

HARDEN UP

QUEENSLAND



CASE STUDY: Gold Coast Erosion, 1967

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Tropical cyclones *Dinah*, *Barbara*, *Dulcie*, *Elaine* and *Glenda* all passed east of the Gold Coast and then in June three major East Coast Lows directly affected the Gold Coast causing unprecedented beach erosion.

Tropical cyclone *Dinah*. *Dinah* 24-31 January 1967 probably generated the largest waves observed in Southern Queensland and Northern NSW over the last century. On its passage towards southern Queensland caused severe damage at Heron Island initially from inundation from large northeast swells and a day later from winds. It turned more southerly and passed over the Sandy Cape lighthouse, which recorded a central pressure of 944.8 hPa and high water, 10 metres above normal. Although well off the coast many trees were blown down from Rockhampton to Grafton. Houses were unroofed at Bundaberg Maryborough and along the Sunshine and Gold Coasts. Banana and cane crops were wiped out on the Tweed Coast and a severe wind gust overturned a car at Evans Head. The hardest hit area of northern NSW was around Brunswick Heads where several banana plantations were wiped out.

Huge seas and storm surge caused severe erosion at Emu Park, Yeppoon, and in the Maryborough Bundaberg area. Very large waves broke completely over Lady Musgrave Island (about 80km northeast of Bundaberg while the following report was received from a Marine biologist on nearby Lady Fairfax Island "The section of Island on which I live is only 5 acres and it was no surprise to find it underwater with the arrival of *Dinah*. In fact it was extremely difficult to read the rain gauge, the gauge being covered by 3 feet of water."

The following report was received from the head lightkeeper on Sandy Cape "A very heavy easterly swell was observed on the inside beach on the 28th but afterwards visibility was so reduced to make observations impossible. High seas together with high tides brought the sea level up to within 20 feet of the boatshed, approximately 30 feet higher than usual.' The report from Lady Elliott Island was as follows 'A very heavy swell persisted and was most visible from the northwest and during the forenoon high tide phenomenal seas broke across the reef all around the island, previous banks of coral above high water were all moved as seas broke over onto the island. Self sown trees approximately five years on the east beach were washed out and blown onto the island. It appears that the cyclone passed Lady Elliot at approx 1300, this being the lowest point on the barograph."

A storm surge of 2 metres covered the flats inland from Double Island Point and a storm surge inundated cane farms at Bli Bli on the Sunshine Coast and was knee deep in Hastings St Noosa. Spectacular wave damage occurred on the ocean side of Bribie Island where two massive concrete World War II gun emplacements, 13 metres by 9 metres by 4.5 metres in dimension, were undermined by the sea and moved about 2 metres from their original position

Around Sandgate in Moreton Bay seawater 1.5 metres deep came into houses. More than one hundred homes were flooded and at Cribb Island one house was washed into the sea. At nearby Nudgee beach the sea wall was destroyed and houses were flooded with 0.66 metres of salt water.

Storm surge also affected the Gold Coast and water lapped the decking of the Jubilee Bridge, which are about 1.5 metres above highest astronomical tide. Waves surged into Rainbow Bay causing damage and flowing over a road 7 metres above mean sea level. A similar storm surge occurred on the Tweed River isolating Fingal with six houses awash. Large waves caused a section of the esplanade to collapse at Surfers Paradise and the severe erosion on the Gold Coast had begun.

