



THERE IS AN R IN LLOYD'S

Trevor Maynard

15 JULY 2013

SOME HISTORY



ACT 1. A LEARNED GATHERING OF ACTUARIES IN OCTOBER 2005.....

....IN BLACKPOOL



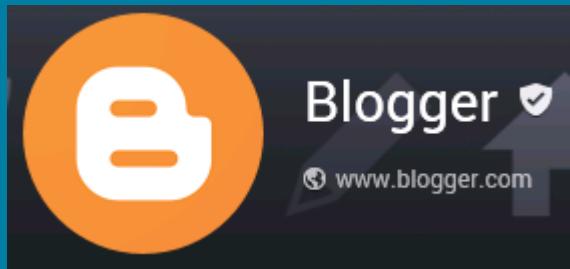
Maths toolkit working party (formed in Killarney in 2004) presented their thoughts.

- Do we have time to think?
- Are we using computers to their full potential?
- Are our methods outdated and constrained by the past?

WE TALKED ABOUT



Wikipedia



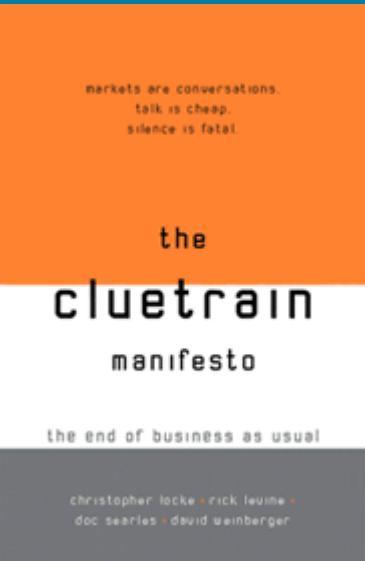
Blogging



RSS



Wikis and web 2.0



markets are conversations.
talk is cheap.
silence is fatal.

the
cluetrain
manifesto

the end of business as usual

christopher locke • rick levine •
doc searles • david weinberger

1 Markets are CONversations.

...

2 The Internet is enabling conversations among human beings that were simply not possible in the era of mass media.

...

93 We're both inside companies and outside them.....

94 To traditional corporations, networked conversations may appear confused, may sound confusing. But we are organizing faster than they are. **We have better tools, more new ideas, no rules to slow us down.**

95 We are **waking up and linking to each other**. We are watching. But we are not waiting.

ACT 2. TOOLKIT MANIFESTO



- If the only tool a dentist had was a Swiss army knife – would you let them fill your teeth?...
....So why do we only use Microsoft Office?

1. Pick the best tool for the job

- Why don't we use the best tools?
 - Lack of awareness

2. Search out and use prior art

- IT policies prevent it

3. We need a new relationship with IT

- Many hands make light work

4. Harness collective intelligence

- Web 2.0 allowed us to share what we found – to reduce the discovery time

5. If you find a useful tool post it and tell the world



The Toolkit Manifesto

- Pick the best tool for the job
- Search out and use Prior Art
- If you find a useful tool, post it and tell the World
- Harness collective intelligence
- We need a new relationship with IT

VIEW EDIT

FrontPage

last edited by PBworks 5 years, 7 months ago

Page history

The views expressed by individuals on this wiki do not necessarily represent the views of their employers - regardless of whether company email addresses are given. The information shown should be checked before use and no guarantee is made on its validity.

Welcome to the Toolkit Wiki!

Welcome

Drawing on tools pioneered by the IT community, this Toolkit Wiki is aimed sharing knowledge and experience within the actuarial community.

A [wiki](#) is a set of web pages which users can add to or edit as they see fit without having much or any knowledge of html. This tool has many applications, but here we (and we hope you) will use it as a platform to share knowledge and provide useful tools to other likeminded people.

Contents

1. [Welcome to the Toolkit Wiki!](#)
 - i. [Pages So Far](#)
 - ii. [How to Contribute](#)

Pages So Far

Software / Tools

Please list any useful software tools [here](#).

- [R Toolkit](#)
- [CurveExpert](#)
- [RSS Aggregators](#)
- [del.icio.us](#)
- [Free to Use Excel Addins](#)
- Find out what that [acronym](#) means!

Actuarial and Mathematical

- Use [this](#) page to set out problems/issues to address.
- [Cartograms](#) are distorted maps which can have a very powerful effect when trying to display geographical information, read more... [here](#)
 - [Actuarial Symbols in LaTeX](#)
 - AMO graph with code

Other Contributions

- [CAS COTOR Challenge](#)
- [ClueTrain](#)
- [JargonBuster](#)
- [LighthillDataProject](#)
- [ScreenCasting](#)
- [UsefulLinks](#)

To join this workspace, [request access](#).

Already have an account? [Log in!](#)

Navigator

- [ActuarialSymbolsinLaTeX](#)
- [AMOWithCode](#)
- [AvoidingPriorArt](#)
- [BuildingPackages](#)
- [CapitalAllocation](#)
- [CaseForResearch](#)

[Pages](#) [Files](#) [options](#)

SideBar

Warning! See disclaimer.

[learn how to](#) add a page to this wiki in 6 easy steps!

Recent Activity

[RToolkit](#)
edited by

[BuildingPackages](#)
added by

HEATED DISCUSSIONS AT LLOYD'S COFFEE SHOP...



300 YEARS
LATER...
...R SOULS



R Souls

last edited by PBworks 6 years, 7 months ago



R Souls

1. Introduction

R Souls is a club meeting to discuss the actuarial uses of R.

Wow!

2. Member of Lloyds' R Souls

Please add your name if you want to be on the distribution list for meetings.

Name	E-mail
Trevor Maynard	trevor.maynard@lloyds.com
Markus Gesmann	markus.gesmann@lloyds.com
Nigel Desilva	Nigel.DeSilva@thomasmiller.com
Junsang Choi	junsang.choi@loyds.com
Chibisi Chima-Okereke	Chibisi.Chima-Okereke@lloyds.com
Simon Brickman	Simon.Brickman@beazley.com
David Hughes	David.Hughes@beazley.com
Liz Lotz	Liz.Lotz@lloyds.com
Vinay Mistry	vinay.mistry@lloyds.com

3. Time table for the meeting

When	Where	Topic
30/11/2006	Lloyd's, G5 Room 6a	Package written in C calling from R
24/11/2006	Lloyd's, G5	<u>This is driving me loopy!</u>
17/11/2006	Lloyd's, G5	Copula Cont.
10/11/2006	Lloyd's, G5	How to create class and object
03/11/2006	Lloyd's, G5 Room 6	Why copulas?
20/10/2006	Lloyd's, G5 Room 6a	general-purpose optimization function for curve fitting
13/10/2006	Lloyd's, G5 Room 7	XML and KML

4. Desires

- Reserving using lm and glm
- XML in R to create a structure to generate KML

5. The list of the output of the Lloyds R user group

- [30th November 2006](#) - C to R ?
- [24th November 2006](#) - This is driving me loopy!
- [3rd November 2006](#) - Why copulas?
- [20th October 2006](#) - general-purpose optimization function for curve fitting
- [13th October 2006](#) - XML and KML
- [18 Aug 2006](#) - Fitting censored distributions
- [2 June 2006](#) - R Reserving package
- [5 May 2006](#) - R and Excel
- [28 April 2006](#) - Ideas for a reserving package
- [21 April 2006](#)- Pairs and copulas/funnels
- [31 March 2006](#) - Mixed Normal Copoulas/ R and S-Plus

IMPLICATIONS



POWERFUL SPONSOR

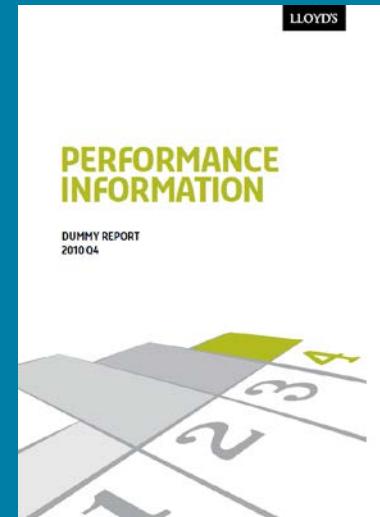
Is it going to be better?

Will it make you more efficient?...

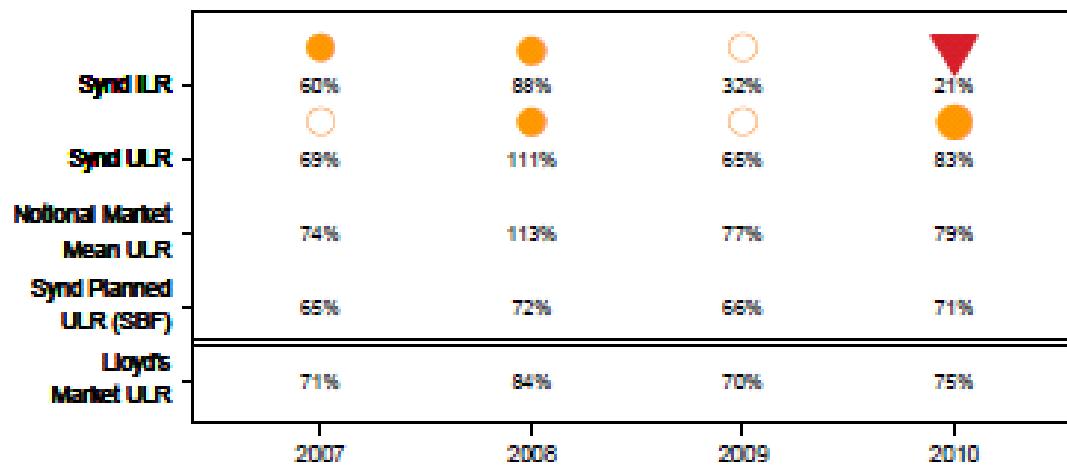
....Then what are you waiting for?



