

CASE STUDIES

**AUSTRALIAN TROPICAL CYCLONES
YASI and OSWALD**

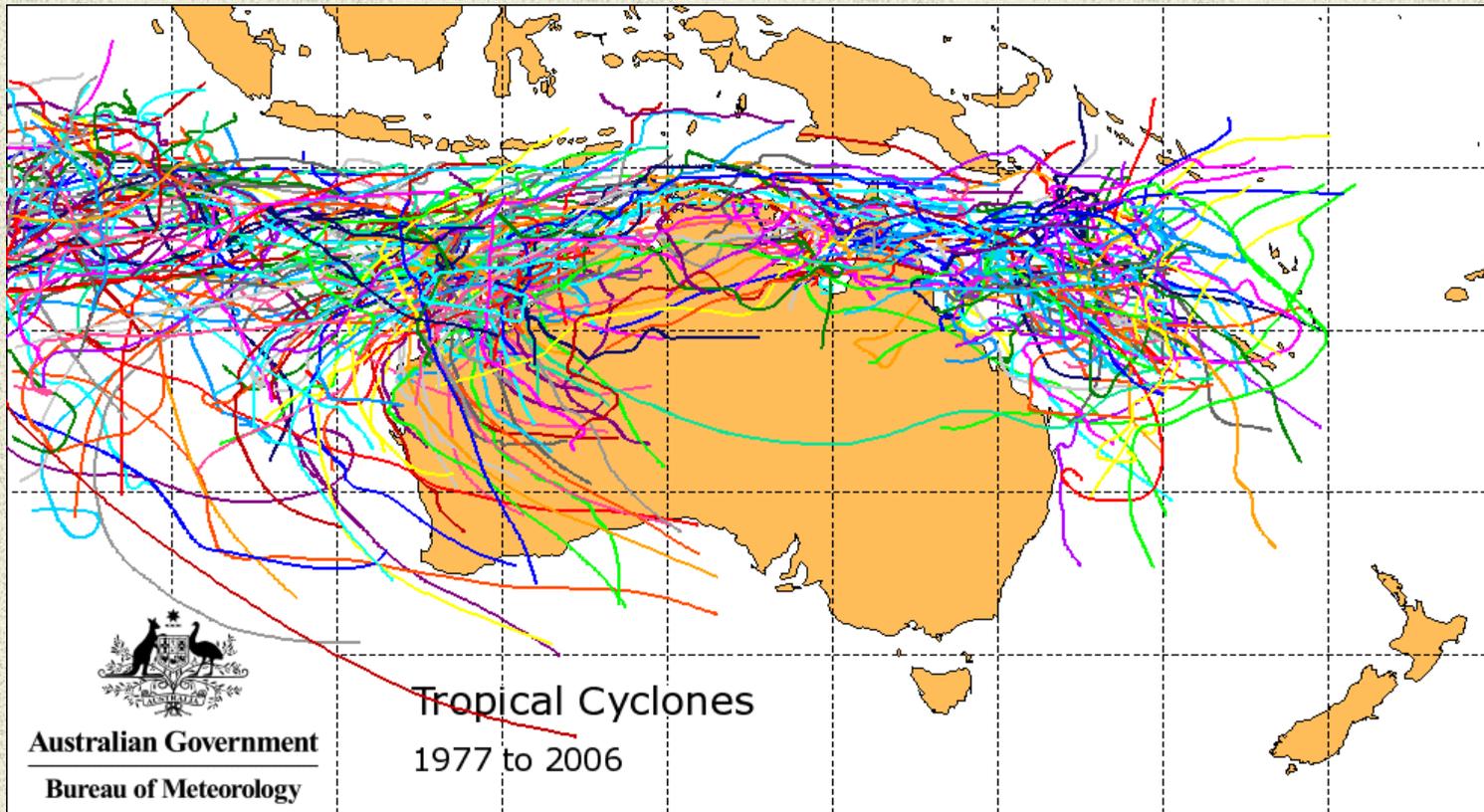
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Significant wind storms in the southern hemisphere are designated as Tropical Cyclones with the northern coasts of Australia being particularly exposed.

Tropical cyclones YASI and OSWALD were significant events on the East coast of Queensland in 2011 and 2013 respectively.

