

THE AUSTRALIAN BASELINE SEA LEVEL MONITORING PROJECT

MONTHLY DATA REPORT

APRIL 2000



NOTES ON THE DATA FOR APRIL 2000

Sea level data return this month was excellent for most stations, the exceptions being Groote Eylandt and Esperance (Figures 1 and 15). Communication with Rosslyn Bay was restored during April allowing the logged data to be retrieved. Groote Eylandt suffered from power supply problems and the Esperance gauge was disconnected while harbour works were in progress.

Looking at the sea level anomalies this month (Figure 10), all mainland stations, except Esperance and Rosslyn Bay, exhibited positive sea level anomalies. The sea level anomaly at Rosslyn Bay was almost zero while Cocos Islands, the only non-mainland based Baseline gauge, continued to exhibit negative anomalies. The sea level anomalies are greatest in the northern and northwestern regions and decrease in magnitude in a counter clockwise direction, reaching minimums at Lorne and Stony Point. Continuing in a counter clockwise direction from Burnie and along the east coast of Australia the anomalies begin to increase once again.

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 April of barometric pressure, air and water temperatures 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 April data for each station ***excluding*** the current month of data.

The mean barometric pressure recorded for April was quite consistent with the long-term April means for the Baseline stations. A record low barometric pressure was recorded at Broome (Figure 16).

A similar comparison was made between the long-term spread of April air temperature data and that which occurred this month. There are no significant differences between the long-term April mean and the April 2000 mean at each

station. Figure 16 indicates record low air temperatures were recorded at Cocos Islands and Hillarys this month.

The water temperature mean values occurring this month were quite close to the long-term April means for the northern and western locations (Figure 16). From Thevenard to Port Kembla the mean water temperature for April 2000 was significantly higher than the long-term mean, with the minimum temperatures for these southern stations being close to the long-term mean. A record low water temperature was recorded at Rosslyn Bay this month.

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	+7.2	-1.1
Groote Eylandt	Sep 1993	+34.2	+1.5
Darwin	May 1990	+18.3	+0.6
Broome	Nov 1991	+26.6	+0.9
Hillarys	Nov 1991	+23.4	+0.7
Esperance	Mar 1992	+15.7	+0.0
Thevenard	Mar 1992	+8.1	+0.8
Port Stanvac	Jun 1992	+6.5	+0.6
Portland	Jul 1991	+3.0	+0.3
Lorne	Jan 1993	+0.8	+0.3
Stony Point	Jan 1993	+1.4	+0.2
Burnie	Sep 1992	+3.6	+0.5
Spring Bay	May 1991	+2.4	+0.3
Port Kembla	Jul 1991	+2.8	+0.3
Rosslyn Bay	Jun 1992	+9.0	+0.1
Cape Ferguson	Sep 1991	+11.1	+0.4

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 from 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

APRIL 2000
SIX MINUTE OBSERVATIONS FROM SEAFRAME STATIONS (m)

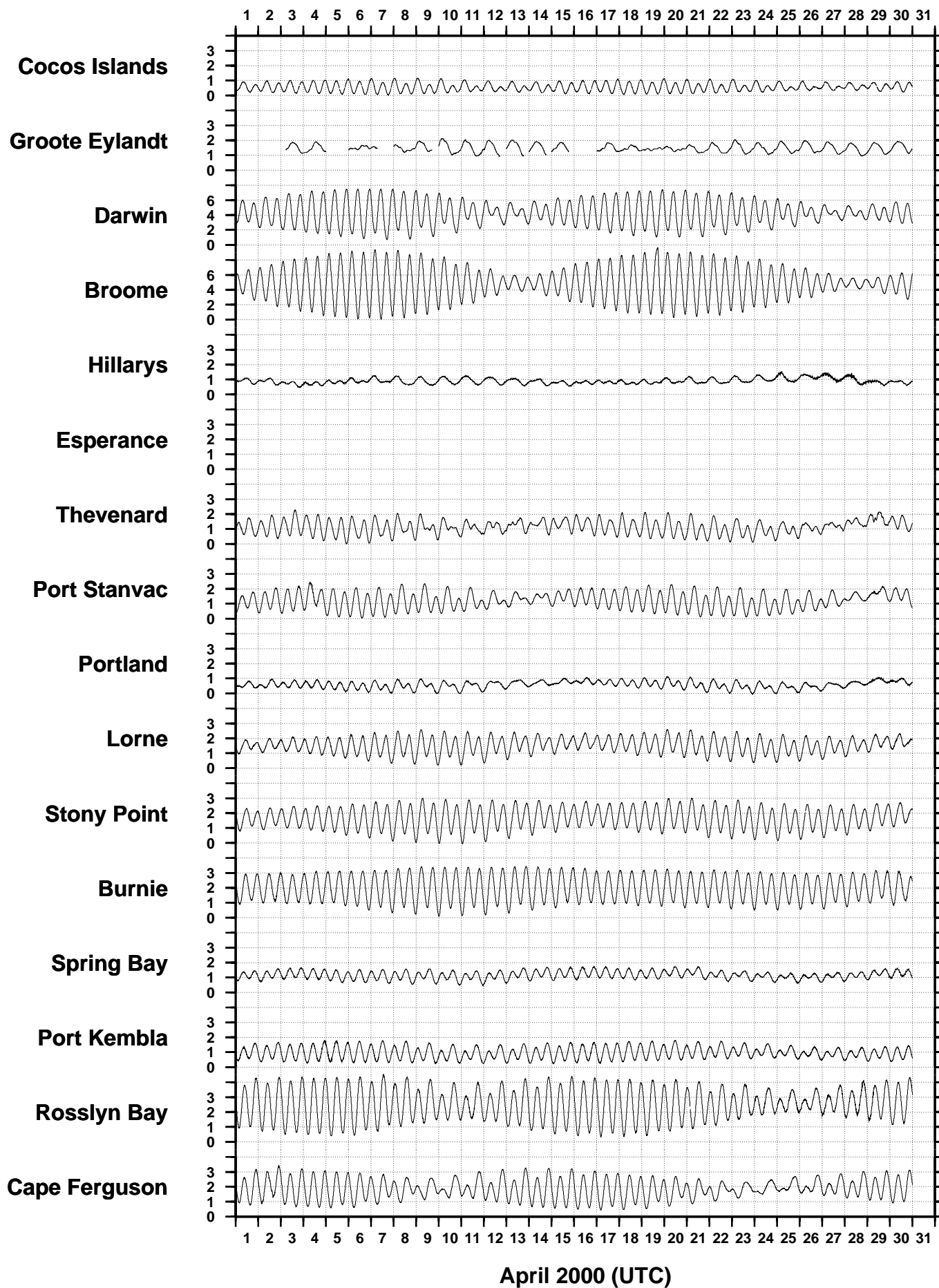


Figure 2

APRIL 2000

RESIDUALS AT SIX MINUTE INTERVALS FROM SEAFRAME STATIONS (m)

