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Dear Reader,

The 2018/2019 European windstorm season proved relatively benign. Starting early with two storms in September, followed by a prolonged period without any significant cyclones, we started to believe there would be no material events this season – then windstorm Dragi-Eberhard struck. In this Newsletter, we report on the European extratropical cyclones investigated by PERILS.

In contrast to the lack of Cat loss activity in Europe, in Australia a hailstorm in Sydney just before Christmas as well as floods in Queensland in early February caused severe industry losses which PERILS has captured and will continue to report on.

In addition to monitoring industry losses, we released the PERILS Industry Exposure Database 2019 with up-to-date market sums insured exposed to natural perils for 16 countries. Together with the PERILS industry loss information, the database is becoming ever more useful for model calibration and contributing to a higher transparency and a better understanding of insured Cat risk. Our data are also used as triggers in the industry-loss-based risk transfer market and we present updated statistics on page 7.

In our special section, we detail the latest addition to Wind-Jeannie, our live industry loss forecasting platform. Wind-Jeannie has proved its worth for European extratropical cyclones and it was a natural step to cover Australian wind events with the launch of Wind-Jeannie Australia. While yet to be truly tested by a major tropical or extratropical cyclone, we are confident the platform will serve its intended purpose come the next big event.

Finally, we recently announced the acquisition of CatIQ. We already have a strong working relationship with the CatIQ team and by building on this we will further increase data availability and tradability and enhance our ability to provide greater insight into Cat events across Canada.

In conclusion, we would like to thank you all for your continued support. PERILS is an insurance industry initiative and could not exist without your backing. In return, we remain fully committed to providing reliable data to help you understand and manage Cat risk in the best possible way.

With my best regards,

Luzi Hitz, CEO PERILS

# Figures & Facts

per 31 Dec 2018

68%	PERILS overall market coverage as measured in % of property premium
> 150	number of national insurance companies providing exposure and loss data to PERILS
16	number of countries covered: AUS, AUT, BEL, CAN, CHE, DEU, DNK, FRA, GBR, IRL, ITA, LUX, NLD, NOR, SWE, TUR
6	number of perils covered: bushfire, earthquake, extratropical and tropical cyclone, flood, hail
10	number of industry exposure databases released since 1 Apr 2010
42	number of captured qualifying events in the PERILS loss database
214	number of event gust footprints in the PERILS-UKMO European winter storm catalogue (1979 to 2015)
260	number of PERILS-based transactions placed since 1 Jan 2010
32	number of PERILS-based transactions at risk
USD 16.2bn	total of PERILS-based limits placed since 1 Jan 2010
USD 3.5bn	total of PERILS-based limits at risk

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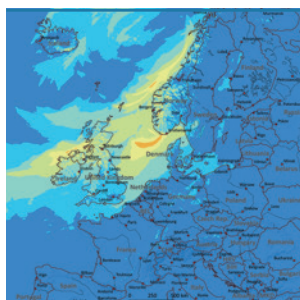
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# Cat Events

This section provides an overview of all major European extratropical cyclones which occurred during the 2018/2019 winter. It also provides a summary of all qualifying events since the end of March 2018 which have been captured or revised by PERILS.

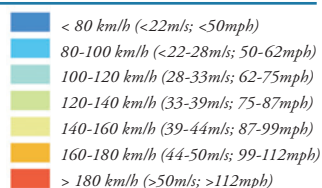


## DORCAS-ELENA (ALI-BRONAGH/KNUD)

19 Sep 2018

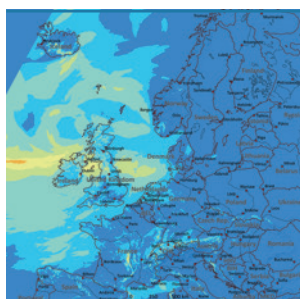
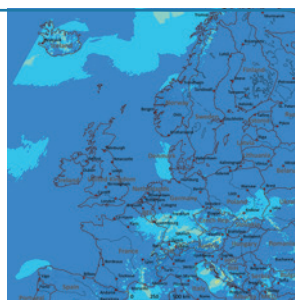
Industry Loss < EUR 200m