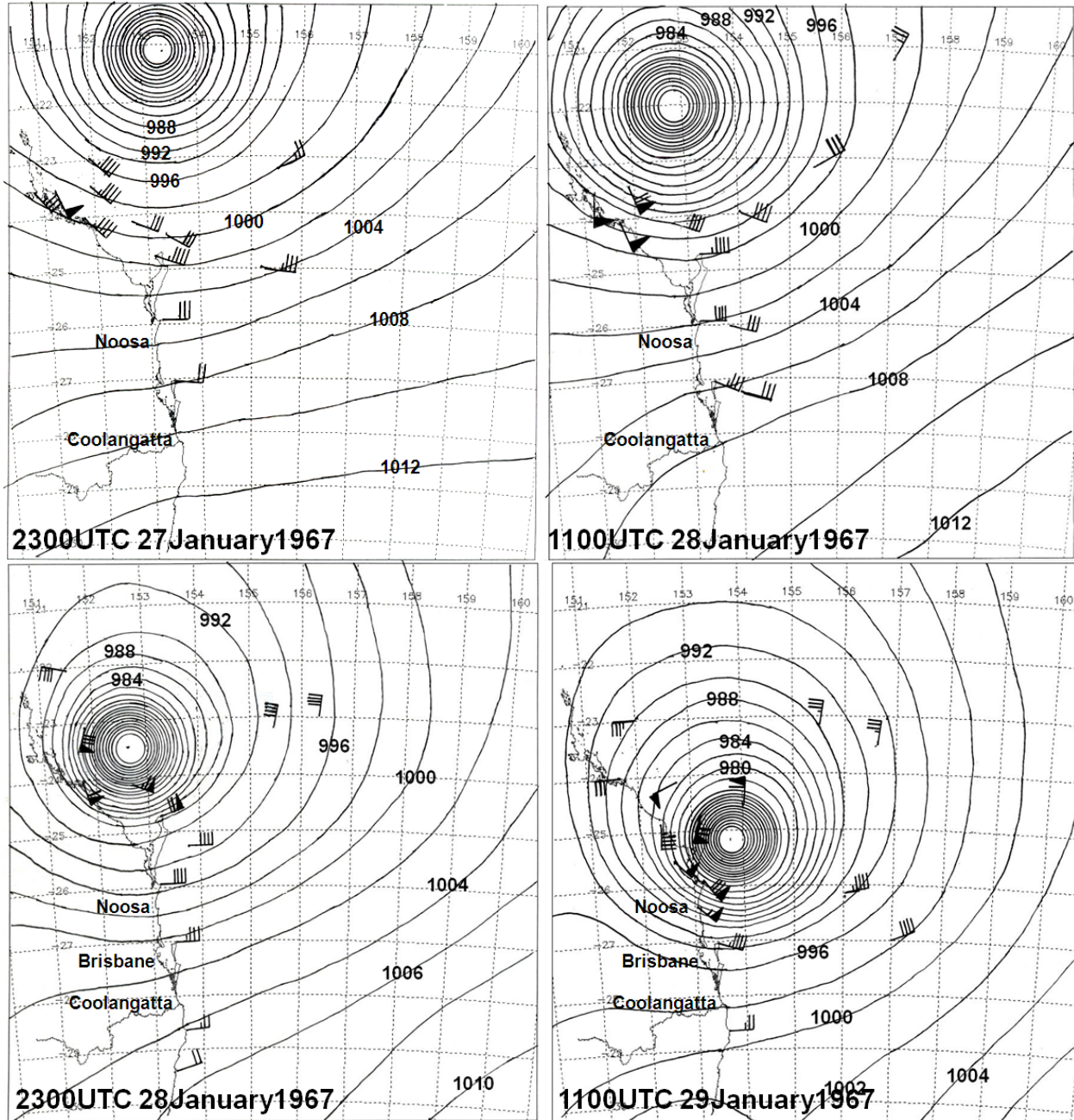


Figure 1. Mean sea level pressure analyses with wind observations showing tropical cyclone Dinah, Approaching southern Queensland and crossing Fraser Island.

