Geo Risk Insurance Seminar
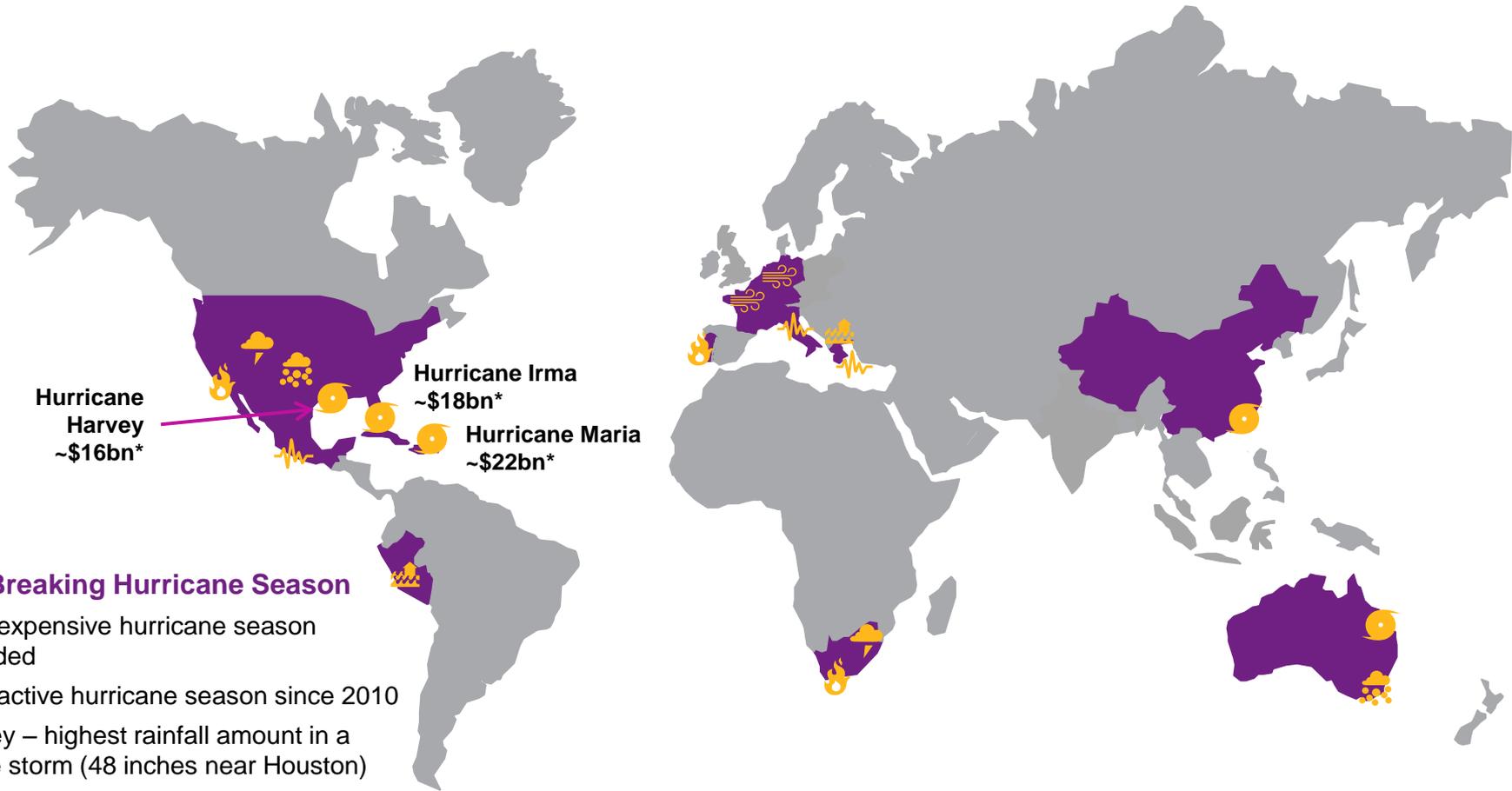
Geospatial (Re)insurance Trends in Catastrophe Analytics

Michael Thomas, Willis Re

13th March 2018

WillisRe

A very active catastrophe year

2017 was the most expensive year in history for weather disasters ~$143bn*

Hurricane Harvey ~$16bn*

Hurricane Irma ~$18bn*

Hurricane Maria ~$22bn*

Record Breaking Hurricane Season

- Most expensive hurricane season recorded
- Most active hurricane season since 2010
- Harvey – highest rainfall amount in a single storm (48 inches near Houston)
- Irma – 3 consecutive days as a Cat 5

Flood Hurricane or TC Hail Thunderstorm Windstorm

*Willis Re Summary of Natural Catastrophe Events 2017

WillisRe

2

How does geospatial analytics help?

