

THE AUSTRALIAN BASELINE SEA LEVEL MONITORING PROJECT

MONTHLY DATA REPORT

MARCH 2000



NOTES ON THE DATA FOR MARCH 2000

Sea level data return this month was excellent for most stations, the exceptions being Groote Eylandt, Esperance and Rosslyn Bay (Figures 1 and 15). Groote Eylandt suffered from power supply problems while data return from Esperance and Rosslyn Bay was affected by harbour works.

Looking at the sea level anomalies this month (Figure 10), all mainland stations counter clockwise from Darwin through to Spring Bay, exhibited positive sea level anomalies. Cape Ferguson also showed a positive sea level anomaly while the Cocos Islands, Groote Eylandt, Rosslyn Bay and Port Kembla exhibited negative anomalies.

With regard to the water and air temperature anomalies in Figures 12 and 13 respectively, it must be noted that there are large gaps in the data for several stations where the data collected was erroneous. Please note that for several stations there were no backup water temperature sensors in operation, so the quality of this data is unknown. Similarly, air temperatures are compared to the temperature recorded by a sensor located in the upper levels of the environmental housing of the tide gauge. These will not exactly agree, as in locations where the housing is in the sun, the housing temperature will be higher than the actual air temperature. Where the housing is in the shade, it will be lower than the actual air temperature. The temperature fluctuations inside the housing will also be less pronounced compared to the actual temperature fluctuations. This is due to the smaller amount of ventilation within the environmental housing. So although this can be used as a rough gauge in determining the quality of air temperature data, it is not an exact measure.

It is difficult to relate the water and air temperature anomalies directly to those of barometric pressure and sea level without considering other effects, such as localised currents, wind speeds and directions. However, the anomalies are very useful in monitoring the water and air temperatures at the Baseline stations with regard to quality control.

Again, we can compare the long-term ranges for March of barometric pressure, air and water temperature at each station, with the ranges recorded this month (Figure 16). Please remember that the long-term ranges are calculated using the historical sets of March data for each station **excluding** the current month of data.

The mean barometric pressure recorded for March was quite consistent with the long-term March means for the Baseline stations. Record low barometric pressures were recorded at Broome and Hillarys (Figure 16). A record low pressure recorded at Groote Eylandt may be due to the barometer malfunctioning, as there appears to be a correlation between the pressure recorded and the battery voltage.

A similar comparison was made between the long-term spread of March air temperature data and that which occurred this month. There are no significant differences between the long-term March mean and the March 2000 mean at each station. Figure 16 indicates record high air temperatures were recorded at Hillarys, Thevenard, Portland and Spring Bay this month.

The water temperature mean values occurring this month were quite close to the long-term March means for most locations (Figure 16). Record high water temperatures were recorded at Thevenard, Portland and Spring Bay.

The month of commencement of operation of each gauge is listed in Table 1. Also shown is the short-term sea level trend for the entire record and the change from the previous month's analysis. Figure 14 shows the short-term sea level trends for each station.

Table 1: Installation dates and short-term sea level trends for the Baseline array.

Station	Installation Date	Sea Level Trend (mm/yr)	Change in Trend (mm/yr)
Cocos Islands	Sep 1992	+8.3	-1.3
Groote Eylandt	Sep 1993	+32.7	+0.7
Darwin	May 1990	+17.7	+0.6
Broome	Nov 1991	+25.7	+0.8
Hillarys	Nov 1991	+22.7	+0.4
Esperance	Mar 1992	+15.7	+0.3
Thevenard	Mar 1992	+7.3	+0.8
Port Stanvac	Jun 1992	+5.9	+0.6
Portland	Jul 1991	+2.7	+0.4
Lorne	Jan 1993	+0.5	+0.3
Stony Point	Jan 1993	+1.2	+0.2
Burnie	Sep 1992	+3.2	+0.4
Spring Bay	May 1991	+2.2	+0.3
Port Kembla	Jul 1991	+2.5	-0.1
Rosslyn Bay	Jun 1992	+8.9	-0.3
Cape Ferguson	Sep 1991	+10.7	+0.1

The *Monthly Data Report* is prepared by the National Tidal Facility (NTF) for Environment Australia. Staff members of the NTF produce the text, plots and tables.

Further information on the *Monthly Data Report* and other projects conducted by the NTF can be obtained by contacting the NTF at the following address.

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Individuals and organisations are advised that quality controlled six-minute or hourly data from these stations are available on request from the National Tidal Facility. Some handling fees may be charged. For commercial agencies requesting data, some additional costs may be levied.

Figure 1

MARCH 2000
SIX MINUTE OBSERVATIONS FROM SEAFRAME STATIONS (m)

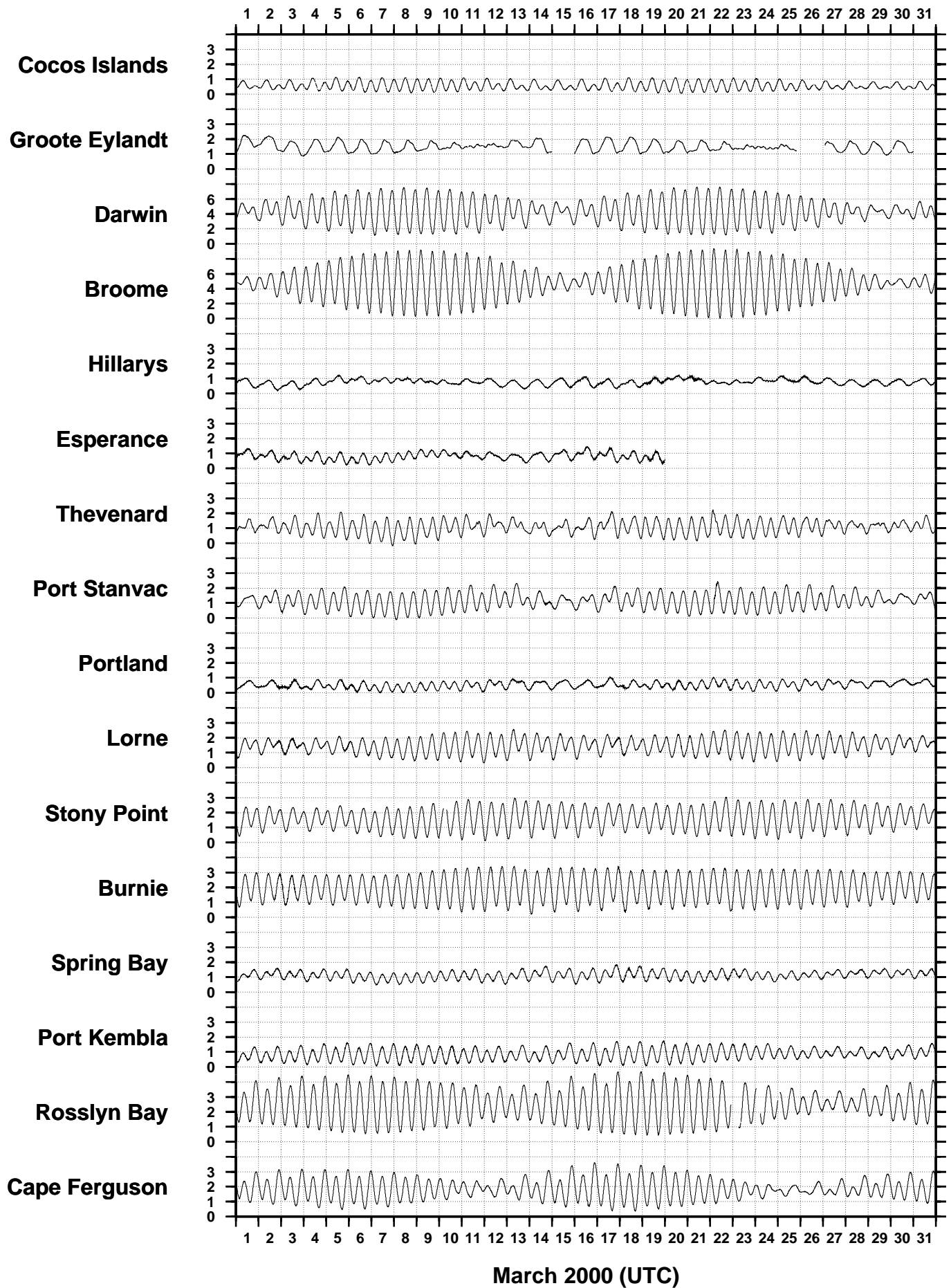


Figure 2

MARCH 2000
RESIDUALS AT SIX MINUTE INTERVALS FROM SEAFRAME STATIONS (m)

