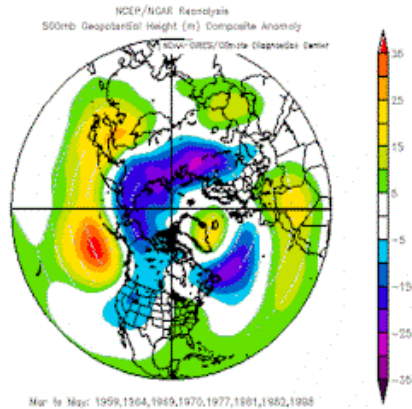


# *The Pennsylvania Observer*

## The Pennsylvania State Climatologist



### **December Climate Highlight:**

The first climate highlight compares the divisional snowfall totals that followed when Pennsylvania Climate Division 8 was drier than normal during September-October, Pennsylvania Climate Division 1 was wetter than average during the same months, and the statewide August through October temperatures were below normal.

The second climate highlight shows the expected temperature and precipitation anomalies for this coming winter (December to February) by using the analog years in which the following criteria was met: a wet September through October in Nebraska and/or Kansas; a dry August through October in Kentucky and/or Ohio, plus cooler than average temperatures from July through September in Kansas and/or Texas.

## Divisional Snowfall Totals

Analog Years: 1963, 1965, 1974, 1979, 1985, 2004

**1963:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nov	1.4	0.6	0.0	2.9	1.1	3.1	1.4	1.7	3.0	7.0
Dec	16.2	10.8	10.8	15.1	12.3	13.9	20.0	19.1	18.1	37.9
Jan	25.8	15.1	11.9	7.2	23.1	28.5	24.2	23.2	22.0	25.4
Feb	25.5	17.6	18.6	13.5	18.7	20.0	20.1	30.8	16.6	20.7
Mar	8.9	6.2	7.7	5.4	2.3	4.5	2.8	6.8	6.8	6.5
April	0.3	0.0	0.2	0.0	0.0	0.6	0.6	1.7	0.9	1.9
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>78.1</b>	<b>50.3</b>	<b>49.2</b>	<b>44.1</b>	<b>57.5</b>	<b>70.6</b>	<b>69.1</b>	<b>83.3</b>	<b>67.4</b>	<b>99.4</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 1: The seasonal divisional snowfall amounts as compared to the norm.

**1965:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.4
Nov	0.0	0.0	0.0	0.0	0.0	1.4	0.1	1.5	1.0	5.8
Dec	4.3	1.8	1.7	1.0	0.6	1.3	3.6	1.4	1.5	5.6
Jan	22.2	21.3	22.3	12.0	9.3	16.5	23.7	30.0	21.3	30.8
Feb	17.5	13.8	12.2	1.0	1.2	2.0	9.7	16.0	12.0	8.5
Mar	2.7	0.4	0.0	15.0	7.1	9.0	3.8	4.1	4.7	11.4
April	0.7	0.0	0.0	0.0	1.6	11.2	2.5	4.5	2.4	4.2
May	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.4	1.4
<b>Seasonal Total:</b>	<b>47.5</b>	<b>37.3</b>	<b>36.2</b>	<b>29.0</b>	<b>19.8</b>	<b>42.3</b>	<b>44.0</b>	<b>57.5</b>	<b>43.3</b>	<b>68.1</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 2: The seasonal divisional snowfall amounts as compared to the norm.

**1974:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.8
Nov	3.1	0.1	0.0	0.0	0.0	3.8	0.9	1.9	1.8	3.9
Dec	6.1	2.7	7.5	12.4	2.0	9.7	13.8	28.0	13.9	16.6
Jan	15.0	11.9	6.6	5.6	10.7	11.3	11.9	20.6	11.7	16.3
Feb	14.0	10.4	9.3	4.6	12.2	11.0	14.7	20.0	11.8	16.5
Mar	4.9	2.8	2.1	0.3	4.2	5.9	7.0	9.0	7.1	15.9
April	1.5	0.0	0.0	0.0	0.0	1.7	0.9	0.9	1.0	6.9
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>44.7</b>	<b>27.9</b>	<b>25.5</b>	<b>22.9</b>	<b>29.1</b>	<b>43.5</b>	<b>49.3</b>	<b>80.6</b>	<b>47.4</b>	<b>76.9</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 3: The seasonal divisional snowfall amounts as compared to the norm.