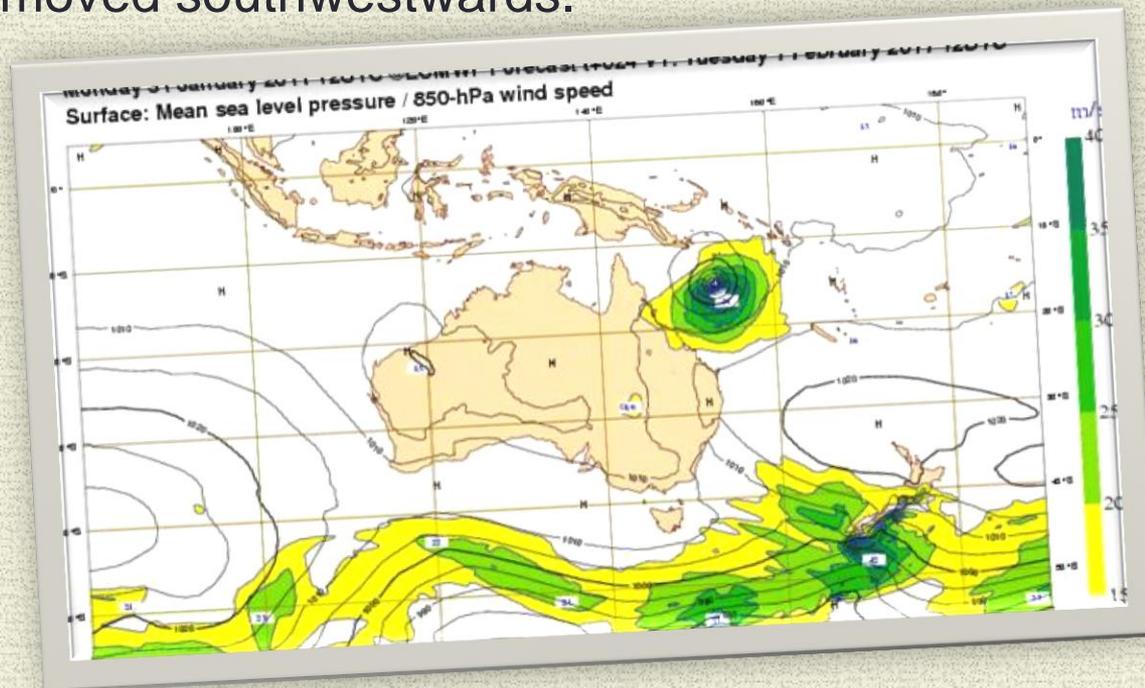
Here follows an overview and a personal experience of these two events from a marine insurance perspective.



TC YASI

Severe Tropical Cyclone Yasi was first identified on 26 January 2011 as a tropical disturbance, given the identifier "09F" by the Meteorological Centre in Fiji when it was located about 330 km south-southwest of Tuvalu.

Situated over a region of high sea surface temperatures and low to moderate wind shear, gradual intensification was expected as the system moved southwestwards.



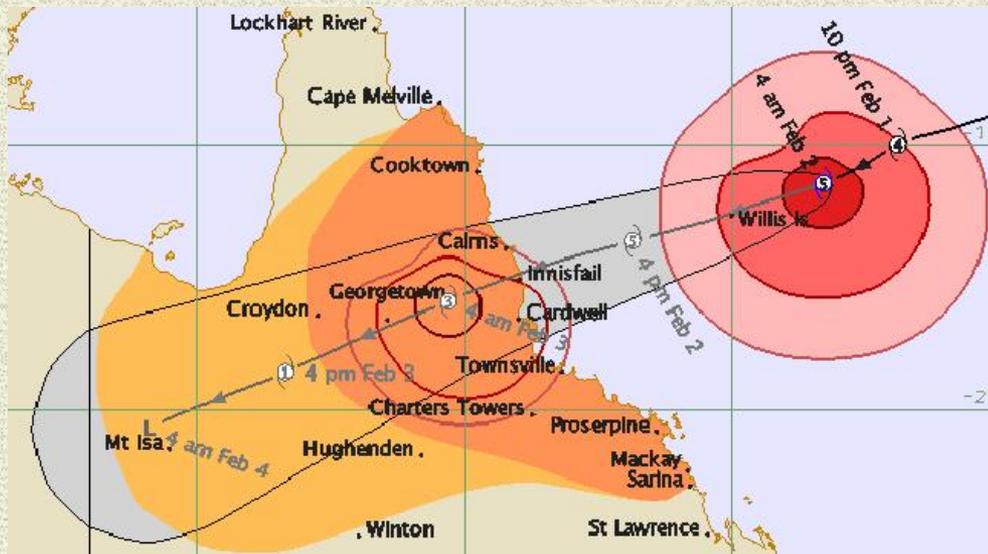
TC Yasi
The early stages

TC YASI

When it was first classified a tropical cyclone, Yasi was located about 370 km (230 mi) northeast of Vanuatu tracking in a westward direction and rapidly intensifying.

