Australian Government
Bureau of Meteorology

Tropical Cyclone Greg

29 April – 1 May 2017

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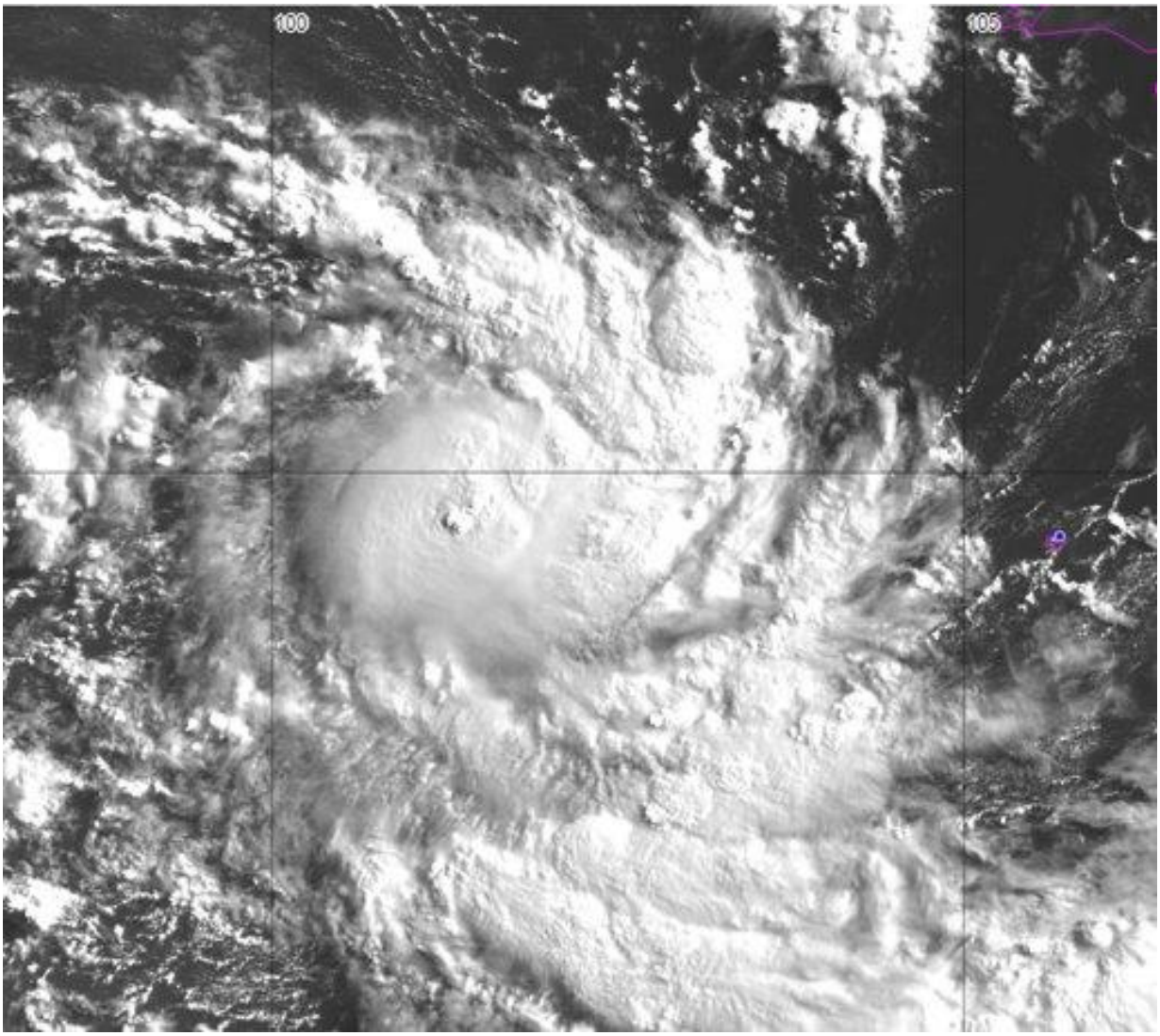

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Front cover image: Visible image of Tropical Cyclone Greg at 0000 UTC 30 April 2017