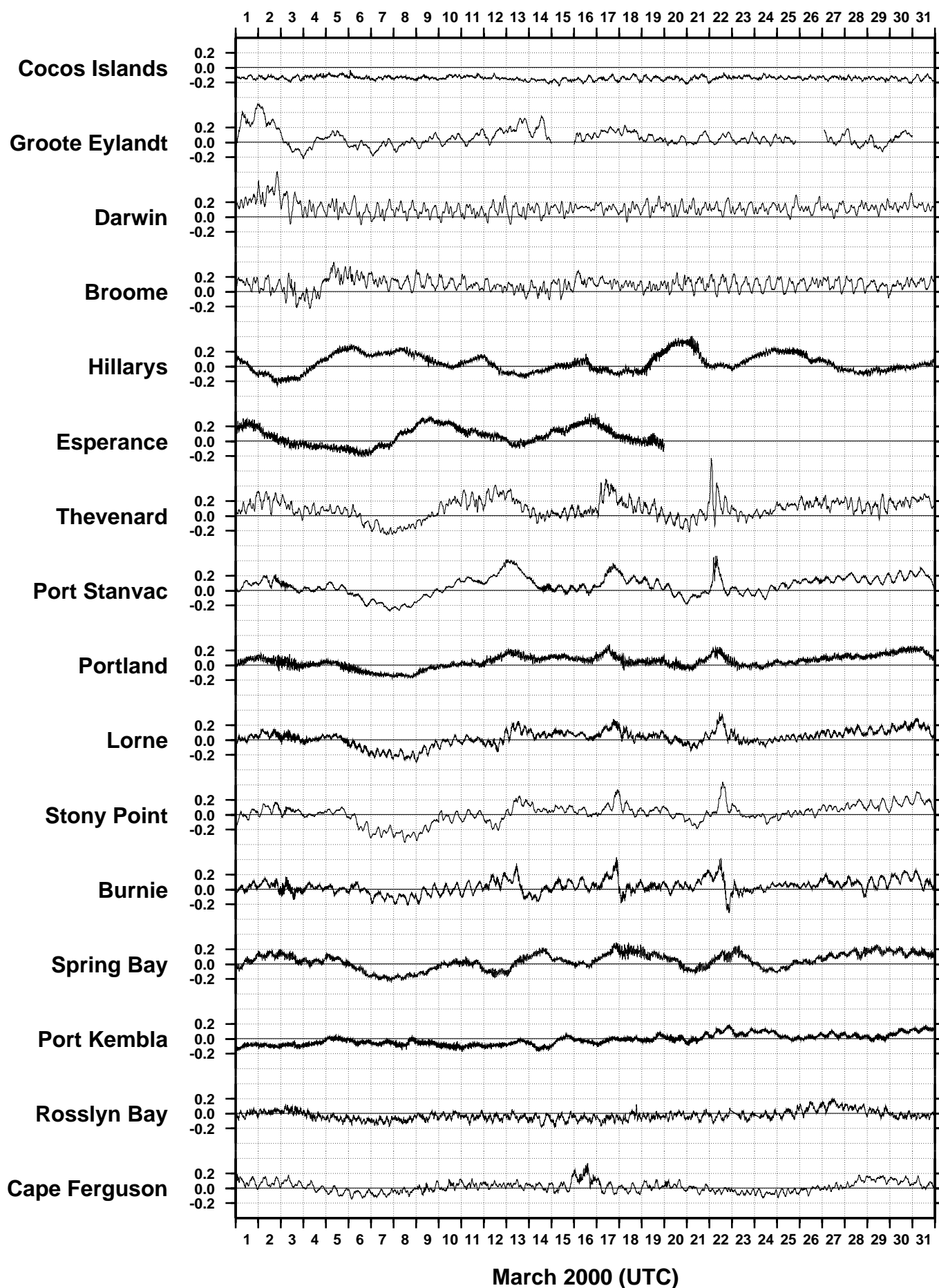


Figure 3

MARCH 2000

RESIDUALS AT SIX MINUTE INTERVALS FROM SEAFRAME STATIONS (m)
ADJUSTED FOR ATMOSPHERIC PRESSURE

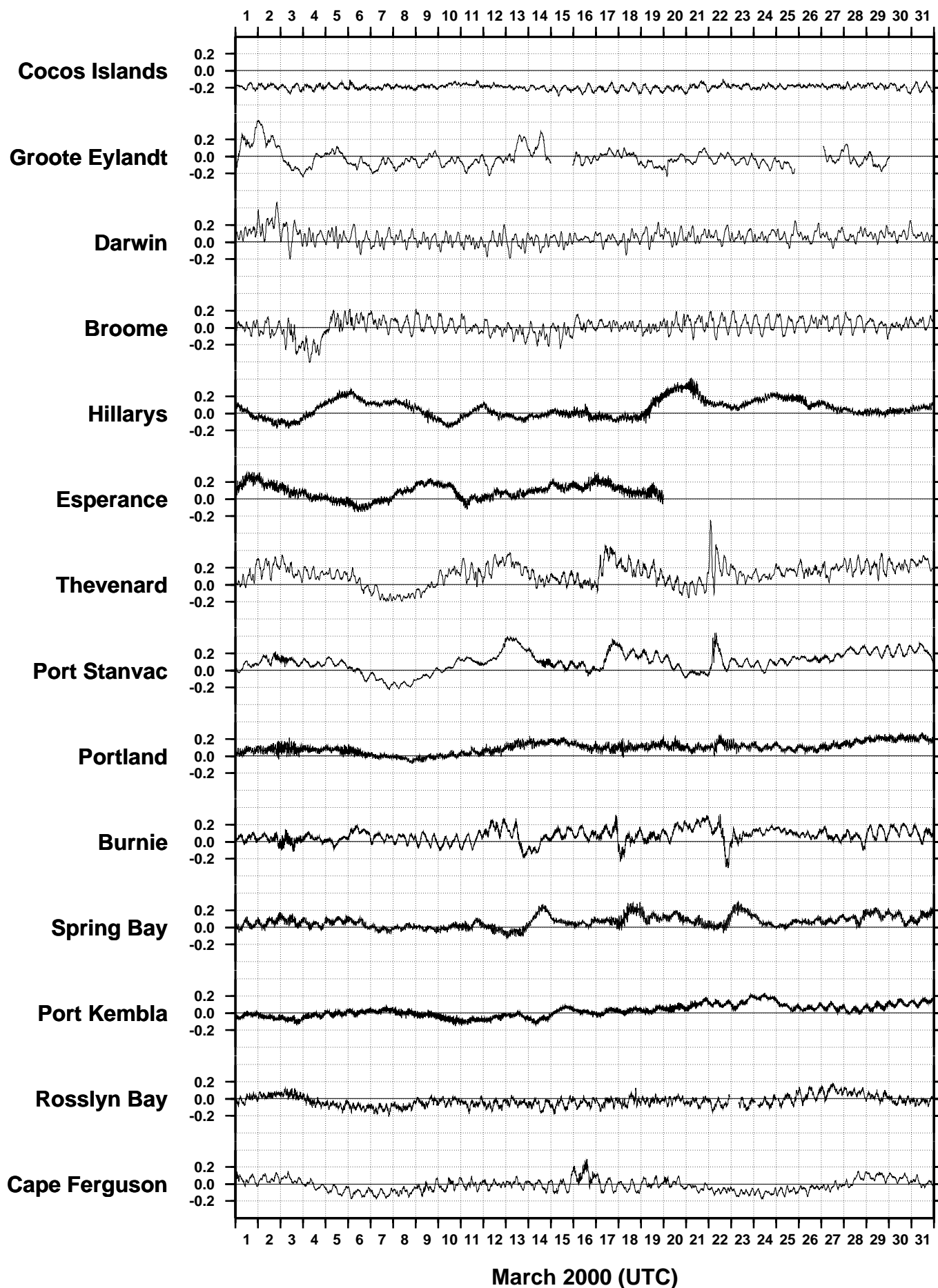