BENCHMARKING



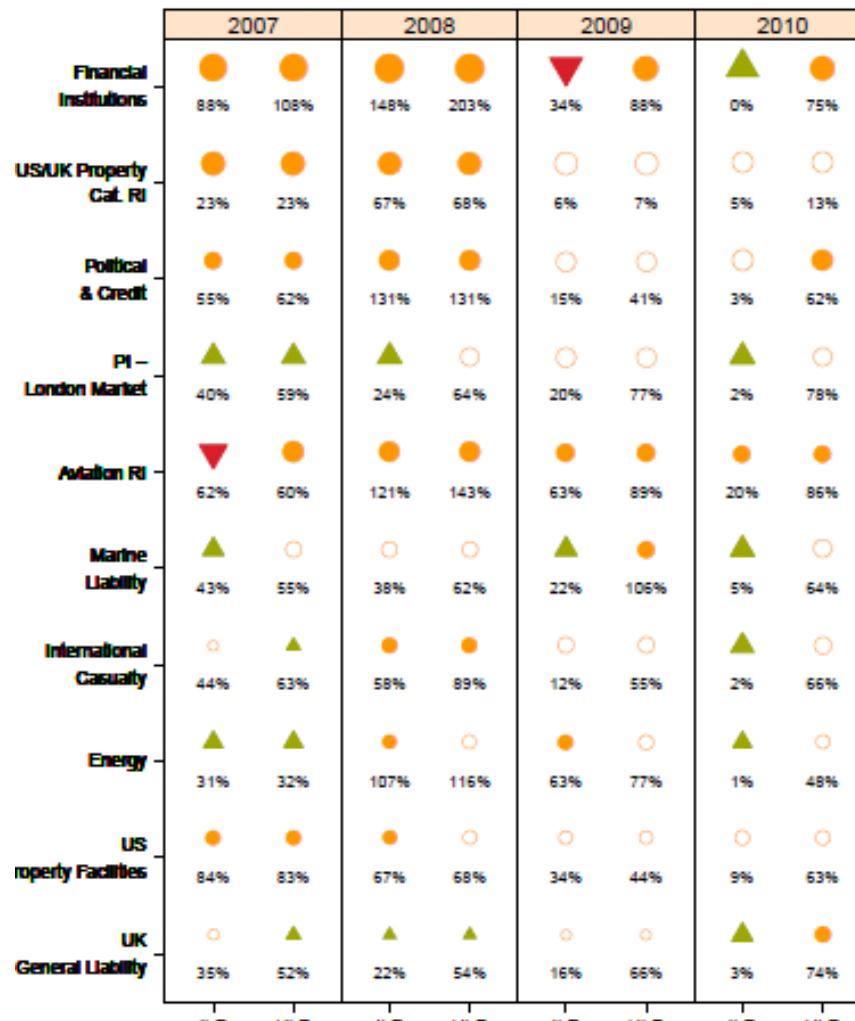
Syndicate 9999



Symbol size is proportional to gross ult premium

▲ top quartile ○ second quartile ● third quartile ▼ bottom quartile

Syndicate 9999

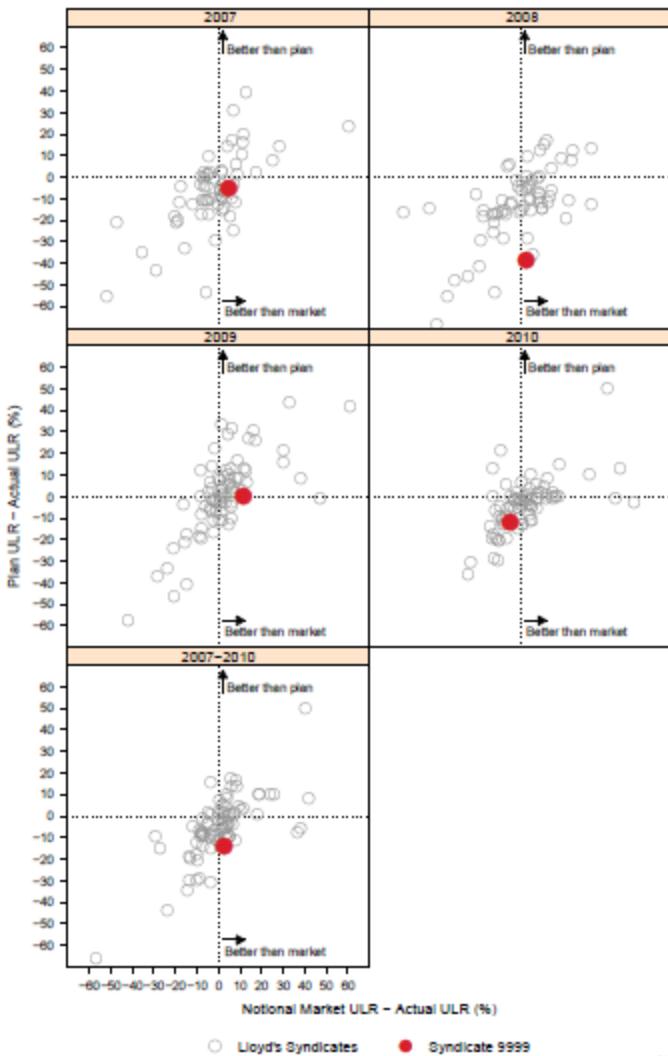


Symbol size is proportional to gross ult premium

top quartile second quartile third quartile bottom quartile

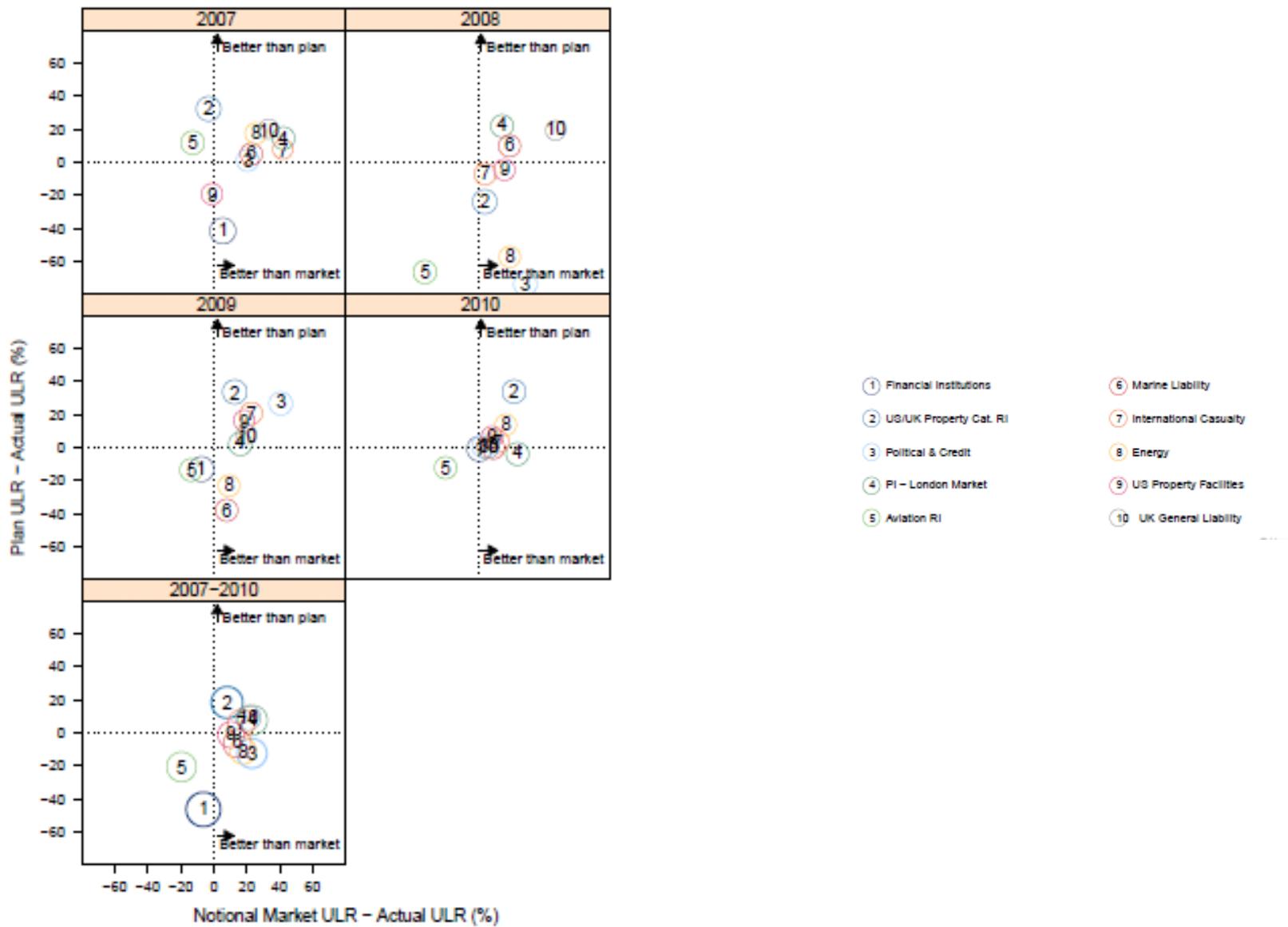
© Lloyd's

Syndicate 9999

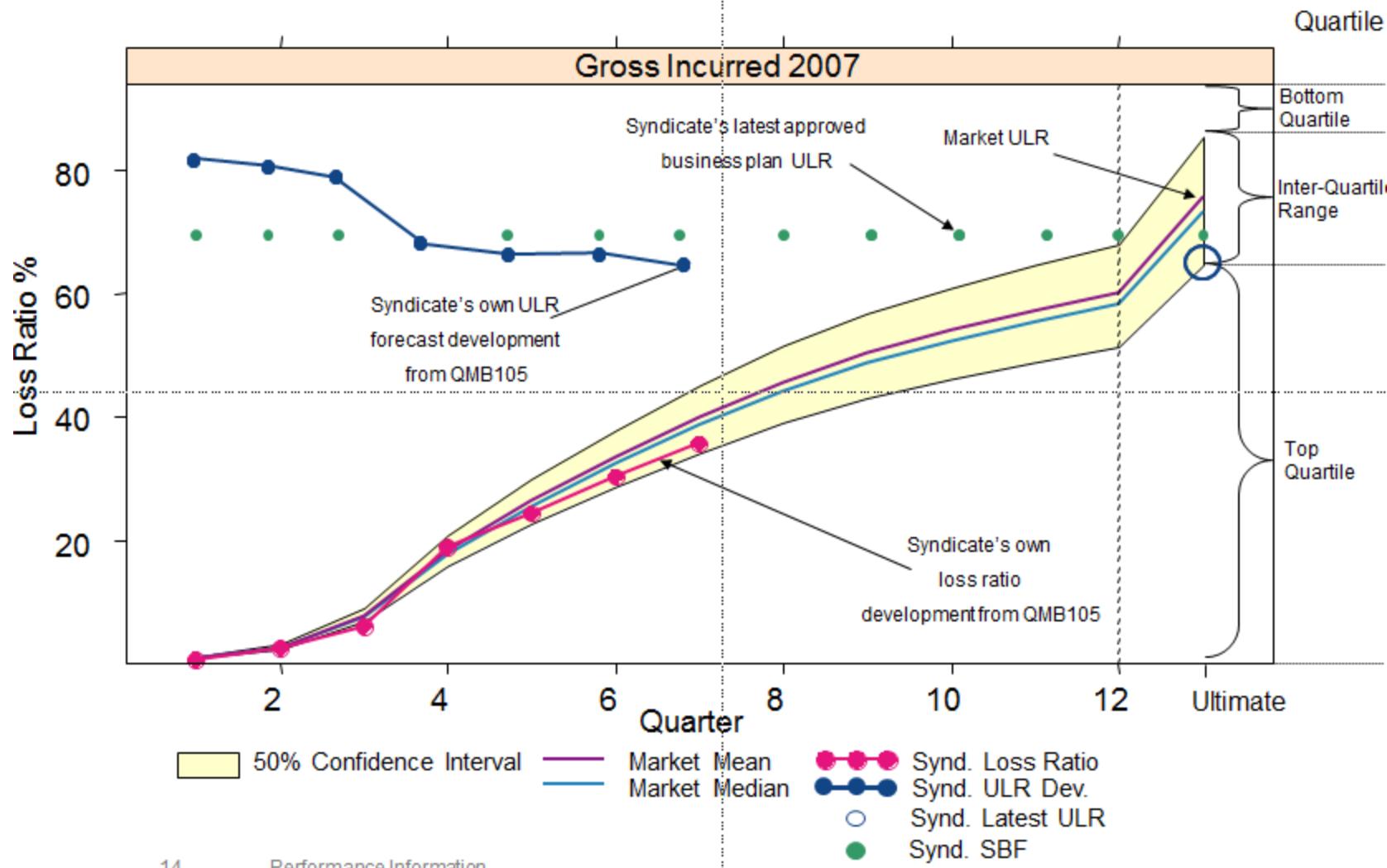