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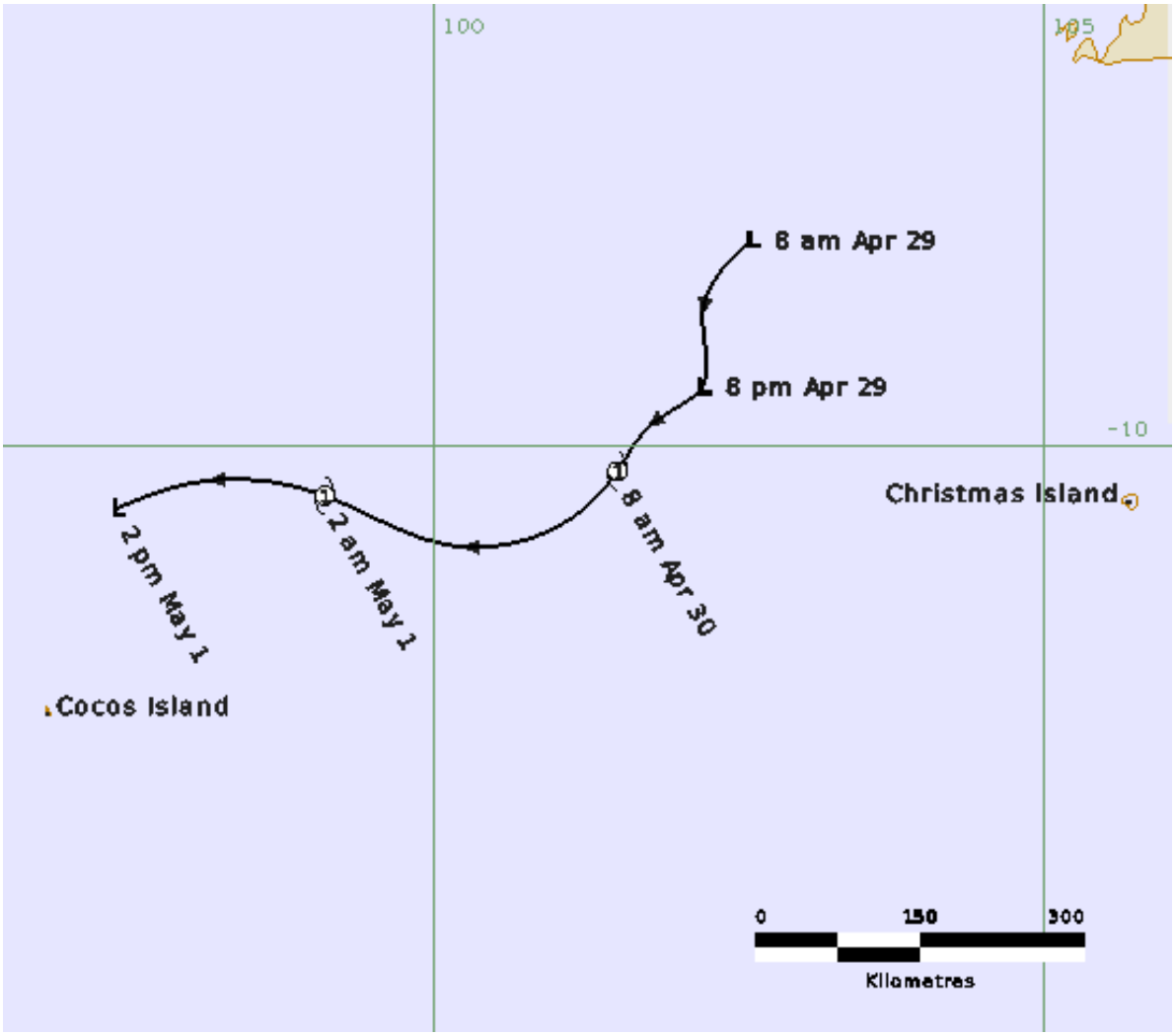
1. Summary

Tropical Cyclone Greg was a small and short-lived system over open waters in the Indian Ocean to the north-east of Cocos Island.

A small low developed to the north of Christmas Island on 29 April and moved southwest. It strengthened rapidly that night, and Tropical Cyclone Greg was named on the morning of 30 April.

Tropical Cyclone Advices were issued for potential impacts to the Cocos (Keeling) Islands along with Ocean Wind Warnings and track maps. Although Greg briefly threatened Cocos (Keeling) Islands as it approached from the east, it weakened again without having any significant impacts on the islands and was downgraded during the morning of 1 May.

Figure 1. Best track of Tropical Cyclone Greg 29 April - 1 May 2017 (times in AWST, UTC +8 hours).