Countries most affected: GBR, IRL, NOR



*Maximum gust speeds in km/h*  
*Source: ICON-EU, DWD*

**FABIENNE**  
23 Sep 2018  
Industry Loss < EUR 200m  
Countries most affected: AUT, CHE, DEU, FRA, LUX



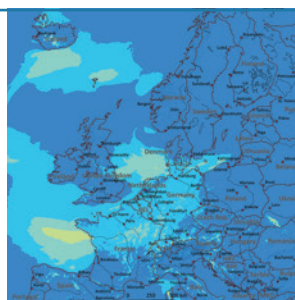
## THOMAS (ERIK) - UWE (ISAIAS)

8 - 10 Feb 2019

Industry Loss < EUR 200m

Countries most affected: CHE, DEU, FRA, GBR, IRL

**BENNET (FREYA)**  
4 Mar 2019  
Industry Loss < EUR 200m  
Countries most affected: BEL, CHE, DEU, FRA, LUX



## DRAGI-EBERHARD

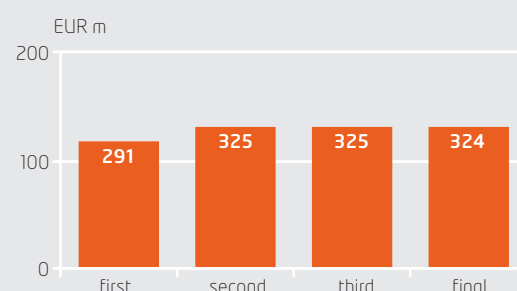
9 Mar 2019

Industry Loss = EUR 798m (2nd Loss Report)

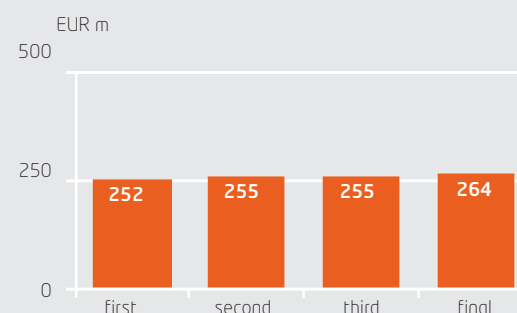
Countries most affected: BEL, CHE, DEU, FRA, GBR, LUX, NLD

**QUALIFYING**

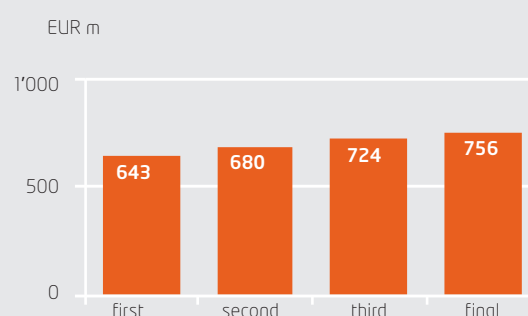
NAME	EXTRATROPICAL CYCLONE XAVIER
Start to end date	5 Oct 2017
Territories affected	DEU
Description	On 5 October 2017, Xavier caused significant damage mainly in Germany. Impacts were also felt in Poland and the Czech Republic, however, these are not territories covered by PERILS.
Market loss	EUR 324m (final)