Key themes on event response

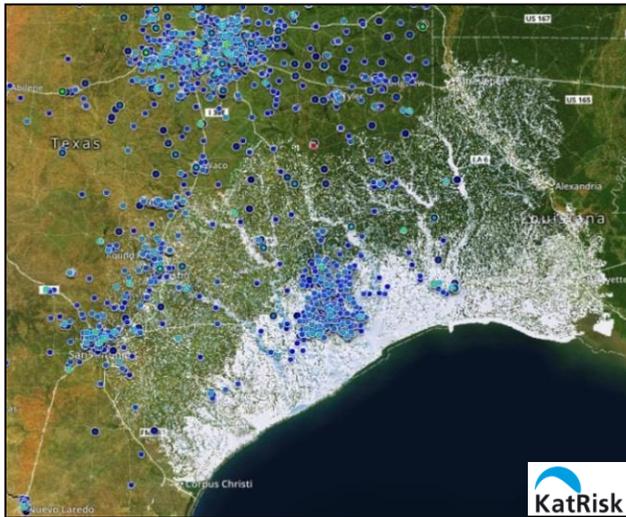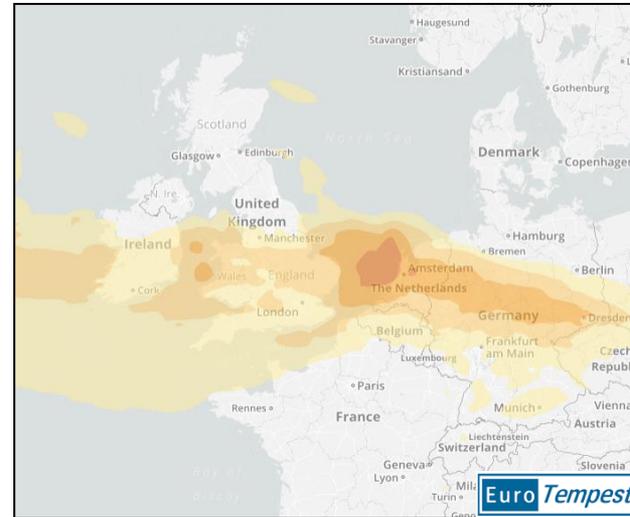|			
Helping insurers inform their customers	**Proactive loss mitigation**	**Claims and cash flow management**	**Surge planning**

Hurricane Harvey Flood Footprint 2017

Windstorm Friederike January 2018

Geo Intelligence enables Willis Re clients to make real-time business decisions

Opportunities ahead
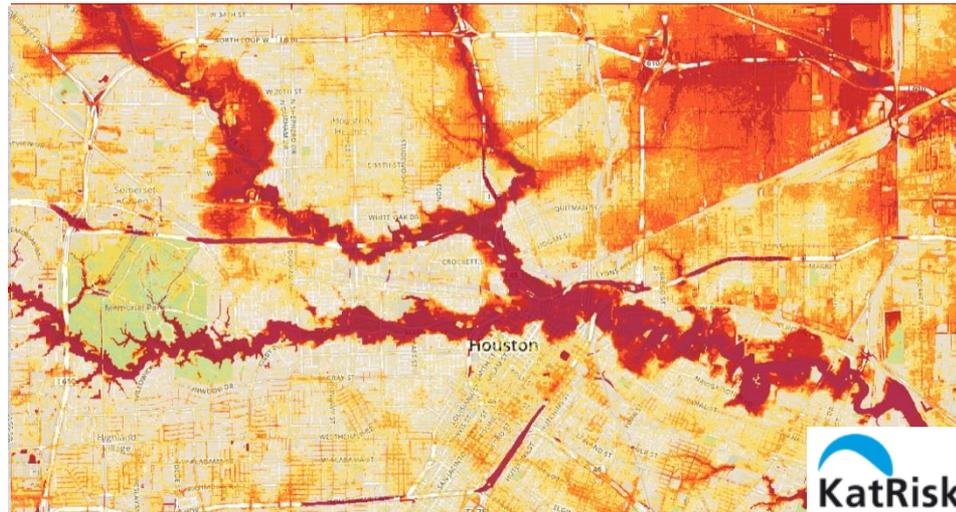
Case Study: National Flood Insurance Program