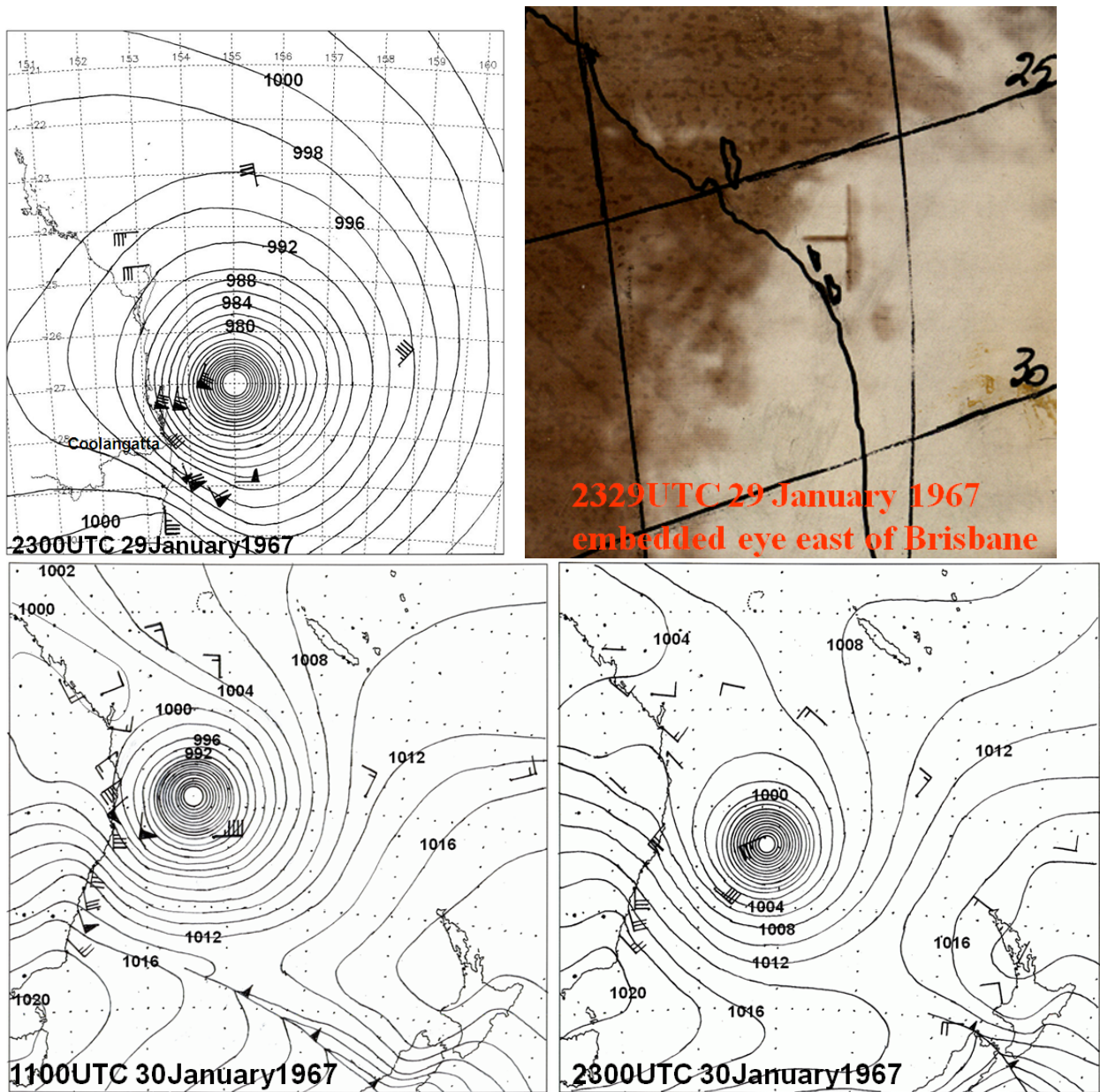


Figure 2 . Mean sea level pressure analyses with wind observations showing tropical cyclone Dinah, passing the Gold Coast and moving into the Tasman Sea. The top right panel is a rare satellite image for the time showing a circular eye east of Brisbane.