2. Meteorological Description

2.1 Intensity analysis

A tropical low formed in the Indian Ocean on 29 April following an increase in monsoonal storm activity. The low strengthened quickly during the morning of 30 April and was named Tropical Cyclone Greg. Greg reached an estimated peak intensity of 45 kn (category 1) from 0600 UTC to 1200 UTC then increasing westerly shear due to a mid-latitude trough to the south caused Greg to weaken back to a tropical low by 0000 UTC 1 May. Its time as a tropical cyclone was less than 24 hours as Greg strengthened and weakened rapidly. Figure 2 shows a visible satellite image of Greg as a tropical cyclone 24 hours after the initial formation of a tropical low.

Intensity estimates were based largely on subjective Dvorak analysis. Microwave imagery also indicated the rapid intensification including the AMSR2 image at 1806 UTC 29 April in Figure 3 that showed the emergence of an eye. Objective aids including SATCON and ADT were unavailable.

2.2 Structure

Gales commenced east and south of the centre (45 nm (80 km) radius) on the morning 30 April. At peak intensity it is estimated that the radius of gales was roughly symmetrical at 45 nm (80 km) prior to persisting briefly in only the southern semicircle as Greg weakened.

Radius of maximum winds (RMW) was estimated as 10 nm (20 km) throughout Greg's lifetime. Refer to Table 1 for wind radii estimates.

2.3 Motion

The low was initially steered to the south under the influence of a monsoon surge but the low-level subtropical ridge to the south became the more dominant steering influence and Greg moved westwards from 30 April.

TABLE 1. Best track summary for Tropical Cyclone Greg.

Refer to the Australian Tropical Cyclone database for complete listing of parameters.
Note: UTC is AWST - 8 hours.

Year	Month	Day	Hour	Pos. Lat.	Pos. Long.	Pos. Acc.	Max Wind 10min	Max gust	Cent. Press.	Rad. of gales (NE/SE/SW/NW)	RMW
			UTC	S	E	nm	kn	kn	hPa	nm	nm
2017	4	29	0000	-8.3	102.6	60	25	45	1006	0/0/0/0	-
2017	4	29	0600	-8.9	102.2	60	25	45	1006	0/0/0/0	-
2017	4	29	1200	-9.5	102.2	30	30	45	1004	0/0/0/0	-
2017	4	29	1800	-9.8	101.8	20	30	45	1004	0/0/0/0	-
2017	4	30	0000	-10	101.5	40	40	55	998	45/45/45/0	20
2017	4	30	0600	-11	101.1	20	45	65	995	45/45/45/45	20
2017	4	30	1200	-11	100.1	30	45	65	996	45/45/45/45	20
2017	4	30	1800	-10	99.1	60	40	55	1000	20/45/45/20	20
2017	5	1	0000	-10	98	10	30	45	1005	0/0/0/0	-
2017	5	1	0600	-11	97.4	10	20	45	1008	0/0/0/0	-

Figure 2. Visible Himawari-8 imagery at 0000 UTC 30 April 2017.

