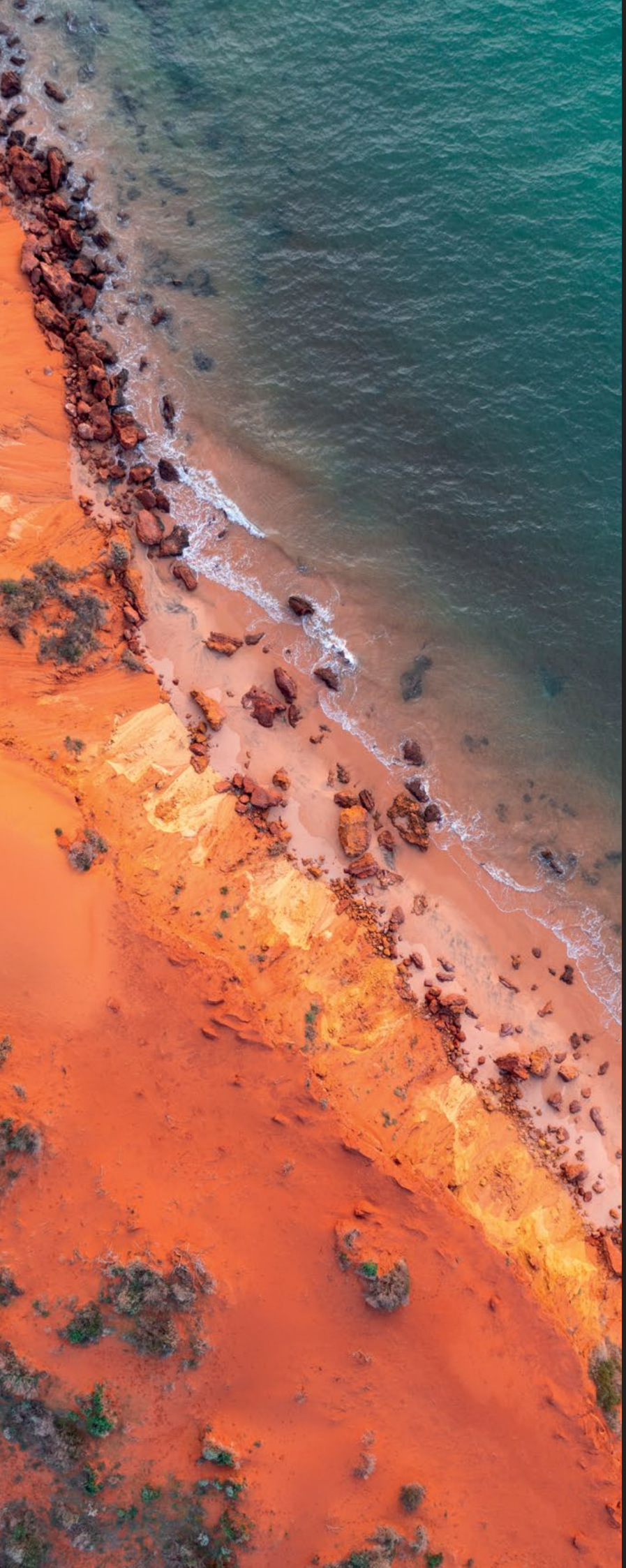


INIGO

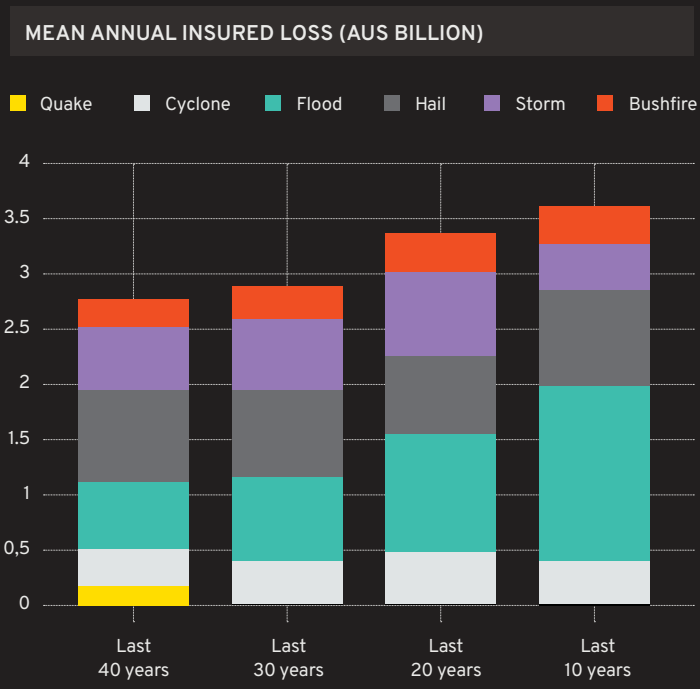
ANALYSING AUSTRALIA'S GROWING NATURAL CATASTROPHE RISK

INIGO

FOR THE LOVE OF DATA

CLIMATE CHANGE IS INCREASING AUSTRALIAN NAT CAT RISK

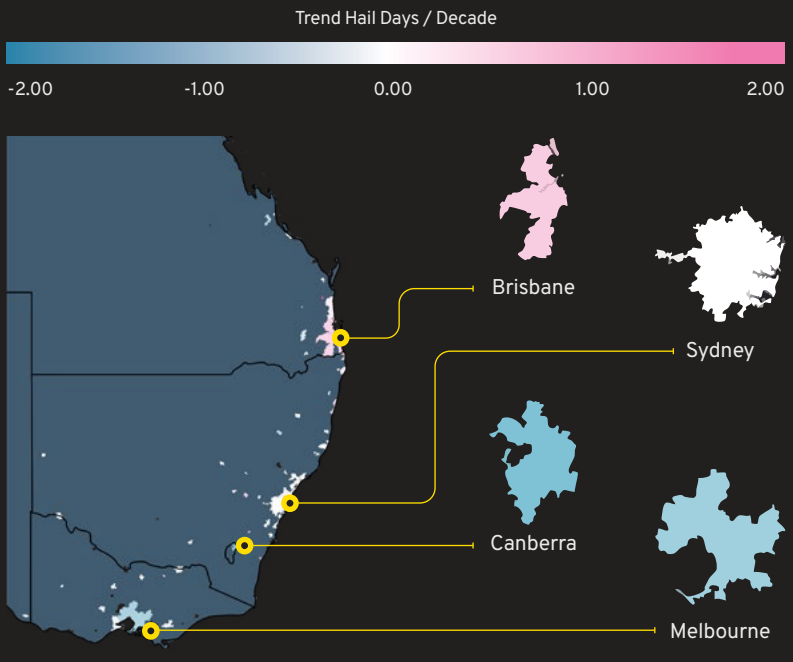
- Australia's climate has warmed by 1.51 ± 0.23°C since national records began in 1910
- Sea level rise is approaching 4 cm per decade, increasing coastal flood risk
- There will be fewer, but more intense and more dangerous cyclones
- Australia will experience more frequent heatwaves and longer, more dangerous fire seasons
- Heavy rainfall will become more intense, particularly hourly to sub-hourly downpours
- In all state capitals insurance costs have risen >2.8x faster than the consumer price index since 1990
- By 2030, 4% of properties will be 'high risk', defined as expecting average annual losses >1% of replacement cost
- >80 % of 'high risk' properties are principally flood affected



- Insured losses adjusted for inflation are steadily increasing in Australia
- Flood losses have seen the biggest year-on-year increases

Data: CSIRO State of the Climate 2024; Climate Council, Uninsurable Nation: Australia's most climate-vulnerable places, 2022. ICA losses to 2024 adjusted to 2022 monetary values.