On 31 January Yasi attained severe tropical cyclone intensity and later that day crossed longitude 160E, prompting the final advisory from the Fijian Meteorological Service and the first advisory from the Australian Bureau of Meteorology.

At 7pm on 1 February Yasi was a Category 4 cyclone and it began taking a more west-south west movement and accelerated towards the Queensland coast



Predicted track
on the morning
of 2 February

TC YASI

By the time Yasi approached, preparations had been in hand for several days. Media outlets had been referring to the storm as "what could be the state's worst cyclone in history".

Many feared that Yasi could cause damage more severe than Larry in 2006 or Tracy, which severely damaged Darwin in 1974.

THIS COULD BE A KILLER
- BURDEKIN MAYOR LYN MCLAUGHLIN

SIZE: 500km wide. The eye of the storm is 100km
CATEGORY: Modelling predicts Yasi will reach Category 4 (Cyclone Larry was a marginal Category 5)
AT RISK: 350,000 people from Cape Melville to Yeppoon
WINDS: Expected to reach 250-280km an hour
RAINFALL: Expected to top 1000mm
FLOODING: Fears of a massive storm surge that could swamp low-lying areas.
IMPACT: People advised to find alternative accommodation
Whitsunday Island resorts evacuated
Ports between Mackay and Cairns closed
Aircraft at Cairns airport set to be tied to anchor points
Boats ordered to cyclone mooring
Coal terminals at Bowen and Mackay closed.

Sources: The Australian, The Courier Mail, Cairns Post,
http://earthsci.org/processes/weather/Larry_data/bom_larry/Tropical%20Cyclone%20Larry.htm#compare; <http://www.bom.gov.au>

Brisbane
Courier Mail
newspaper

TC YASI

Thousands of residents in the path of the storm were urged to evacuate. Thirty thousand people were evacuated from Cairns including all hospital patients who were airlifted to Brisbane.

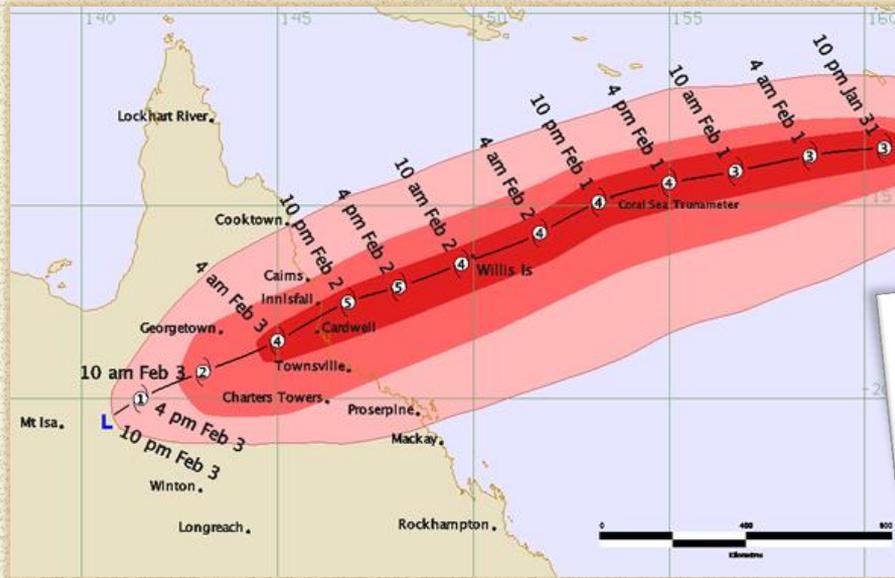
The state emergency coordinator warned residents that they would be on their own for up to 24 hours, as the conditions would be too dangerous for emergency responders.

10.24am Anna Bligh says **the next 24 hours "will be terrifying"**.



TC YASI

Yasi maintained its intensity and its west-southwest movement, making landfall on the southern tropical coast near Mission Beach between midnight and 1am on Thursday 3rd February.



TC YASI

- Category : 5
- Australian States effected : QLD, NSW, VIC, SA and NT
- Highest recorded wind (gust) : 285 km/h
- Eye diameter : 35km
- Storm surge : 5.33m above predicted tide
- Fatalities : 1 (Asphyxiation)
- Homeless: 1100
- Public infrastructure losses: \$1.5bn
- Insurance claims: 72,200 claims - \$1.41bn
- Estimated total damage cost: More than \$3.5bn (costliest Australian)

TC YASI

That's when the fun started.....