© Lloyd's

Syndicate 9999



Notional Market Benchmark



BENCHMARKING

LLOYDS
LCM BENCHMARK REPORT
1ST APRIL 2011 RETURN

SYNDICATE **XXXX**
JULY 2011



LLOYDS
RDS BENCHMARK REPORT

SYNDICATE **XXXX**
JUNE 2011

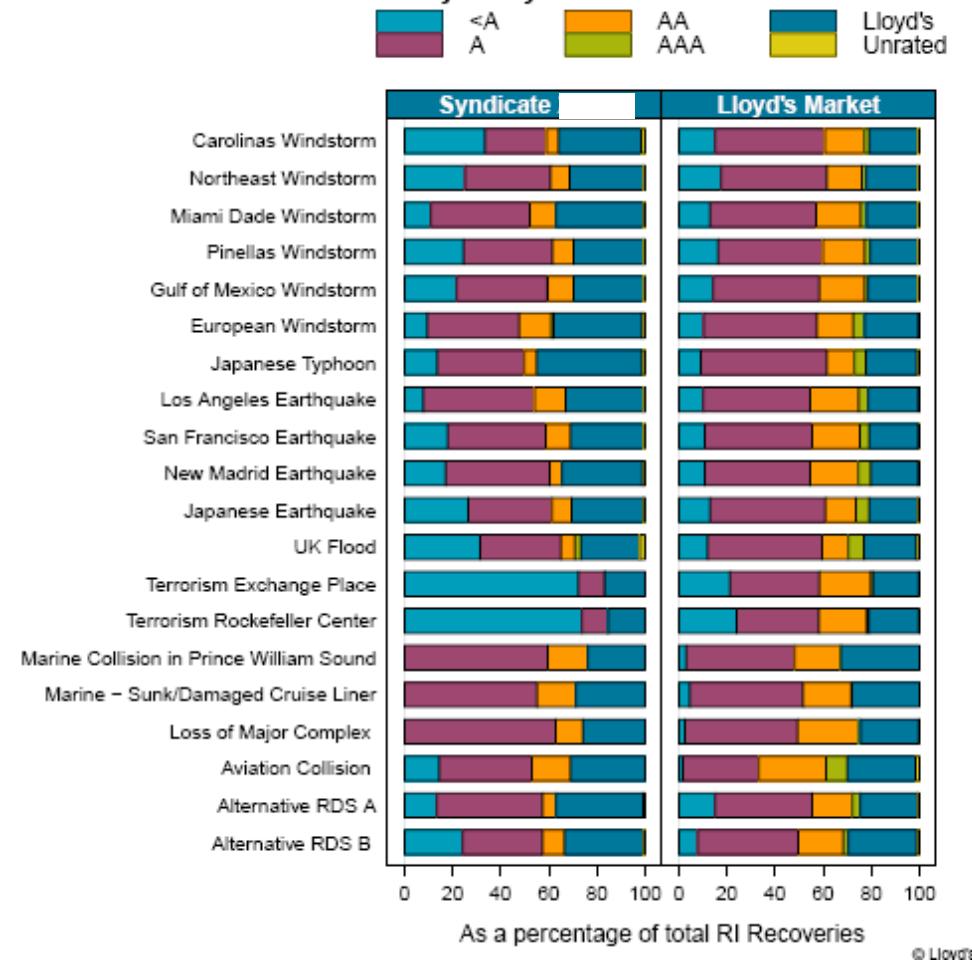




LATEX

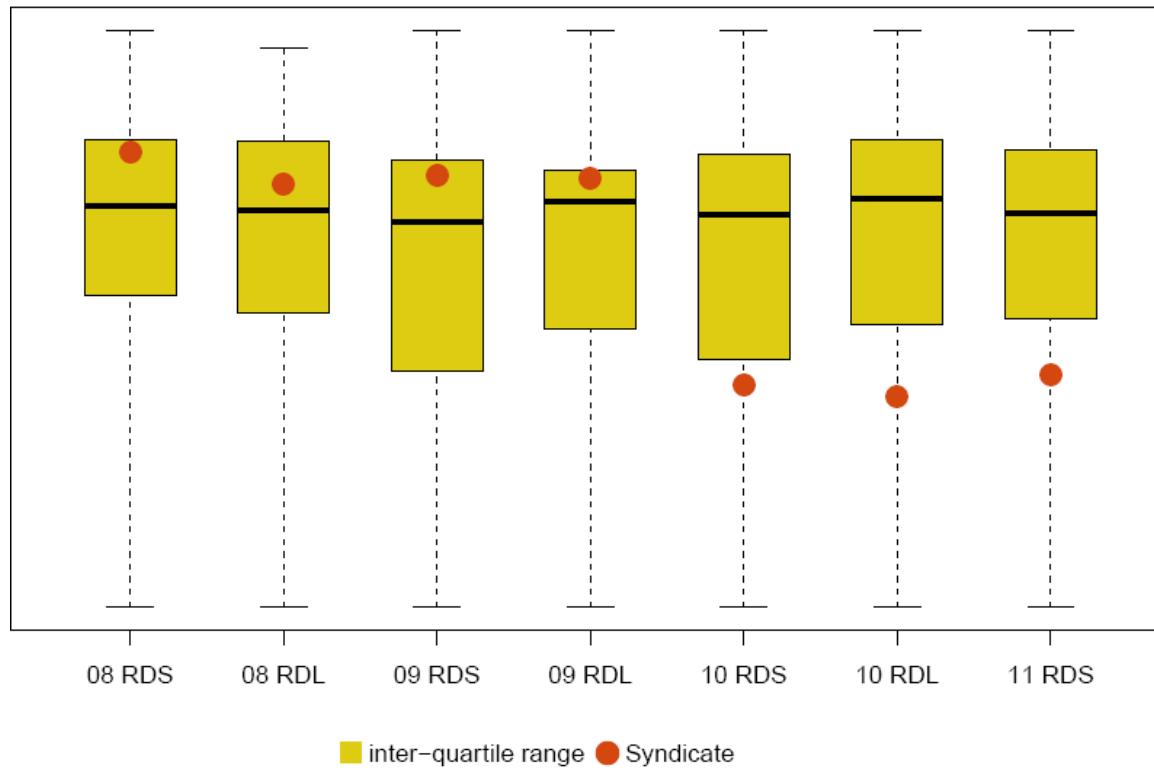


Reinsurance Security Analysis as at 1 Jan 2011



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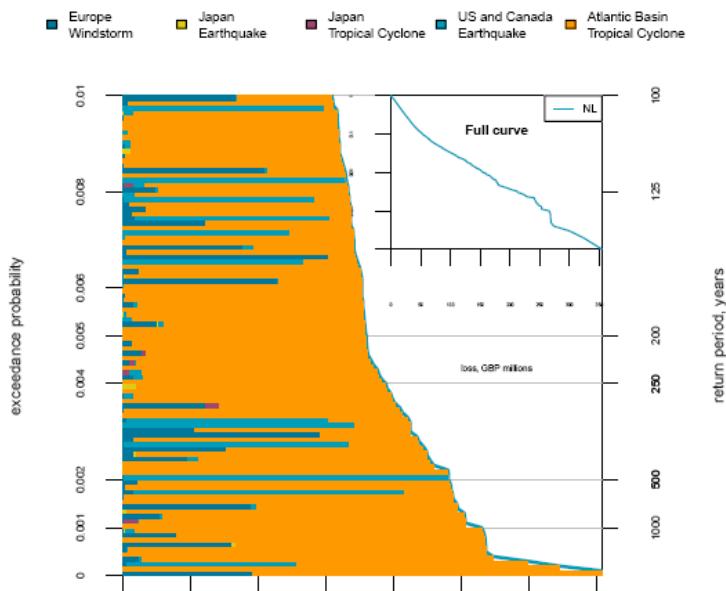