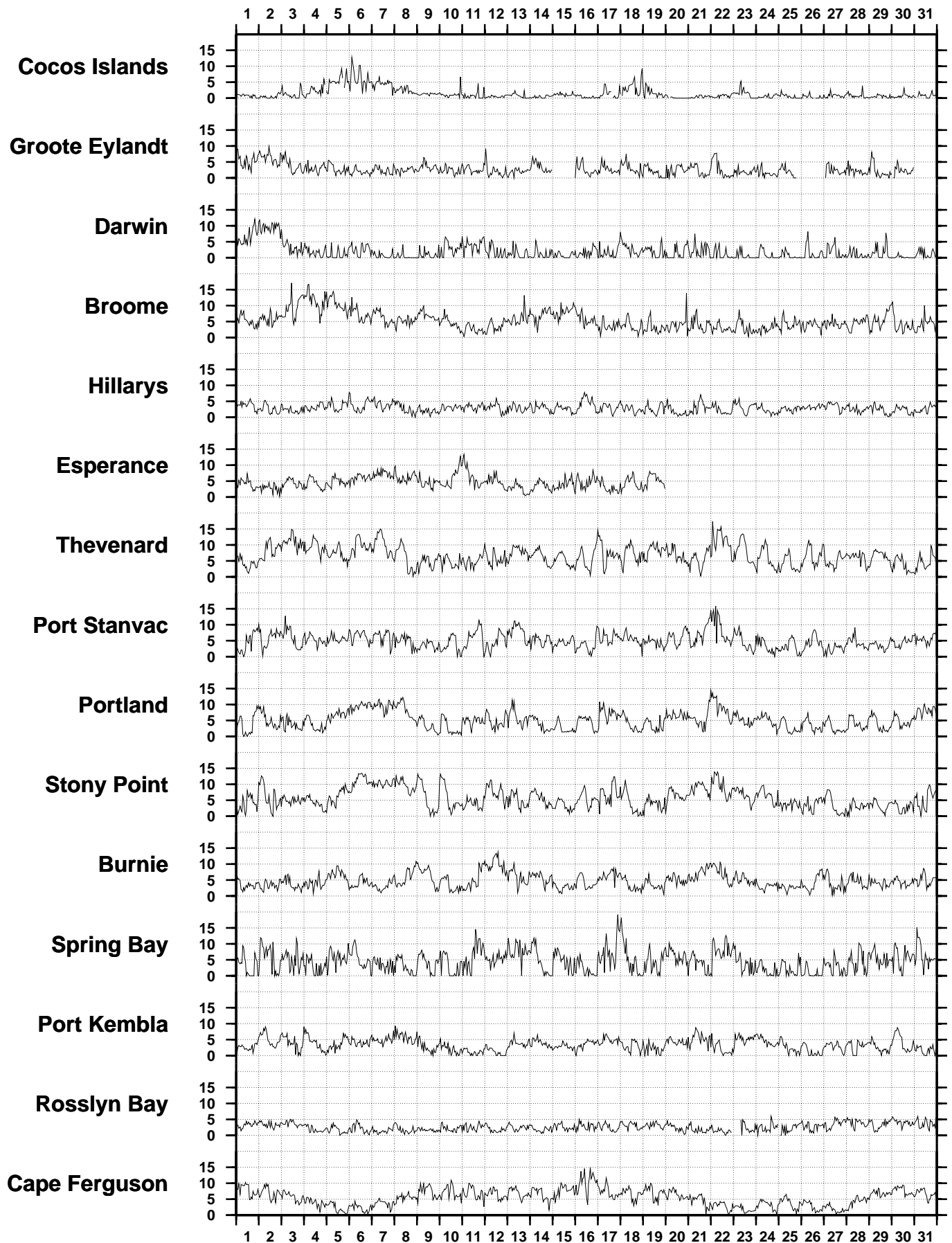


Figure 4

MARCH 2000
HOURLY WIND SPEEDS FROM SEAFRAME STATIONS (m/s)



March 2000 (UTC)

Figure 5

MARCH 2000
HOURLY INCIDENT WINDS FROM SEAFRAME STATIONS (m/s, deg True)