The resulting claims from a marine perspective:

- Approximately 800 klms of coastline affected
- 1 marina complex entirely damaged (pontoons floated off piles in surge)
- 2 marinas minor damage
- Fishing vessels, aquaculture infrastructure, tourist vessels and recreational craft – all all sectors of marine industry were effected.

Port Hinchinbrook was the focus.....more than 100 vessels in a small confined space.

TC YASI

This is the iconic image of the marina destruction at Port Hinchinbrook later on the first morning.



TC YASI

Many vessels on top of each other in the gardens of luxury villas facing the water.

Difficulties from a claim handling perspective:

- Local insureds and brokers without communication.
- No power.
- No access.
- No accommodation.
- No repairers.
- Continued torrential rain for several weeks.











TC YASI

- We got in to the site on day 1 with some difficulty- nearly 3 days before any other surveyors arrived – by then we had the job well under way.
- Emergency services had control and were causing more damage.
- Access had to be negotiated.

“Our first impression of the jumble of yachts was of a children’s game of ‘pick-up-sticks’ where each child picks a stick out of the pile in the hope that the whole lot does not come tumbling down. Fortunately, our approach was much more ordered. We started on the outside and worked our way in.”

“This approach allowed our team to identify each relevant vessel, their owner and insurer in a logical manner. We organised the vessel’s removal so that the salvage team could gain access to identify the damage.”

“Each vessel had to be individually assessed to see if it could be repaired or was a total loss. One of our key challenges was to make it as painless as possible for their owners.”



TC YASI

Operation took many weeks – cranes, divers, demolition crews etc.

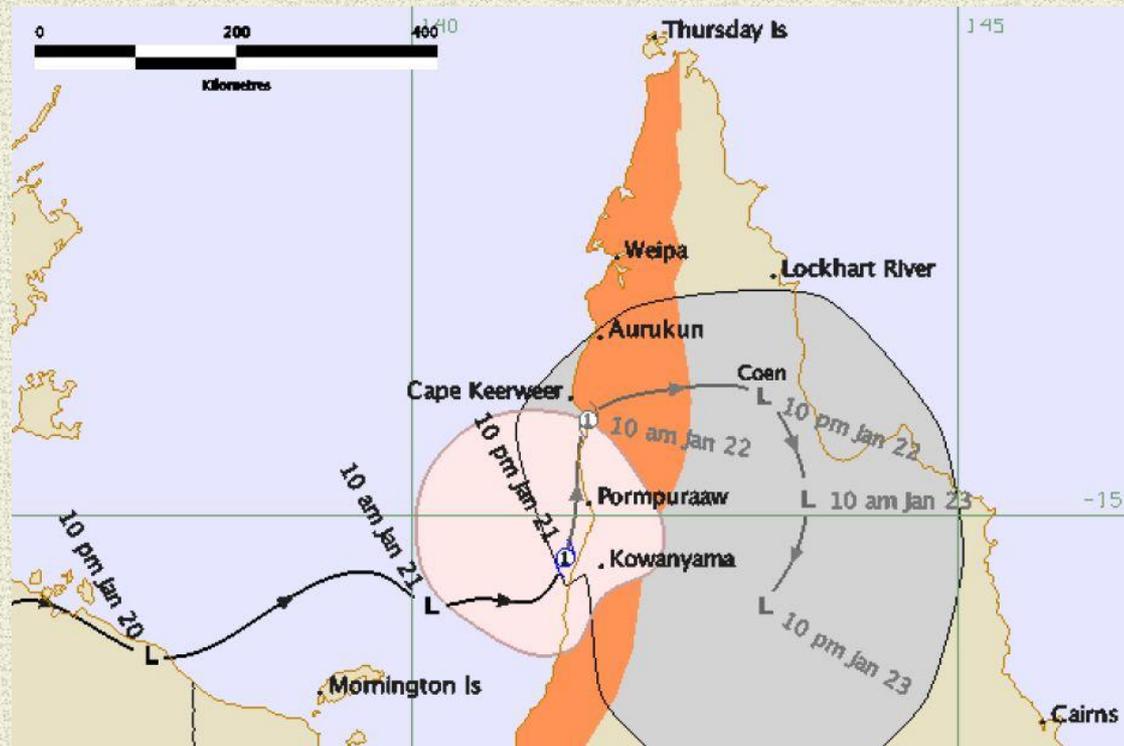
Careful apportionment of costs.

The last boat.....