Los Angeles Earthquake



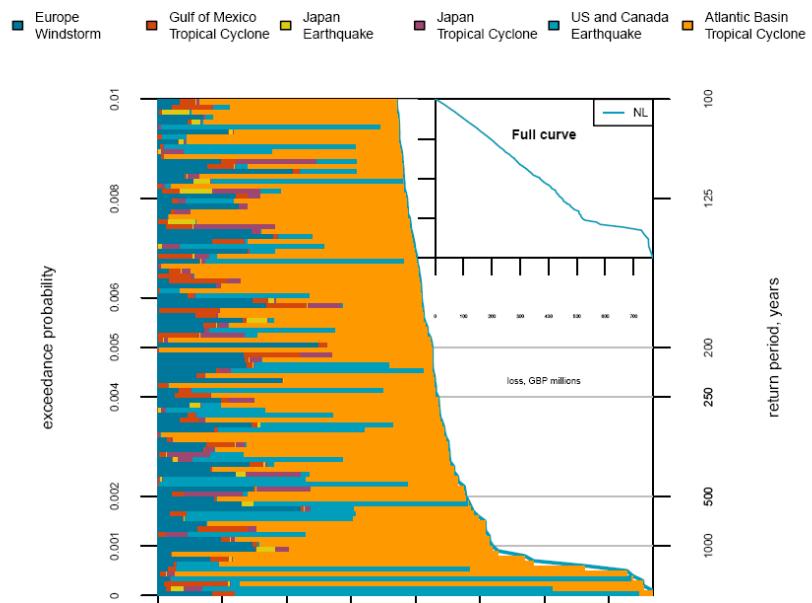
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Region and Peril Contribution Analysis



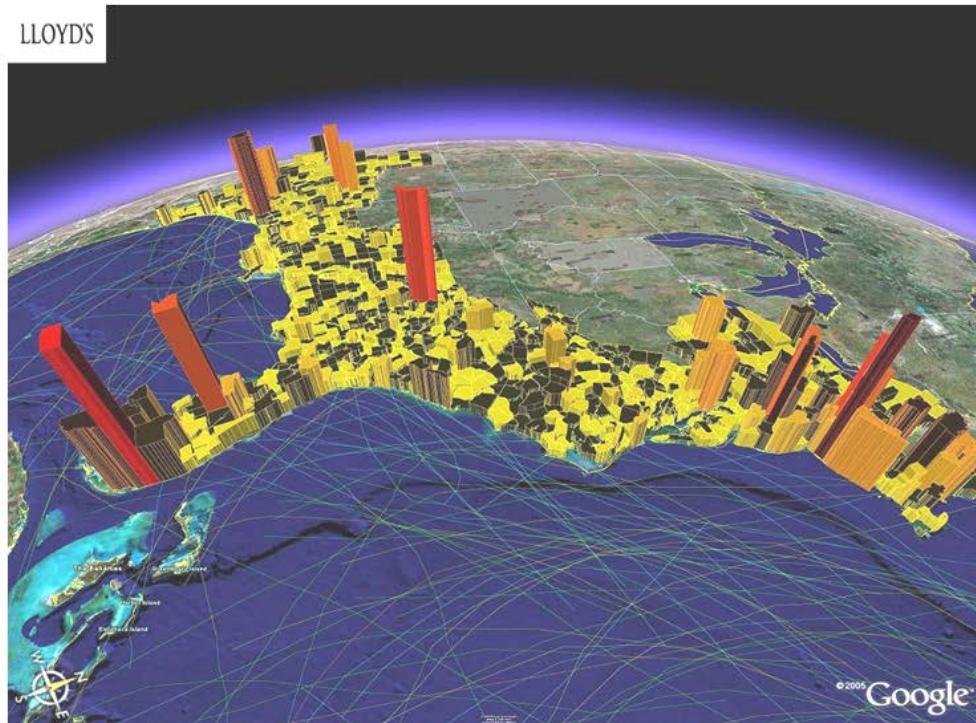
Region and Peril Contribution Analysis



VISUALISING RISK



DATA VISUALISATION TOOL

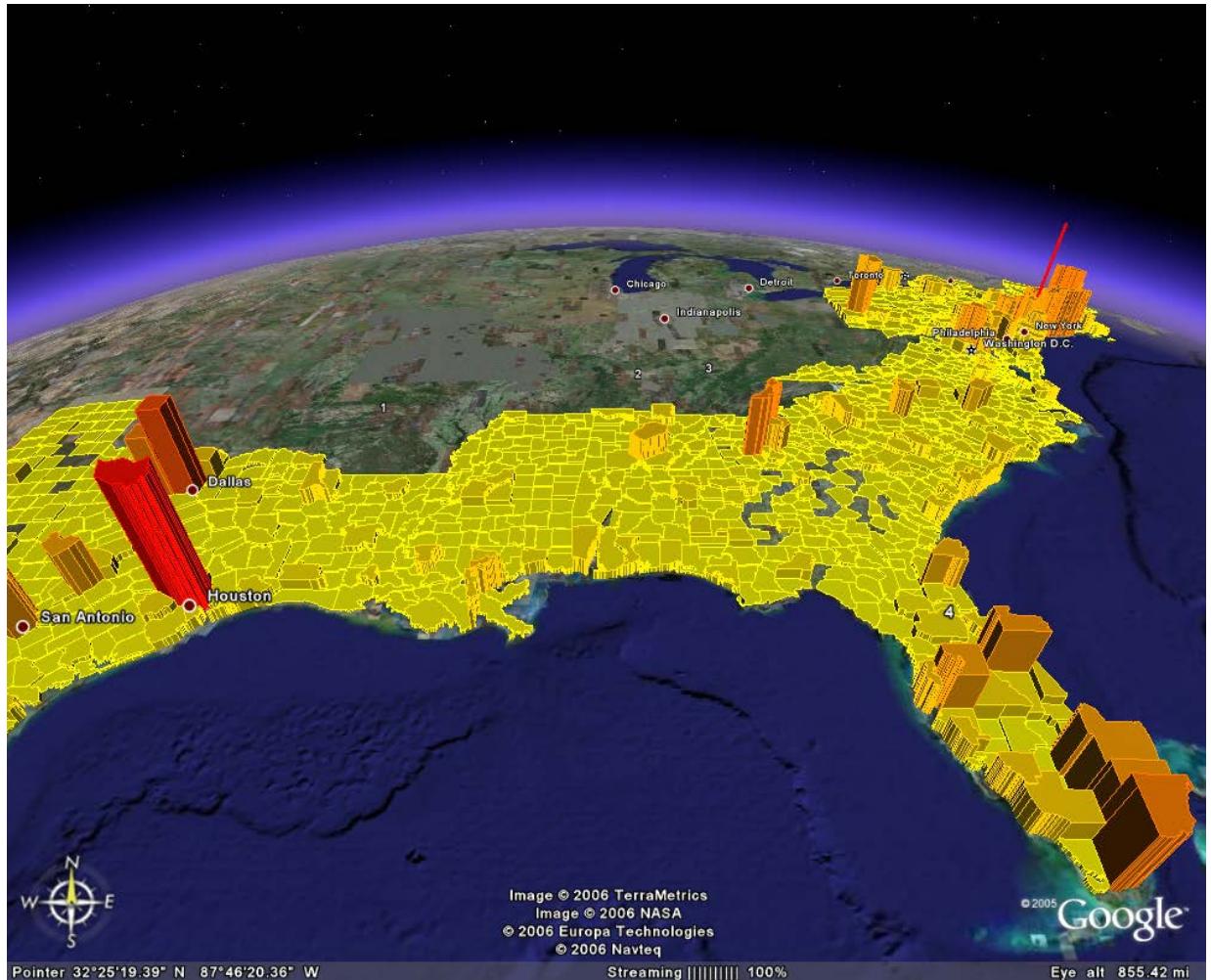


We would like to invite you to a presentation on Lloyd's "Data Visualisation Tool" using Google Earth.