CLIMATE CHANGE HAS NOT STRONGLY AFFECTED HAIL RISK

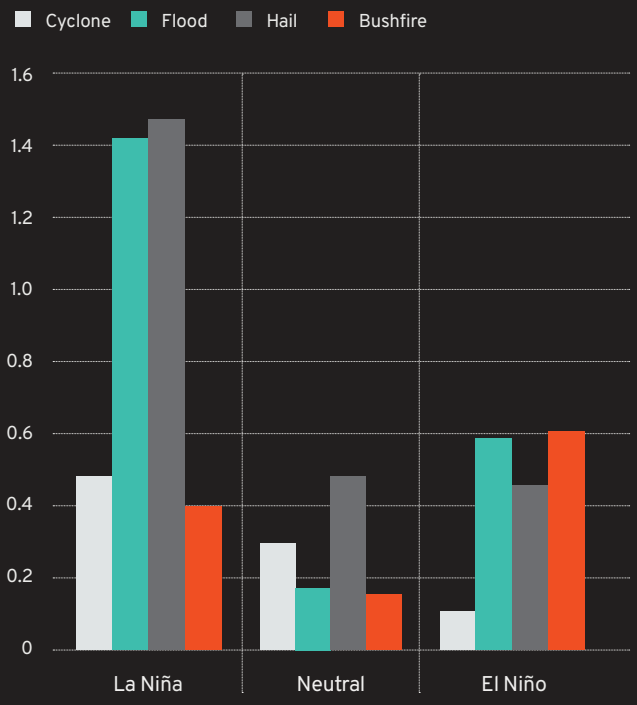


- Hail poses a significant risk to Australia
- Major Australian cities have seen varying small trends in hail hazard
- While scientific literature suggests hail risk may be increasing in cities like Sydney and Canberra (Raupach et al., 2023), hail observations have not shown this trend
- Brisbane has seen hail frequency increase at approximately 0.5 days per decade
- Inigo continues to monitor hail risk in Australia to ensure we are appropriately pricing in a changing climate

Data: Hail data from the Australian Bureau of Meteorology severe storms archive. Trends calculated from 1990-2015 due to data availability. City extents defined by Australian Bureau of Statistics Significant Urban Areas.

OCEAN TEMPERATURES ALSO INFLUENCE INSURED LOSSES

AVERAGE ANNUAL LOSS (AUS BILLION)

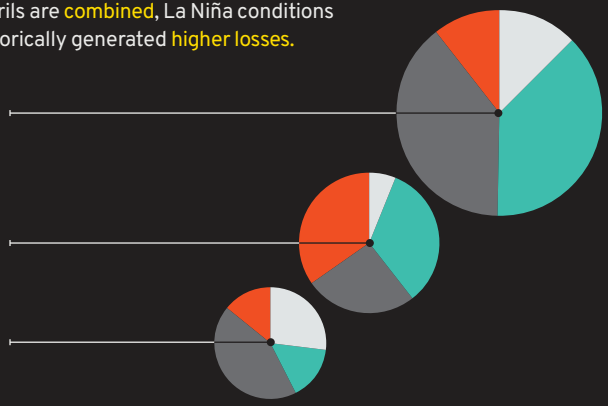


Data: Ocean conditions assigned by month using Oceanic Niño Index. ICA losses 1980-2024 adjusted to 2022.

Anomalously warm (El Niño), neutral, and cool (La Niña) Pacific Ocean temperatures vary over months to years, which can influence wind patterns and, in turn, affect the frequency and severity of natural disasters.

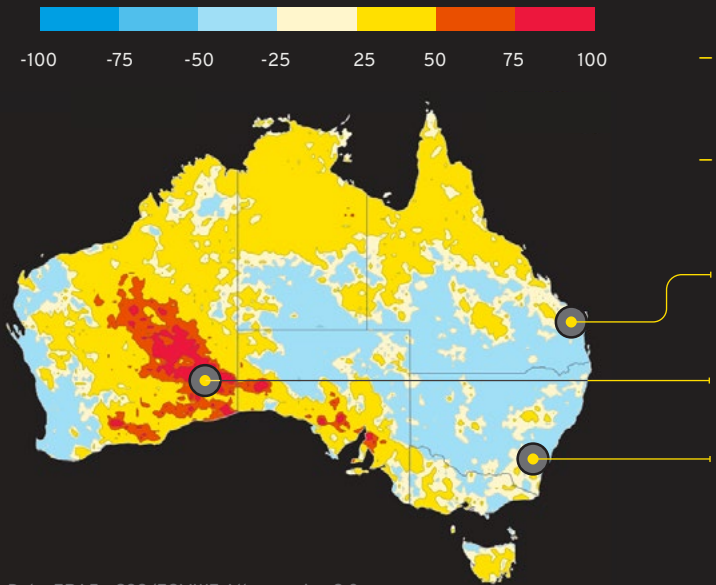
- Cyclone: Fewer cyclones develop near Australia during El Niño years and they are half as likely to make landfall
- Flood: La Niña conditions increase rainfall and flooding in Central, Northern and Eastern Australia.
- Hail: Hail days are more frequent and intense in Sydney and inland New South Wales during La Niña
- Bushfire: El Niño increases likelihood of high-fire-danger ratings in densely populated southeast Australia

When perils are combined, La Niña conditions have historically generated higher losses.



INCREASED RAINFALL VARIABILITY DRIVES CATASTROPHIC FLOODS

Change in extreme precipitation days between 1960–1990 and 1991–2020 (%)



Data: ERA5 - C3S/ECMWF, Atlas version 2.0.