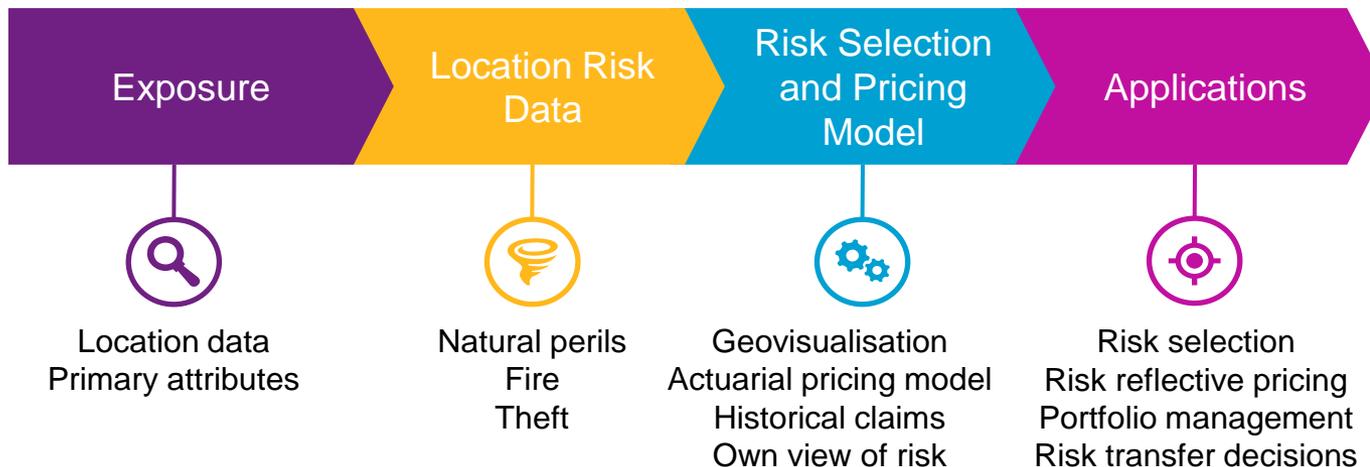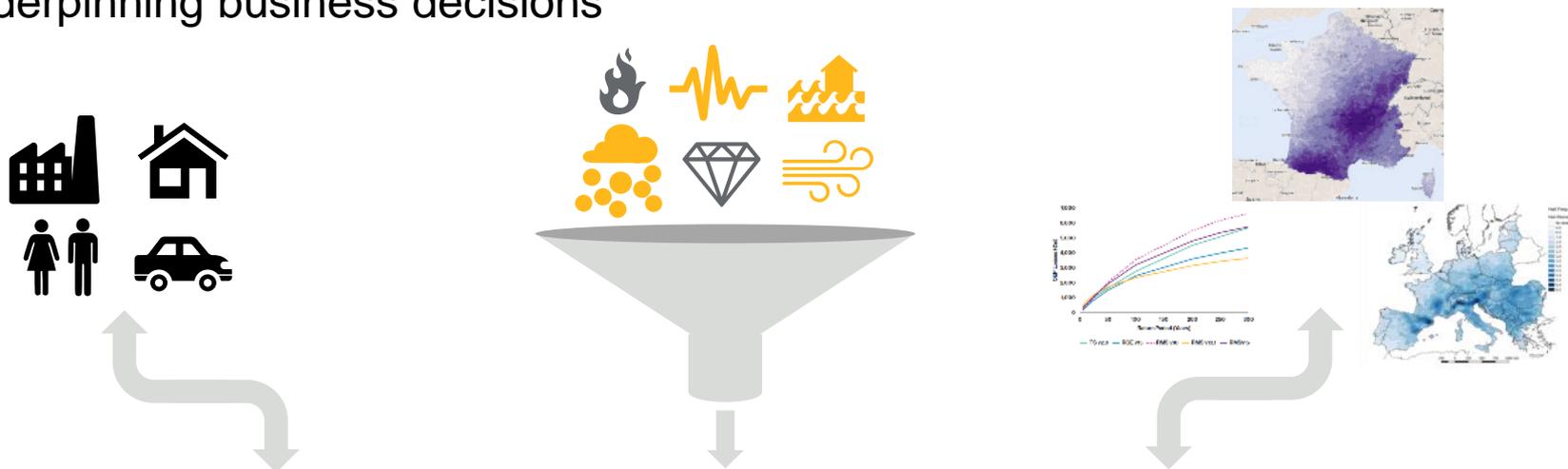| Flood tariffs based on dated modelling approaches and political pressure | Active hurricane seasons have put the NFIP in **+$25bn debt** | An opportunity for the insurance market to take on US flood risk | Competition to find edge in flood risk modelling and hazard mapping |

Developing insightful solutions for non-modelled risk

Geospatial analytics becoming an integral part of pricing

Underpinning business decisions

Exposure	Location Risk Data	Risk Selection and Pricing Model	Applications

Location data	Natural perils	Geovisualisation	Risk selection
Primary attributes	Fire	Actuarial pricing model	Risk reflective pricing
	Theft	Historical claims	Portfolio management
		Own view of risk	Risk transfer decisions

A growing trend towards risk reflective pricing in the market

Looking Ahead

Where can geospatial analytics expand its influence on (re)insurance?