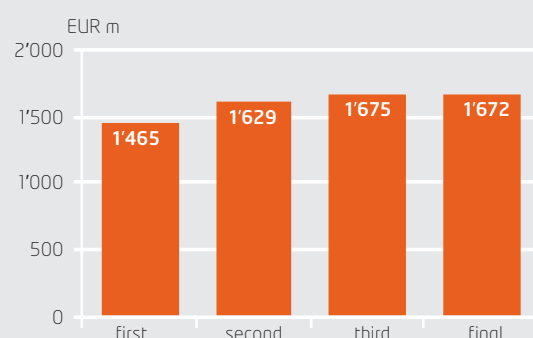
NAME	EXTRATROPICAL CYCLONE HERWART
Start to end date	29 Oct 2017
Territories affected	AUT, DEU
Description	On 29 October 2017, Herwart caused damage in Austria and Germany. Herwart caused eleven fatalities – one in Denmark, four in Germany, two in Poland and four in the Czech Republic.
Market loss	EUR 264m (final)



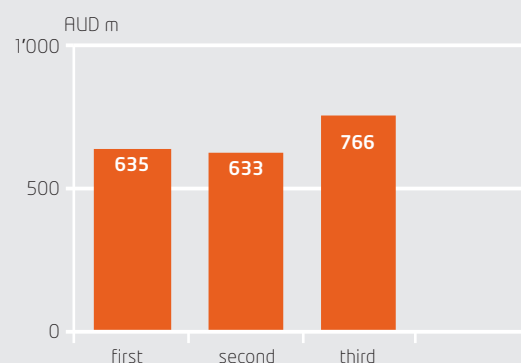
NAME	EXTRATROPICAL CYCLONE BURGLIND (ELEANOR)
Start to end date	2 to 3 Jan 2018
Territories affected	AUT, BEL, CHE, DEU, FRA, GBR, IRL, LUX, NLD
Description	On 2 and 3 Jan 2018, Burglind caused significant damage mainly in France, Switzerland and Germany. Gusts reached 138km/h in Freudenstadt (D) and 125km/h in Zurich (CH).
Market loss	EUR 756m (final)



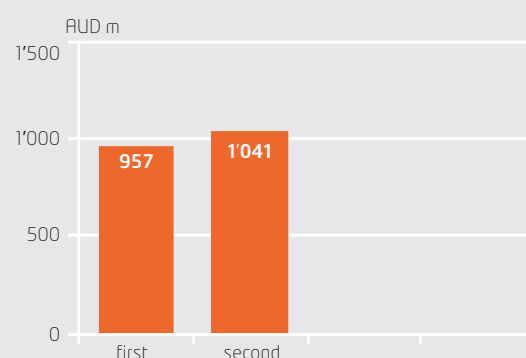
NAME	EXTRATROPICAL CYCLONE FRIEDERIKE
Start to end date	17 to 18 Jan 2018
Territories affected	BEL, DEU, GBR, IRL, NLD
Description	On 17 and 18 Jan 2018, Friederike caused significant damage mainly in Germany and The Netherlands. Gusts reached more than 200km/h and there were 12 fatalities. Friederike occurred exactly eleven years after Kyrill (17 Jan 2007) affecting a similar area.
Market loss	EUR 1'672m (final)



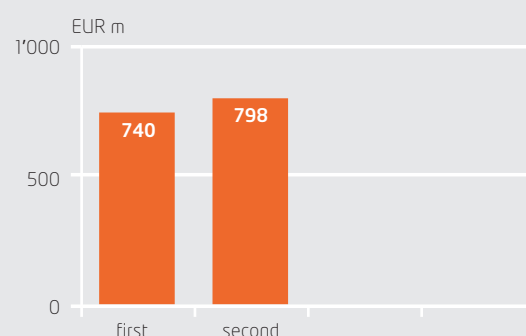
NAME	SYDNEY HAILSTORMS
Start to end date	20 to 22 Dec 2018
Territories affected	AUS
Description	On 20 December 2018, a convective storm system caused significant damage in Sydney and the surrounding regions in NSW. Severe storms also occurred in Brisbane and on the Gold Coast over the following two days. Note: the PERILS loss numbers cover Property line of business only – losses from Motor and other lines of business are not included.
Market loss	AUD 766m (per 20 Jun 2019, third loss report)