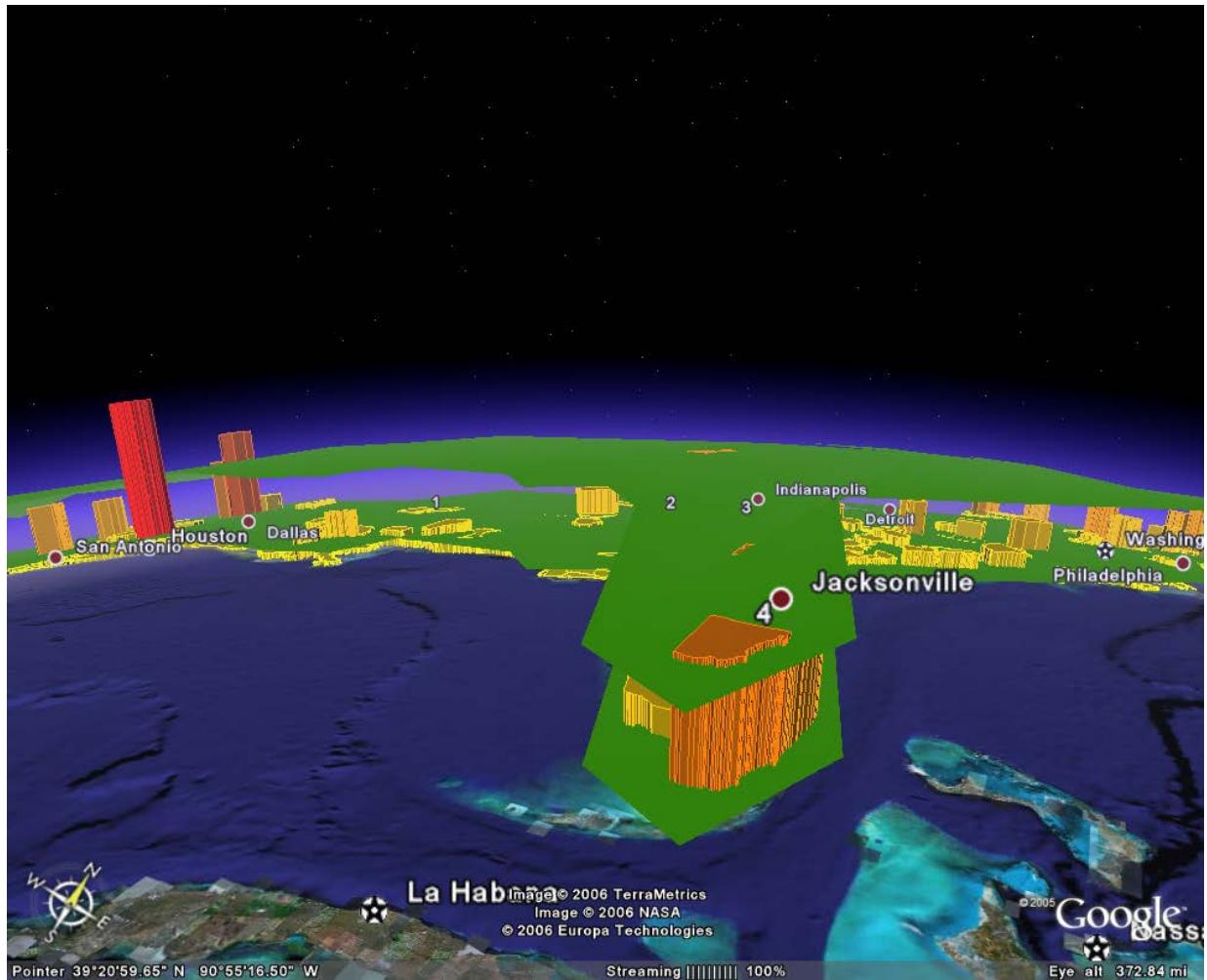
Please contact Joanna Day on extension 5967
if you would like to attend.

**9-10 AM, 14 DECEMBER 2006 , LLOYD'S OLD LIBRARY
LLOYD'S EXPOSURE MANAGEMENT,
FRANCHISE PERFORMANCE DIRECTORATE**

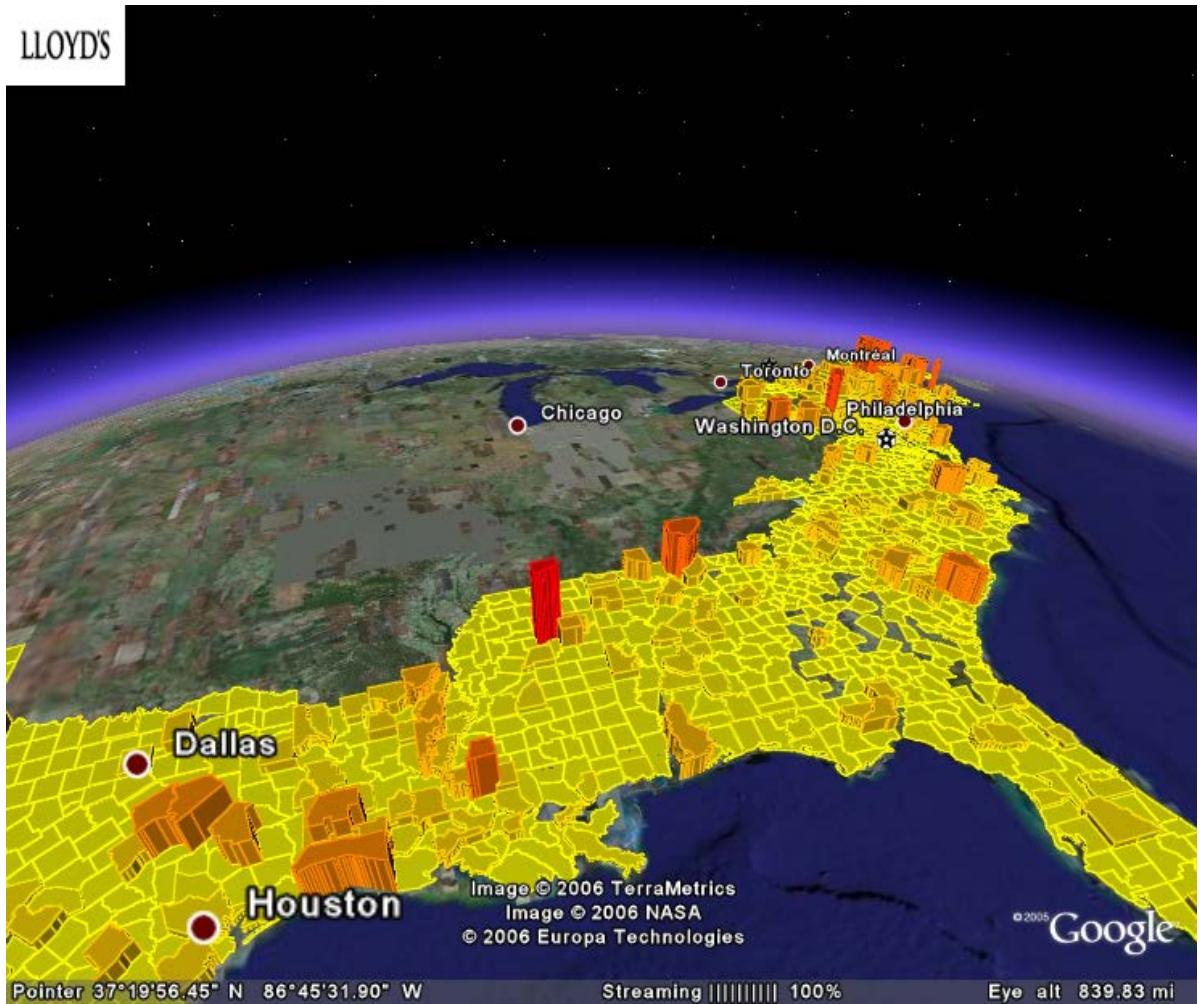
COUNTY WIND AGGREGATES



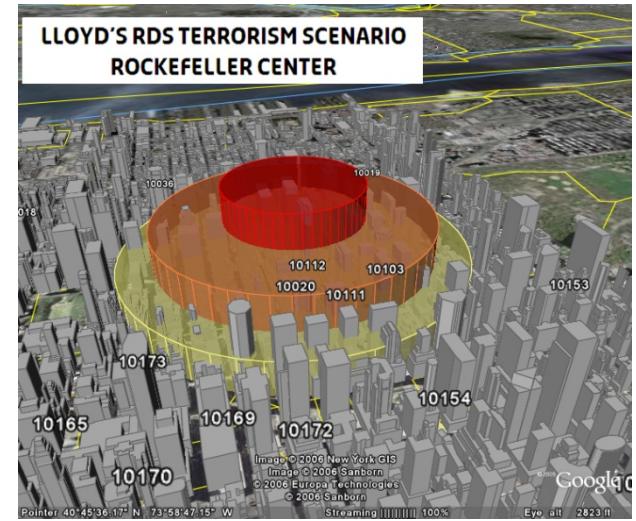
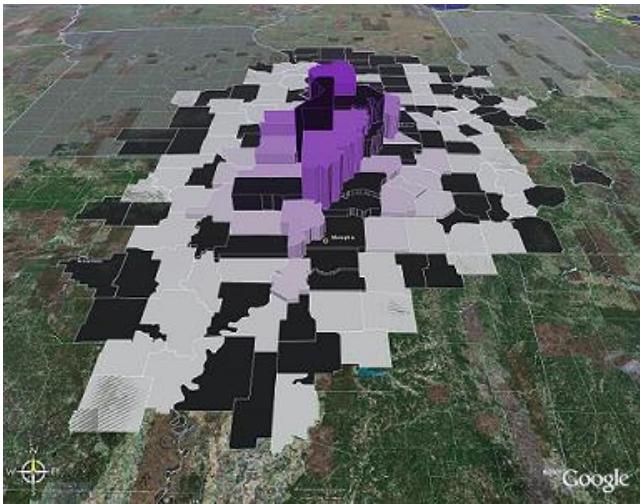
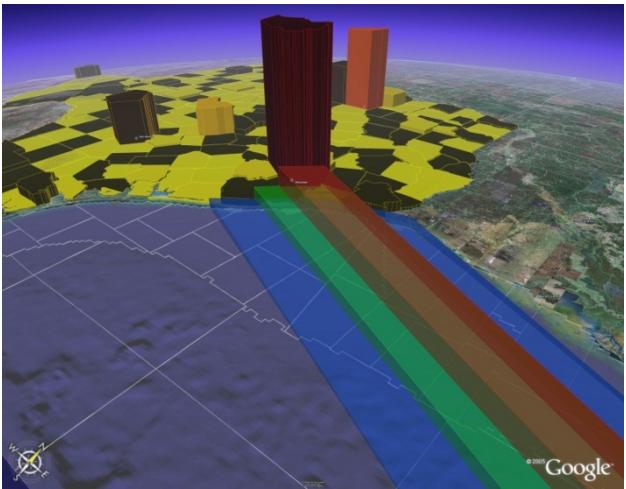
R/I ATTACHMENT AND EXHAUSTION POINTS