How can geospatial further complement the insurance business journey?

What geo-intelligence tools are missing to better inform business decisions?

How do we use geospatial to quantify non-modelled risk?

Thank You

WillisRe

Willis Re disclaimers

- This analysis has been prepared by Willis Limited and/or Willis Re Inc. and/or the "Willis Towers Watson" entity with whom you are dealing ("Willis Towers Watson" is defined as Willis Limited, Willis Re Inc., and each of their respective parent companies, sister companies, subsidiaries, affiliates, Willis Towers Watson PLC, and all member companies thereof) on condition that it shall be treated as strictly confidential and shall not be communicated in whole, in part, or in summary to any third party without written consent from Willis Towers Watson.

- Willis Towers Watson has relied upon data from public and/or other sources when preparing this analysis. No attempt has been made to verify independently the accuracy of this data. Willis Towers Watson does not represent or otherwise guarantee the accuracy or completeness of such data nor assume responsibility for the result of any error or omission in the data or other materials gathered from any source in the preparation of this analysis. Willis Towers Watson shall have no liability in connection with any results, including, without limitation, those arising from based upon or in connection with errors, omissions, inaccuracies, or inadequacies associated with the data or arising from, based upon or in connection with any methodologies used or applied by Willis Towers Watson in producing this analysis or any results contained herein. Willis Towers Watson expressly disclaims any and all liability arising from, based upon or in connection with this analysis. Willis Towers Watson assumes no duty in contract, tort or otherwise to any party arising from, based upon or in connection with this analysis, and no party should expect Willis Towers Watson to owe it any such duty.

- There are many uncertainties inherent in this analysis including, but not limited to, issues such as limitations in the available data, reliance on client data and outside data sources, the underlying volatility of loss and other random processes, uncertainties that characterize the application of professional judgment in estimates and assumptions, etc. Ultimate losses, liabilities and claims depend upon future contingent events, including but not limited to unanticipated changes in inflation, laws, and regulations. As a result of these uncertainties, the actual outcomes could vary significantly from Willis Towers Watson's estimates in either direction. Willis Towers Watson makes no representation about and does not guarantee the outcome, results, success, or profitability of any insurance or reinsurance program or venture, whether or not the analyses or conclusions contained herein apply to such program or venture.

- Willis Towers Watson does not recommend making decisions based solely on the information contained in this analysis. Rather, this analysis should be viewed as a supplement to other information, including specific business practice, claims experience, and financial situation. Independent professional advisors should be consulted with respect to the issues and conclusions presented herein and their possible application. Willis Towers Watson makes no representation or warranty as to the accuracy or completeness of this document and its contents.

- This analysis is not intended to be a complete actuarial communication, and as such is not intended to be relied upon. A complete communication can be provided upon request. Willis Towers Watson actuaries are available to answer questions about this analysis.

- Willis Towers Watson does not provide legal, accounting, or tax advice. This analysis does not constitute, is not intended to provide, and should not be construed as such advice. Qualified advisers should be consulted in these areas.

- Willis Towers Watson makes no representation, does not guarantee and assumes no liability for the accuracy or completeness of, or any results obtained by application of, this analysis and conclusions provided herein.

- Where data is supplied by way of CD or other electronic format, Willis Towers Watson accepts no liability for any loss or damage caused to the Recipient directly or indirectly through use of any such CD or other electronic format, even where caused by negligence. Without limitation, Willis Towers Watson shall not be liable for: loss or corruption of data, damage to any computer or communications system, indirect or consequential losses. The Recipient should take proper precautions to prevent loss or damage – including the use of a virus checker.

- This limitation of liability does not apply to losses or damage caused by death, personal injury, dishonesty or any other liability which cannot be excluded by law.

- This analysis is not intended to be a complete Financial Analysis communication. A complete communication can be provided upon request. Willis Towers Watson analysts are available to answer questions about this analysis.

- Willis Towers Watson does not guarantee any specific financial result or outcome, level of profitability, valuation, or rating agency outcome with respect to A.M. Best or any other agency. Willis Towers Watson specifically disclaims any and all liability for any and all damages of any amount or any type, including without limitation, lost profits, unrealized profits, compensatory damages based on any legal theory, punitive, multiple or statutory damages or fines of any type, based upon, arising from, in connection with or in any manner related to the services provided hereunder.

- Acceptance of this document shall be deemed agreement to the above.