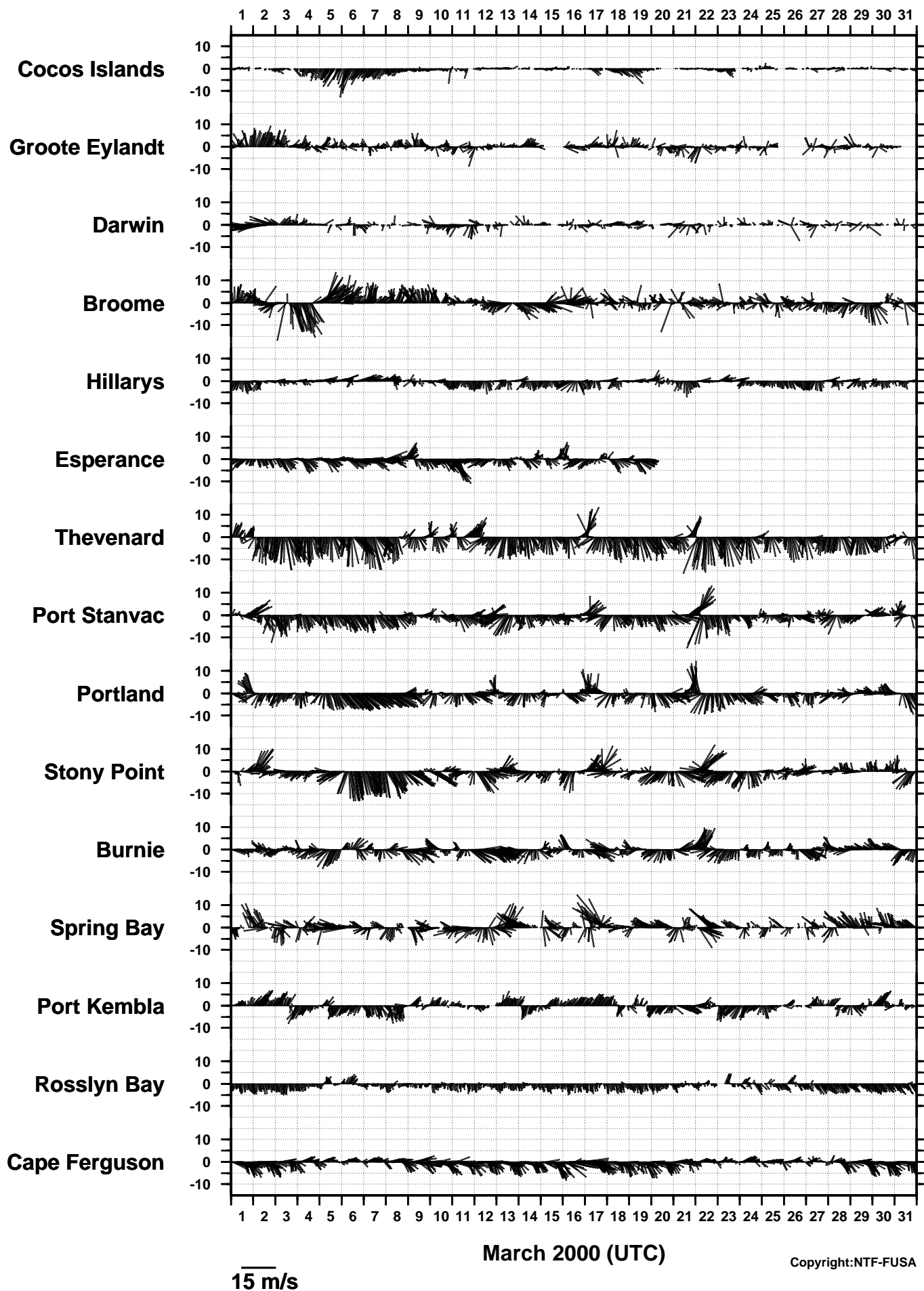
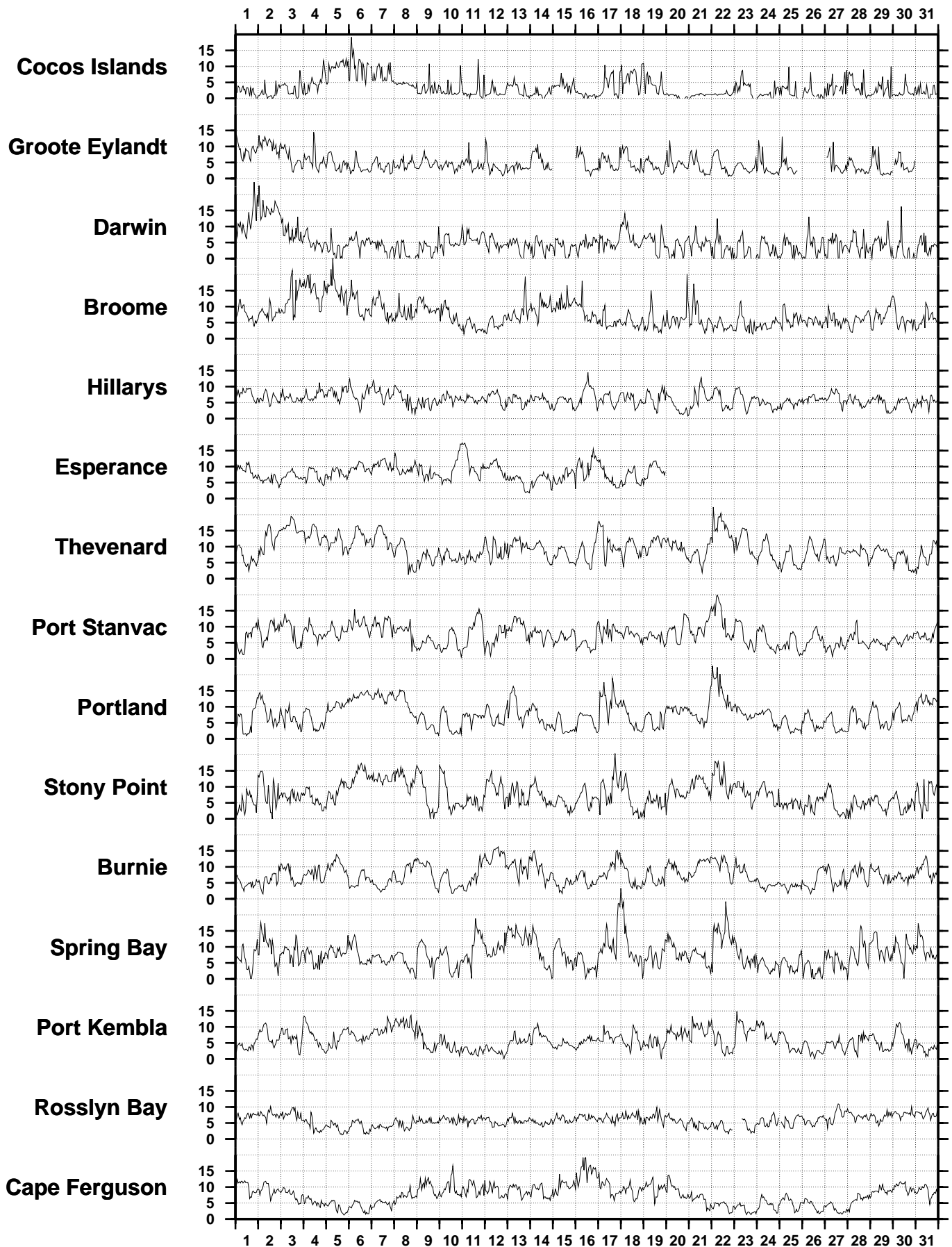


Figure 6

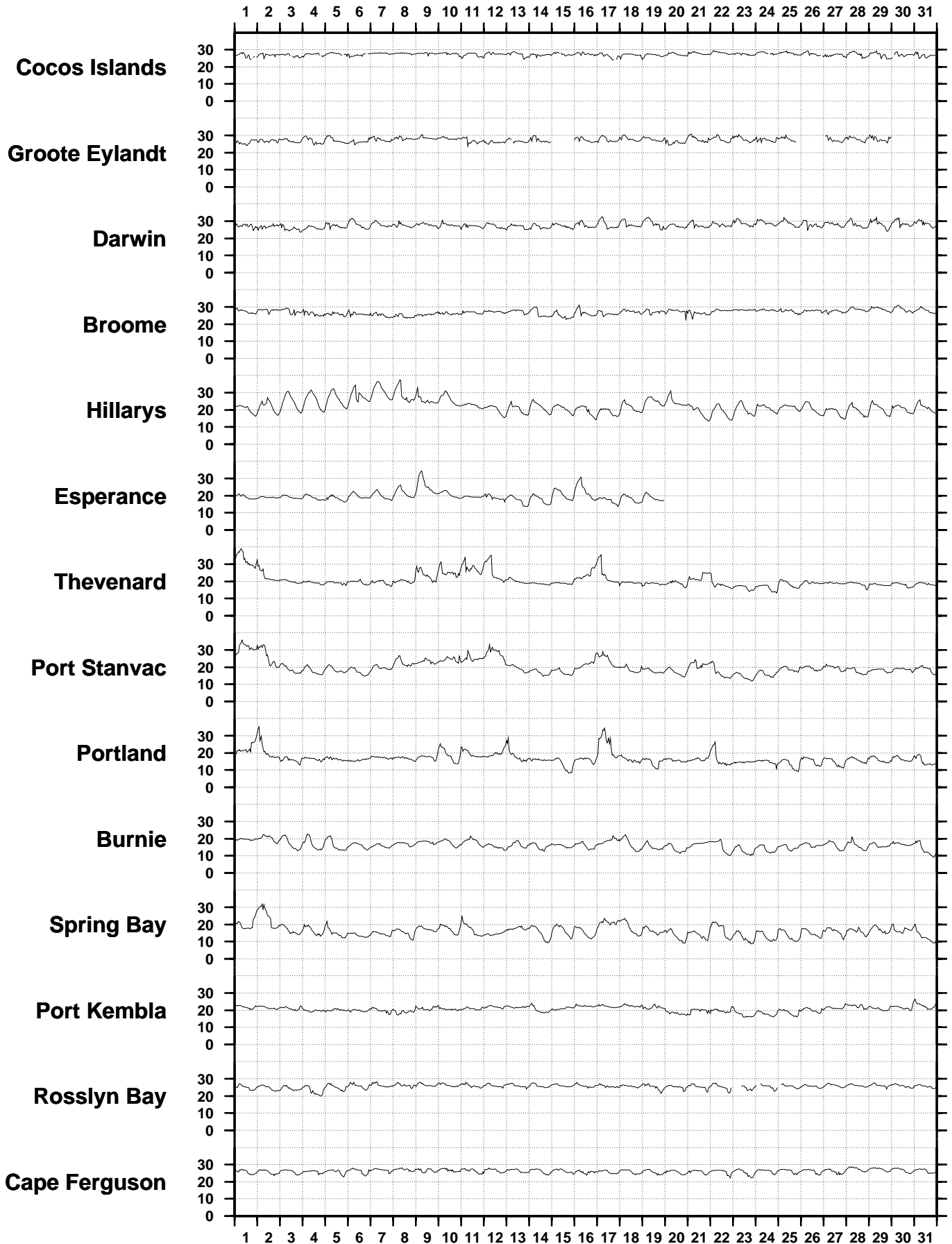
MARCH 2000
HOURLY MAXIMUM WIND GUSTS FROM SEAFRAME STATIONS (m/s)



