POST CYCLONE MONICA SURVEY

MAY 2006

Centre for Disaster Studies

James Cook University

Bureau of Meteorology

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Summary

- The experience of Cyclone Monica has not undermined peoples' confidence in cyclone warnings and preparation
- Nearly everyone prepared for the cyclone
- People were

Background to Cyclone Monica

Cyclone Monica was first declared a cyclone in the Coral Sea on April 17th 2006. It moved westward crossing the Queensland coast south of Lockhart River on April 19th as a category 3. It left the west side of Cape York the next day still a tropical cyclone and tracked north west across the Gulf of Carpentaria intensifying to a category 5 as it neared Nhulunbuy on April 23rd. However it remained offshore for the next day, skirting the

Flood waters cut the Arnhem Highway at the Adelaide River and Cox Peninsula Road at Berry Creek. The town bore at Oenpelli was covered with flood water, cutting off the town water supply.

Very heavy rainfall (>100mm) was recorded in parts of the western Arnhem District on 23 and 24 April, in the Darwin-Daly District on 24 and 25 April, and in the Victoria River District on 26 April.

TC Monica was the strongest tropical cyclone on record to affect the Northern Territory. Monica's estimated maximum intensity was stronger than TC Tracy in 1974, TC Neville in 1992 and TC Ingrid in 2005. Monica was an unusual late season tropical cyclone and was the first cyclone to affect the NT area of responsibility in the 2005/06 season."

BoM website http://www.bom.gov.au/announcements/sevwx/nt/nttc20060417.shtml accessed 13/6/6.

A primary issue of cyclone Monica was the reaction of an urban population to preparation for a very severe cyclone that eventuated as a minor event with minimal impact. However, it must be borne in mind that even as late as 12 hours out the uncertainty in the forecast TC track (map) indicated that there was a chance that Darwin would be directly impacted by a severe cyclone.

Post Cyclone Monica Survey

The Centre for Disaster Studies was approached by the Bureau of Meteorology to conduct a brief survey to gauge the reactions of residents to preparation for a severe event that fortunately did not transpire. This was carried out as a brief telephone survey of Darwin residents between 6th and 10th May. The Bureau had been keen on a separate survey of residents in Arnhem Land communities who were more directly impacted by the cyclone. Unfortunately there are many logistical problems with carrying out telephone surveys in remote locations, and insufficient funds for face to face surveys of the type we had just completed in the Cyclone Larry impact communities. Thus telephone numbers were randomly generated for suburbs of Darwin. These were contacted until surveys of 200 households had been completed (201). A random coverage of Darwin was achieved, but as in all such surveys based on landlines there is a bias against households that are privately listed and those (often lower socio-economic groups) that do not have a telephone. Mobile numbers were not contacted. Nearly all households in the urban area have a phone and as the questionnaire was aimed at household preparation activities the coverage is sufficient to indicate general patterns of behaviour, but does not lend itself to sophisticated statistical tests. Telephone surveyors all had knowledge of Darwin suburbs and previous research experience. Responses were overall positive and helpful.

Responses were partly pre-coded to aid consistency of responses and were mostly entered into the database as coded answers in order to generate simple tables. Telephone surveys are most successful when kept brief and simple, although inevitably the depth of data is reduced. A questionnaire survey was developed in 2005 and used in Port Douglas after category 5 Cyclone Ingrid had threatened the Queensland coast before landfalling in

Table 3. Preparation by Previous Cyclone Experience

Preparation	Previously experienced a cyclone		Total
	Yes	**No**	
Yes	130	56	186
No	13	2	15
Total	143	58	201

Table 4. Cyclone Education by Gender

Cyclone Education	Gender		Total
	Male	**Female**	
Yes	56	73	129

Table 6. Things to do Differently Next Time

Things to do differently	Count	Col %
Nothing different	130	64.7%
Prepare earlier	35	17.4%
Delay preparations	2	1.0%
Take it more seriously	6	3.0%
Prepare as normal	4	2.0%
Buy extra items	14	7.0%
Review more websites	1	.5%
Leave Darwin	7	3.5%
Refuse to leave home **	1	.5%
Go to evacuation Centre	1	.5%
Total	201	100.0%

