Turbulence on the Gold Coast

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Severe cyclones rarely reach the east coast of southern Queensland – the last time was in the 1970s. However, current climate change predictions and increasing concentrations of values are making risk researchers sit up and take notice, because should a storm event occur, the consequences could be devastating.

As the probability of #cyclones hitting Brisbane increases, insurers need to prepare for #major losses and emergency plans #cost explosion, #climate change.

The east coast of Queensland, where the state capital of Brisbane is situated, has grown dramatically over the last 50 years. The population has soared and led to massive urban expansion. Fuelled by the rising worldwide demand for raw materials, southeast Queensland has seen strong economic development and is currently Australia's fastest-growing region. The Australian Bureau of Statistics expects the population in and around Brisbane to grow by 34–57% over the next 20 years.

Tourism in the region is also booming. Gold Coast, for instance, with over 500,000 residents, has become Queensland's second-largest "city" or urban region. It also has the second-fastest growing population, again after Brisbane. Thanks to two major airports in Brisbane and Coolangata, this holiday paradise can be reached quickly and conveniently. The Pacific Highway, completed in 2000, additionally connects the tourist hub to Brisbane.

Climate change will bring severe cyclones closer to Brisbane

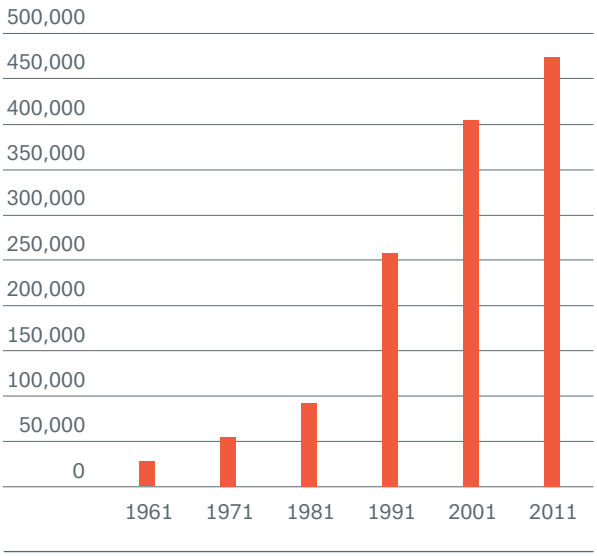
Greater Brisbane is constantly exposed to the risk of tropical storms and their outer bands. With its high concentration of values, this makes Greater Brisbane one of the regions with the highest loss potential. Though most major storm events have so far been confined to the northern part of Queensland, Brisbane has still had several uncomfortably close brushes with strong cyclones. Furthermore, as climate change takes hold, the Queensland region is expected to see an increase in long-lived cyclones, which will increasingly shift southwards. According to current climate research, the number of storm events is likely to decrease, but their severity increase. Based on these indicators, the possibility of a major event in and around Brisbane does indeed exist.

Brisbane 1960

Brisbane 2011

Brisbane today has a population of over 2 million. In 1960 it was 700,000.

Population growth Gold Coast 1961–2011



Source: Queensland Government Statistician's Office, Australian Bureau of Statistics

Major losses in the 1970s

In recent decades, very few cyclones have made landfall in Greater Brisbane. Nevertheless, there is an ever-present possibility of a powerful storm event. For example, the region experienced several very heavy storms in the 1970s. In 1972, Cyclone Daisy resulted in an insured loss of A$ 116m in the Brisbane and Gold Coast region. In 1974, Cyclone Wanda caused insured losses amounting to A$ 2.6bn. Zoe followed soon after with an insured loss of A$ 171m (all figures indexed to 2011, ICA).

Such events are rare because of strong westerly winds along the latitudes of Brisbane, which break down the vertical structure of a cyclone. However, the precondition for the development of a tropical cyclone, namely a high temperature of over 26°C in the ocean's surface layer to a depth of at least 50 m, also exists south of Brisbane in summer. This situation can not only promote the

Loss potential for Brisbane and Gold Coast

Due to the steady increase in values along the Queensland coast, the sums insured, and thus also the loss potentials in this region, have increased greatly in recent decades. The following percentage values can serve as a basis for loss estimates. Even in regions like Brisbane, where tropical cyclones are a rarity, losses amounting to 5% of the total sum insured are possible.