**1979:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.6
Nov	4.7	3.2	3.2	3.4	3.5	0.8	0.1	1.1	0.9	3.0
Dec	10.2	0.9	0.1	0.3	2.4	6.3	2.6	2.3	2.5	9.2
Jan	1.5	8.1	9.7	10.5	8.1	3.2	3.3	8.7	10.0	9.7
Feb	10.8	19.4	25.8	22.9	17.0	9.5	7.1	7.6	10.3	15.9
Mar	14.4	0.1	0.0	0.0	0.0	11.0	11.0	11.0	9.8	12.2
April	2.0	0.0	0.0	0.0	0.3	2.9	0.2	0.1	0.2	0.3
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>43.6</b>	<b>31.7</b>	<b>38.8</b>	<b>37.1</b>	<b>31.3</b>	<b>33.8</b>	<b>24.3</b>	<b>30.8</b>	<b>33.8</b>	<b>50.9</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 4: The seasonal divisional snowfall amounts as compared to the norm.

**1985:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nov	2.4	0.0	0.1	0.0	0.0	3.9	0.0	0.1	0.0	0.4
Dec	14.7	2.7	3.0	4.7	4.3	13.1	12.0	13.9	12.2	35.4
Jan	12.9	5.7	4.3	4.1	7.0	19.6	9.4	17.6	13.1	17.7
Feb	11.6	16.5	15.3	20.2	13.9	22.5	18.7	18.2	14.0	15.2
Mar	2.1	0.0	0.1	0.3	0.3	4.0	1.4	3.6	3.0	7.3
April	8.3	1.1	0.9	0.0	0.0	7.5	0.2	5.5	2.0	4.4
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>52.0</b>	<b>26.0</b>	<b>23.7</b>	<b>29.3</b>	<b>25.5</b>	<b>70.6</b>	<b>41.7</b>	<b>58.9</b>	<b>44.3</b>	<b>80.4</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 5: The seasonal divisional snowfall amounts as compared to the norm.

**2004:**

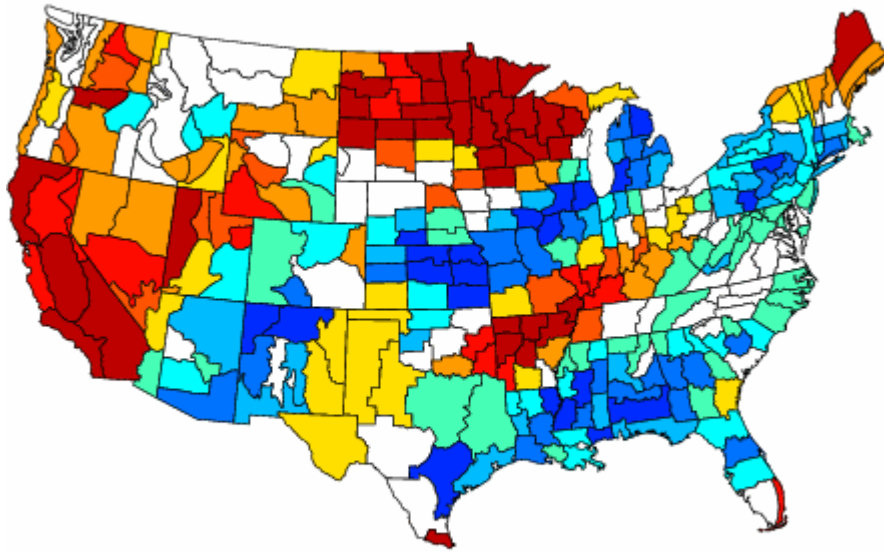
	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nov	0.7	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.1	0.1
Dec	4.9	1.6	0.2	15.4	0.4	4.4	1.8	2.4	6.5	6.5
Jan	27.8	16.2	11.9	17.4	12.3	24.7	17.7	12.3	13.3	13.3
Feb	13.1	17.2	9.6	5.4	11.7	10.9	12.3	8.1	9.0	9.0
Mar	22.0	10.4	6.0	2.6	10.2	22.7	10.3	11.7	16.6	16.6
April	0.0	0.0	0.0	0.0	0.0	1.3	1.9	1.2	3.9	3.9
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>68.5</b>	<b>45.4</b>	<b>27.7</b>	<b>40.8</b>	<b>34.6</b>	<b>65.2</b>	<b>44.0</b>	<b>35.7</b>	<b>49.4</b>	<b>49.4</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 6: The seasonal divisional snowfall amounts as compared to the norm.