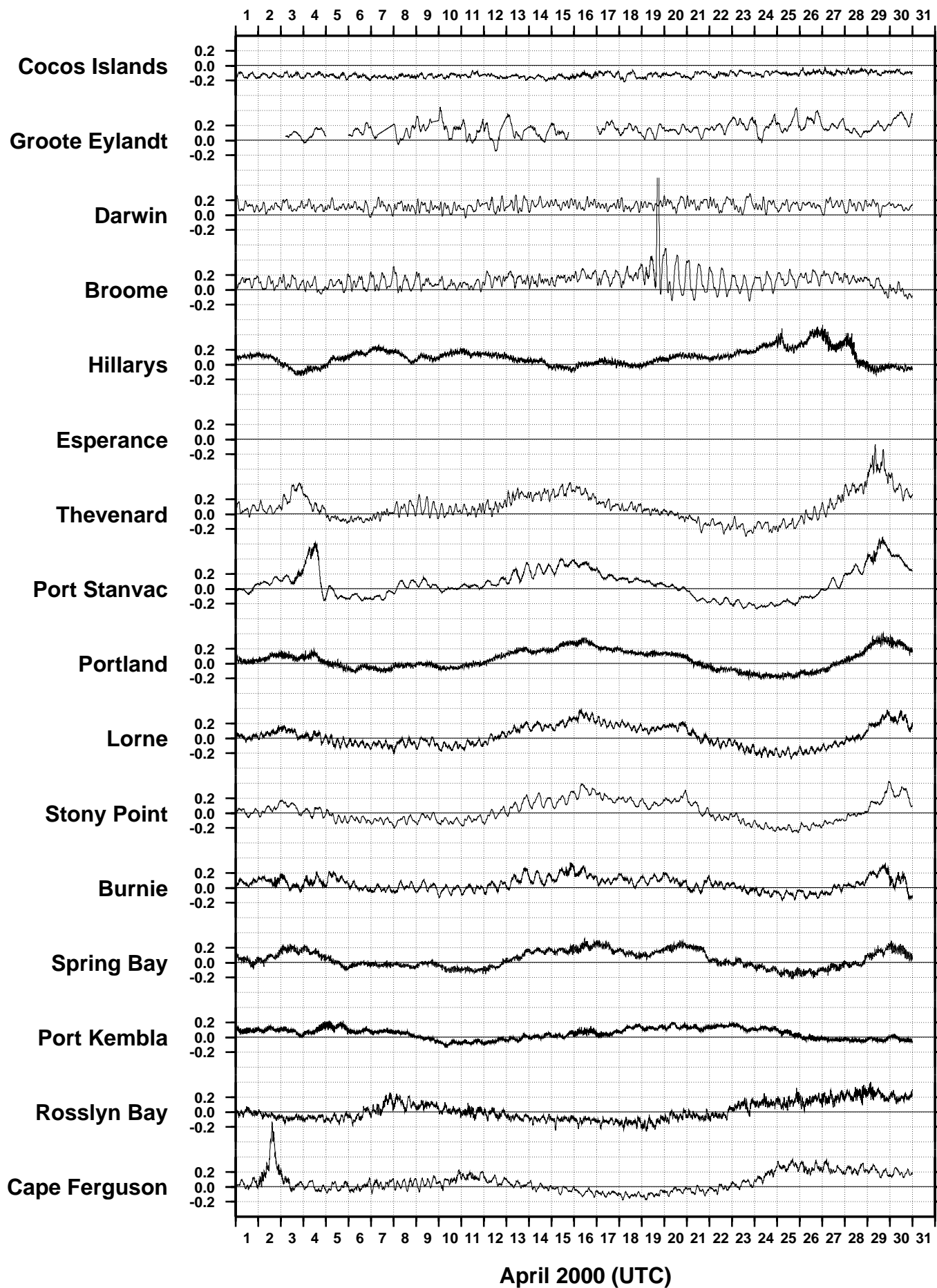


Figure 3

APRIL 2000

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

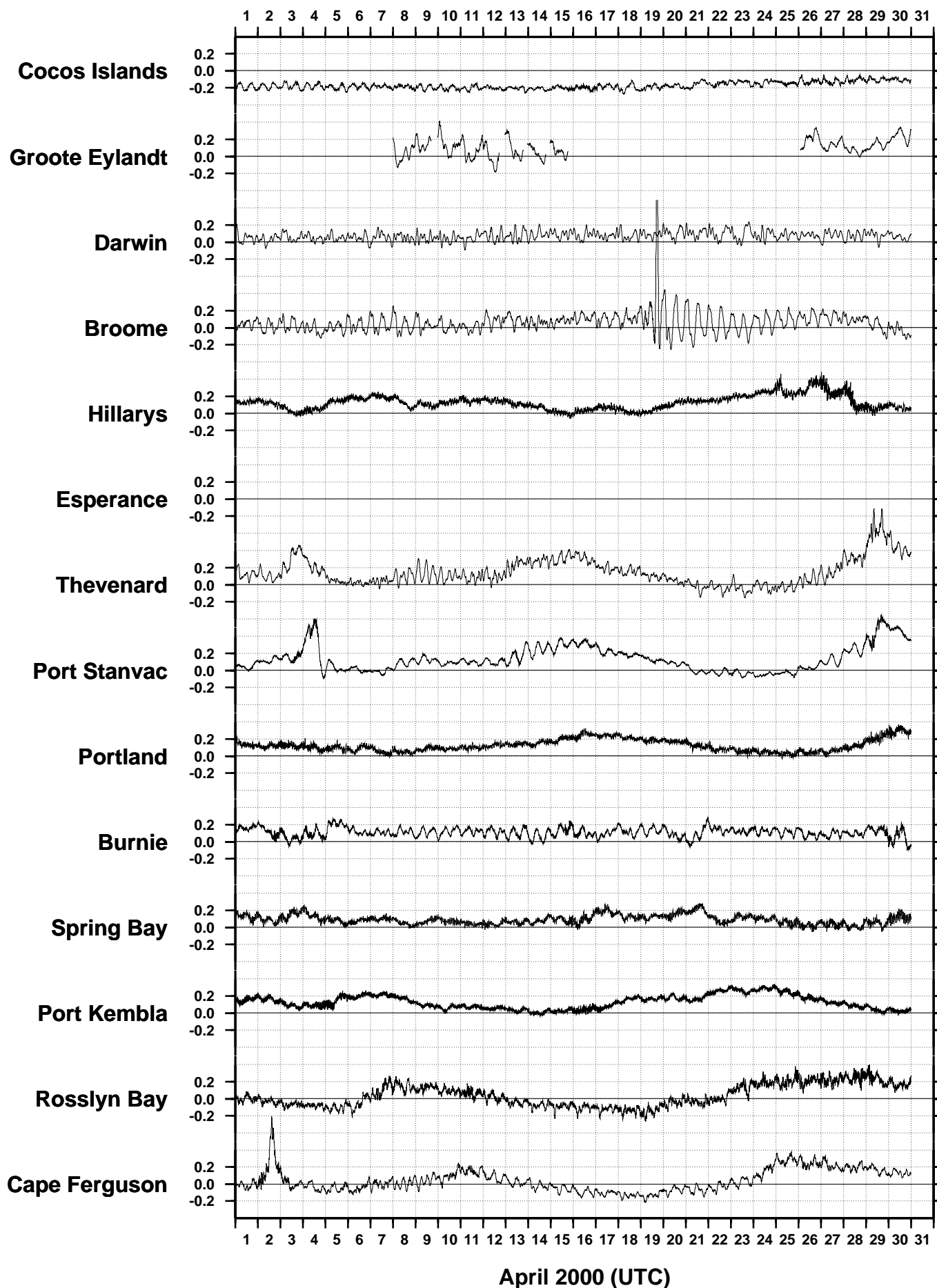


Figure 4

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