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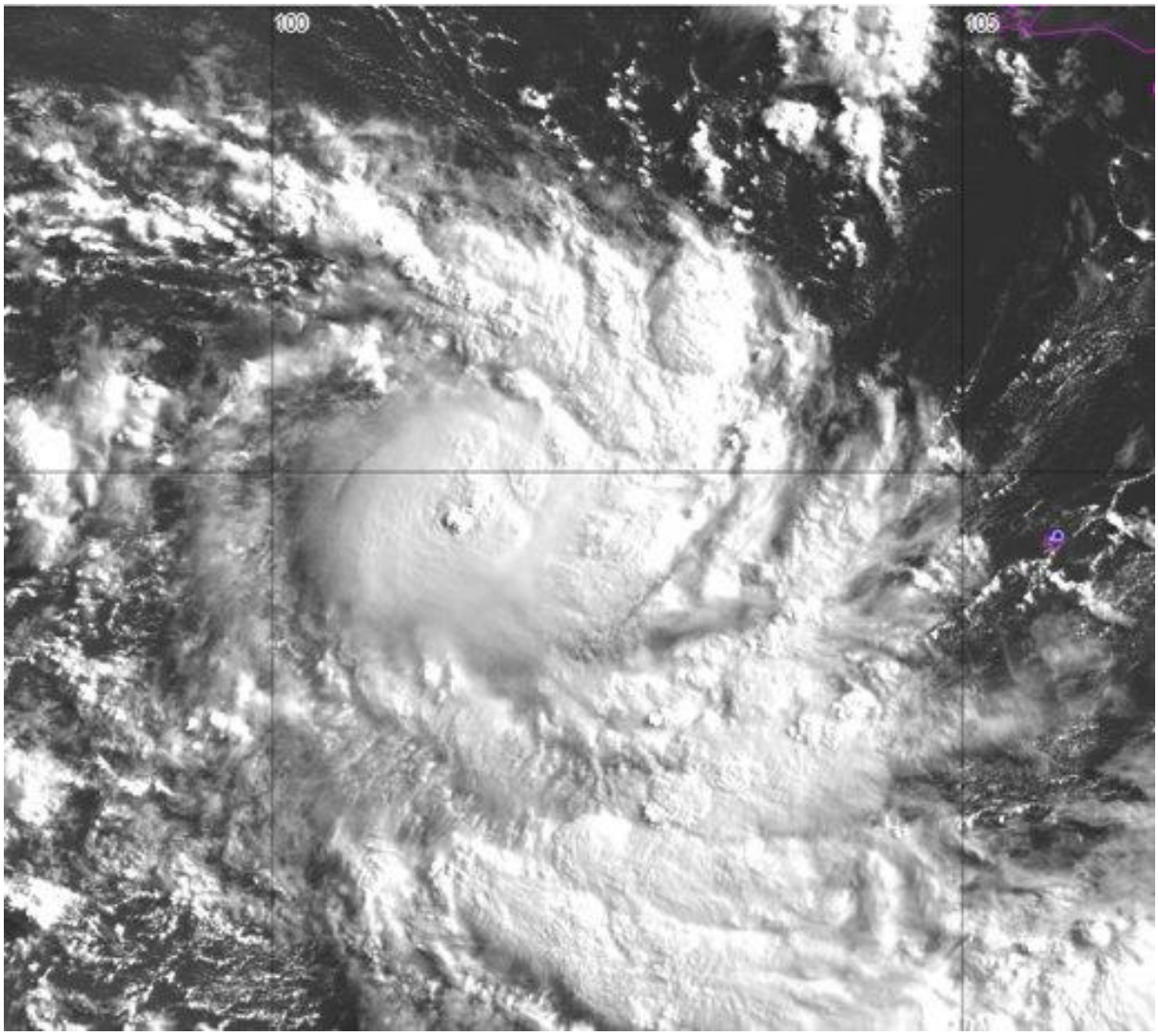


Figure 3. SSMIS 91 GHz microwave image at 2343 UTC 28 April 2017.

Image courtesy of NRL: https://www.nrlmry.navy.mil/TC.html.