NAME	TOWNSVILLE FLOOD
Start to end date	26 Jan to 10 Feb 2019
Territories affected	AUS
Description	From 26 January into early February 2019, a slow-moving low-pressure system brought exceptional rainfall to Northern Queensland causing major river and surface water flooding. The flood waters caused six fatalities and major damage to private and public property, particularly in Townsville on the north-eastern coast of Queensland, Australia.
Market loss	AUD 1'041m (per 10 May 2019, second loss report)



NAME	EXTRATROPICAL CYCLONE DRAGI-EBERHARD
Start to end date	9 to 10 Mar 2019
Territories affected	BEL, CHE, DEU, FRA, GBR, LUX, NLD
Description	On 9 and 10 March 2019, extra-tropical cyclones Dragi and Eberhard caused significant damage in Western/Central Europe. Eberhard was by far the stronger of the two storms. In addition to the countries covered by PERILS, Dragi-Eberhard also affected the Czech Republic, Poland and Slovakia.
Market loss	EUR 798m (per 7 June 2019, second loss report)



# PERILS IED 2019

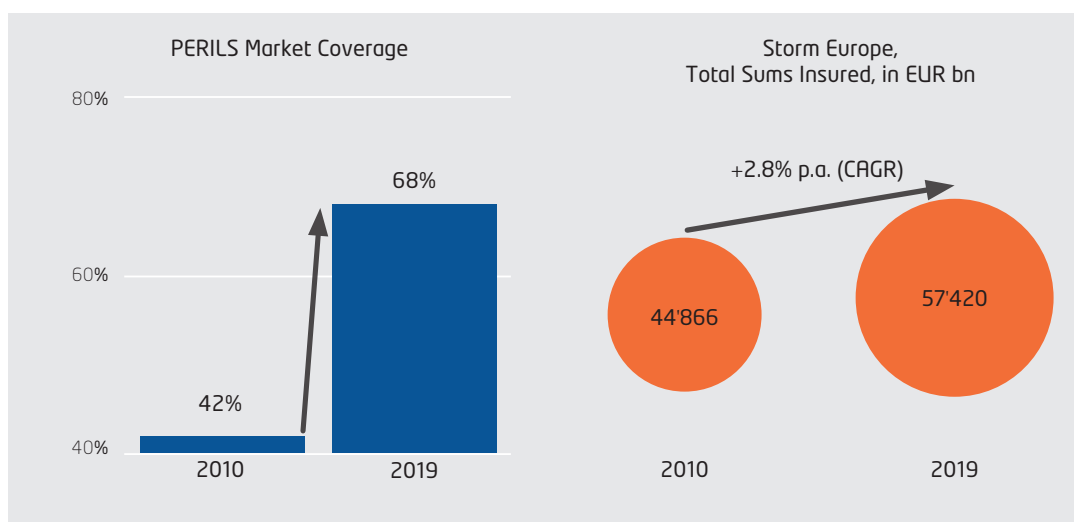
Release of the PERILS Industry Exposure Database 2019. The PERILS IED 2019 contains updated property market sums insured for 15 countries.

PERILS IED 2019	
In force date	1 Jan 2019
Content	<ul style="list-style-type: none"> <li>– property sums insured</li> <li>– number of policies</li> <li>– information on prevailing limits, deductibles</li> </ul>
Resolution	<ul style="list-style-type: none"> <li>– CRESTA zone</li> <li>– property line of business (residential, commercial, industrial, agricultural)</li> <li>– coverage type (building, content, business interruption)</li> </ul>
Methodology	TSI collected from scratch from >150 national and international insurance companies (approx. 68% market coverage) → data anonymization → data validation → data aggregation → extrapolation by CRESTA/LoB to 100% market
Release date	4 April 2019

NATURAL PERILS AND TERRITORIES	
Bushfire, Hail	Australia
Earthquake	Australia, Italy, Turkey
Flood	Australia, Italy, Turkey, United Kingdom
Windstorm	Australia, Austria, Belgium, Denmark, France, Germany, Ireland, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom

APPLICATIONS
<ul style="list-style-type: none"> <li>– market share analysis</li> <li>– natural catastrophe model validation</li> <li>– structuring and risk assessment of risk transfer products (Cat bonds, ILW)</li> <li>– and more</li> </ul>

The IEDs are updated annually which ensures that the quality of the database is continuously enhanced. Subscribers to the PERILS database have access to the data at full granularity: per CRESTA zone, per property line of business and per coverage type.