Figure 2. Preparations Next Time
Note: "Nothing" means nothing different

xt Time by Gender

Table 9. Information Source

Information Source	Count	Col %
TV	14	7.0%
Radio	2	1.0%
Friends & relatives	1	.5%
Emergency Services	1	.5%
Internet	15	7.5%
Other sources	3	1.5%
Multiple sources	165	82.1%
Total	201	100.0%

Table 10. Information Source By Gender

Information Source	Gender		Total
	Male	**Female**	
TV	8	6	14
Radio	2	0	2
Friends & relatives	1	0	1
Emergency Services	0	1	1
Internet	6	9	15

0.48001

exclusively. This follows through into the next question as to which is the preferred site. Only the United States Navy website is a very minor alternative.

Figure 3. Use of Internet Sites

Table 12. Internet Sites Used and Table 13. Preferred Internet Site

Internet Sites	Count	Preferred site	Count
bom	102	bom	103
checked with neighbours	1	don't know	9
don't know	4	n/a	78
msn weather	1	none	5
none	79	U.S. Navy	6
U.S. Navy, bom	14	**Total**	201
Total	201		

Question 7 and 8.
7. Did you look at the cyclone forecast map on the Bureau website or did you see them on TV?
8. If you saw the cyclone track forecast map what did you think the grey zone meant?

Use of the forecast map is high, but there is no important difference either by gender or previous cyclone experience.

Table 14. Use of Forecast Map

Forecast Map	Count	Col %
Yes	186	92.5%
No	15	7.5%
Total	201	100.0%

Table 15. Use of Forecast Map By Gender

Forecast Map	Gender		Total
	Male	**Female**	
Yes	78	108	186
No	8	7	15
Total	86	115	201

Table 17. Understanding Forecast Map

Grey Zone	Count	Col %
Forecast track	56	27.9%
Don't know	92	45.8%
Don't remember	15	7.5%
Incorrect answer	23	11.4%
Guessed correctly	10	5.0%
Used legend	5	2.5%
Total	201	100.0%

Table 18. Understanding Forecast Map by Gender

Grey Zone	Gender				Total	
	Male		Female			
	Count	Col %	Count	Col %	Count	Col %
Forecast track	24	27.9%	32	27.8%	56	27.9%
Don't know	36	41.9%	56	48.7%	92	45.8%
Don't remember	4	4.7%	11	9.6%	15	7.5%
Incorrect answer	14	16.3%	9	7.8%	23	11.4%
Guessed correctly	6	7.0%	4	3.5%	10	5.0%
Used legend	2	2.3%	3	2.6%	5	2.5%
Total	86	100.0%	115	100.0%	201	100.0%

Table 19. Understanding Forecast Map by Previous Cyclone Experience

Grey Zone	Previously experienced a cyclone		Total
	Yes	No	
Forecast track	39	17	56
Don't know	68	24	92
Don't remember	11	4	15
Incorrect answer	17	6	23
Guessed correctly	6	4	10
Used legend	2	3	5
Total	143	58	201

Question 9.
9. Were the text messages issued by the Bureau of Meteorology and read out on TV or radio clear and understandable?

There is universal acclaim for the intelligibility and clarity of the Bureau of Meteorology me

