

MONITORING EXPLOSIVE CYCLONES ON THE COAST OF THE ANTARCTIC CONTINENT

BY ROMAO, M. AND PIRES, L. B. M.

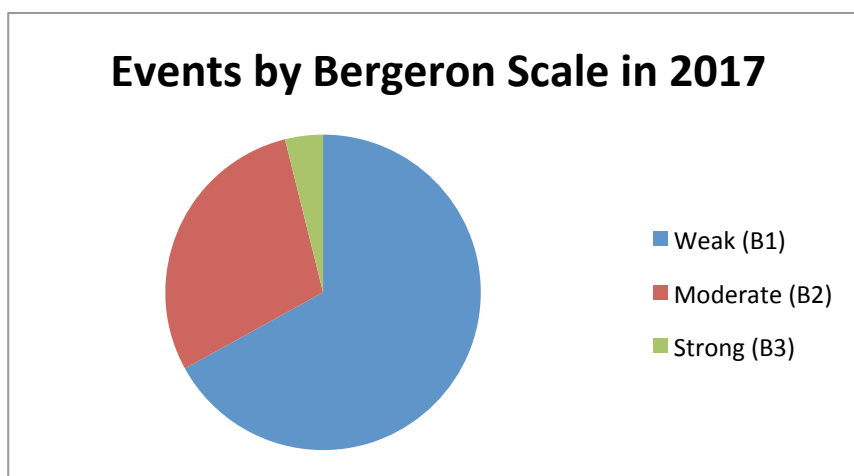
DECEMBER 2017

During this month, 04 events were registered among the 13 research stations located on the coast of the Antarctic utilized as references for the monitoring of explosive cyclones, at the stations of: Davis, Mawson, Frei and Palmer, totaling 01 more case than in the previous month. The most intense cyclone recorded was number 100/2017 at the Mawson station on December 16th with sustained winds of up to 33.5 m/s (75 mph). The cyclone which registered the lowest atmospheric pressure at sea level was the number 103/2017 at the Palmer station, with values reaching 949.9 hPa. Throughout 2017 the station with the largest number of events has been the Australian Casey with 16 cases, followed by the Frei stations with 12 cases. Russkaya's Russian station was not operating this month, so it was not possible to monitor that region.

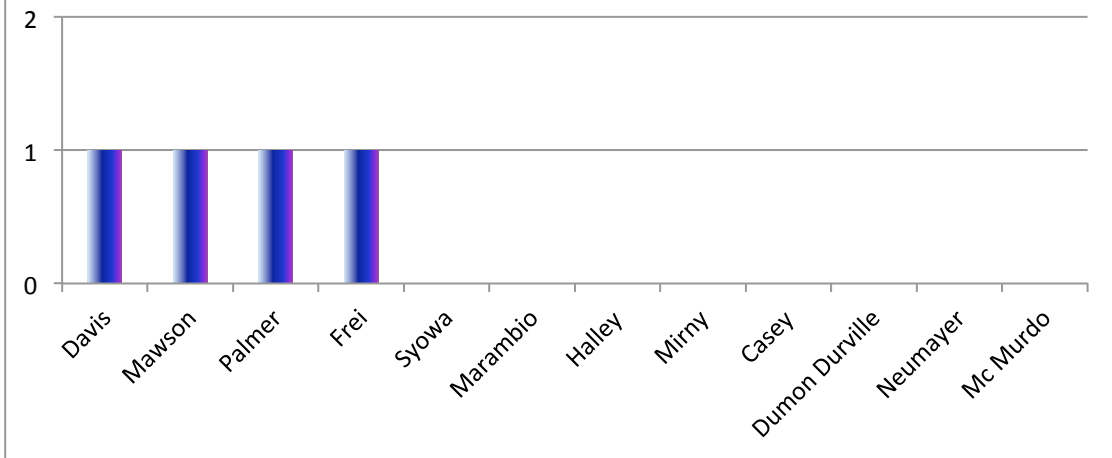
STATISTICS OF THE MONTH

Classification	Bergeron Scale	Intensity	Total of cases registered in the month
B1	1 a 1.2	Weak	00
B2	1.3 a 1.8	Moderate	04
B3	>1.8	Strong	00