March 2000 (UTC)

Figure 7

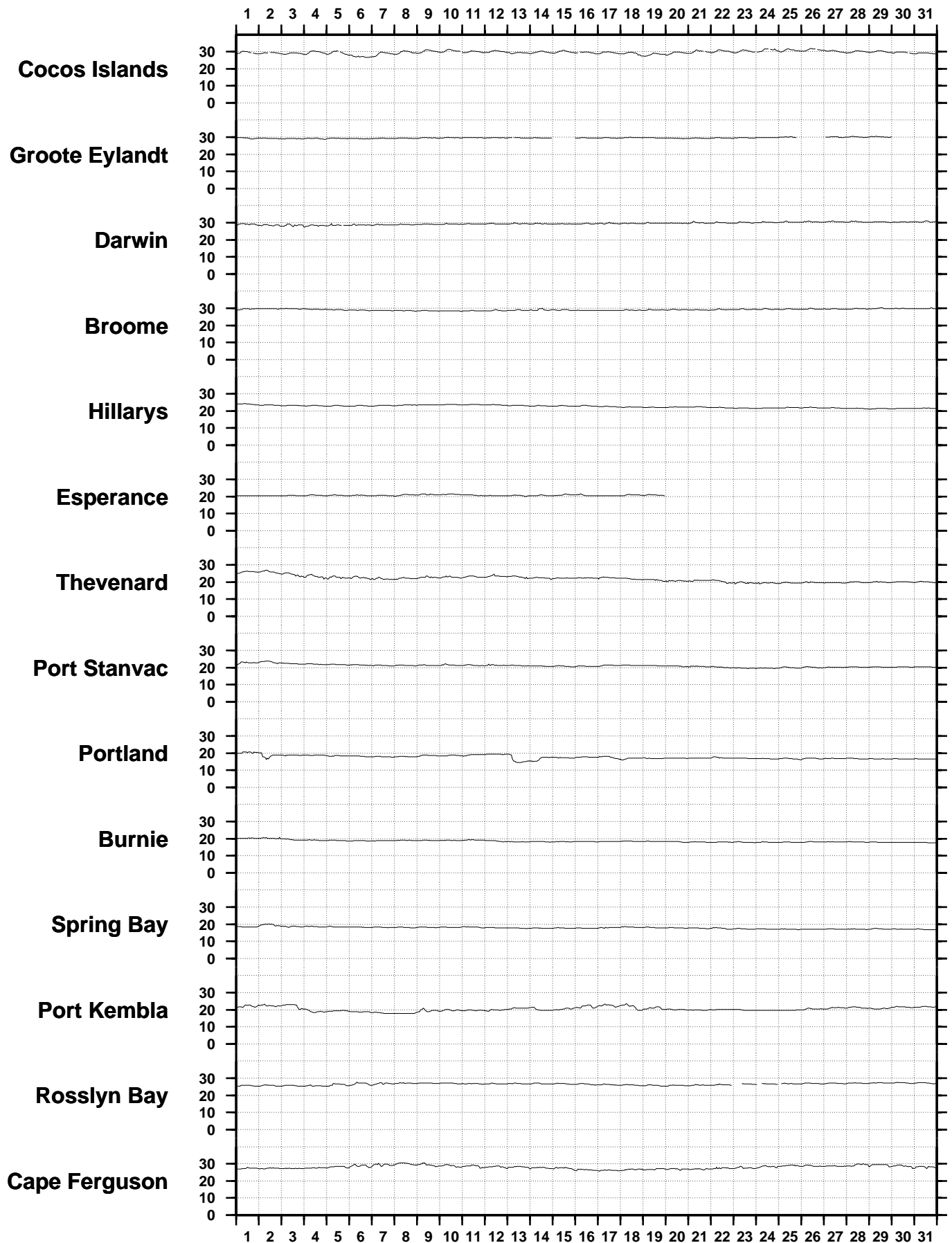
MARCH 2000
HOURLY AIR TEMPERATURES FROM SEAFRAME STATIONS (deg C)



March 2000 (UTC)

Figure 8

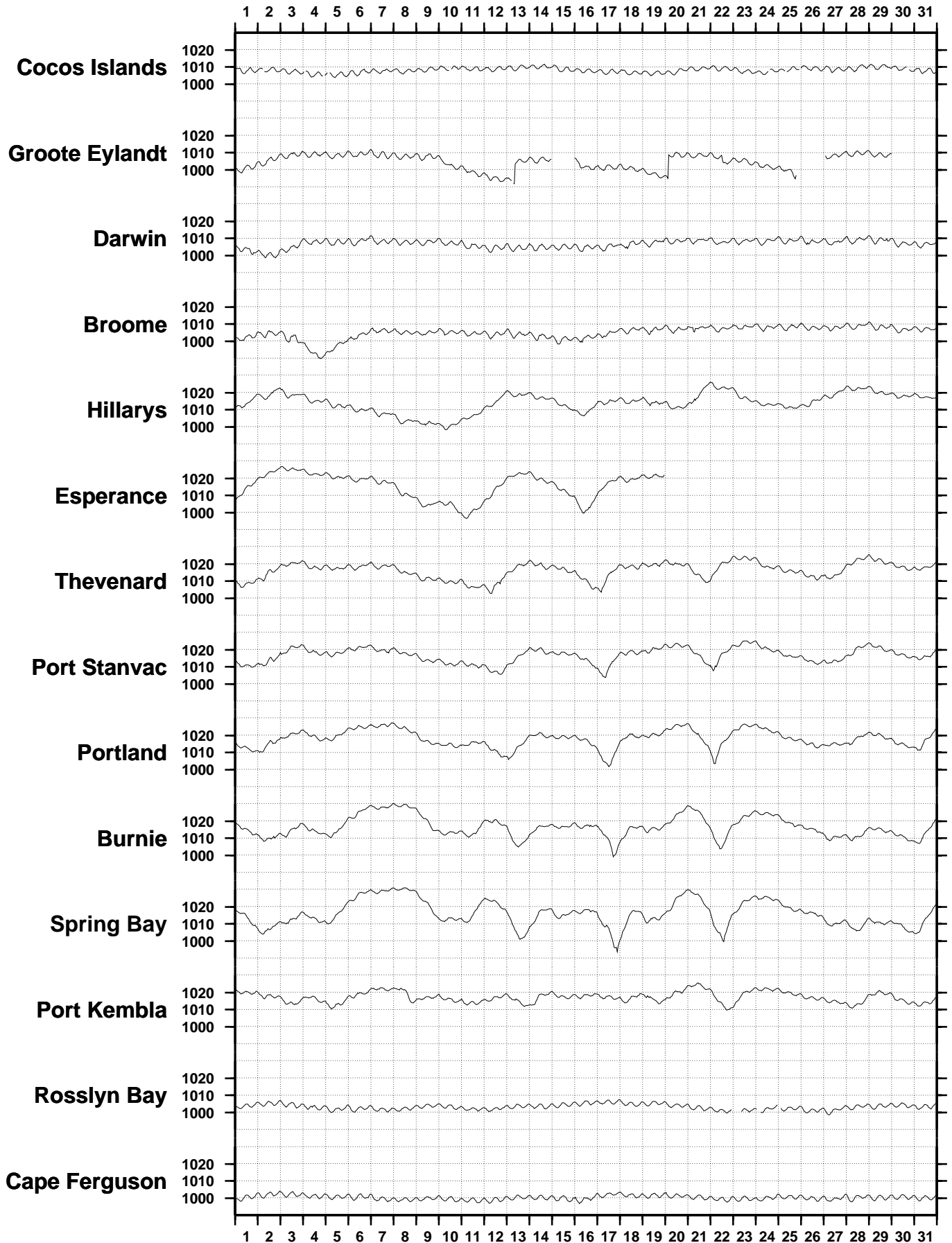
MARCH 2000
HOURLY WATER TEMPERATURES FROM SEAFRAME STATIONS (deg C)