**Figure 1: PERILS 2019 vs. 2010:** The chart on the left shows the increase of PERILS market coverage over all 15 countries covered by PERILS. Over the last 10 years, PERILS was successful in increasing its market penetration through gaining new data providing insurers in all markets covered. The chart on the right shows the increase of PERILS total insured property values exposed to European storms over the last nine years

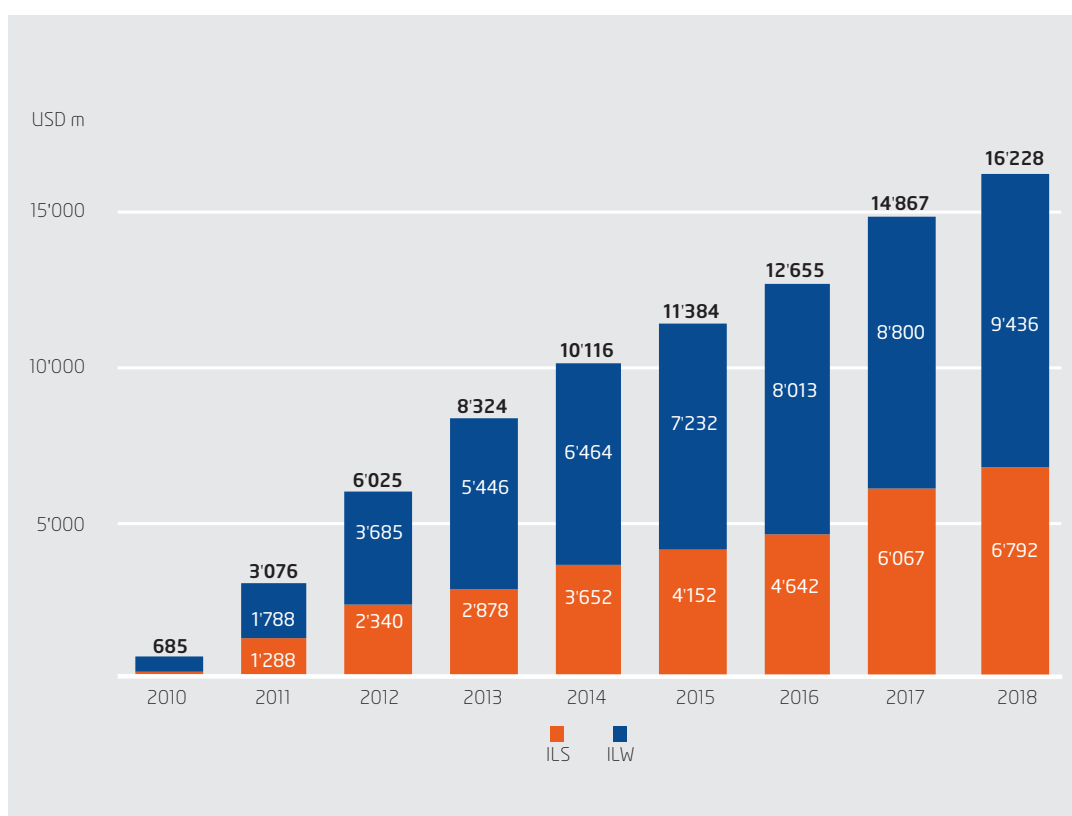
# PERILS Transaction Statistics

PERILS industry exposure and loss data are used for the risk assessment and as triggers of industry-loss-based risk transfer products. Transaction forms include Cat Bonds (144A ILS), Industry Loss Warranty (ILW), or Risk Swaps.