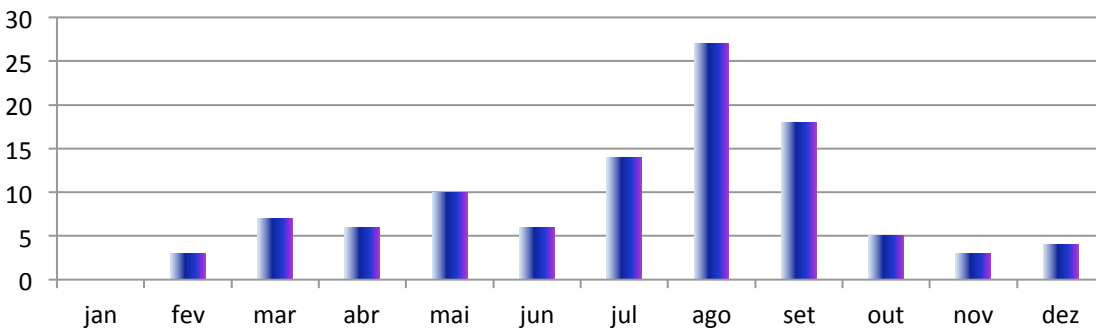
Highest pressure drop	Lowest recorded pressure	Highest sustained wind	Average minimum pressures	Mean of pressure drops
-34.7 hPa/24h	949.9 hPa	33.5 m/s	958.0 hPa	-31.8 hPa/24h
Davis Station	Palmer Station	Mawson Station		
December 17	December 21	December 16		



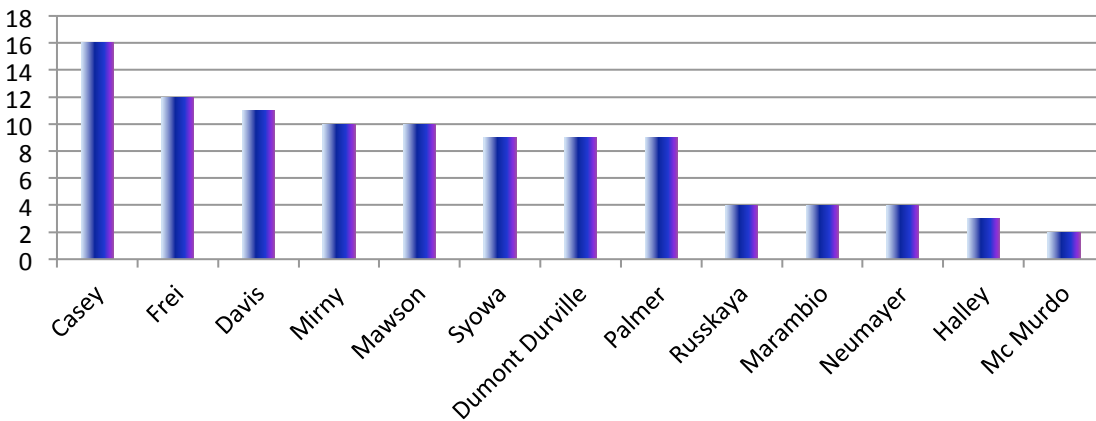
Total of events registered in each station in the month of December/2017