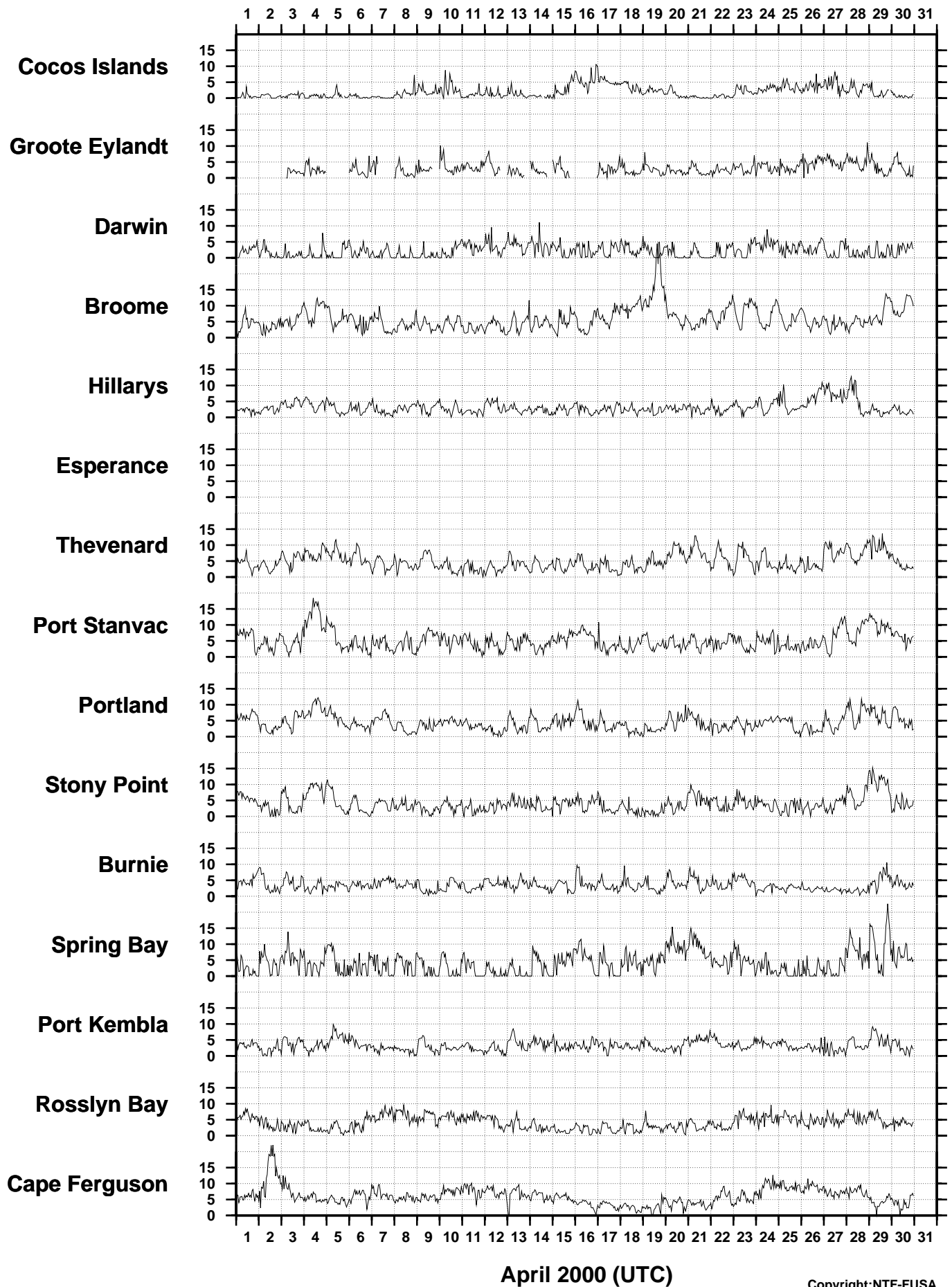


Figure 5

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

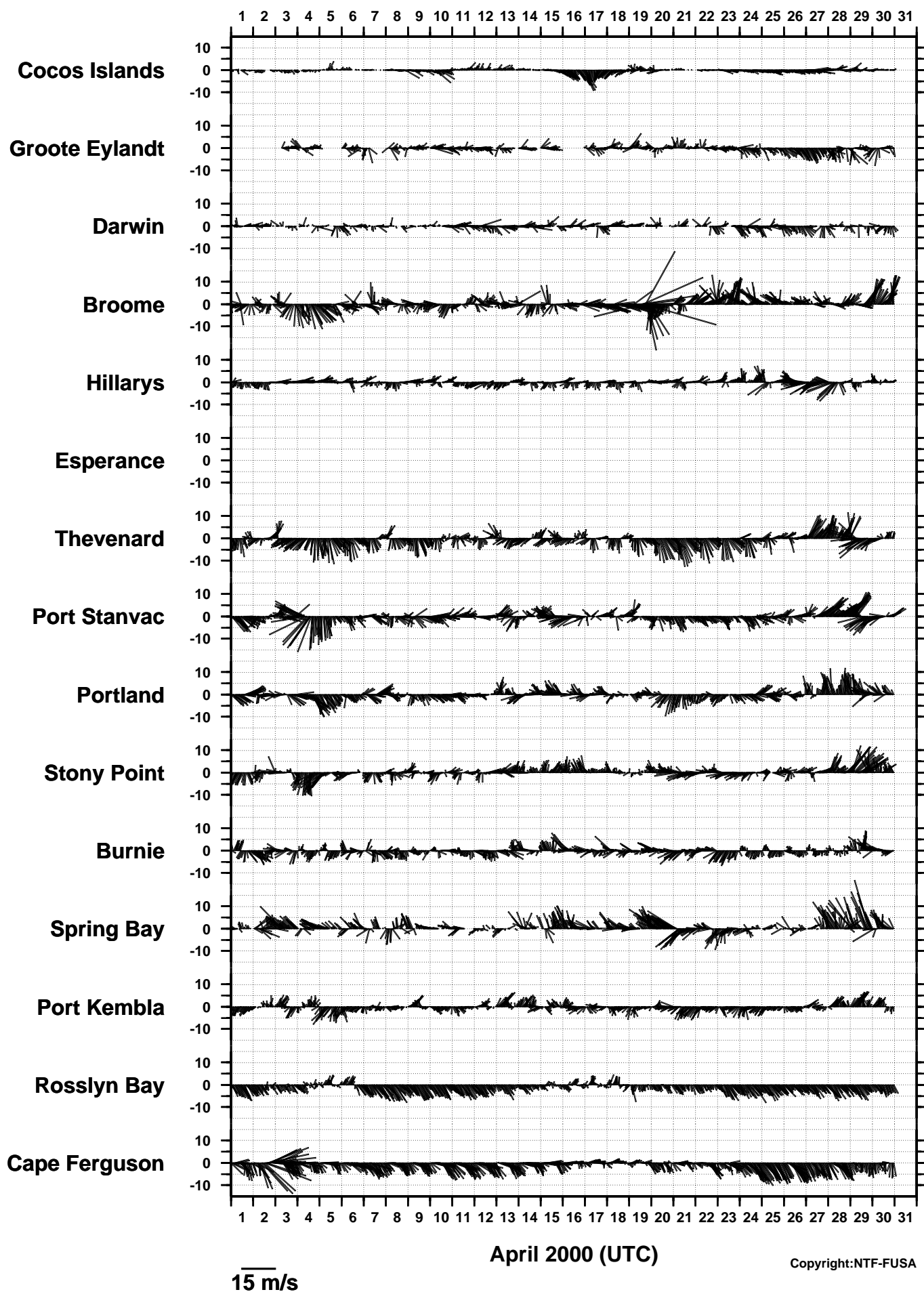


Figure 6