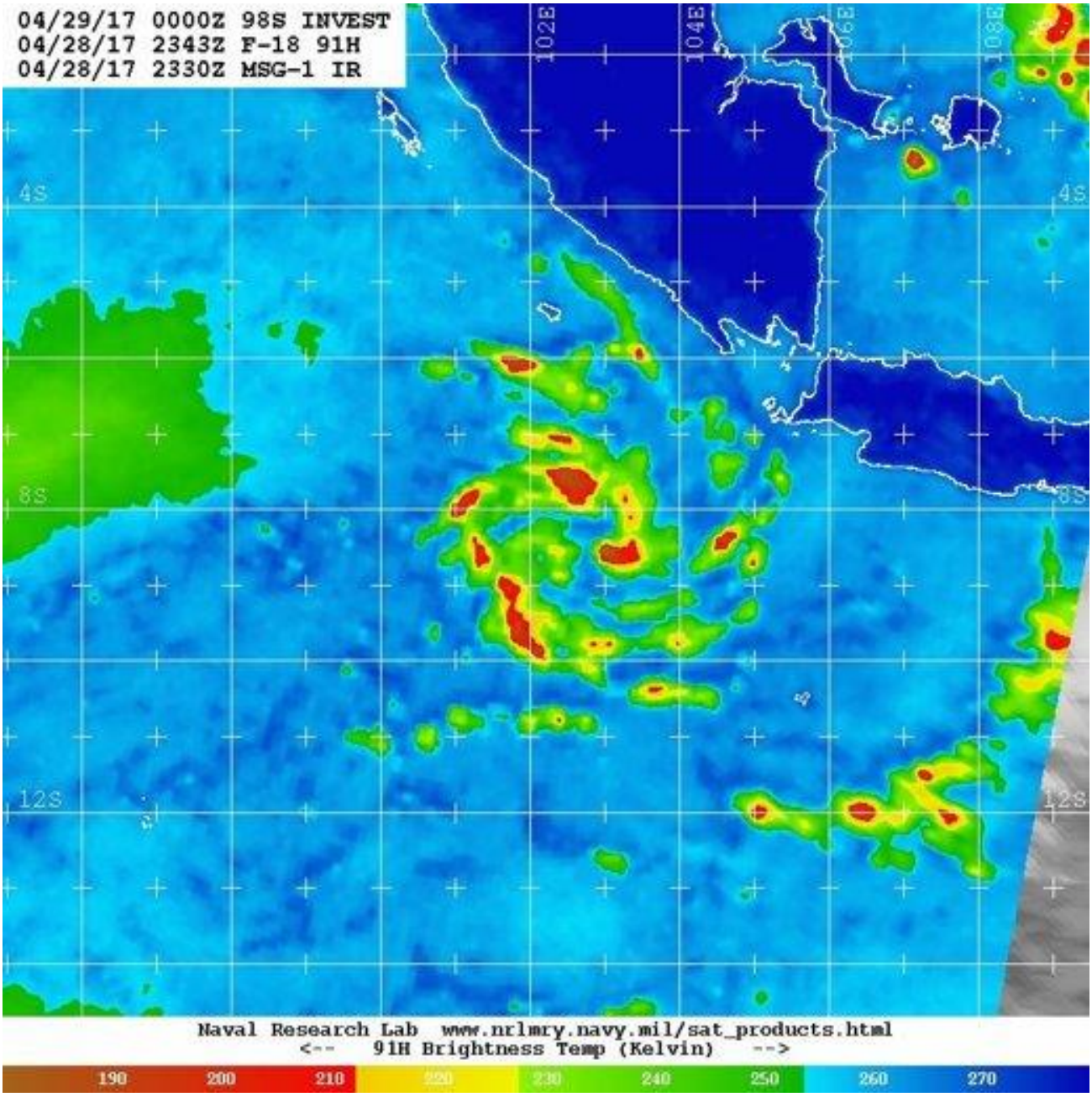
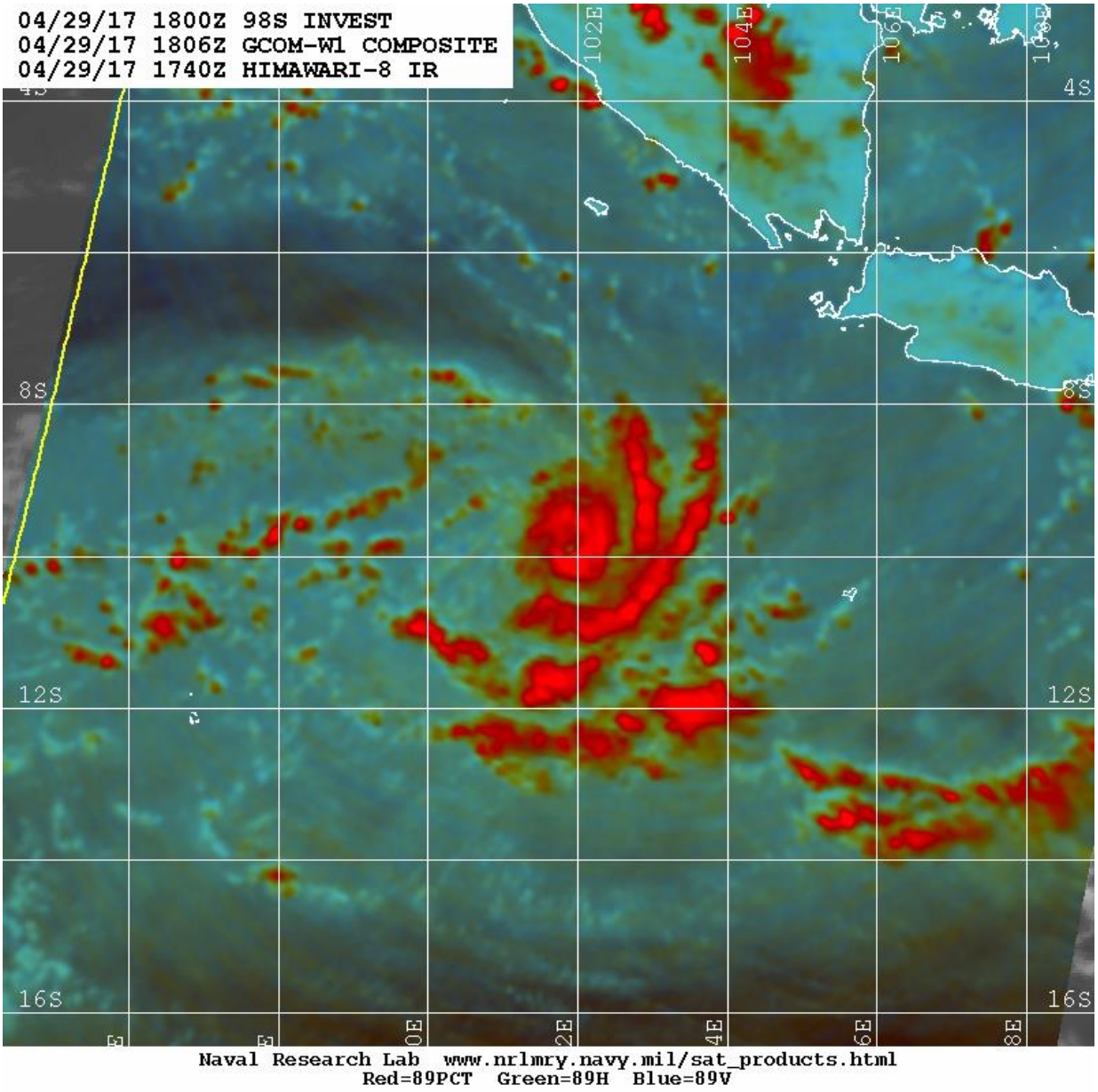