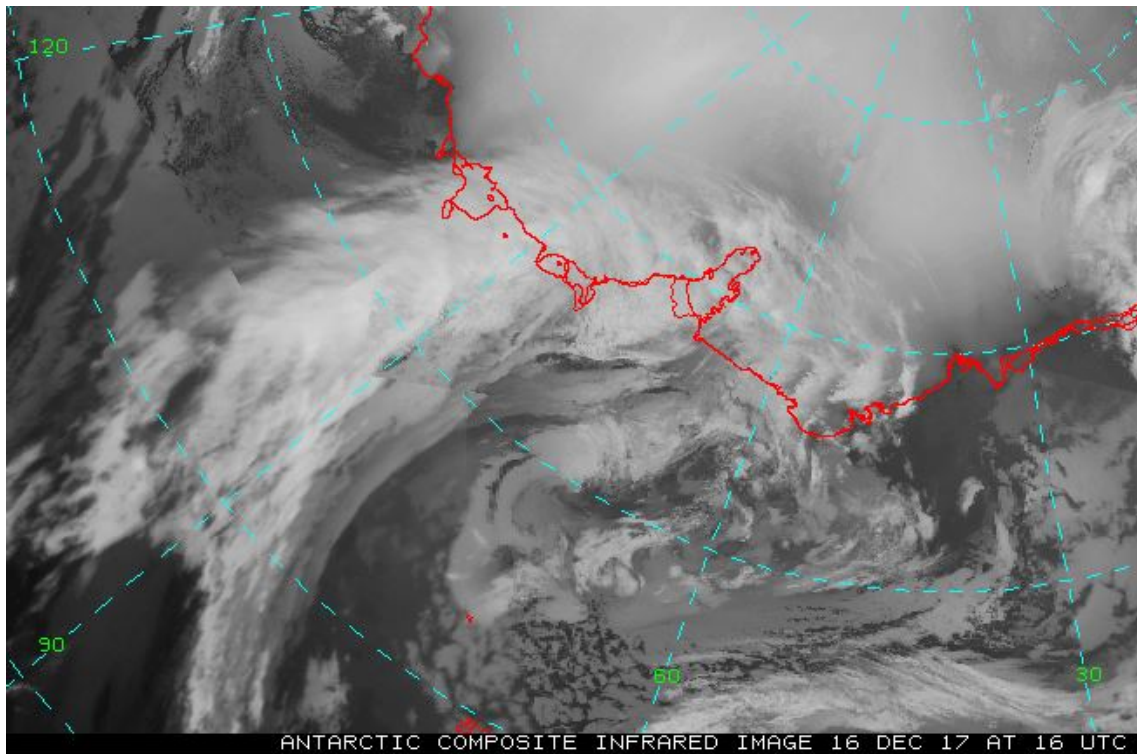
Explosive Cyclones in the Antarctic Total of monthly events



Total of events registered by station in 2017



EXPLOSIVE CYCLONE N°100/2017- DATA: 16/DEC/2017
LOCAL: MAWSON STATION – WMO 89564 (OPERATED BY AUSTRALIA)

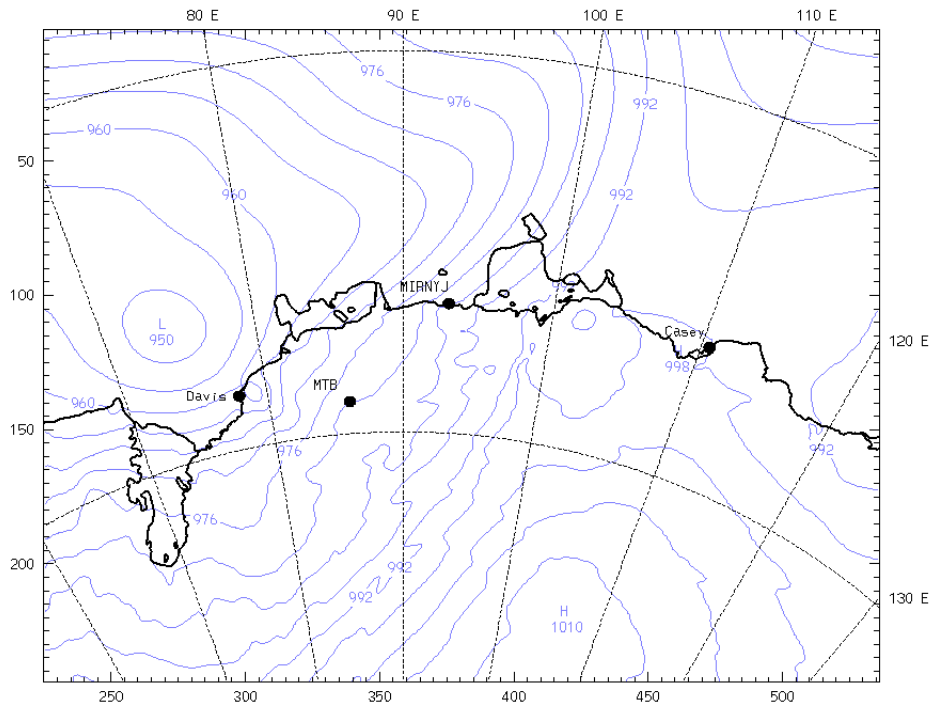


DROP OF PRESSURE IN 24H: -30.4 hPa
MINIMUM PRESSURE REGISTERED ON STATION: 957.9 hPa
MINIMUM PRESSURE ESTIMATED IN THE CYCLONE CORE: 950.0 hPa
SUSTAINED MAXIMUM WIND: 33.5 m/s (75 mph)
MAXIMUM WIND GUST: 37.5 m/s (84 mph)
BERGERON: 1.3 (MODERATE)