March 2000 (UTC)

Figure 9

MARCH 2000
HOURLY ATMOSPHERIC PRESSURE FROM SEAFRAME STATIONS (hPa)



March 2000 (UTC)

Copyright:NTF-FUSA

Figure 10

SEA LEVEL ANOMALIES THROUGH MARCH 2000 (m)

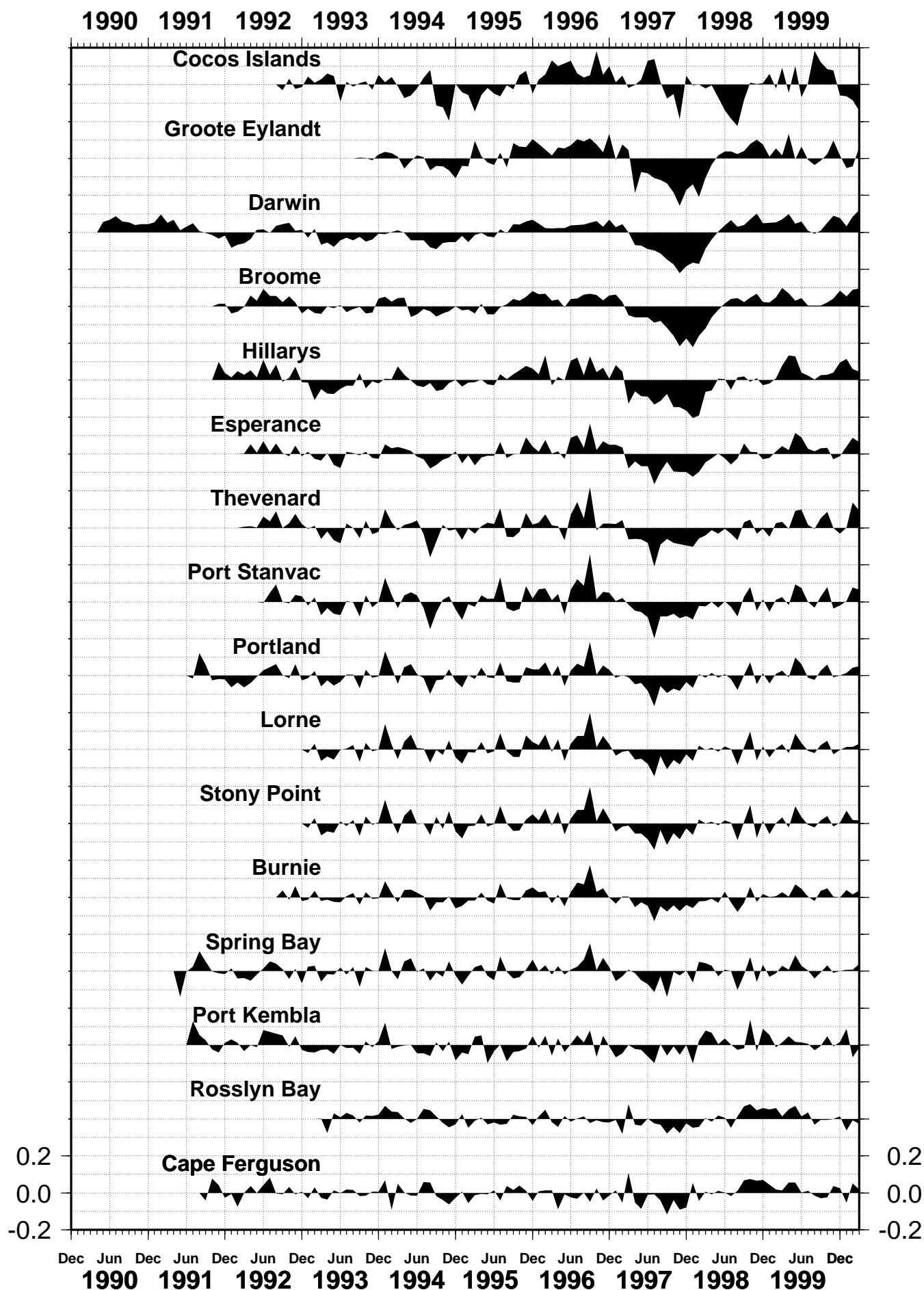
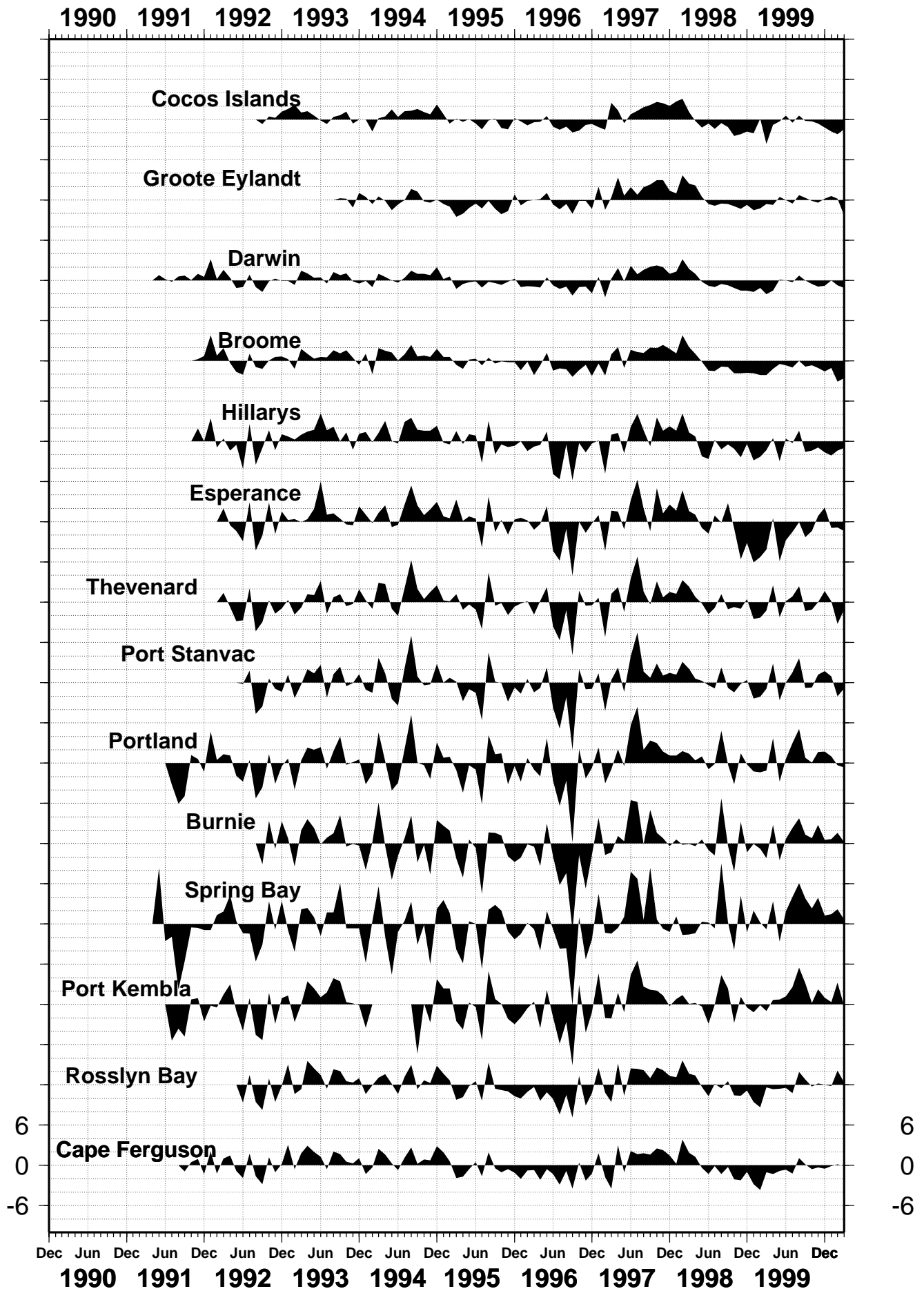
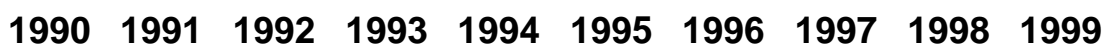