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

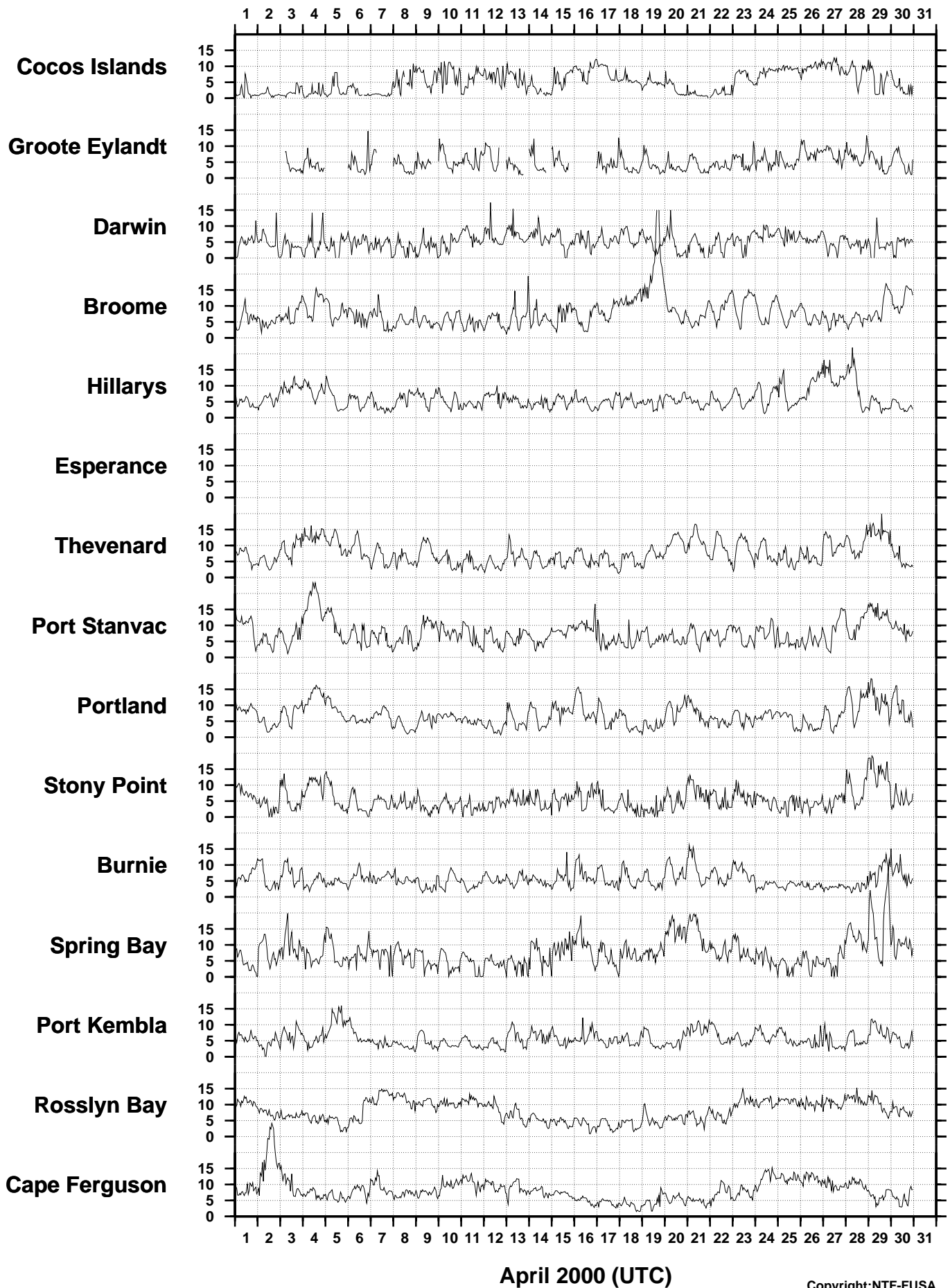
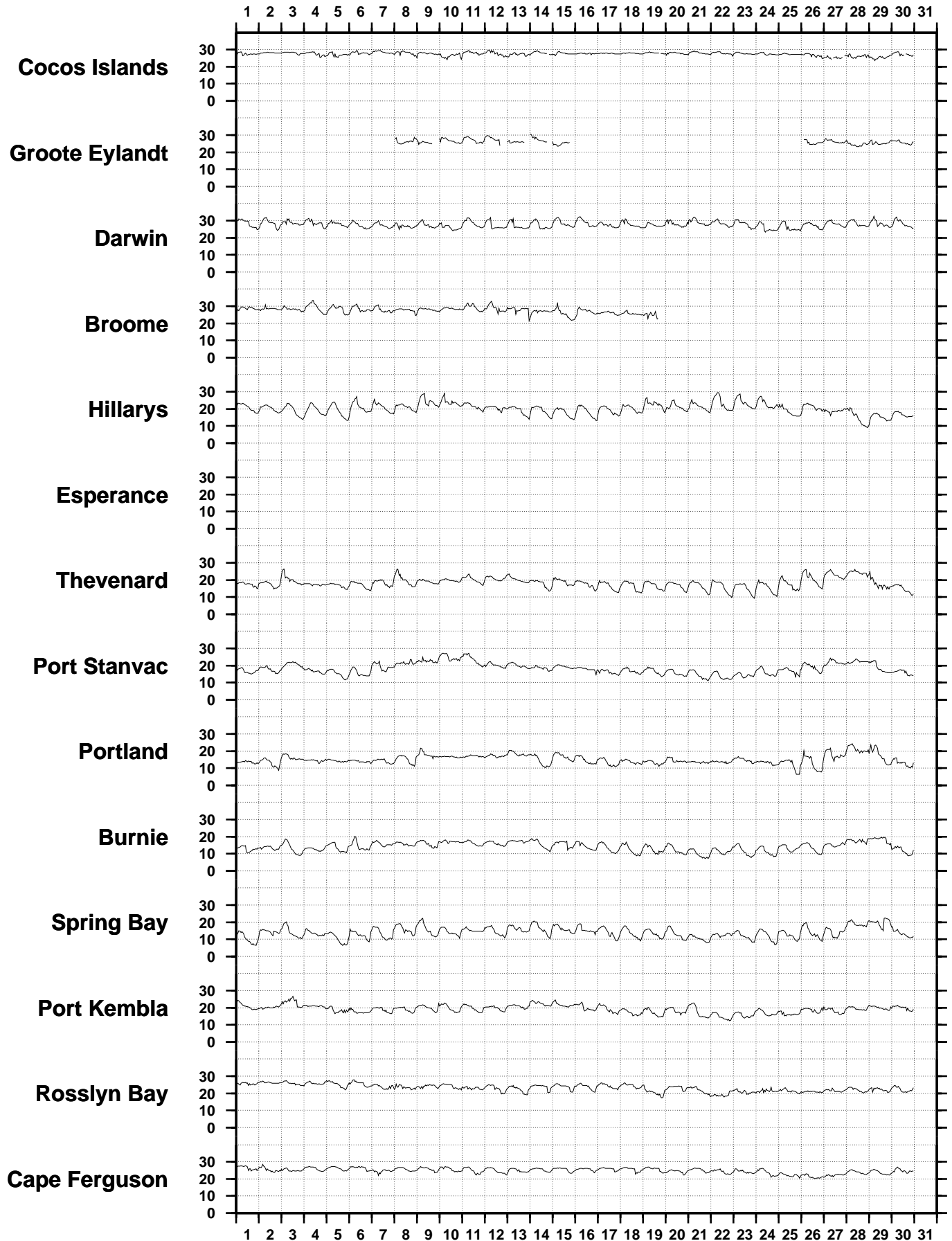


Figure 7

APRIL 2000

HOURLY AIR TEMPERATURES FROM SEAFRAME STATIONS (deg C)