EXPLOSIVE CYCLONE N°101/2017- DATA: 17/DEC/2017
LOCAL: DAVIS STATION – WMO 89571 (OPERATED BY AUSTRALIA)

AMPS 8-km WRF -- Casey-Davis Window
Fcst. 0 h
Total precip. in past 3 h
Sea-level pressure

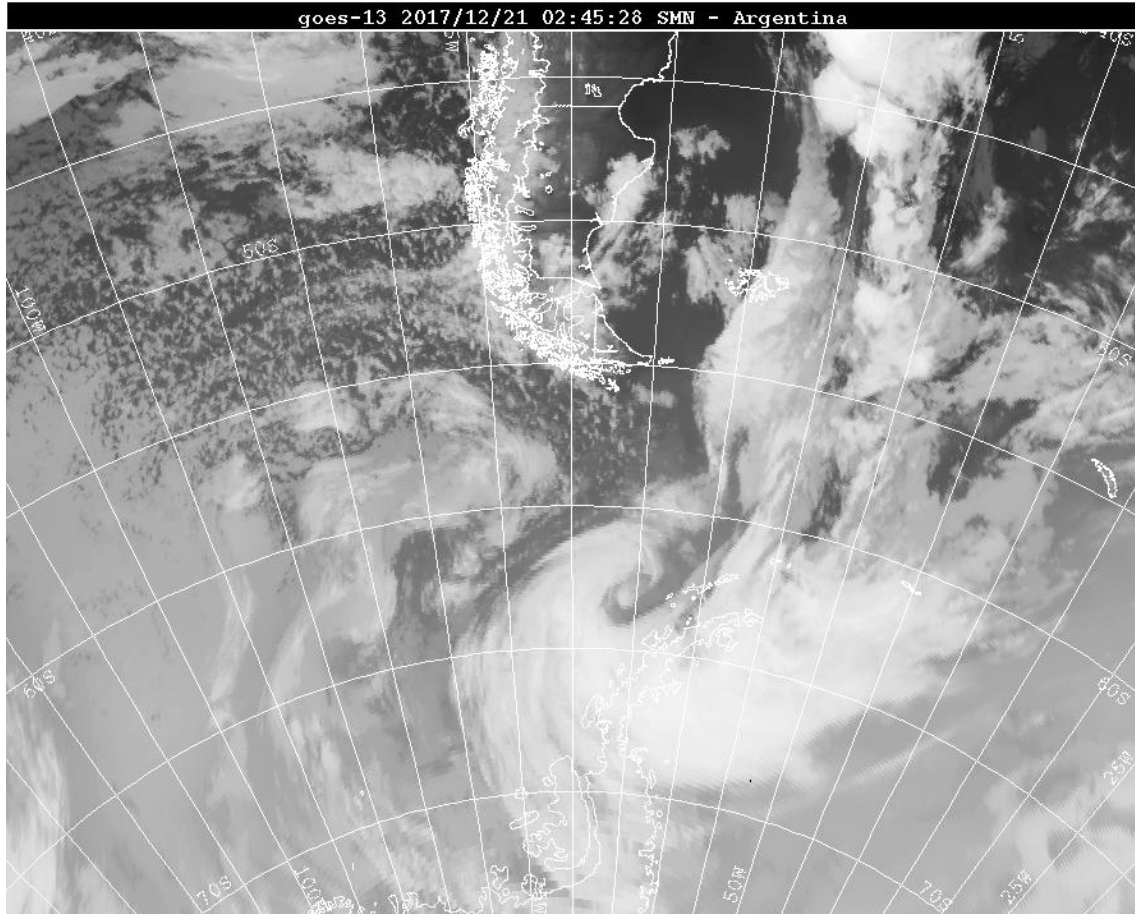
Init. 00 UTC Sun 17 Dec 17
Valid. 00 UTC Sun 17 Dec 17



CONTOURS: UNITS=hPa LOW= 952.00 HIGH= 1008.0 INTERVAL= 4.0000
Model Info: Y3.9.1.1 KF MYJ PBL WSM 5class Noah LSM 8.0 km, 60 levels,
LW: RRTM SW: Goddard DIFF: simple KM: 2D Smagor

