33	30	18	383
1912	18	21	51	5	45	47	25	78	53	39	61	78	521
1913	16	25	11	34	19	26	166	52	14	31	24	31	449
1914	14	28	41	13	38	70	74	58	34	17	9	43	439
1915	22	31	9	20	37	33	135	77	52	5	91	24	536
1916	35	17	39	37	28	50	30	82	31	48	64	40	501
1917	7	17	13	23	34	55	39	64	86	65	33	28	494
1918	22	13	7	6	24	80	82	85	104	39	24	35	509
1919	28	9	39	21	23	19	62	83	52	19	22	30	535
1920	49	48	53	23	33	42	134	70	40	16	14	18	540
1921	33	7	26	15	21	100	89	211	23	62	18	47	652
1922	30	21	26	38	50	108	97	95	16	168	10	47	566
1923	37	4	19	19	53	22	30	77	74	105	3	16	502
1924	19	16	18	19	65	25	76	76	117	73	3	68	629
1925	20	32	26	31	31	54	108	108	34	33	9	68	594
1926	13	22	31	40	71	29	23	169	32	57	64	19	570
1927	48	27	43	24	46	24	48	113	92	63	66	18	527
1928	38	34	8	26	48	100	88	88	55	63	60	18	506
1929	32	6	19	20	18	55	67	96	67	35	48	34	475
1930	26	6	41	31	17	84	43	101	8	40	43	33	473
ave	26	20	26	24	35	60	67	90	49	43	34	30	503

Precipitation				Station:15772				Stenselse							
Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
1931	48	12	10	25	68	80	104	124	33	38	23	22	587		
1932	31	12	19	21	23	62	91	150	74	24	13	13	433		
1933	19	27	25	8	7	13	95	94	23	31	29	7	338		
1934	19	32	24	34	13	36	72	79	55	82	31	49	566		
1935	31	41	5	45	29	85	78	39	51	58	56	54	572		
1936	44	11	35	39	6	68	82	101	3	11	19	33	452		
1937	14	30	31	15	51	59	80	28	129	11	37	34	519		
1938	34	15	42	10	88	90	96	36	19	72	50	18	570		
1939	40	32	8	23	26	50	127	22	49	8	45	14	444		
1940	17	15	22	10	34	14	40	88	107	38	48	26	459		
1941	5	24	36	9	0	39	56	114	70	18	22	43	436		
1942	9	14	6	9	35	71	61	31	49	118	19	29	451		
1943	37	14	28	29	13	51	54	32	63	44	32	22	419		
1944	20	6	51	6	17	77	45	99	64	22	55	72	534		
1945	25	27	12	53	67	69	52	71	11	62	26	34	509		
1946	33	44	17	30	23	79	40	53	78	18	43	29	487		
1947	17	7	10	22	16	68	89	11	110	46	37	67	500		
1948	66	12	23	19	62	45	54	59	29	58	22	27	476		
1949	54	22	19	32	77	66	18	85	19	43	69	56	560		
1950	39	20	29	72	40	42	107	25	47	34	57	50	562		
1951	18	48	7	37	6	59	108	87	33	3	78	54	538		
1952	24	43	19	32	21	90	71	85	46	16	42	28	517		
1953	20	42	42	59	56	50	110	85	35	28	20	49	557		
1954	16	12	21	16	14	78	130	144	43	29	23	45	571		
1955	30	33	10	12	33	47	43	22	59	20	55	59	423		
1956	31	22	2	22	12	48	145	72	12	43	20	22	451		
1957	30	24	29	7	47	34	141	71	48	28	26	34	519		
1958	28	10	13	15	42	23	57	61	13	52	24	46	384		
1959	58	12	14	22	27	39	43	37	15	29	66	36	398		
1960	30	23	19	20	33	75	104	103	32	13	66	44	562		
ave	30	23	21	25	33	57	80	67	47	37	38	36	493		

Anno	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
1961	21	26	16	6	51	96	127	116	31	50	33	30	603		
1962	44	22	10	3	16	50	92	75	74	17	32	15	424		
1963	11	6	7	27	33	43	76	41	61	32	63	29	424		
1964	12	32	21	34	28	78	32	159	41	30	40	42	555		
1965	64	17	47	25	36	38	89	44	38	29	23	40	490		
1966	26	39	56	30	44	50	146	31	61	43	32	99	657		
1967	34	42	42	8	37	48	50	83	64	87	31	40	606		
1968	34	12	27	46	38	39	10	48	62	24	34	38	414		
1969	40	30	16	41	38	21	45	37	37	41	57	15	484		
1970	15	30	37	50	20	29	146	42	37	65	57	15	543		
1971	44	40	34	33	27	75	80	28	40	50	45	40	536		
1972	9	22	14	35	23	91	50	38	77	20	73	35	505		
1973	14	31	21	46	38	38	187	61	42	23	26	38	505		
1974	41	48	25	10	10	43	138	61	42	23	26	38	505		
1975	38	17	5	29	45	36	33	32	95	21	22	48	441		
1976	41	28	11	7	21	31	96	7	44	24	40	29	379		
1977	20	11	29	49	24	35	108	36	22	26	29	29	400		
1978	37	18	27	25	24	102	66	108	27	26	29	29	400		
1979	32	18	23	25	25	102	66	108	27	26	29	29	400		
1980	6	16	41	12	36	77	39	90	42	49	39	27	494		
1981	38	16	50	9	5	126	137	38	27	55	54	26	581		
1982	16	16	31	11	65	19	39	67	63	39	50	38	444		
1983	35	8	21	37	28	57	32	33	128	76	33	38	555		
1984	33	20	24	15	19	61	53	77	168	123	55	38	555		
1985	14	17	36	3	48	86	85	164	107	33	47	39	609		
1986	38	3	28	22	64	5	67	45	50	57	51	67	497		
1987	26	23	35	4	47	86	126	59	56	34	47	30	573		
1988	57	76	35	13	41	15	172	112	29	27	3	37	617		
ave	32	24	27	25	36	55	89	64	57	42	41	37	529		

Statistics for the whole period.				Station:15772				Stenselse							
num	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year		
ave	129	129	129	129	129	129	129	129	129	129	129	129	129		
std	28	21	22	23	34	52	76	73	51	41	35	15	48		
min	16	13	14	14	20	27	42	41	30	26	18	3	28		
max	86	76	56	72	88	151	261	211	158	142	91	99	747		

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|-------|--|-------|--|
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Local scale plume model for nitrogen oxides.
Model description.
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Graddagsstatistik för Sverige
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Luftföroreningsepisoden över södra Sverige 2 - 4 februari
1987
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Statistisk analys av nederbördsdata. Del III. 200-åriga
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