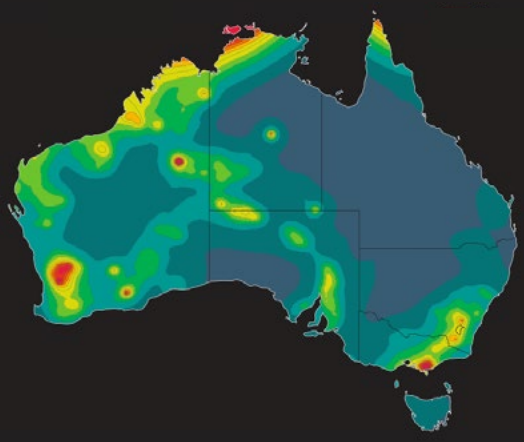
- Oscillations in Pacific sea surface temperatures are the main driver of rainfall variability and flood risk in Australia
- Alongside La Niña, negative cycles of the Interdecadal Pacific Oscillation (period 15-30 years) also increase eastern Australian rainfall
- La Niña and negative Interdecadal Pacific Oscillation phases characterized the 2010-2011 Queensland floods

- The frequency of extreme days has decreased, but the severity of rainfall on those days has increased, leading to higher overall flood risk
- Central Western Australia extreme precipitation days have increased in the last 30 years
- Most major cities have seen an increase in the amount of rainfall during heavy rainfall events

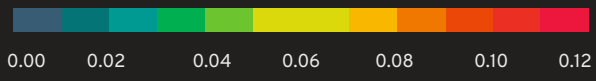
RISK INCREASES IN NATIONAL SEISMIC HAZARD ASSESSMENT

NATIONAL SEISMIC HAZARD ASSESSMENT (NSHA23)

- Large Earthquake losses are infrequent, are not affected by climate change, but dominate Australia's tail risk
- Australia's latest National Seismic Hazard Assessment (NSHA23) is an update of the 2018 version (NSHA18)
- At Inigo, we have evaluated NSHA23, discussed its implementation with key scientists at Geoscience Australia, and incorporated our findings into our pricing model

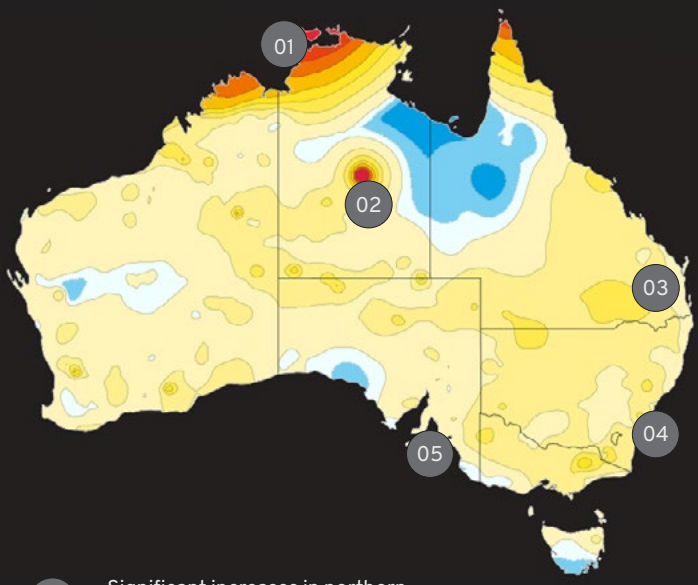


Peak ground acceleration (PGA) at 475-year return period (g)



Data: Data: Allen, T. I., Griffin, J. D. Clark, D. J., Cummins, P. R., Ghasemi, H., Ebrahimi, R. 2023. The 2023 National Seismic Hazard Assessment for Australia: model overview. Record 2023/53. Geoscience Australia, Canberra.

Change in PGA at 475-year return period between NSHA18 and NSHA23 (%)



01 Significant increases in northern coastal regions due to a new ground-motion model for Indonesian subduction zone earthquakes

02 Risk increase in Tennant Creek region which experienced a Mw 6.7 earthquake in 1988

03 Revised ground-motion models slightly elevate hazard across most of Australia

04 Moderate risk increases in all state capitals

05 New fault models improve risk estimation in Adelaide and Melbourne but absence of basin amplification in the model remains a concern

INIGO CATASTROPHE RESEARCH TEAM

ADAM ALVAREZ
Head of Climate and Capital Strategies

LUDOVICO NICOTINA
Head of Catastrophe Research, PhD in Hydrology

RUTH PETRIE
Principal Risk Scientist, PhD in Meteorology and Climate Science

TYLER COX
Risk Scientist, PhD in Atmospheric Sciences

PATRICK BALL
Risk Scientist, PhD in Earth Sciences