

## Protection for Australian businesses that rely on rainfall, sunshine, wind or a specific temperature range

**During the 2017 financial year, 73 companies on the S&P 500 publicly disclosed an effect on earnings attributed to weather events<sup>1</sup>.**

Weather Index insurance is a relatively new product for the Australian insurance market, and can be applied across many industries. The intent behind a Weather Index insurance product is to provide cover to an Insured predicated upon weather conditions set out in the policy documents.

### Why consider Weather Index cover?

Even if a business knows how normal weather affects its earnings, unexpected extreme weather events present their own risks.

The frequency and the intensity of extreme weather patterns have increased in Australia<sup>2</sup> including:

- ▶ the frequency of very warm months has increased five-fold in the past 15 years
- ▶ the frequency of very cool months has declined by about a third in the past 15 years
- ▶ increases in the duration, frequency and intensity of heat waves in many parts of the country
- ▶ the amount of locations in Australia receiving a high proportion of their annual rainfall from extreme rain days has been increasing since the 1970s

### What can be indexed?

The simplest way to measure any deviation from the agreed weather conditions is to use the data provided by the Australian Bureau of Meteorology (BOM). The BOM report many types of weather data, including:

- |   |                       |
|---|-----------------------|
| ▶ rainfall  | ▶ wind direction      |
| ▶ temperature (min, max, dew point, dry bulb, ground minimum, soil @10cm) | ▶ wind, maximum gust  |
| ▶ evaporation   | ▶ sunshine – duration |
| ▶ wind speed  | ▶ cloud – amount      |
|   | ▶ air pressure        |

<sup>1</sup> The Effects of Weather Events on Corporate Earnings Are Gathering Force, S&P Global Ratings, June 2018

<sup>2</sup> Technical Report, Climate Change in Australia, CSIRO 2015



## Who should consider Weather Index insurance?

Any industry that is commercially impacted by the weather has potential application for the Liberty Specialty Markets (Liberty) Weather Index product. This includes agriculture, renewable energy, construction, mining, food & beverage producers, tourism and retail.

### Five examples

	Weather risk exposures:	Solution:
1.  <b>Agriculture</b>	<ul style="list-style-type: none"><li>• Yields decrease when there is drought or lack of rain</li></ul>	<ul style="list-style-type: none"><li>• Purchase cover to protect against insufficiency of cumulated rainfall</li></ul>
2.  <b>Electricity retailers – heating demand fluctuations</b>	<ul style="list-style-type: none"><li>• Sales decrease when winter is too mild</li><li>• Profitability decreases when winter is too cold</li><li>• Sales volumes are different from one area to another</li></ul>	<ul style="list-style-type: none"><li>• Multi-year, multi-stations against mild winter</li><li>• Geographical weighting: one weight per station</li><li>• Attachment point close to historical average due to high fixed costs</li><li>• Cover provided against a too cold winter and increase in costs</li></ul>
3.  <b>Air conditioning demand and marketing offer</b>	<ul style="list-style-type: none"><li>• When summer is too hot, household electricity bills increase (due to increased air conditioning demand)</li></ul>	<ul style="list-style-type: none"><li>• Monthly or seasonal protection against a high average maximum temperature (e.g. \$200 off your bill if the average temperature is greater than 35°C)</li><li>• Customer benefit: credit on the next bill</li><li>• Development of customer loyalty and marketing differentiation</li></ul>
4.  <b>Hydro power weakness in drought</b>	<ul style="list-style-type: none"><li>• Correlation between dam's water level &amp; cost of electricity</li><li>• Power station can't supply if there is not enough rainfall</li><li>• Must purchase electricity at market price</li></ul>	<ul style="list-style-type: none"><li>• Purchase cover to protect against insufficiency of cumulated rainfall</li><li>• Potential for profit sharing agreement – Initial upfront premium is cheaper, and client pays an additional premium if no claim</li></ul>
5.  <b>Wind farm financing secured by wind guarantee</b>	<ul style="list-style-type: none"><li>• Sales are secured and prices are regulated (demand)</li><li>• Wind mill power is dependent on wind speed</li><li>• Wind mill needs to be stopped in very high winds</li></ul>	<ul style="list-style-type: none"><li>• Cover to protect against insufficiency of wind, and the speed of wind being too great</li></ul>

### How are the BOM data points measured?

Liberty obtains weather data from Speedwell ([www.speedwellweather.com](http://www.speedwellweather.com)), who source this data for Australia from the BOM.