TC Glenda 1967. This was one of the big 3 in 1967. It passed southwards 500 km east of Brisbane. Gold Coast beaches were completely eroded by large waves. *Glenda* was last of a series of cyclones in 1967. The erosion came within 20 yards of the new Coolangatta SLSC and the patio was damaged by subsidence. Six men lost their lives in two separate boat incidents in waves to 16 metres off the South Queensland Coast. On 2300UTC 1 April the 9000tonne *White Ocean* was 160 km south of the centre in waves generally less than 7metres in height. But occasionally waves were much higher and crashed into the superstructure 16metres above waterline. The Captain and third officer were caught on the forecastle on one of these waves. The third officer was killed and the Captain badly injured. The 10 metre *Beagle* was anchored in the lee of Double Island Point at 0830UTC 2 April when the boat was caught broadside by a huge wave and broken up with 5 of the crew of 6 were drowned. The previous day the *Malveena* reported waves to 16metres along the open coast near here. The *Maranui* at 1520UTC 4 April 1967 was located near the centre of *Glenda* at 30.0°S 158.5°E (east of

Coffs Harbour) when the wind turned southerly averaging 75 knots with the mean sea level pressure 985.4hPa. At 2000UTC it was located at 29.6°S 158.0°E (east of Yamba) with southwesterly winds averaging 70knots and the pressure 981.6hPa .