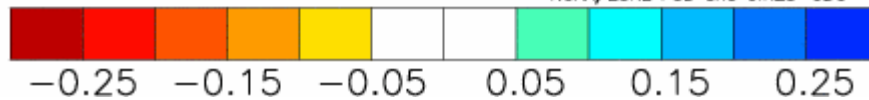
### Composite Standardized Precipitation Anomalies

Jan 1985, 1964, 1974, 1979, 2004, 1963, 1965

Versus 1895–2000 Longterm Average



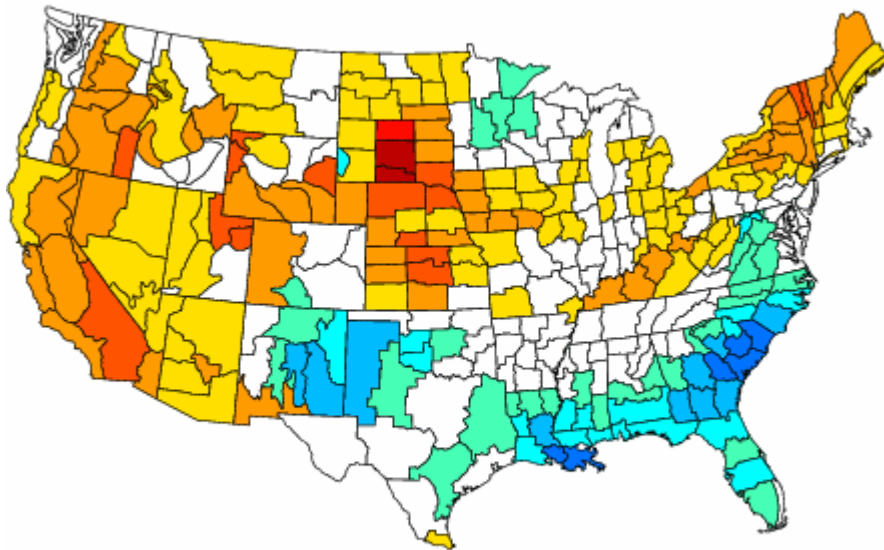
NOAA/ESRL PSD and CIRES-CDC



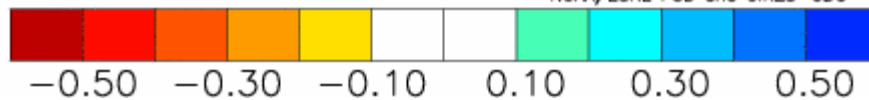
### Composite Standardized Precipitation Anomalies