PERILS-based Risk Transfer per per 31 December 2018	
Limits at Risk, total <sup>1</sup>	USD 3'458m
Split ILW / Cat Bonds (144A ILS)	ILW: USD 618m (18%)      ILS: USD 2'840m (82%)
No. of Transactions at Risk	Total: 32 (ILW: 23, ILS: 9)
% Structured Triggers <sup>2</sup>	>90%
Geography	<ul style="list-style-type: none"> <li>— Europe: USD 3'337m</li> <li>— Australia: USD 1'600m</li> <li>— Turkey: USD 75m</li> <li>— Canada: USD 45m</li> </ul>
Total issued since 1 Jan 2010	USD 16'228m
Total No. of Transactions since 1 Jan 2010	260

1: can cover multiple territories

2: transactions with CRESTA or country weighting, in % limits



**Figure 2, Aggregated PERILS-based Limits as at 31 Dec 2019, in USD m:**  
On a cumulative basis, PERILS data have facilitated more than USD 16bn in Cat risk capital. It is a good example of how increased data availability benefits the risk transfer markets.



# Wind-Jeannie Australia

Wind-Jeannie Australia was launched in October 2018 as a new service providing live industry loss forecasts for Tropical and Extratropical Cyclones in Australia.



*Figure 3, Wind-Jeannie provides live industry loss forecasts for Tropical and Extratropical Cyclones in Australia. Loss forecasts are updated every 12 hours. Wind-Jeannie runs on desktops, tablets and smartphones. Access is free for PERILS data providers and PERILS Database subscribers.*

Wind-Jeannie Australia was successfully launched in October 2018 to all PERILS users worldwide. The platform is based upon the Wind-Jeannie Europe industry loss forecasting platform which was originally launched in September 2015.

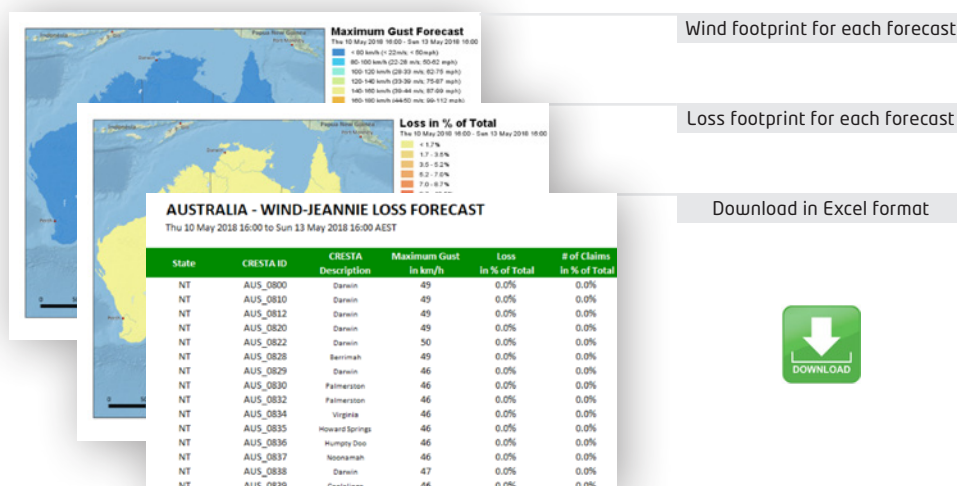
PERILS launched its industry exposure and loss database for Australia in September 2016. This includes six perils: tropical cyclone, extratropical cyclone, earthquake, flood, hail and bushfire. It was then a natural extension following the success of Wind-Jeannie Europe to develop Wind-Jeannie Australia.

The platform provides live forecasts of the insured property market loss from windstorm events for the forthcoming 72 hours. It is a web-based service and is available free to all of our subscribers.