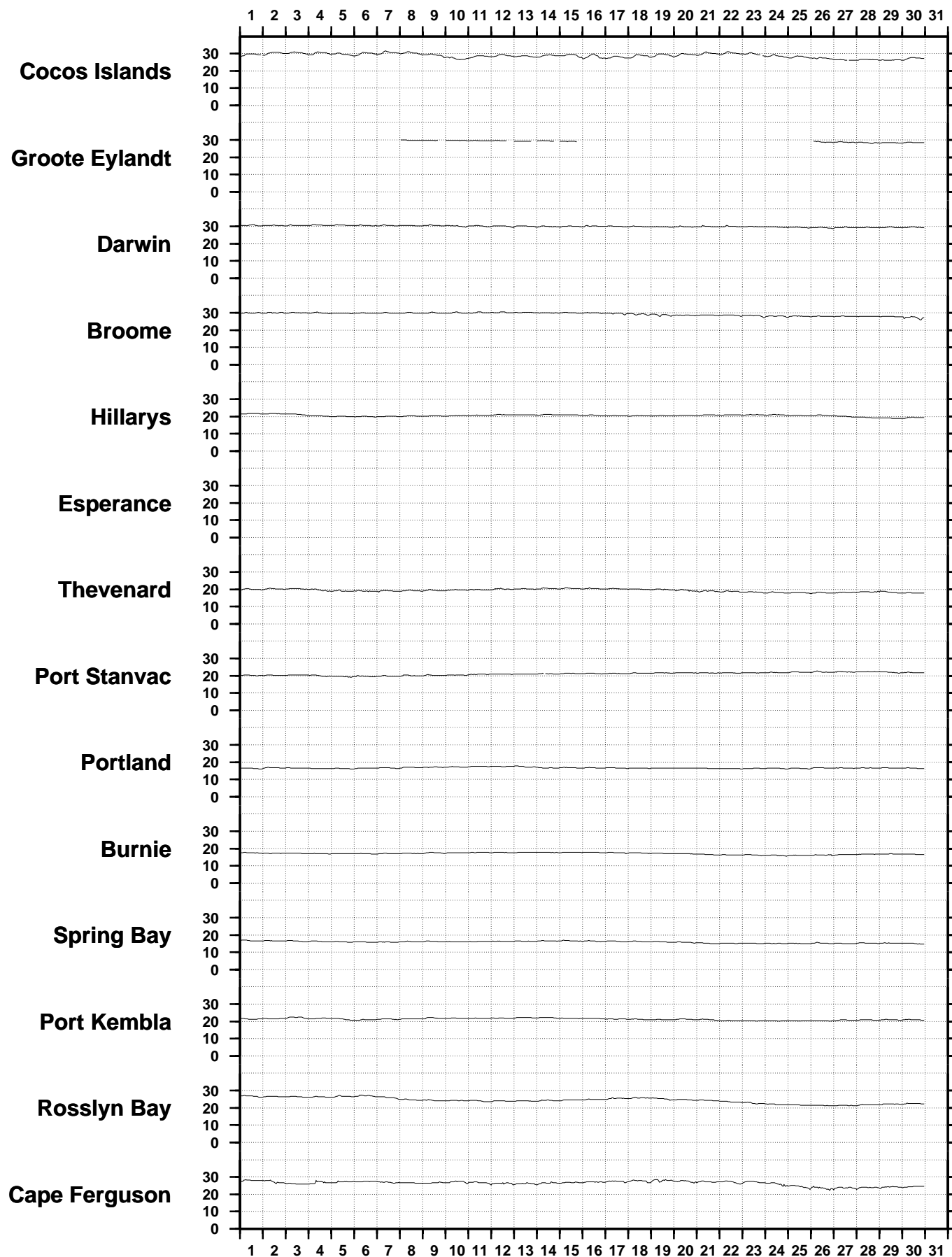


April 2000 (UTC)

Figure 8

APRIL 2000

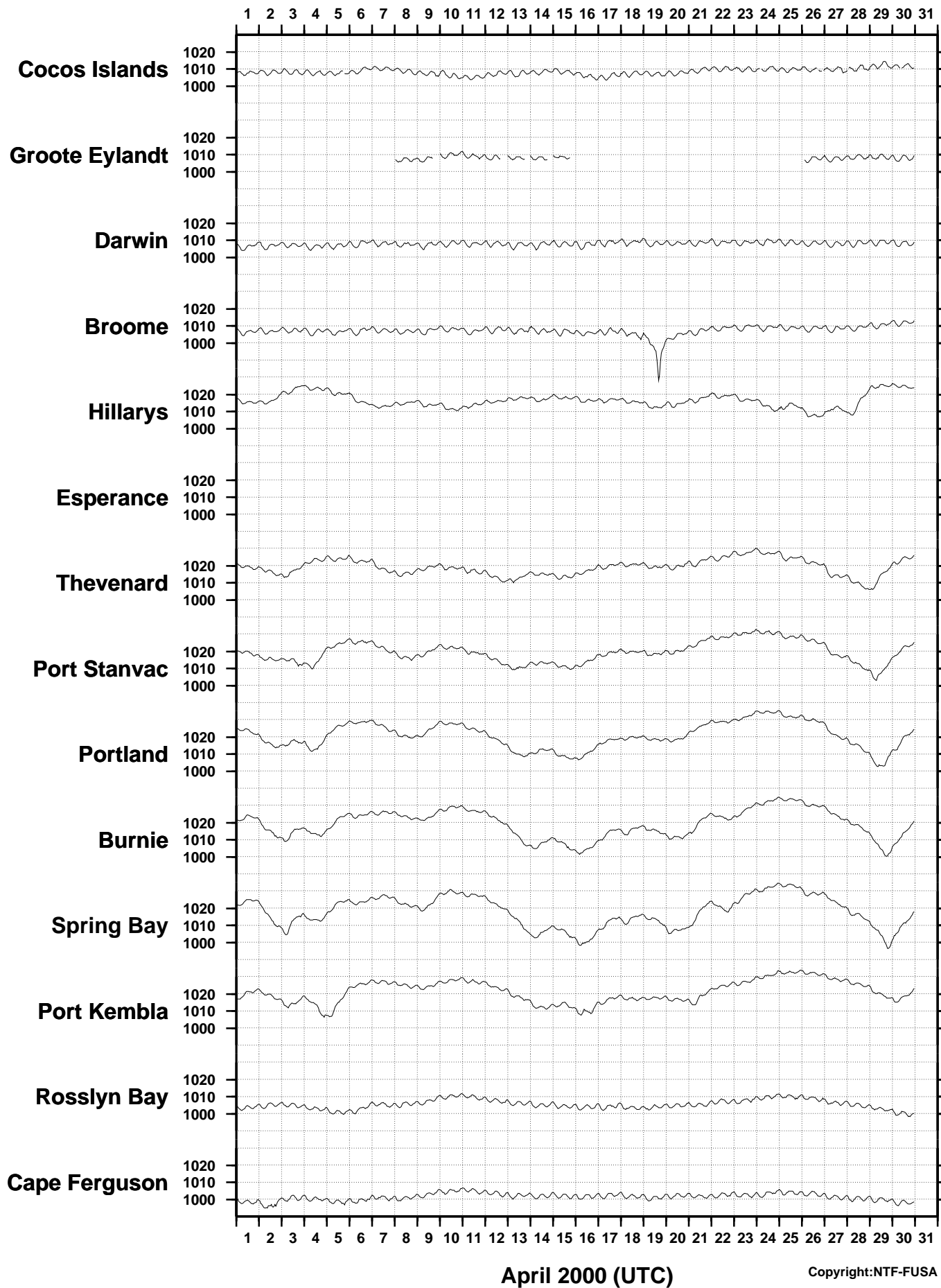
HOURLY WATER TEMPERATURES FROM SEAFRAME STATIONS (deg C)



April 2000 (UTC)

Figure 9

APRIL 2000
HOURLY ATMOSPHERIC PRESSURE FROM SEAFRAME STATIONS (hPa)



April 2000 (UTC)

Copyright:NTF-FUSA

Figure 10

SEA LEVEL ANOMALIES THROUGH APRIL 2000 (m)