Table 24. Perception of Cyclone Likelihood. Mean

	No.	Mean	Std. Deviation
Likelihood of cyclone this decade	201	1.41	.814

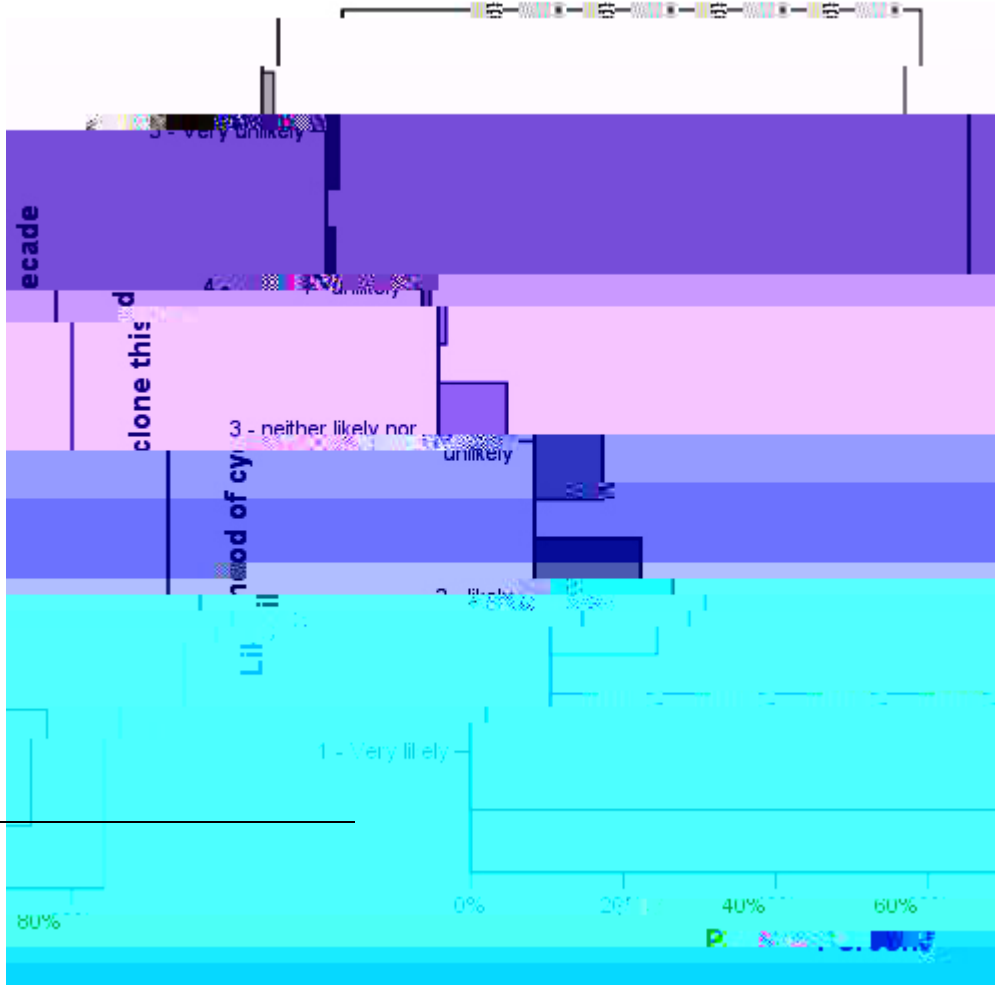**Figure 4. Perceived Likelihood of Further Cyclones this Decade**

Table 25. Perception of Cyclone Likelihood by Gender

	Gender		Total
	Male	Female	

There is no difference by gender. Of those who had not previously experienced a cyclone the expectation was slightly mo