Figure 11

BAROMETRIC PRESSURE ANOMALIES THROUGH MARCH 2000 (hPa)



WATER TEMPERATURE ANOMALIES THROUGH MARCH 2000 (degC)



Groote Eylandt

Darwin

Broome

Hillarys

Esperance

Thevenard

Port Stanvac

Portland

Burnie

Spring Bay

Port Kembla

Rosslyn Bay

Cape Ferguson

2

C

-2

[illegible]

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999

AIR TEMPERATURE ANOMALIES THROUGH MARCH 2000 (degC)



SEA LEVEL TRENDS THROUGH MARCH 2000 (mm/year)

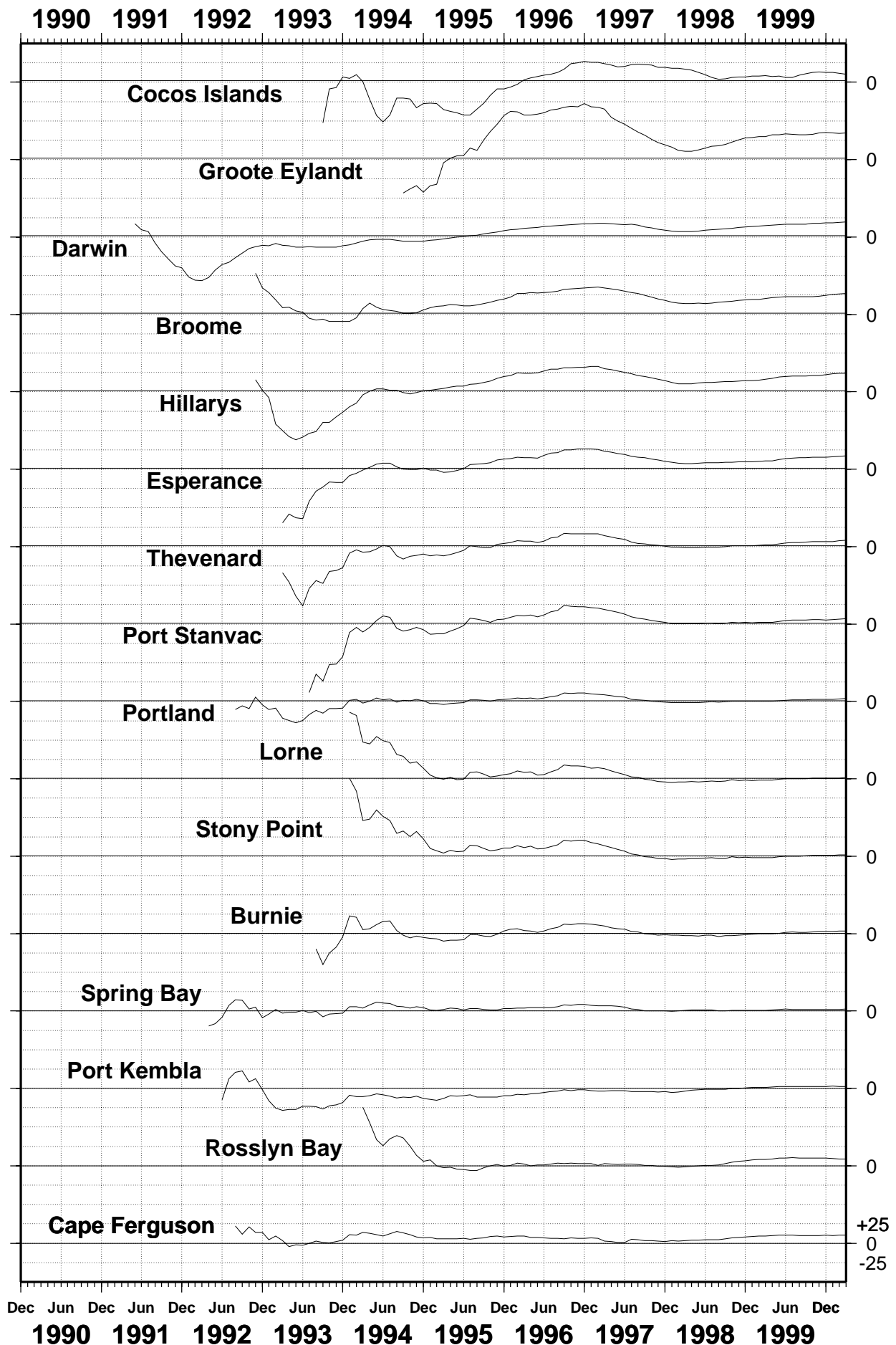


Figure 15
SEA LEVEL DATA RETURN
 THE NUMBER OF DAYS OF MISSING DATA ARE INDICATED
 GAPS INCLUDE TRANSMISSION, POWER AND LOGGER FAILURE
 * Patchy record