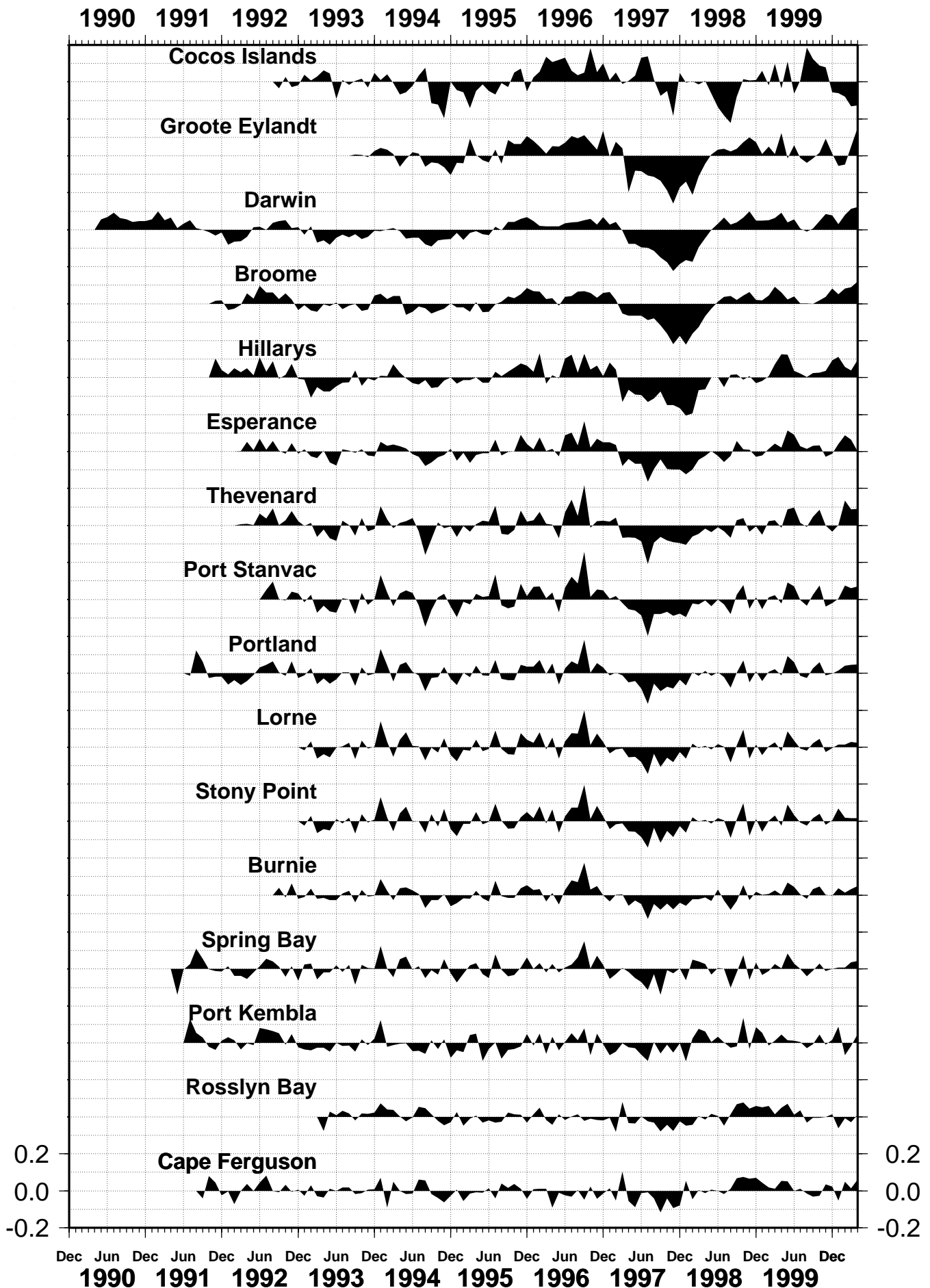


Figure 11

BAROMETRIC PRESSURE ANOMALIES THROUGH APRIL 2000 (hPa)

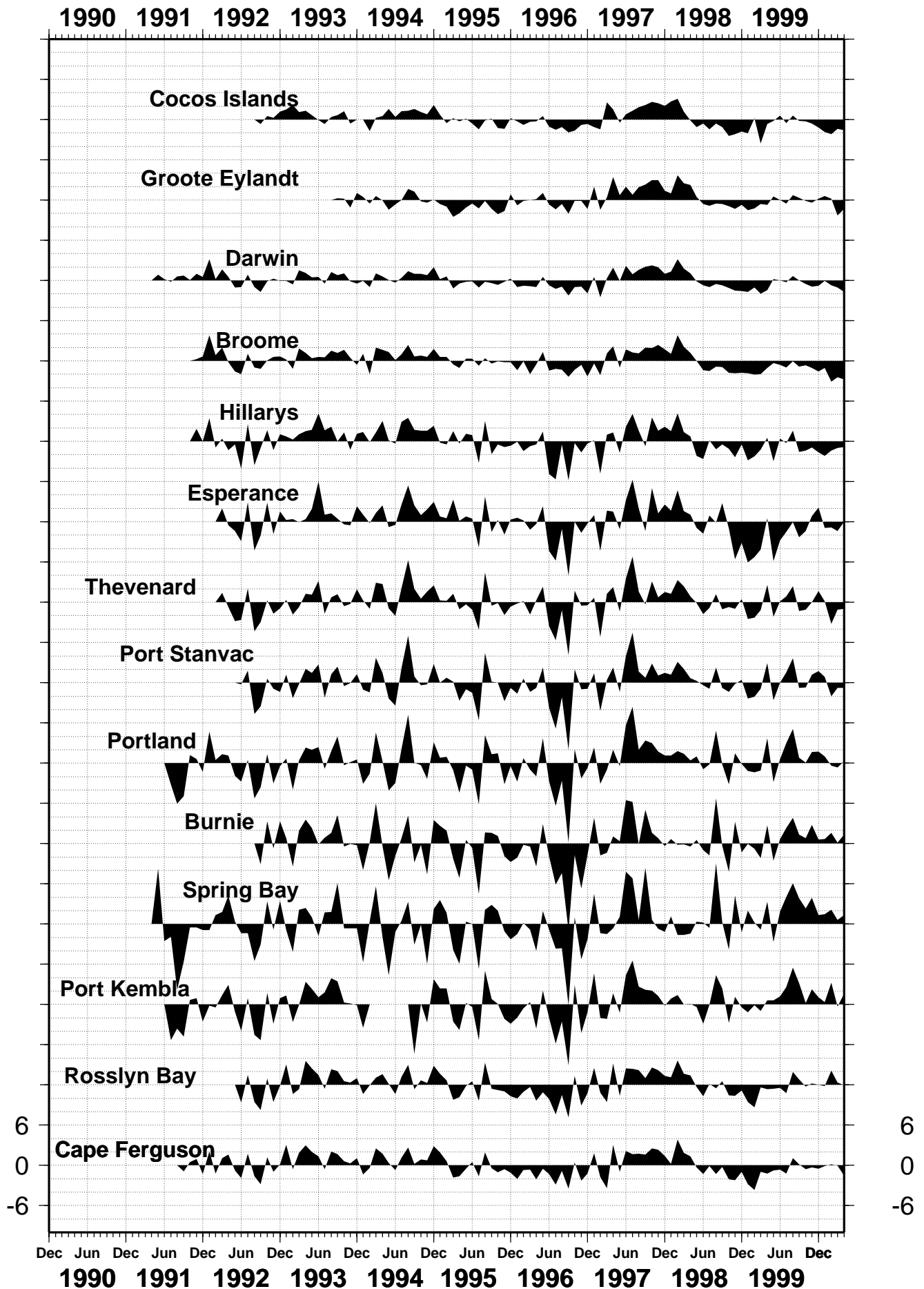
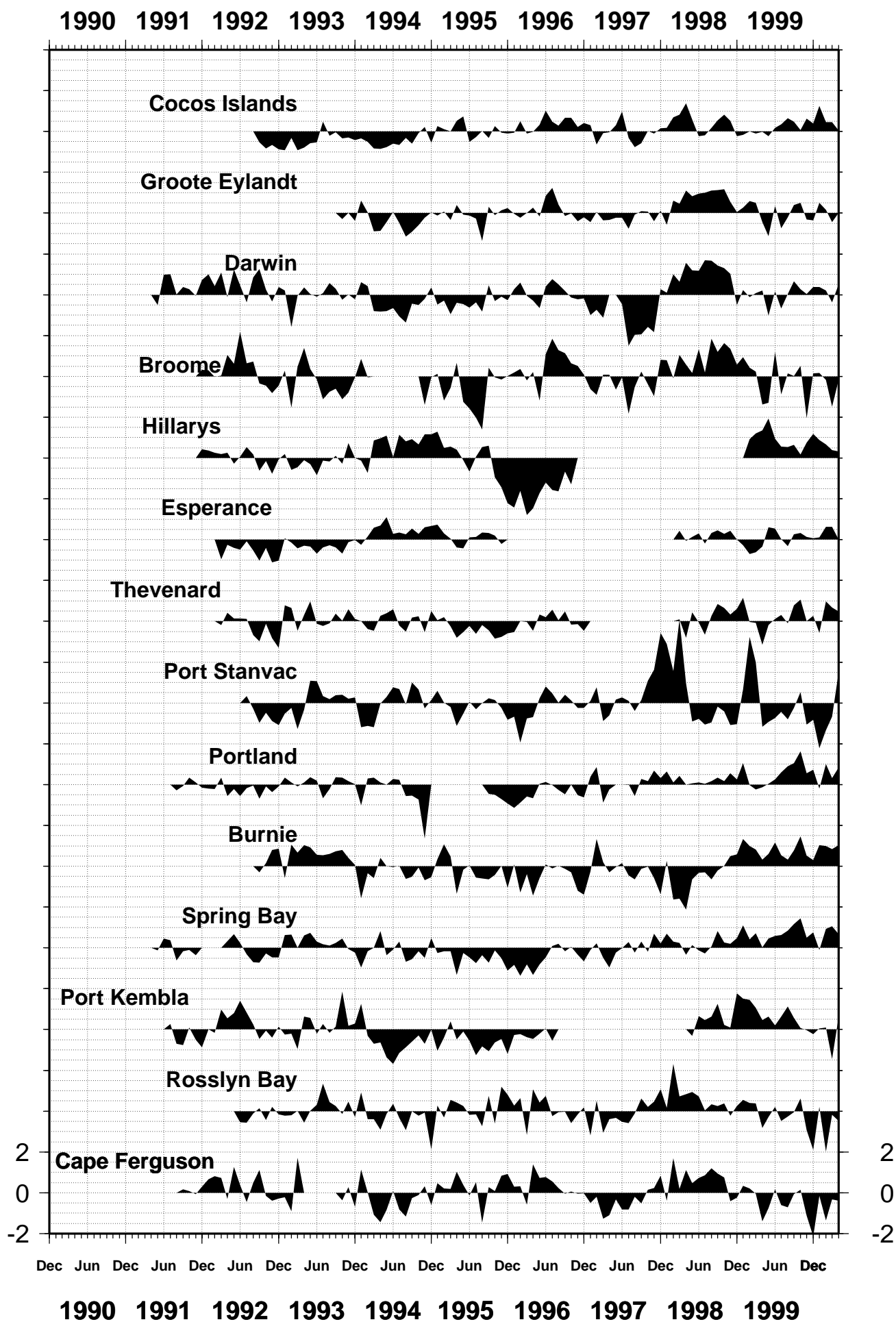