Loss forecasts are updated in real-time every 12 hours. Each industry loss forecast is broken down by Australian State and post-code (=high-res CRESTA zones). Users can also activate an email alert service for major approaching windstorm events and watch animated gust forecasts for the upcoming seven-day period.

The loss calculation in Wind-Jeannie Australia is based on detailed three-day gust forecasts produced by the European Centre for Medium Range Weather Forecasts (ECMWF) combined with damage vulnerability information and the latest industry-wide sums insured captured by PERILS. In addition, footprints of the forecasted gusts and losses can be downloaded as Excel files.





*Figure 4, Wind-Jeannie provides live industry loss forecasts for wind events in Australia. Each forecast includes a downloadable Excel file with information on predicted wind-speeds and losses per postcode.*

To keep track of the development of forecasted losses, users can monitor the previous eight forecasts plus the current forecast. This helps to check how stable the loss forecasts have so far been and enables users to make their own judgements as to the overall credibility of the predicted figures.

All this information is readily available on your desktop, tablet or smartphone at [www.wind-jeannie.org/Australia](http://www.wind-jeannie.org/Australia). The website's design and navigation are similar to a standard weather forecast site and it requires no specialist knowledge. It takes less than 15 seconds to get an overview of the current situation, making it easy to check on a daily basis and keeping the user fully up-to-speed on any potential losses.

### Wind-Jeannie Australia at a Glance

Live forecasts of insured industry losses for Tropical and Extratropical Cyclones in Australia for the next 72 hours

Updated every 12 hours

Forecasts for Australia for wind gust and industry losses by post code

Downloadable gust and loss footprints for each forecast in map and table formats

Based on the PERILS Industry Exposure & Loss Database and gust forecasts by ECMWF

Runs on desktops, tablets and smartphones

Free access for PERILS data providers and PERILS DB subscribers

Go to [www.wind-jeannie.org/Australia](http://www.wind-jeannie.org/Australia) to find out more

## What are the benefits of Wind Jeannie Australia?

There are various applications where Wind-Jeannie Australia can be used. While the specific benefits will depend upon the user's individual needs, we have observed the following key benefits based upon subscriber feedback:

1. **Preparation:** Enabling insurance companies to prepare for large windstorm events as they approach land, such as:
  - a. Setting up customer help lines before the event strikes;
  - b. Alerting loss adjusters before the event strikes and being able to steer resources to critical areas expected to be impacted.
2. **Communication:** Rapid internal communication pre- and post-event. For insurers and reinsurers, it is often critical to be able to answer questions from senior management such as:
  - a. What is our estimated net loss?
  - b. What is the estimated industry loss?
3. **Live trading:** As Wind Jeannie Australia is a 'live' industry loss forecasting tool using independent and current weather and industry exposure data, it can serve as a useful information source for "Live Cat" and "Dead Cat" trading.

## "Forecasts are difficult, especially those concerning the future"

It goes without saying that loss forecasting for any windstorm event is challenging. There are significant uncertainties in weather forecasting as well as in loss modelling. It would therefore be unwise to take Wind-Jeannie Australia industry loss forecasts at face value, because the reality might be very different.

During the pilot testing of Wind-Jeannie Australia, we undertook back-testing which involved four, albeit moderate, windstorms as well as a calibration with loss data from Cyclone Debbie (March 2017). This testing has shown that the system can predict Australia-wide industry losses with a useful degree of accuracy (see Figure 5).