DATA QUALITY



RDS FOOTPRINTS



HOW?

We created an R function:

“the KMLer”

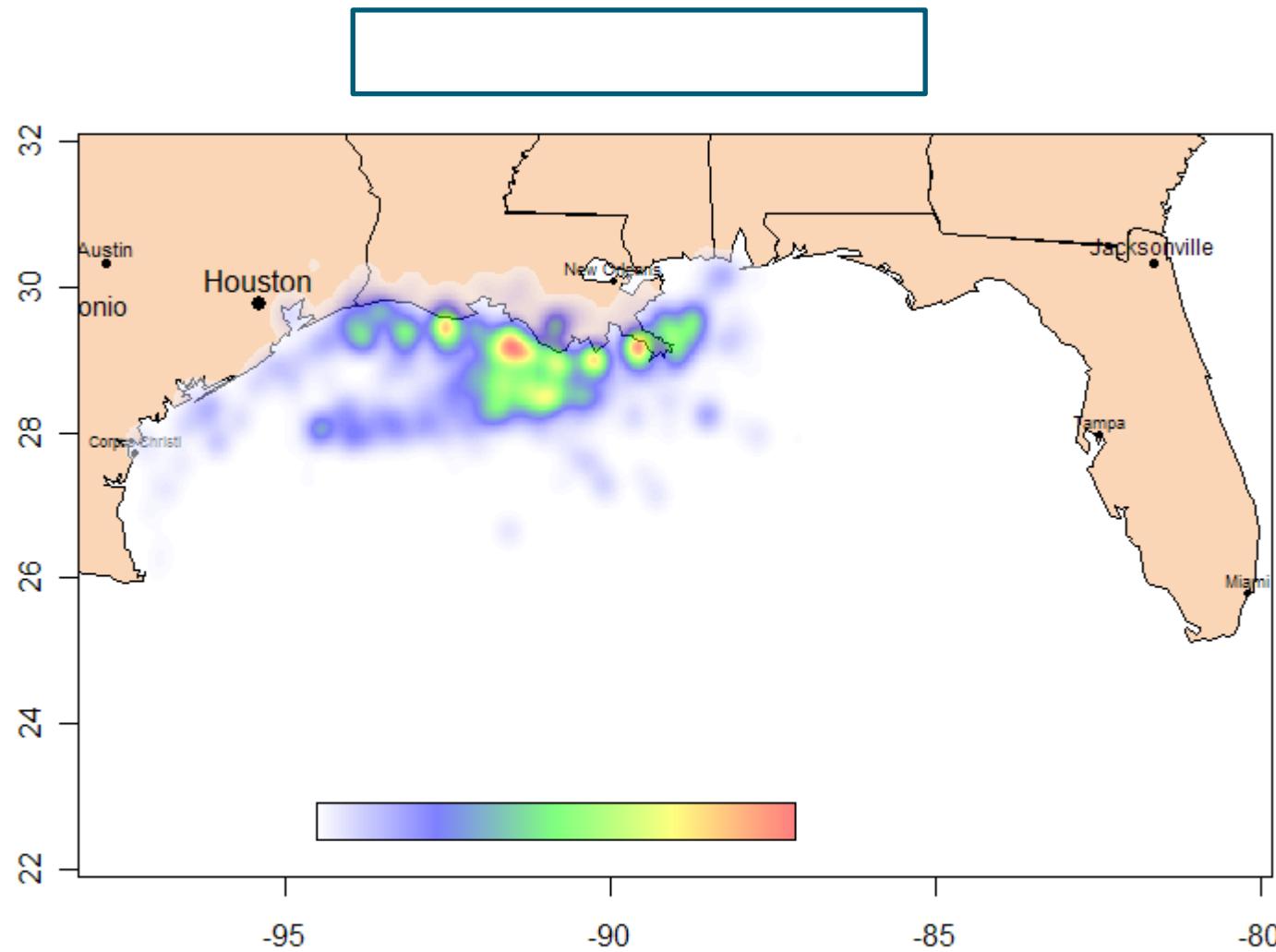
Using...XML package (prior Art)

County boundary's etc from R Maps (prior Art and open data)