Figure 12

**WATER TEMPERATURE
ANOMALIES THROUGH APRIL 2000 (degC)**

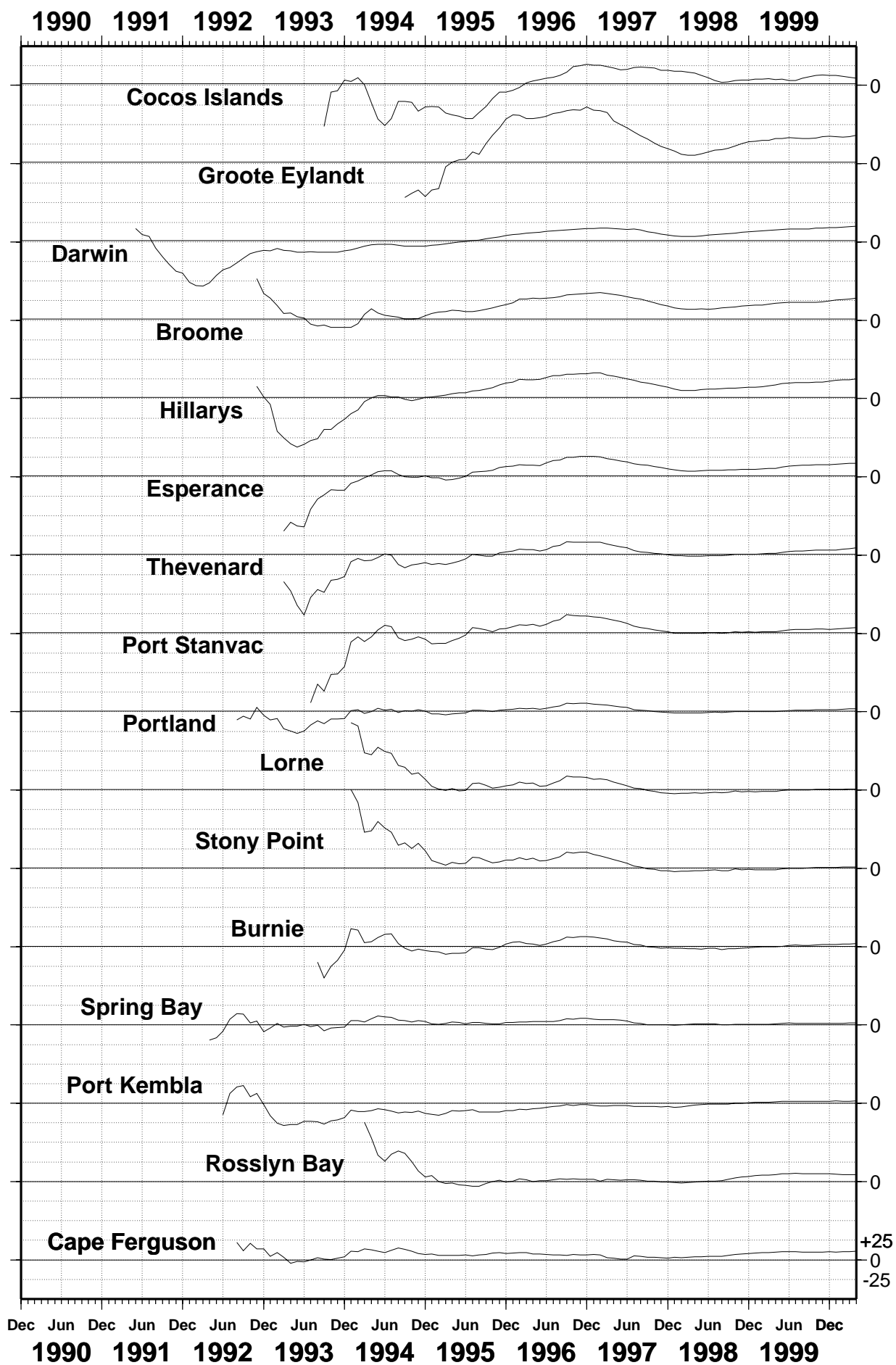


AIR TEMPERATURE ANOMALIES THROUGH APRIL 2000 (degC)



Figure 14

SEA LEVEL TRENDS THROUGH APRIL 2000 (mm/year)