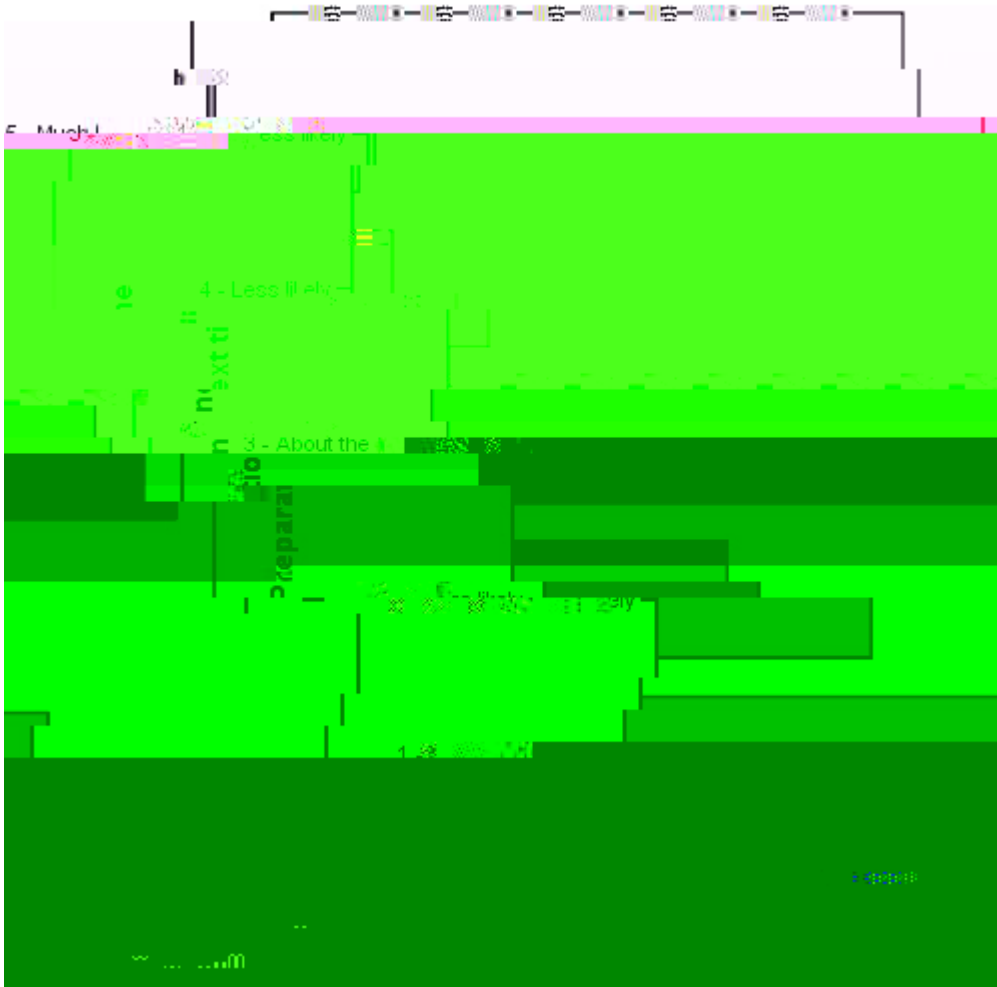**Figure 5. Future Preparations**
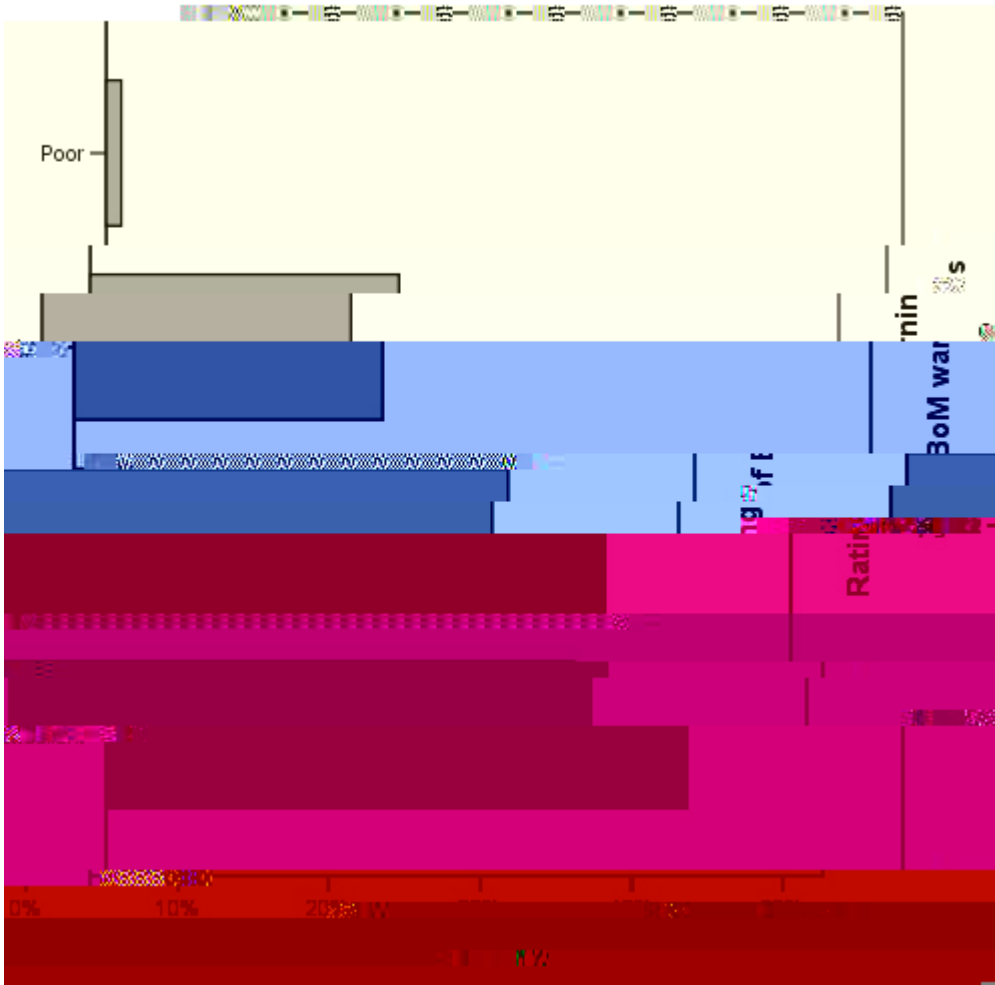
Table 29. Likely Preparations Next Time By Gender