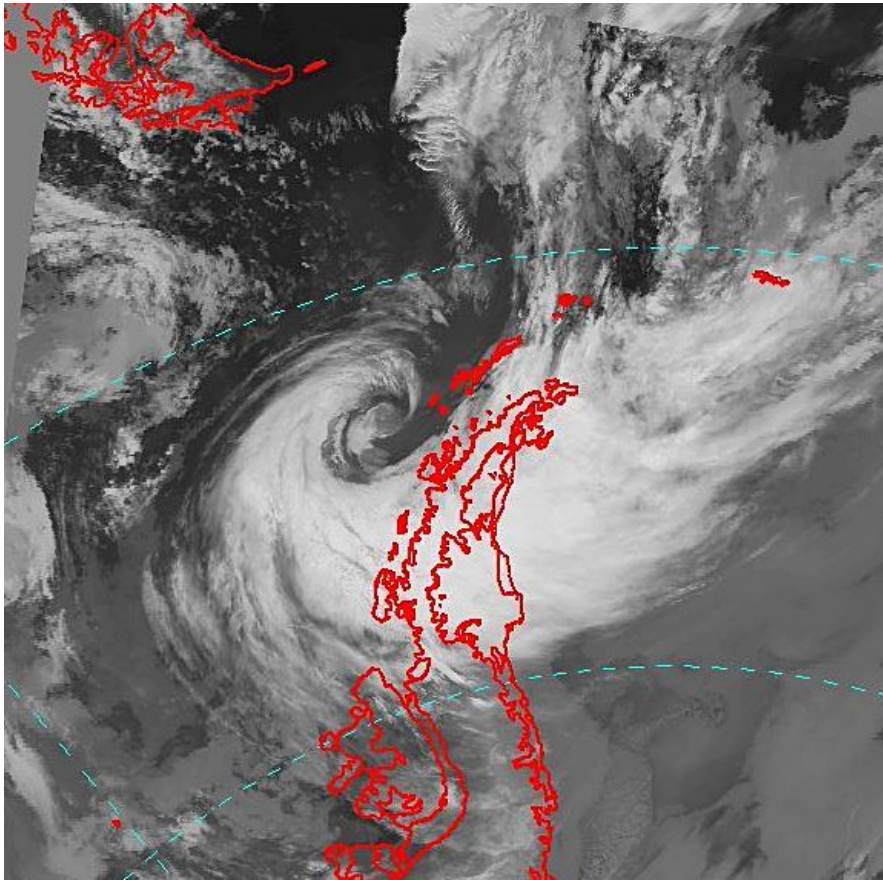
DROP OF PRESSURE IN 24H: -34.7 hPa
MINIMUM PRESSURE REGISTERED ON STATION: 961.2 hPa
MINIMUM PRESSURE ESTIMATED IN THE CYCLONE CORE: 950.0 hPa
SUSTAINED MAXIMUM WIND: 28.5 m/s (64 mph)
MAXIMUM WIND GUST: 40.5 m/s (91 mph)
BERGERON: 1.4 (MODERATE)

EXPLOSIVE CYCLONE N°102/2017- DATA: 21/DEC/2017
LOCAL: FREI STATION –WMO 89056 (OPERATED BY CHILE)



DROP OF PRESSURE IN 24H: -30.0 hPa
MINIMUM PRESSURE REGISTERED ON STATION: 963.0 hPa
MINIMUM PRESSURE ESTIMATED IN THE CYCLONE CORE: 946.0 hPa
SUSTAINED MAXIMUM WIND: 20.5 m/s (46 mph)
MAXIMUM WIND GUST: 27.5 m/s (62 mph)
BERGERON: 1.3 (MODERATE)

EXPLOSIVE CYCLONE N°103/2017- DATA: 21/DEC/2017
LOCAL: PALMER STATION – WMO 89061 (OPERATED BY USA)



DROP OF PRESSURE IN 24H: -32.0 hPa
MINIMUM PRESSURE REGISTERED ON STATION: 949.9 hPa
MINIMUM PRESSURE ESTIMATED IN THE CYCLONE CORE: 946.0 hPa
SUSTAINED MAXIMUM WIND: 16.5 m/s (37 mph)
MAXIMUM WIND GUST: none m/s (mph)
BERGERON: 1.3 (MODERATE)

Sources:

AMRC – UW Madison
<https://worldview.earthdata.nasa.gov>
<http://www.weathersa.co.za>
<http://www.bom.gov.au>
<https://data.aad.gov.au>
<http://www.smn.gov.ar>
<http://meteoarmada.directemar.cl>