Feb 1985, 1964, 1974, 1979, 2004, 1963, 1965

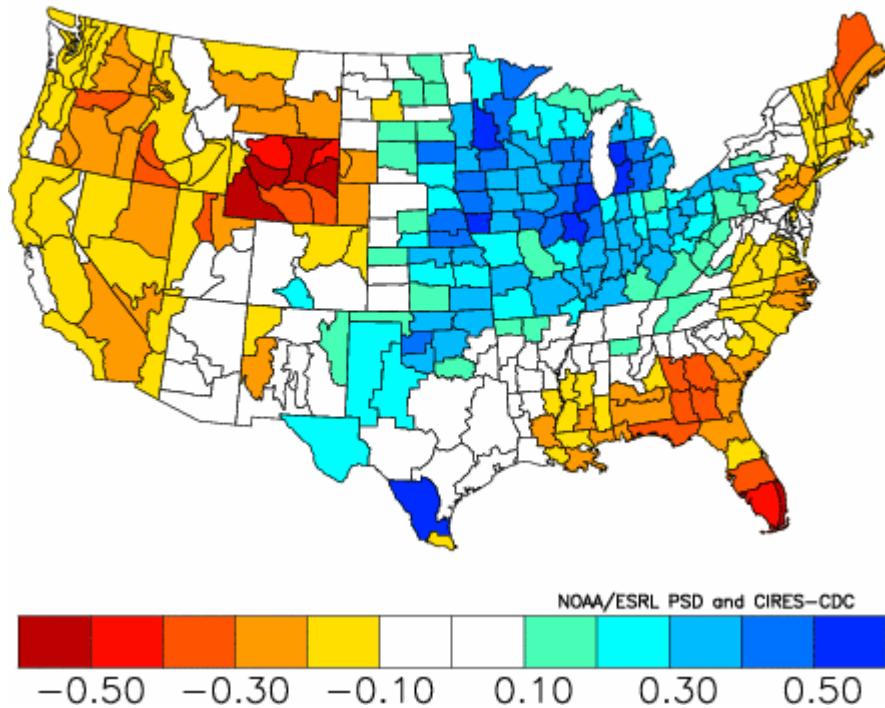
Versus 1895–2000 Longterm Average



NOAA/ESRL PSD and CIRES-CDC



Composite Standardized Precipitation Anomalies  
Mar 1985,1964,1974,1979,2004,1963,1965  
Versus 1895–2000 Longterm Average



For Pennsylvania, this analog forecast suggests a wet, snowy January with conditions drying out in February and lingering into March for the eastern half of the state. The tables above also suggest that there is a 75% chance that most climate divisions in Pennsylvania will see above average snowfall for this coming winter.

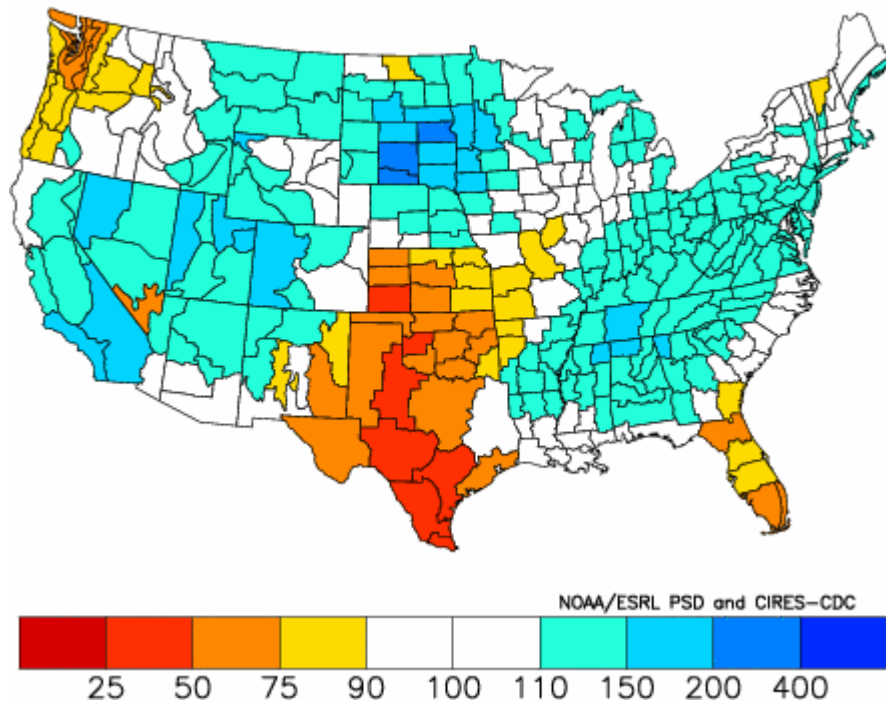
# Temperature and Precipitation Anomalies

Written by: Joshua Boden

In order to best describe the commonality of the scenarios, “Percent of Normal” for precipitation and “Average Anomaly” for temperature were graphed. Analog years: 1951-1952 and 1961-1962 were found to match all three of the criteria. However, because two years would not pose such a great forecast, analog years were chosen in which two of the three criteria were met. These were also plotted using the same parameters as before. Similar correlations between the 3 year and 2+ year maps were shown, with the southeast and southern plains forecasted to have a warm winter and areas of the north plains and northeastern Rockies to see cooler than average temperatures. Almost the entire northern half of the country are likely to see some above average precipitation, while the south central United States may be drier than normal.