Figure 4. AMSR2 composite microwave pass at 1806 UTC 29 April 2017.

Image courtesy of NRL: https://www.nrlmry.navy.mil/TC.html.



3. Impact

The system caused no significant impacts to Cocos Islands.

4. Observations

No significant observations were reported.

5. Forecast Performance

Ocean wind warnings and official Tropical Cyclone Forecast Track Maps were issued from 01 UTC 30 April July to 22 UTC 30 April. Tropical Cyclone Advices commenced at 0125 UTC 30 April and continued until 2136 UTC 30 April.

Insufficient forecasts were issued to make a meaningful assessment of forecast performance for this event.

6. Appendix: List of abbreviations

ADT	Advanced Dvorak Technique
ACST	Australian Central Standard Time
AEST	Australian Eastern Standard Time
AMSR2	Advanced Microwave Scanning Radiometer
ASCAT	Advanced Scatterometer
ATMS	Advanced Technology Microwave Sounder
AWS	automatic weather station
AWST	Australian Western Standard Time
C	Celsius
CI	Current intensity
CIMSS	Cooperative Institute for Meteorological Satellite Studies (USA)
CIRA	Cooperative Institute for Research in the Atmosphere (USA)
EIR	Enhanced InfraRed
ERC	eyewall replacement cycle
FNMOC	Fleet Numerical Meteorology and Oceanography Centre (USA)
FT	Final T-number
GCOM	Global Change Observation Mission
GHz	Gigahertz
GMI	Global Precipitation Measurement Microwave Imager
h	hour
hPa	hectopascal
HSCAT	Hai Yang 2 Scatterometer (HY-2B, HY-2C)
km	kilometres
km/h	kilometres per hour
kn	knot
LLCC	low level cloud centre
MET	Model Expected T-number
METOP	Meteorological Operational Satellite
MJO	Madden-Julian Oscillation
mm	millimetres
MSLP	mean sea level pressure
nm	nautical mile
NOAA	National Oceanic and Atmospheric Administration
NRL	Navy Research Lab (USA)
PAT	Pattern T-number
RH	relative humidity
RMW	radius of maximum winds
RSMC	Regional Specialised Meteorological Centre
SAR	Synthetic Aperture Radar
SATCON	satellite Consensus
SMAP	Soil Moisture Active Passive
SMOS	Soil Moisture and Ocean Salinity
SSMIS	Special Sensor Microwave Imager/Sounder
TC	Tropical Cyclone
TCWC	Tropical Cyclone Warning Centre
UTC	Universal Time Co-ordinated