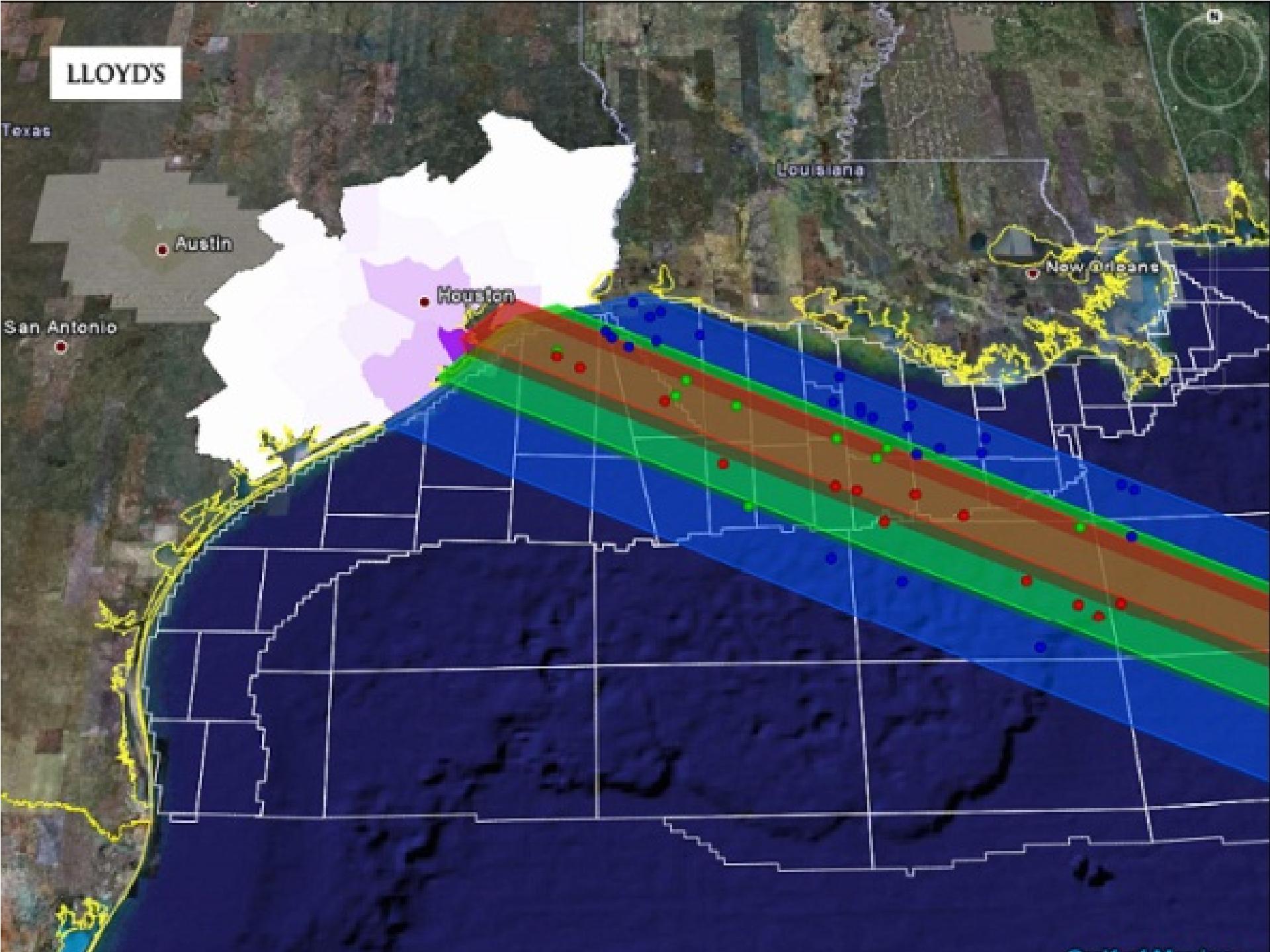
Orientation and reversing boundaries



OFFSHORE OIL RIGS – EXPOSURE DATA

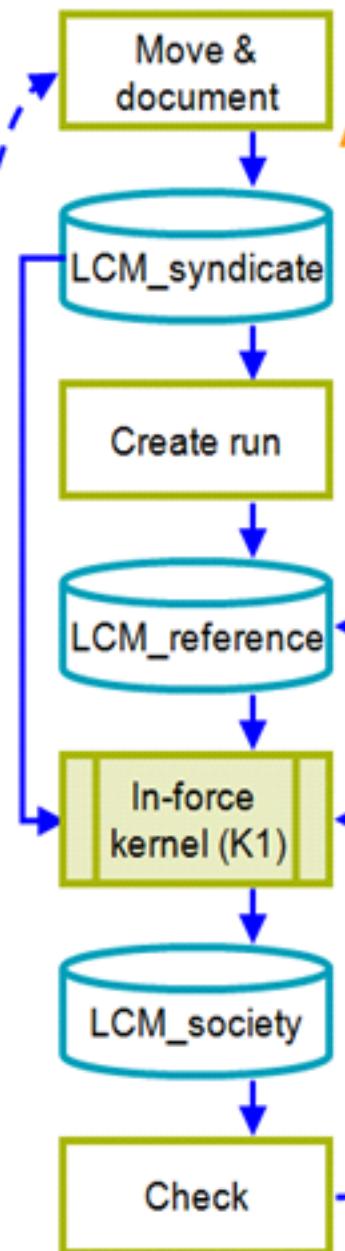


LLOYD'S

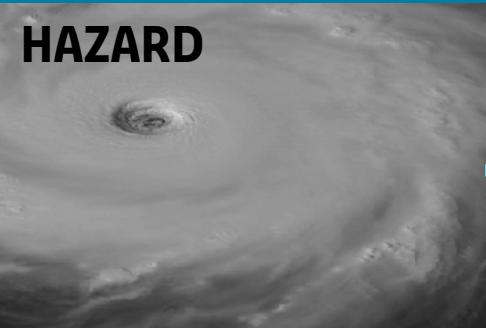


LLOYD'S CATASTROPHE MODEL

LCM Model team

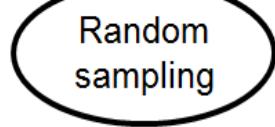






RMS model eventId table

peril	region	eventId	rate
WS	US	1	0.1
WS	US	2	0.2
WS	US	3	0.1
EQ	US	4	0.1
EQ	US	5	0.3
EQ	US	6	0.2



RMS years

modelYear	eventId	peril	region
1	1	WS	US
1	3	WS	US
1	5	EQ	US
2	3	WS	US
2	4	EQ	US
3	1	WS	US
3	1	WS	US
3	2	WS	US
3	6	EQ	US
3	4	EQ	US
5	2	WS	US
5	4	EQ	US
5	4	EQ	US

Synd:1, model:RMS, v:9

tableId	peril	region	COB	modelYear	NL	GL
10	WS	US	A	1		
10	WS	US	A	2		
10	WS	US	A	3		
10	WS	US	A	4		
10	WS	US	A	5		
10	WS	US	B	1		
10	WS	US	B	2		
10	WS	US	B	3		
10	WS	US	B	4		
10	WS	US	B	5		
10	EQ	US	A	1		
10	EQ	US	A	2		
10	EQ	US	A	3		
10	EQ	US	A	4		
10	EQ	US	A	5		
10	EQ	US	B	1		
10	EQ	US	B	2		
10	EQ	US	B	3		
10	EQ	US	B	4		
10	EQ	US	B	5		

Synd:2, model:RMS, v:9

tableId	peril	region	COB	modelYear	NL	GL
11	WS	US	A	1		
11	WS	US	A	2		
11	WS	US	A	3		
11	WS	US	A	4		
11	WS	US	A	5		
11	WS	US	B	1		
11	WS	US	B	2		
11	WS	US	B	3		
11	WS	US	B	4		
11	WS	US	B	5		
11	EQ	US	A	1		
11	EQ	US	A	2		
11	EQ	US	A	3		
11	EQ	US	A	4		
11	EQ	US	A	5		
11	EQ	US	B	1		
11	EQ	US	B	2		
11	EQ	US	B	3		
11	EQ	US	B	4		
11	EQ	US	B	5		

Synd:7, model:RMS, v:9

tableId	peril	region	COB	modelYear	NL	GL
13	WS	US	A	1		
13	WS	US	A	2		
13	WS	US	A	3		
13	WS	US	A	4		
13	WS	US	A	5		

Synd:8, model:RMS, v:9

tableId	peril	region	COB	modelYear	NL	GL
15	WS	US	A	1		
15	WS	US	A	2		
15	WS	US	A	3		
15	WS	US	A	4		
15	WS	US	A	5		
15	WS	US	B	1		
15	WS	US	B	2		
15	WS	US	B	3		
15	WS	US	B	4		
15	WS	US	B	5		

Synd:6, model:AIR, v:11

tableId	peril	region	COB	modelYear	NL	GL
12	WS	US	A	1		
12	WS	US	A	2		
12	WS	US	A	3		
12	WS	US	B	1		
12	WS	US	B	2		
12	WS	US	B	3		
12	EQ	US	A	1		
12	EQ	US	A	2		
12	EQ	US	A	3		
12	EQ	US	B	1		
12	EQ	US	B	2		
12	EQ	US	B	3		

Synd:7, model:RMS, v:9

tableId	peril	region	COB	modelYear	NL	GL
13	WS	US	A	1		
13	WS	US	A	2		
13	WS	US	A	3		

Synd:7, model:AIR, v:11

tableId	peril	region	COB	modelYear	NL	GL
13	WS	US	B	1		
13	WS	US	B	2		
13	WS	US	B	3		
13	EQ	US	A	1		
13	EQ	US	A	2		
13	EQ	US	A	3		
13	EQ	US	B	1		
13	EQ	US	B	2		
13	EQ	US	B	3		

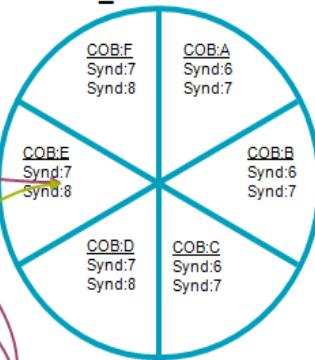
Synd:8, model:AIR, v:11

tableId	peril	region	COB	modelYear	NL	GL
14	EQ	US	A	1		
14	EQ	US	A	2		
14	EQ	US	A	3		
14	EQ	US	B	1		
14	EQ	US	B	2		
14	EQ	US	B	3		

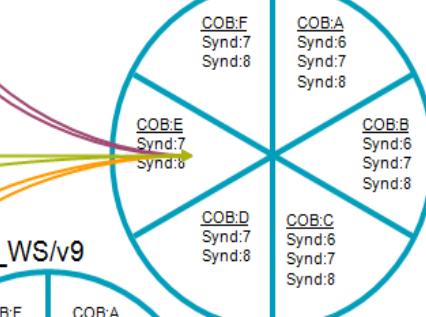
Synd:8, model:RMS, v:9

tableId	peril	region	COB	modelYear	NL	GL
15	WS	US	A	1		
15	WS	US	A	2		
15	WS	US	A	3		
15	WS	US	B	1		
15	WS	US	B	2		
15	WS	US	B	3		