TC OSWALD

- In January 2013, tropical cyclone Oswald was a short-lived Category 1 storm, on the Western coast of North Queensland on 21 January 2013.
- It caused little damage in itself with highest recorded winds of only 95 km/h



TC OSWALD

However, the weather system continued to retain its identity as a low pressure system and move 3000 klms south down the Eastern coast of Australia reaching as far as Sydney before dissipating on about 30 January 2013.



TC OSWALD

Although no longer a cyclone the system caused heavy rain and swells which led to widespread damage to vessels and infrastructure over a very long distance of coastline.

There was widespread flooding and 6 lives were lost. In some places rainfall reached almost 1.5 metres over a 4 day period. Rivers reached record heights and thousands lost power and telephone lines.



TC OSWALD

- Burnett River, Bundaberg hit record level of 9.53m. Some vessels up to about 30m were washed out to sea never to be seen again....
- Losses estimated at more than \$3.0bn – insured losses \$1.0bn.



CYCLONES YASI AND OSWALD

Some thoughts for marine insurers

YASI

- Importance of pile height in marinas.
- Claim handling requires special treatment.
- Importance of co-operation between insurers.

OSWALD

- One event can cover a very large geographical area.
- Because almost all the damage occurred after the system was no longer categorised as a cyclone, cyclone excesses could not be applied.

IMPORTANCE OF PILE HEIGHT IN MARINAS

Inadequate pile heights can allow floating marinas – and the boats attached – to literally float off in a storm surge.

This is inevitably catastrophic.

Local authorities requirements can differ and be complex and cannot be relied upon to ensure pile heights are adequate.

There can be considerable pressure to reduce pile height for aesthetic reasons.

Location	Pile Height-CHART DATUM (m)	Pile Guide Freeboard (m)	Tide level when pontoons are at top of pile (m Chart Datum)	Highest Astronomical Tide For Hamilton Island 4.88m Chart Datum (m Chart Datum)	Height of Tide Above HAT that Pontoon guides will reach the top of piles (m)
A1 A2	7.2	0.9	6.3	4.88	1.42
A3 A4	6.5	1	5.5	4.88	0.62
A5 A6	6.5	0.6	5.9	4.88	1.02
A7 A8	6.5	0.6	5.9	4.88	1.02
A9 A10	6.5	0.6	5.9	4.88	1.02
Dent Pontoon	6.8	1	5.8	4.88	0.92
B Arm Location 1	7.8	0.35	7.45	4.88	2.57
B Arm Location 2	7.7	0.35	7.35	4.88	2.47
C Arm Location 1	7.6	0.35	7.25	4.88	2.37
C Arm Location 2	7.7	0.35	7.35	4.88	2.47
D Arm Location 1	7.9	0.35	7.55	4.88	2.67
D Arm Location 2	7.9	0.35	7.55	4.88	2.67
E Arm Location 1	7.2	0.35	6.85	4.88	1.97
E Arm Location 2	7.1	0.35	6.75	4.88	1.87
F Arm Location 1	7.1	0.35	6.75	4.88	1.87
F Arm Location 2	7.1	0.35	6.75	4.88	1.87
G Arm Location 1	7.2	0.35	6.85	4.88	1.97
G Arm Location 2	7.2	0.35	6.85	4.88	1.97
Fuel Pontoon	6.6	0.55	6.05	4.88	1.17
U Shaped Pontoon	5.8	0.4	5.4	4.88	0.52
Pavilions Pile Location 1	7.1	0.4	6.7	4.88	1.82

This table shows a recent assessment of a 300 berth marina. In a 1/100 year event 2 sections will have inadequate pile height. In a 1/500 year event its 8 sections.

CLAIM HANDLING REQUIRES SPECIAL TREATMENT. IMPORTANCE OF CO-OPERATION BETWEEN INSURERS

At least in the early stages of an isolated but catastrophic event insurers need to consider combining resources to provide prompt and efficient assessment of losses.

It is not a time for individual agendas.

ONE EVENT CAN COVER A VERY LARGE GEOGRAPHICAL AREA

As we have seen with ex TC OSWALD the geographical area covered by a single event can be very large.

Climate does change over time and traditional areas which insurers consider cyclone or storm prone can expand.

On the East coast of Australia at least the traditionally accepted southern boundaries of what was considered the cyclone zone have clearly extended.

CYCLONE EXCESSES COULD NOT BE APPLIED

Again in regard to OSWALD, most of its path of destruction came after it was a named cyclone.

It was all the while being referred to as “EX” TC OSWALD.

Brokers were quick to point out that this did not justify the application of additional deductibles for named cyclone claims!

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