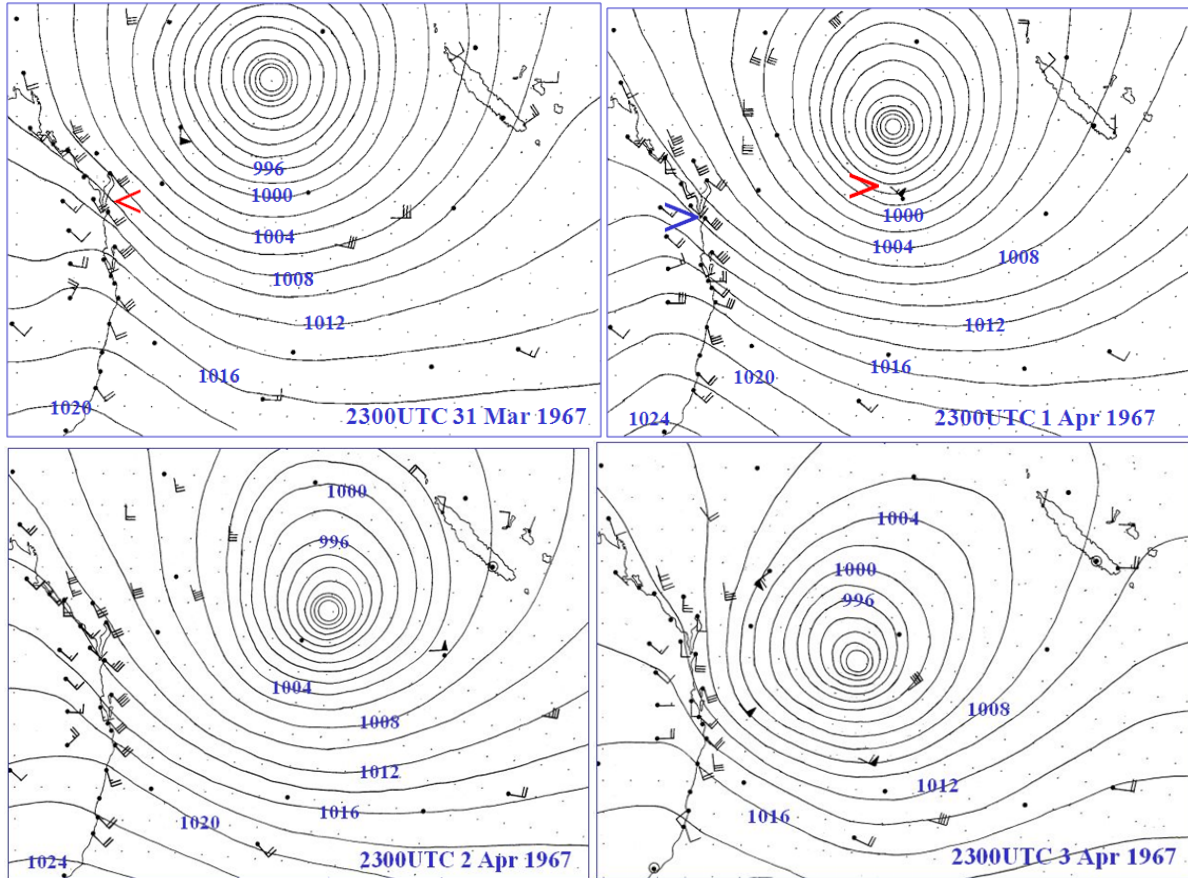


Figure 3 . Mean sea level pressure analyses with wind observations showing tropical cyclone Glenda, passing between Australia and New Caledonia. The red arrow marks the position of the Malveena as it observed 50 feet waves. In the top right panel the red arrow marks the position of the White Ocean.

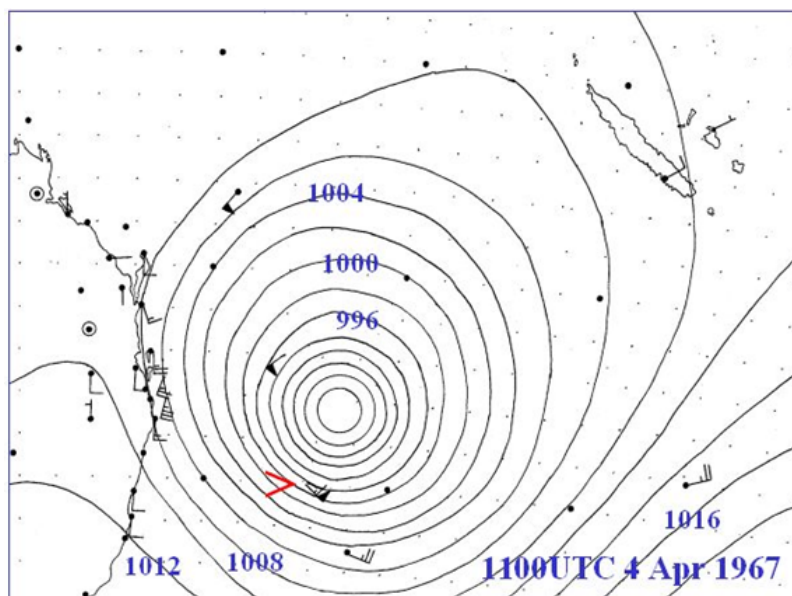


Figure 4 . Mean sea level pressure analyses with wind observations showing tropical cyclone Glenda, east of Kirra. The red arrow marks the position of the Maranui.

The East Coast low late June 1967

This was the culminating event of 1967 (Figure 13) and hurricane force winds were reported from Cape Moreton from 9am 26 June 1967 to 3pm 27 June 1967. A man was killed when his car crashed into a creek at Nerang in bad weather on the night of the 26th. Some houses and buildings were unroofed at Burleigh and Surfers Paradise. At Mudgeeraba a building was blown off its stumps and wrecked. Boats were swept from their moorings. Two houses at Mermaid Beach were lost to the sea (26th).

