Australian Actuaries Climate Index (AACI) AMSI Optimise

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Agenda



Description of the AACI

- Purpose of index
- Components

Some thoughts on extremes

- Significance of extremes
- Link to risk



Results

- High level results
- Interesting findings



Use of the Index

Purpose of the AACI

- Objective measures of historical <u>extreme</u> weather and sea levels
- Focus on extreme weather
- Inform about climate trends in Australia
- A starting point
 - Extremes are linked to risk, but not explicit
 - Consider development of more explicit and specific risk measures in future

We are not the first to do this

Actuaries Climate Index (ACI) – North America



Individual Component Indices



Regions



Regions are based on CSIRO's 15 sub-clusters used for the "Climate Change in Australia" data, with some grouping



Key differences to North American index

Element	Description
Reference period	1981 to 2010, whereas the ACI uses 1961 to 1990. A more recent period means better quality data and a more contemporary view of changes in risk
Definition of exceedance threshold	99 th (not 90 th) A more extreme threshold provides a better link to risk
Wind	Based on the maximum wind gust each day. The ACI uses the average wind speed over the 24 hours
Sea level	Based on the maximum sea level for the month whereas the ACI uses the mean
Composite index	Based on only three component indices, not all six

Some comments on extremes

Extremes – in theory



Extremes – in reality

NSW





Link between extremes and risk





AACI - Composite index



A positive value for the index represents an increase in the relevant climate extremes since 2010 relative to the reference period of 1981 to 2010.

The value is expressed as a standardised anomaly. This means that an index of 0.5 means the component indices have increased on average by 0.5 standard deviations

Component indices







Sea Level - Australia

Summer





Winter



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Recent Events



Using the Index

Problem:

How is catastrophe risk is changing?

future risk What is the risk now How has risk varied historically

forecast

Difficult to detect climate change impacts in catastrophe claims cost data

Source: Risk Frontiers analysis of normalised catastrophe costs

Finity simulation of last 100 years' claims costs. Assumed 1% pa increase in costs after 1990



Use of the Australian Actuaries Climate Index



Future risk indices



Questions?