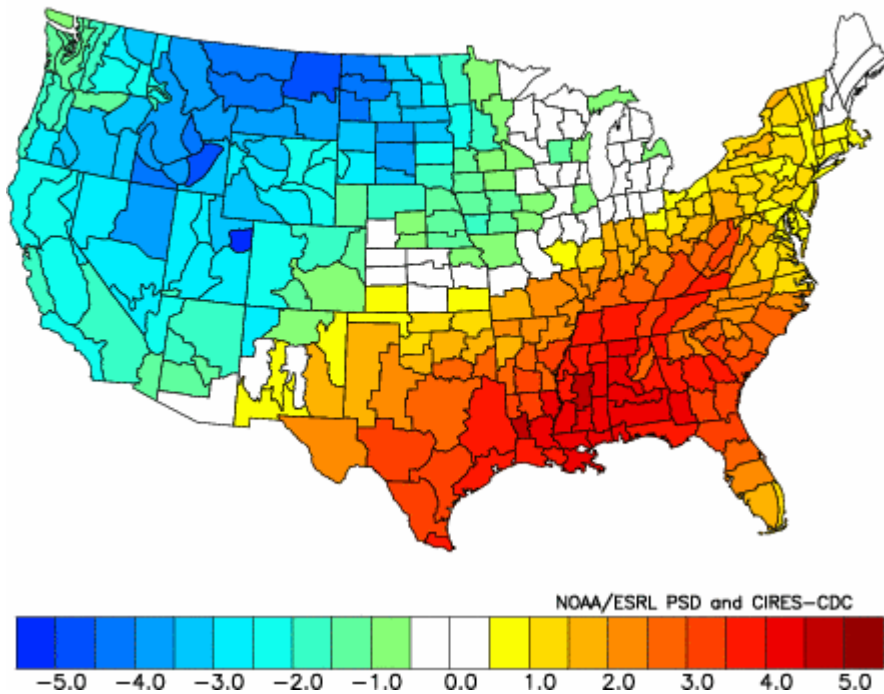
## All 3 years satisfy criteria

Composite Percent of Normal Precipitation 1950–2007  
Dec to Feb 1951–52, 1961–62



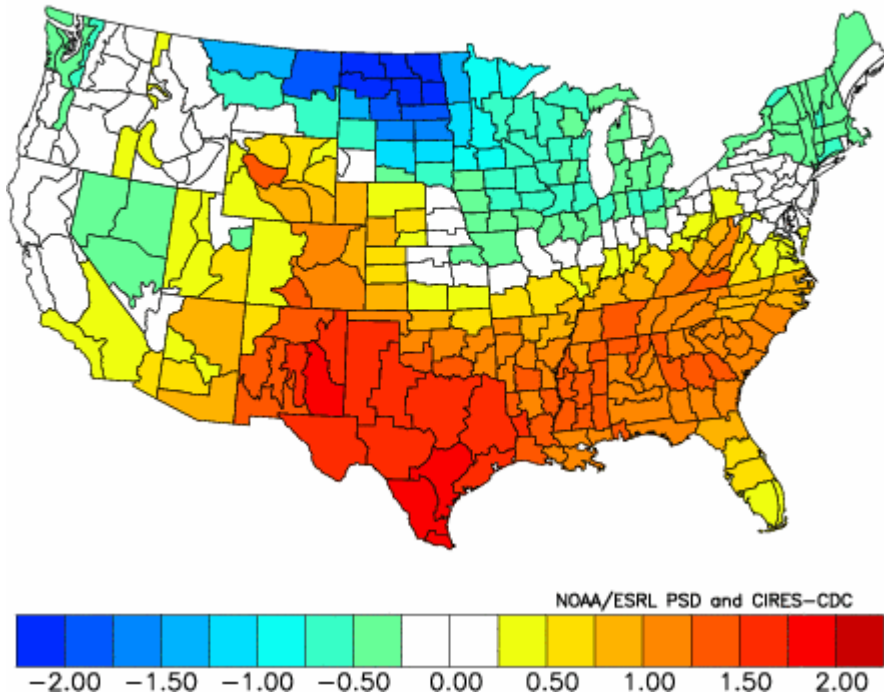
### All 3 years satisfy criteria

Composite Temperature Anomalies (F)  
Dec to Feb 1951-52, 1961-62  
Versus 1950-1995 Longterm Average



### Years which 2 or more criteria were satisfied

Composite Temperature Anomalies (F)  
Versus 1895-2000 Longterm Average  
Dec to Feb 1998-99, 1973-74, 1961-62, 1951-52, 1942-43, 1927-28, 1908-09, 1906-07,  
1903-04, 1902-03, 1901-02,



## Years which 2 or more criteria were satisfied

Composite Percent of Normal Precipitation 1895–2000  
Dec to Feb 1998–99, 1973–74, 1961–62, 1951–52, 1942–43, 1927–28, 1908–09, 1906–07  
1903–04, 1902–03, 1901–02