The standard method of measuring precipitation is by means of rain gauges. A high number of rain gauges are required to accurately capture the distribution of precipitation. The details of this distribution is one of the keys to fully understanding and predicting where flash floods or other weather-related events are occurring or can be expected. In addition to the data provided by rain gauges, the BOM also provide “gridded data” from radars and weather models which allows for rainfall information to be available between gauges.

## Detailed examples

### A typical Weather Index cover for a lack of rain based on accumulated rainfall would look like:

40-year rain average from 1 July to 30 September:	135mm of rain
Strike price (when cover triggers):	Rain under 100mm
Level of cover:	Up to 50mm (under the agreed 100mm strike price)
Maximum payout:	\$1,000,000
Payment per millimeter of rain under 100mm over the period:	\$20,000
If there was 80mm of rain the payment would be:	20mm (being 100mm – 80mm) x \$20,000 = \$400,000
If there was 40mm of rain the payment would be:	50mm (being the maximum level of cover) x \$20,000 = \$1,000,000

### A typical Weather Index cover for frost based on temperature would look like:

Policy period:	1 October to 31 October
Strike price:	Minimum temperature for any day in the month below -1°C
Level of cover:	\$50,000 per 0.1°C below the strike price
Maximum payout:	\$500,000

### Sample payout schedule

Temperature	Payment	Temperature	Payment
-1.1°C	\$50,000	-1.6°C	\$300,000
-1.2°C	\$100,000	-1.7°C	\$350,000
-1.3°C	\$150,000	-1.8°C	\$400,000
-1.4°C	\$200,000	-1.9°C	\$450,000
-1.5°C	\$250,000	-2.0°C	\$500,000

## What is the underwriting process?

Weather Index products are very straightforward to price as all the data is obtained from an independent third party such as the BOM, making the process very fast. All you need to do is specify the:

- ▶ peril
- ▶ measurement location – the closest BOM station or your gridded location
- ▶ risk period
- ▶ trigger
- ▶ payout you require if the trigger is met – this can reflect costs of production, lost profit or total revenue

We can help you structure the cover that fits a client's needs based on understanding your exposure to a specific peril.

If you are interested in a Weather Index product solution, it is important to note that it must be in place at least 30 days prior to the commencement of the risk period.

## An efficient claims handling process

Unlike a traditional insurance policy that involves submitting a claim with the subsequent investigation and adjustment, a Weather Index claim substantially improves the efficiency of the claims process.

At the end of the contract period as soon as data provided by BOM becomes available, our third party calculating agent Speedwell Settlement Services Ltd computes the index in accordance with the policy. Upon completion of this calculation if an indemnity is warranted payment is triggered.

With no documented proof necessary of losses beyond the agreed parameters, the claims process is settled very quickly (subject to the terms and conditions of the policy). This fast claims process minimises paperwork and investigation hours.

## Global reach. Financial strength. Local authority.

Distinct, complex and constantly evolving – every business is as unique as their insurance needs. To confidently progress in the face of risk and uncertainty requires a level of security you can only achieve through working with specialists.

Liberty Specialty Markets offers a breadth of world-class insurance and reinsurance services to brokers and insured clients. We bring value and solutions to more than 26,000 of Asia Pacific's most significant business and government organisations – helping protect what they earn, build and own.

We're part of the global Liberty Mutual Group, a Fortune 100 company that's been in business since 1912 with a Standard and Poor's 'A' rating.

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