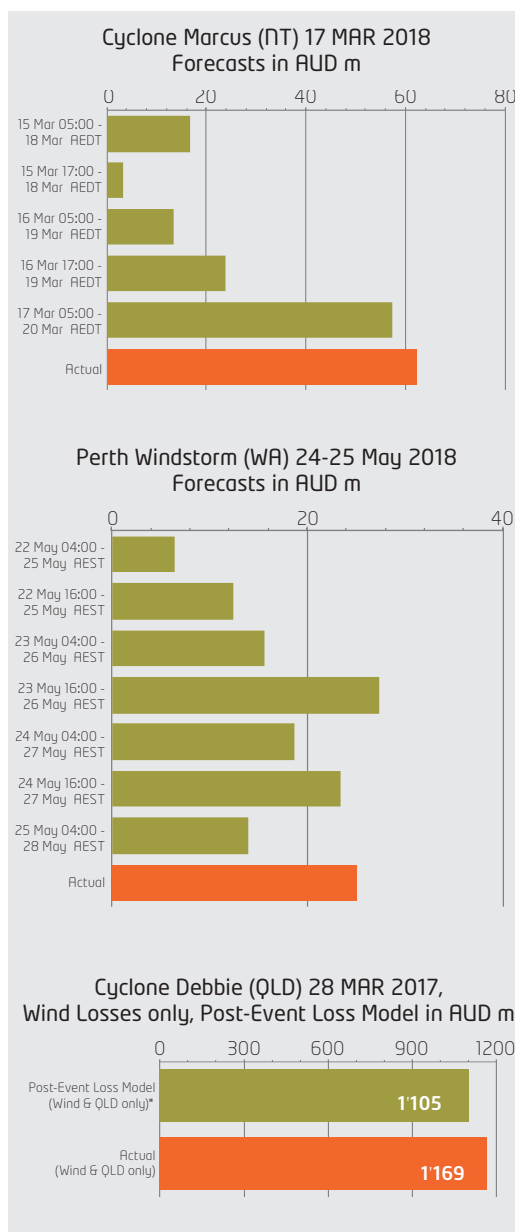
It should, however, be stressed that on a more granular level and for larger events, differences between forecast and reality can be much larger. They depend a lot on the accuracy of the predicted gust field in terms of intensity and geographical location which means that smaller areas are generally more prone to inaccurate forecasts.

Another caveat is that Wind-Jeannie Australia is not applicable to convective summer storms as the extreme winds of these events are often too short-lived to be accurately captured in the forecast.

An additional important aspect to keep in mind is that predicted loss amounts can vary greatly from one forecast to the next. As a general rule, forecasts become more reliable the closer in time they are to the peak of an actual windstorm event. And last but not least, it should also be acknowledged that some forecasts can simply be wrong. Niels Bohr's statement that forecasts are difficult, especially those concerning the future, also applies to Wind-Jeannie!

### Your feedback

A loss model is never finished. It must be continuously improved. We are therefore keen to hear about your experiences with the forecasted windstorm losses. This will help us better achieve our vision of making short-term windstorm loss forecasting as common as daily weather forecasts.



*Figure 5, Back-testing of Wind-Jeannie Australia loss forecasts for one of the main windstorms tested as well as comparison with Cyclone Debbie actual losses from 2017. The green bars show the loss forecasts. The orange bars show the actual industry event loss as collected by PERILS. The comparison shows that on an Australia-wide basis, Wind-Jeannie Australia was able to capture the order of magnitude of the event losses in a reasonable manner.*

# Outlook

We are always being encouraged to expand the coverage of the PERILS Industry Exposure and Loss Database to new territories – and we are working on this.

Central to our ability to expand is our proven approach of working directly with insurance companies to produce the required industry data. Every country has its own market structure and insurance companies want to be 100% certain that their shared information is in safe hands. This on-boarding process therefore takes time. But rest assured that we will be announcing a new PERILS territory once we are sure we can deliver the high-quality market data you expect from us.

CRESTA is another area which will keep us busy in the coming months. After the successful transfer of the CRESTA management from Munich and Swiss Re to PERILS, we have established a new CRESTA Advisory Board with representatives from ten industry players. We are now working on an update of the current CRESTA zones which is scheduled for release in October 2019. Our goal is to “rejuvenate” CRESTA and to further enhance its intrinsic value to the insurance industry.

We thank all of you for your continued support and welcome any feedback you may have.

With our very best regards,

**Your PERILS Team**

Zurich, June 2019