SEA LEVEL DATA RETURN

Figure 15

THE NUMBER OF DAYS OF MISSING DATA ARE INDICATED
GAPS INCLUDE TRANSMISSION, POWER AND LOGGER FAILURE
* Patchy record

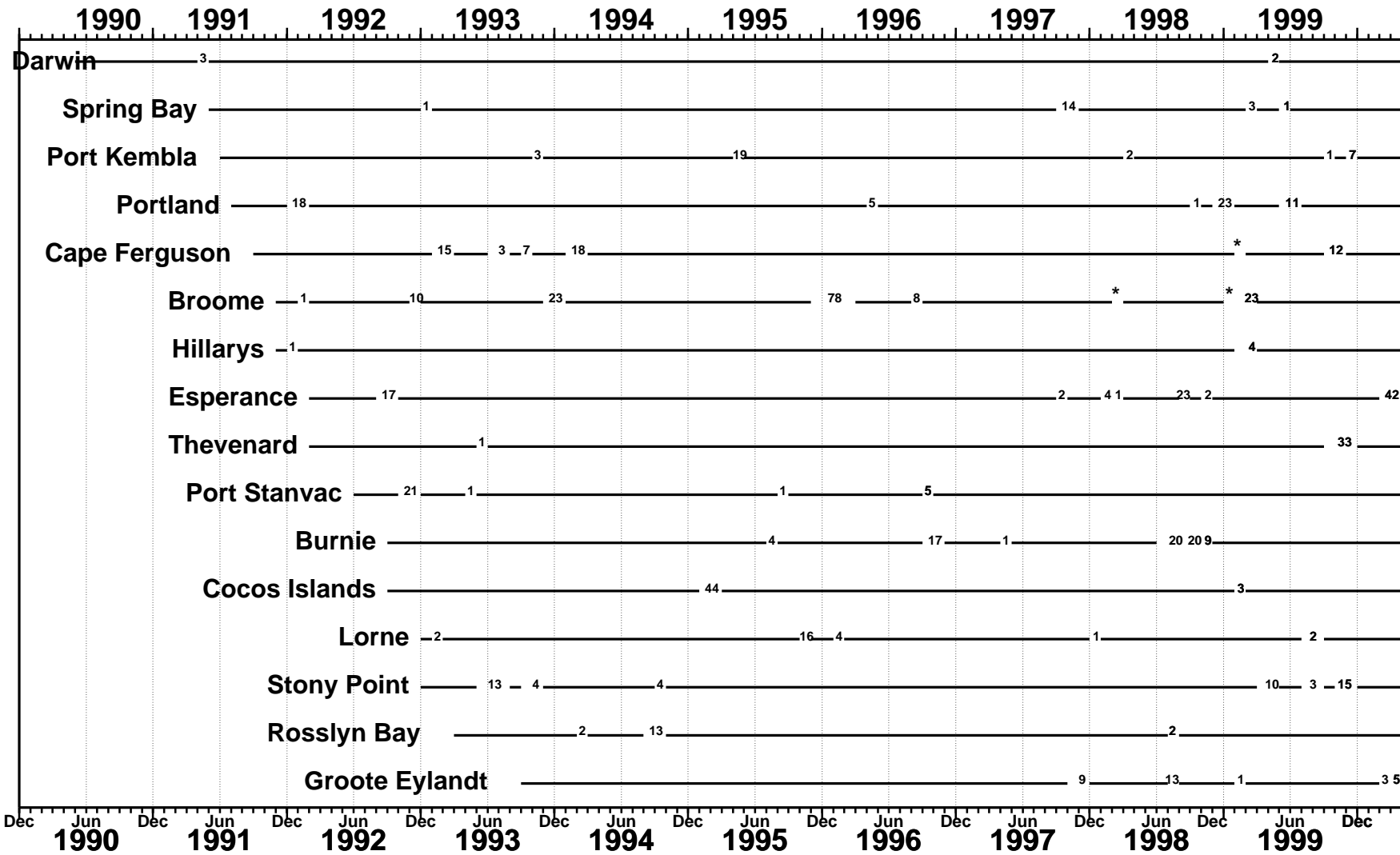
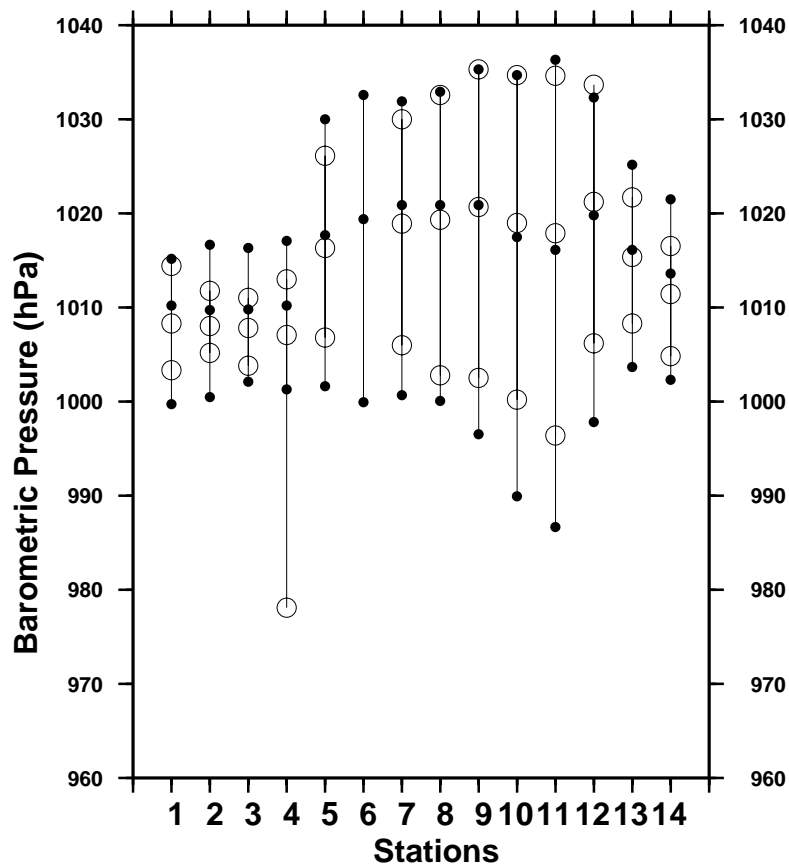
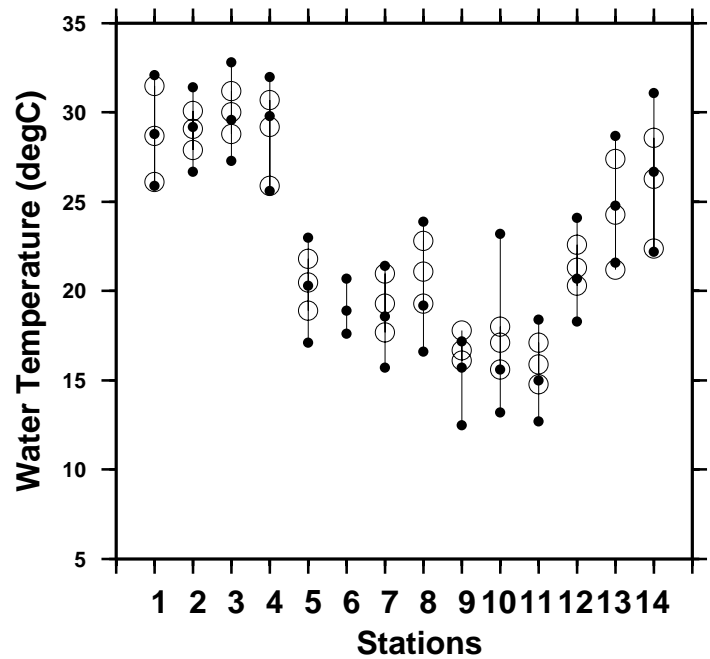
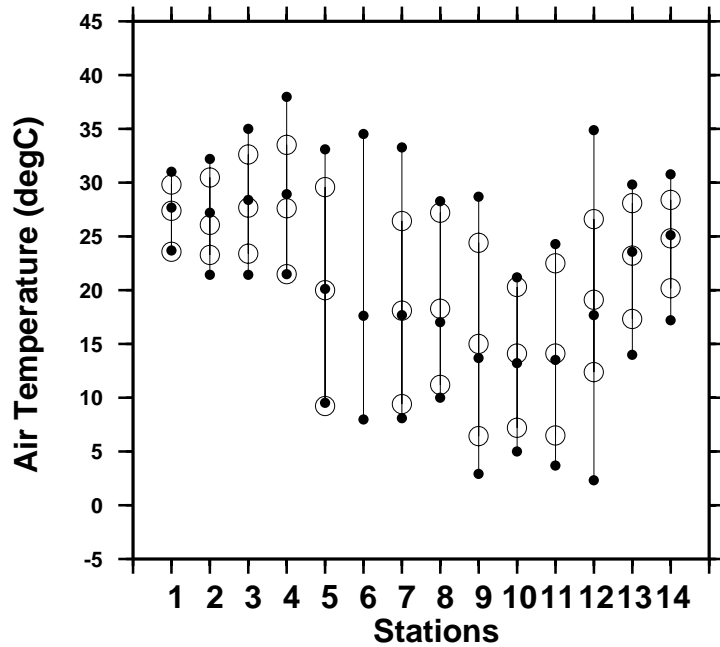


Figure 16
Comparison of April 2000 Max, Min & Mean with
Long Term April Values.



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

April 2000 Maximum
 April 2000 Mean
 April 2000 Minimum

Long Term April Maximum
 Long Term April Mean
 Long Term April Minimum