	Gender	
	M	

Figure 6. Rating of BoM Warnings

Table 34. Rating of BoM Warnings by Previous Cyclone Experience

Rating of BoM warnings	Previously experienced a cyclone		Total
	Yes	No	
Excellent	48	29	77
Very good	63	18	81

although it does not contain that word, but it does come after previous questions that related to information and warnings. However, clearly information is a dominant theme - people want more information, more frequent information, more types of information and so on.

The next table, Table 36, replicates the themes of Table 35 with an emphasis on information, but specifically oriented towards the warnings and information that come from the Bureau of Meteorology. Whether or not some of these comments are realistic is beside the point as these were the responses from the survey. However, 58% had nothing to add and a further 17% gave praise. Of the rest of the comments, which are mostly about more information, the strongest (9%), was for more regular updates.

Table 35. Improvements for Next Time

Things to be done differently next time	Count
More accurate info	1
Consistency – radio/TV/pay TV	3
Better category info	1
Check on neighbours	2

Table 36. General Comments on BoM Information

Comments on BoM information	Preparation
None	116
OK	3
Good	20
Excellent	10
Better images on TV & internet	1
Caused some panic	1
Quite comprehensive	3
Has improved over the years	1
Inconsistent/complex/more	1
Info accessible and clear	1
Info constant	2
Info on cyclone scattered	1
Like new tracking system	1
More accuracy on cyclone location	1
More details in maps/location	1
More info	1
More info for newcomers	1
More info for remote locations	2
More notice on flooding	1
More public education	1
More regular updates	18
More user friendly info	1
Need more correct info	1
Other languages available	1
Overrated	1

preparation of residential dwellings, against a lack, or even negligence, where workplaces are concerned. It is surprising that a category 1 cyclone sho

Appendix. Telephone Survey Questionnaire

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1. What did you do to prepare as the cyclone warnings intensified?
Yes or No
2. Did public education campaigns, such as on TV and radio, and pre cyclone season advice have an influence on your preparations?
Yes or No

3. What things would you do differently if you are threatened by a severe cyclone again?
List first thing

4. Where or who did you get information from about cyclone Monica?
1. From the TV   2. From radio   3. From friends and relatives
4. From the Emergency Services   5. From the council   6. From your employer
7. From your own knowledge and experience   8. Internet   9. Other source

5. If you used the internet which sites did you use?
Name them

6. Which internet site did you prefer?
Name it

7. Did you look at the cyclone forecast map on the Bureau website or did you see them on TV?
Yes or No

8. If you saw the cyclone track forecast map what did you think the grey zone meant?

9. Were the text messages issued by the Bureau of Meteorology and read out on TV or radio clear and understandable?
Yes No

10. On a scale of 1 to 5 where 1 is very likely and 5 is very unlikely please rate the likelihood of another cyclone affecting this area in the next 10 years.

Very likely   1   2   3   4   5   Very unlikely

11. As Monica weakened very quickly, how do you feel about preparing for a major cyclone next time? On a scale of 1 - 5, where 1 you are far <u>more likely</u> to make comprehensive cyclone preparations next time there is a major cyclone threat in your area. and 5 = you are far less likely.

1	2	3	4	5
Much more likely	More likely	About the same	Less likely	Much less likely