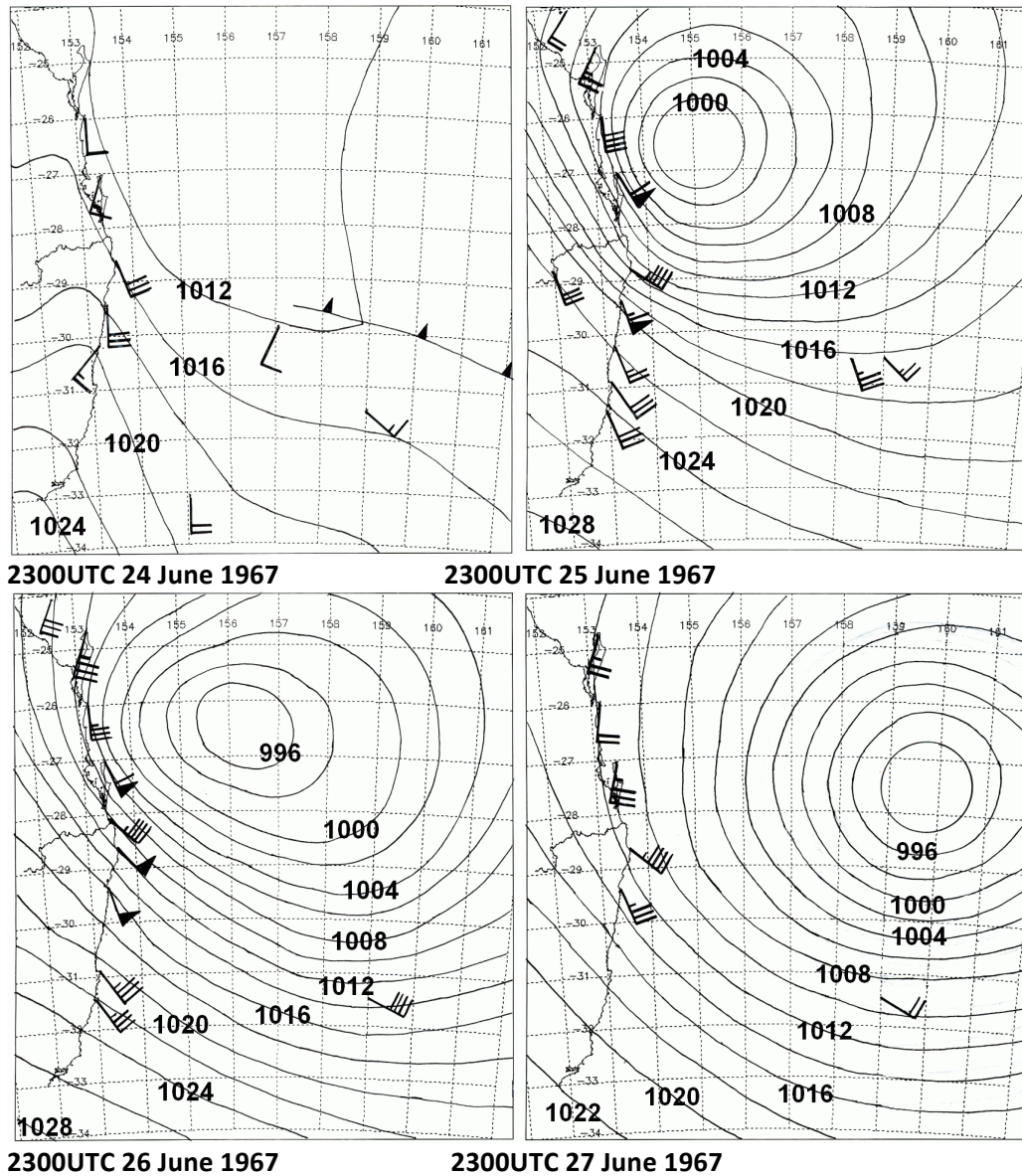


Figure 5 . Mean sea level pressure analyses with wind observations showing the evolution of the severe East Coast Low of 25-28 June 1967.

Large sections of the esplanade at Surfers Paradise was lost to the sea and lanes and streets collapsed at Palm Beach (26th). The swimming pool from the Beach Lodge resort was lost to the sea at Surfers. By the 28th the esplanade at Main Beach fell into the sea and 5 houses were wrecked at Nobby's and Palm Beach. Many houses were badly damaged by the sea along the Gold Coast however a volunteer army of 5000 people placed around 100,000 sandbags along the foreshore helping to prevent many houses being lost to the sea. The wreckage of the Prawn Trawler *Sydney J* was found at Tewantin with no trace of the owner skipper who was believed to have drowned.