The figures are not based on modelled results.

	Brisbane	Gold Coast
Total sum insured (TSI)	A$ 400–425bn	A$ 150–180bn
Loss potential on median TSI	A$ 412bn	A$ 165bn
1%	A$ 4.1bn	A$ 1.7bn
2%	A$ 8.2bn	A$ 3.4bn
3%	A$ 12.4bn	A$ 5.0bn
4%	A$ 16.5bn	A$ 6.6bn
5%	A$ 20.6bn	A$ 8.3bn

Source: Munich Re, status 2013

Australian cyclone scale

Category	Wind speed
1	90–124 km/h
2	125–164 km/h
3	165–224 km/h
4	225–279 km/h
5	≥ 280 km/h

Source: Bureau of Meteorology, Australia

development of a cyclone, but also help to sustain an approaching one. In other words, local winds at higher altitudes need only be weak, for example due to a southward shift in the west wind zone, for a severe cyclone to develop and make landfall in the region around Brisbane.

Loss potential rising in the region

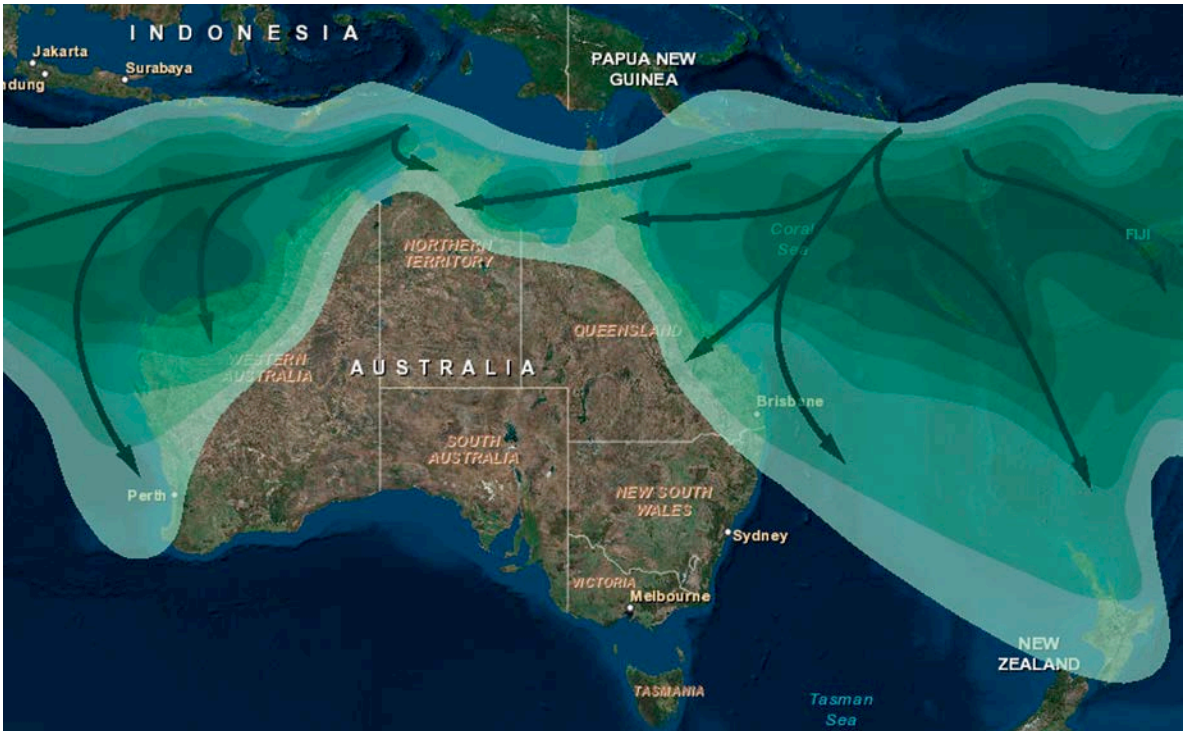
Munich Re calculated the loss potential existing in Greater Brisbane in a Best Practices Study in 2013: based on a stochastic set of cyclones, the 1,000-year insured loss that would be expected to occur in Brisbane in the event of a category 4 cyclone was calculated to be a lower two-digit billion A$ amount.