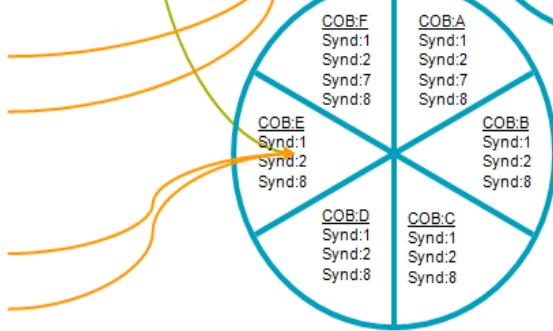
AIR/US_WS/v11



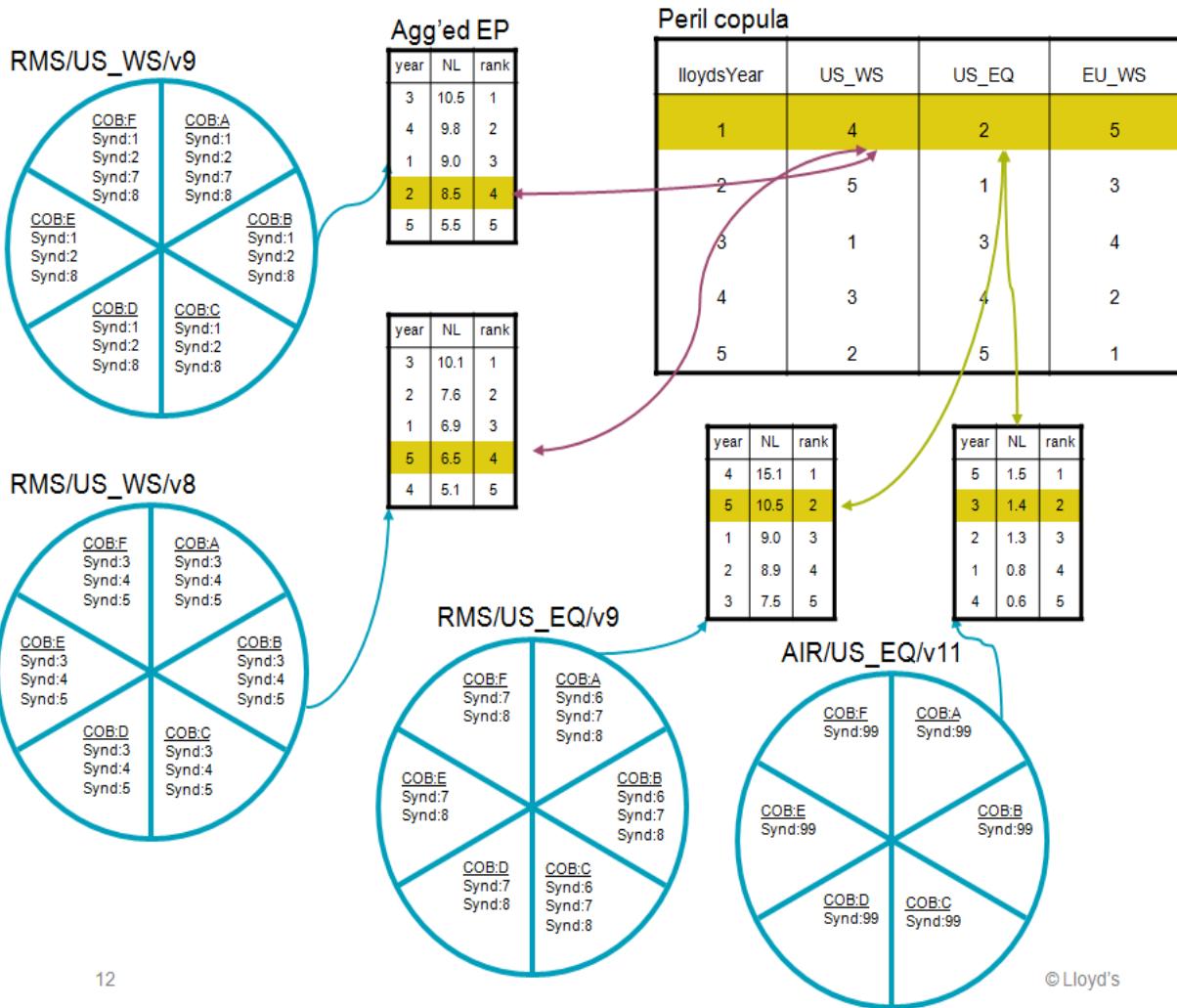
AIR/US_EQ/v11



RMS/US_WS/v9



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EMERGING RISKS DATABASE



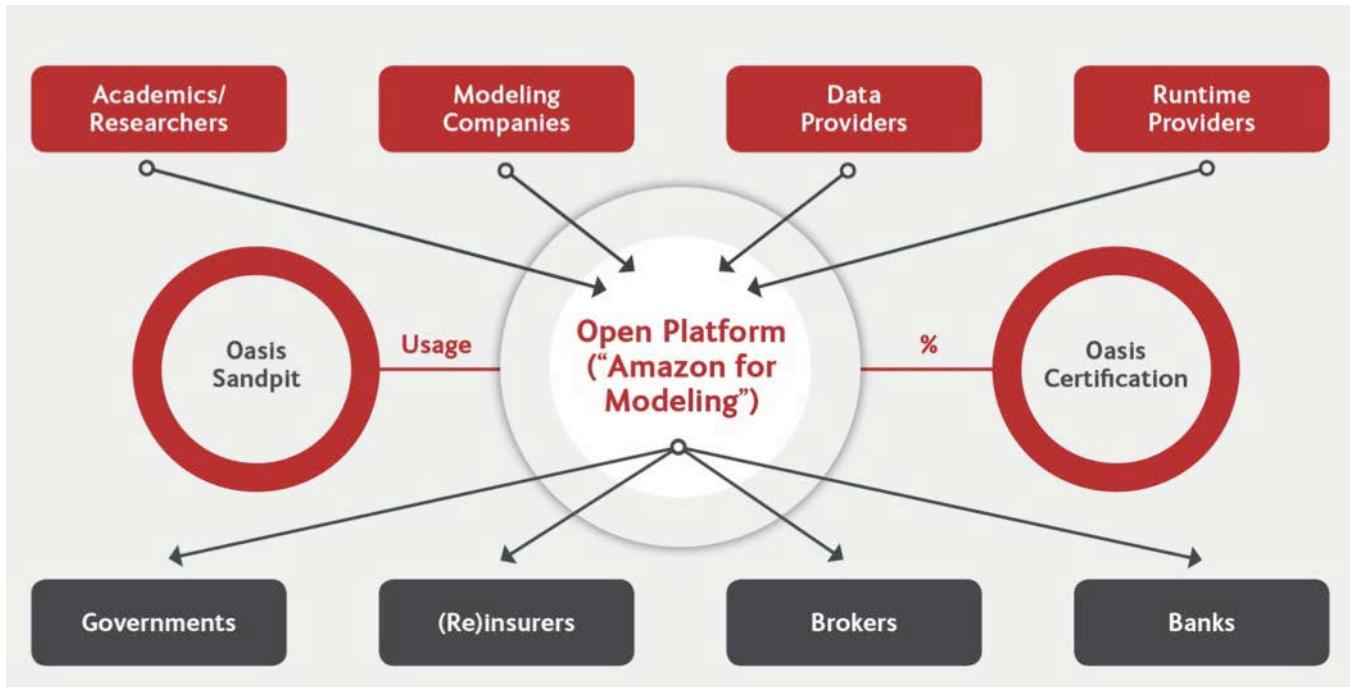
REINSURANCE MONITORING

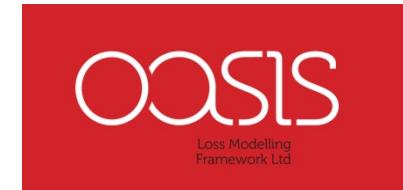


THE FUTURE?

OASIS

Low Modelling
Framework





- Lloyd's
 - SCOR
 - Catlin
 - Validus
 - Ren Re
 - Hiscox
 - Tiger Partners
 - Cathedral
 - Novae
 - Zurich
 - Liberty
 - Aspen
 - Aon Benfield
 - Guy Carpenter
 - Willis
 - Partner Re
 - Allianz
 - Axis
 - Amlin
 - Tokio Millennium Re/Kiln
- + Climate KIC

ASSOCIATE MEMBERS



RPI2.0



JBA
risk
management

KatRisk



KAREN CLARK & COMPANY

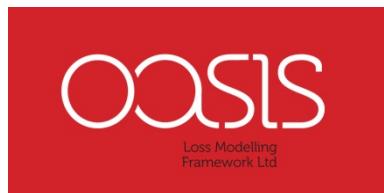
colt
smarter / faster / further



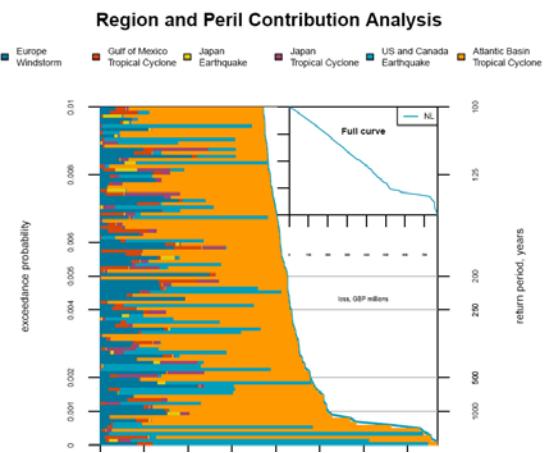
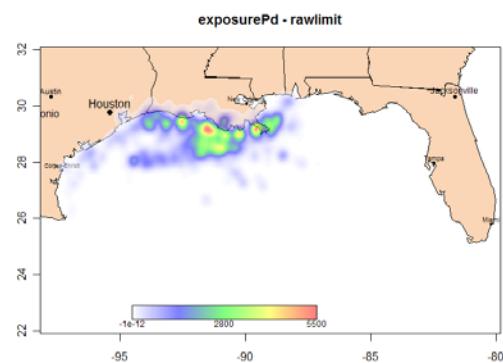
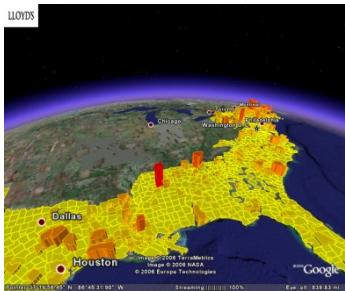
northdoor
know more, do more

GEM
PERILS
ERNST & YOUNG
Quality In Everything We Do

eit
Kn
Inn
Co.
SpatialKey
Climate-KIC



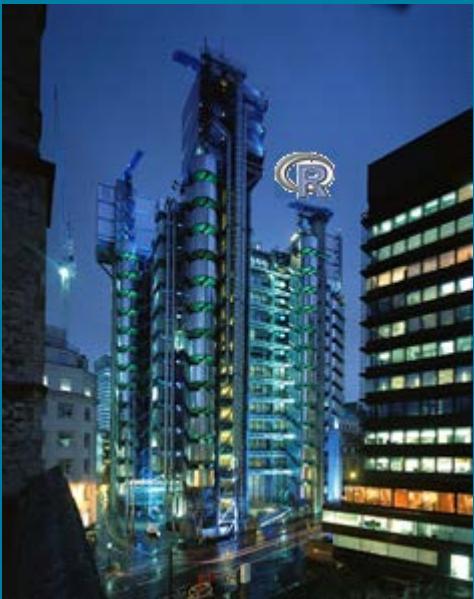
R Souls
2.0?



SUMMARY



SUMMARY



- ▶ Still an R soul at heart
- ▶ Collaborations are powerful and long lasting
- ▶ Picking the right tool for the job, works
- ▶ R is embedded in Lloyd's
 - MRC – capital visualisation tool
 - PMD: Pi packs, Benchmarking, Emerging risks, LCM, Visualisation, Ad-hoc analyses, CPG
- ▶ What will the future hold?



FIDENTIA