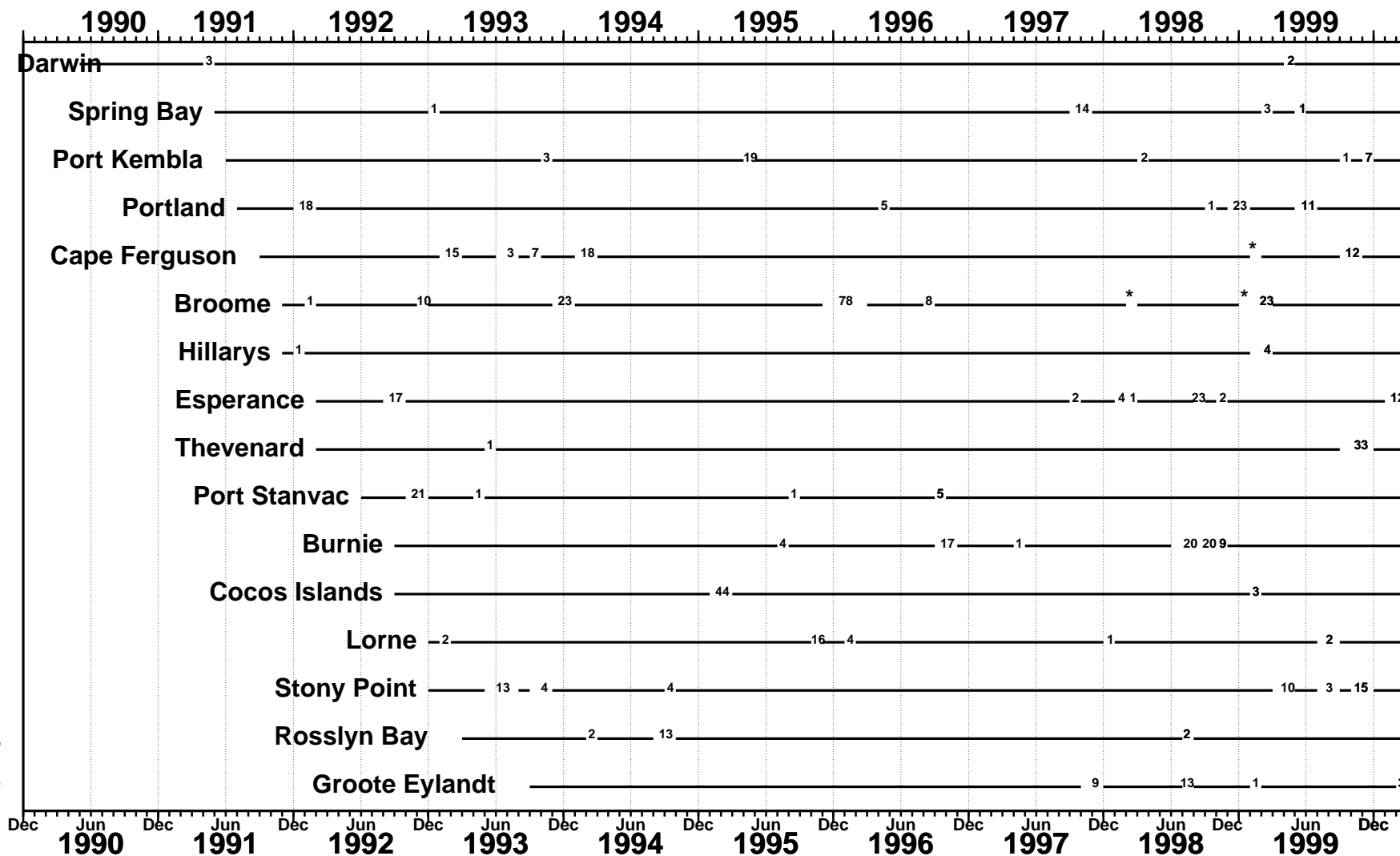
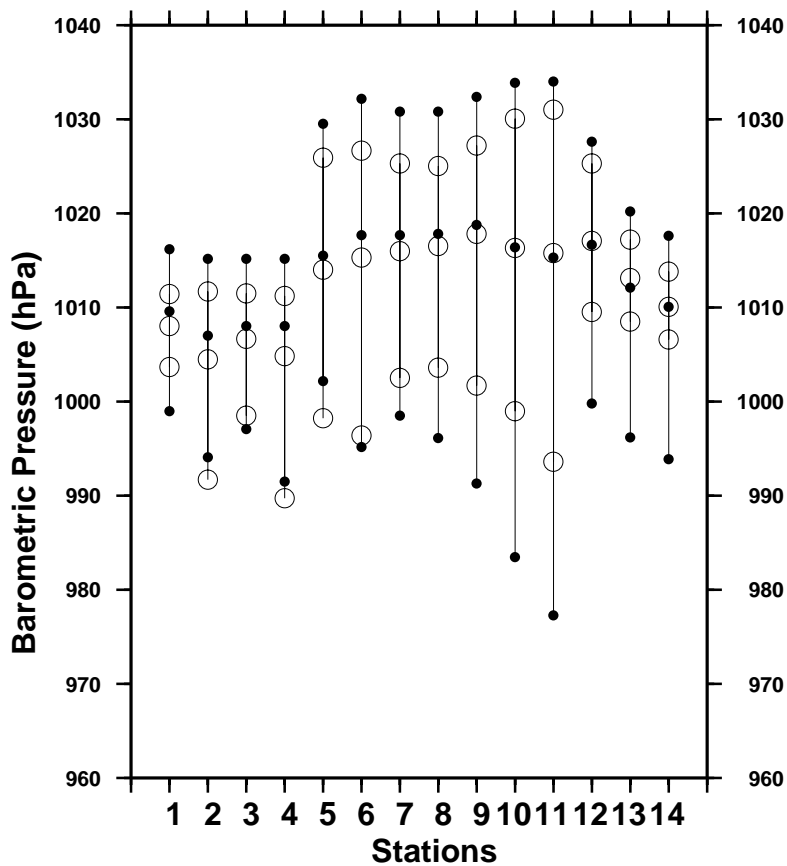
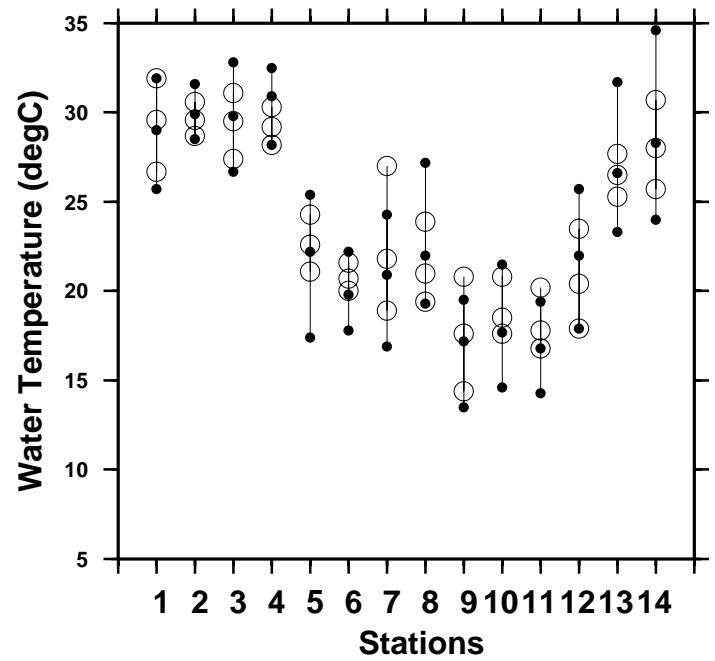
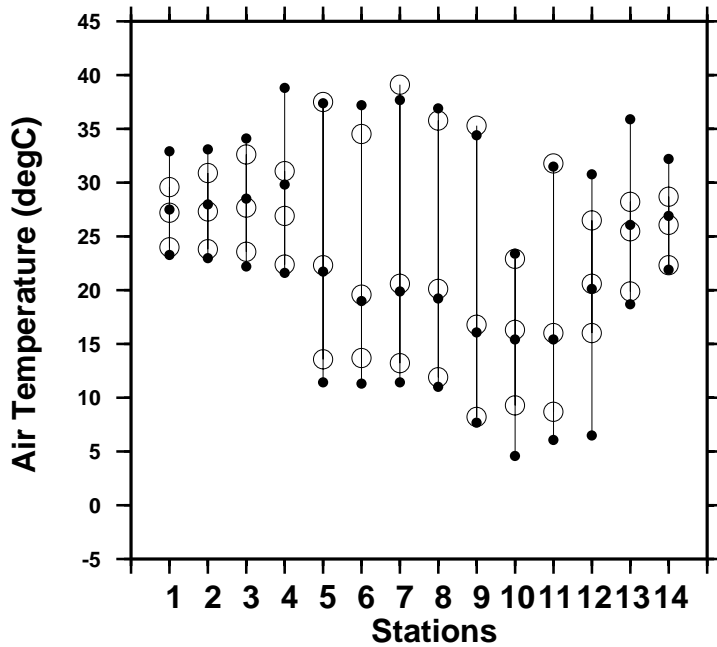


Figure 16

Comparison of March 2000 Max, Min & Mean with Long Term March Values.



Stations

- 1 - Cocos Islands
- 2 - Groote Eylandt
- 3 - Darwin
- 4 - Broome
- 5 - Hillarys
- 6 - Esperance
- 7 - Thevenard
- 8 - Port Stanvac
- 9 - Portland
- 10 - Burnie
- 11 - Spring Bay
- 12 - Port Kembla
- 13 - Rosslyn Bay
- 14 - Cape Ferguson

- March 2000 Maximum
- March 2000 Mean
- March 2000 Minimum
- Long Term March Maximum
- Long Term March Mean
- Long Term March Minimum