The region has experienced many near misses, as in 1967, for example, when category 3 Cyclone Dinah veered away just off the coast. If a storm of this magnitude were to pass over the region today and not turn back, we would have a scenario with high wind speeds, flooding and a storm surge of catastrophic proportions.

Large-loss amplification – Cost explosion after a storm

Events like Hurricane Katrina have shown us that the loss directly associated with a strong storm can rise significantly due to secondary factors. This is referred to as post-loss or large-loss amplification. The central factor in this case is the failure of the infrastructure.

Tropical cyclones in Australia



Area affected by tropical cyclones in Australia and New Zealand.

Source: NATHAN Risk Suite

Gold Coast's geographical features make it extremely vulnerable to storms and flooding. The region's flat surface allows storms to sweep over-land at full force. Meanwhile, the lagoon landscape brings an increased chance of flooding which extends far inland.

Many businesses and supermarkets are located in the basements or semi-basements of high-rises and would no longer be accessible in the event of a major catastrophe.

Destroyed transportation network

In moderate catastrophes, the transportation network is usually restored in just a few days. After more serious events, however, it can be months before roads, railways, airports or ports are back in full operation.

The destruction of infrastructure frequently leaves the hardest-hit areas inaccessible. Transporting relief supplies and rescue services to these areas is impossible or at best extremely difficult. Hotels, restaurants and grocery stores are closed. Relief workers, repair crews and loss adjusters must find accommodation outside the disaster areas and travel up to several hours a day to their places of assignment. Delays in relief supplies, loss adjustment and repairs are the result. Buildings sustain further damage, for example from mould, which can have terrible effects on their condition.

Scarcity of resources

Because of the increased demand and poor transportation conditions, building materials become scarce, which in turn pushes up prices. The demand for skilled workers also increases. Lucrative major contracts are usually given priority. Above all, private buildings that have suffered just minor damage remain unrepaired for an extended period, during which time the damage gets worse.

The increased demand for skilled workers also causes wages to rise. What is more, as skilled workers are in short supply, poorly trained workmen are hired who do not repair the damage professionally, leaving the buildings even more vulnerable when the next storm strikes. This “demand surge” increases the cost of recovery by up to 40% compared to standard conditions – as we learned in the aftermath of Katrina.

Further loss drivers

Failed energy provision, water supplies and telecommunication services can compound the situation further and even lead to serious health risks. Furthermore, additional losses must be expected from looting and the destruction of buildings and property. It can be months before commercial businesses and service providers are able to resume their activities. Some businesses do not survive the catastrophe at all.

What insurers must be prepared for

In the event of major or complex catastrophes, insurers face tremendous financial and personnel-related challenges. For example, the inaccessibility of heavily damaged areas means that loss adjusters often begin by investigating smaller losses in outlying areas. In other words, when estimating losses and calculating reserves, an insurer must bear in mind that the worst losses will not be assessed until late in the adjustment process.

Extreme pressure on loss adjustment

Exceptional situations like a storm-related disaster place a particularly heavy burden on loss adjusters. For instance, in the aftermath of Katrina, staff had to be replaced with fresh teams several times during the loss adjustment process. In such cases, insurers are called upon to ensure they have the necessary personnel available.

Experience with major catastrophes like Katrina has borne out the importance of emergency plans. Insurers have learned that when a major disaster strikes or several loss events coincide, they must be in a position to provide additional loss adjusters, engineering experts and claims managers. In emergency planning, the most extreme, exceptional situations must be anticipated, e.g. several events in different regions within a single year.

State of alert remains in effect

In general, no reduction in the risk of cyclones in the southeast Queensland region can be expected over the next few years. The rising probability of heavy storms, combined with the growth of the region, will inevitably be accompanied by an increase in loss potential. Furthermore, insurers must try to be as well prepared as possible for major catastrophes, ensuring the availability of corresponding emergency response plans and sufficient human resources.

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