Natural catastrophe and geospatial intelligence
Better Management Information for localised events

Geospatial World Forum, Rotterdam, 24 May 2016
Dr Tina Thomson
**UK December floods 2015**

<table>
<thead>
<tr>
<th>Desmond</th>
<th>Eva</th>
<th>Frank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desmond was an extra-tropical cyclone and fourth named storm of the 2015–16 UK and Ireland windstorm season.</td>
<td>Heavy rainfall from Eva occurred circa three weeks after Storm Desmond had brought severe flooding to parts of Northern England, exacerbating the on-going situation.</td>
<td>Frank was the sixth storm to be officially named by the Met Office on 28 December 2015, and brought severe gales to western parts of the UK.</td>
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</tbody>
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<table>
<thead>
<tr>
<th><strong>Formed</strong></th>
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<table>
<thead>
<tr>
<th><strong>Highest gust</strong></th>
<th><strong>Highest gust</strong></th>
<th><strong>Highest gust</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>112 mph</td>
<td>75mph</td>
<td>85mph</td>
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<table>
<thead>
<tr>
<th><strong>Loss estimate</strong></th>
<th><strong>Loss estimate (incl. Frank)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>£662m Perils insured property loss</td>
<td>£578 Perils insured property loss</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Power outages</strong></th>
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</thead>
<tbody>
<tr>
<td>46,300</td>
<td>3,000</td>
<td>27,900</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Casualties</strong></th>
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<th><strong>Casualties</strong></th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Areas affected</strong></th>
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<th><strong>Areas affected</strong></th>
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</thead>
<tbody>
<tr>
<td>Ireland, Isle of Man, UK, Iceland, Norway, Sweden</td>
<td>Ireland, UK</td>
<td>Ireland, UK, Iceland</td>
</tr>
</tbody>
</table>
MS Amlin event response team

Pre-event

Severe weather monitoring

Warning issued – meeting triggered

Clients located in affected postcode areas

Mapping information to review and priorities for contact

Post-event

Severe weather event hits

Pre-event postcode exposures and affected clients reviewed

Visit to impacted areas and identified clients

Case management arranged

Exposure estimation

Underwriting / claims review

Management information
Pre-event monitoring
Events overview December 2015

**Storm Desmond**
- Widespread flooding in Cumbria
- 5th
- Response team visits Cumbria to meet loss adjusters & residential clients, interim payments to support clients

**Storm Eva**
- 100 flood alerts & warnings across England and Wales
- 10th
- Large retailer client flooded in York, loss adjuster on the case within 1hr

**Storm Frank**
- Further threatens the situation in Northern England, Scotland and Northern Ireland
- 25th
- Response team engaged to coordinate flood response
- 26th
- Response team visits large retailer client to offer support
- 29th
- 30th
- 30th
Affected areas, data sources & methodology

Data sources
1. Copernicus Emergency Management Service 95 flood extents from Sentinel radar (all-weather) sensors (20m).
2. In house delineated footprints from Sentinel radar data.
3. RMS flood model footprints in the most affected urban areas.

Exposure estimation method
1. Combined data sources by event and assumed 100m buffer
2. Delineated max area around footprints
3. Netted both down exposures
4. 100% PML
Storm Desmond exposure estimation

Incurred claims
4% of footprint exposure
Storm Eva exposure estimation

Incurred claim
2% of footprint exposure
Storm Frank exposure estimation

Incurred claim
10.5% of footprint exposure
Conclusions

Pre-event

• Varying levels of skill prediction
• Coarse assessment of potential regions affected
• For flood event more localised information critical
• To improve client experience, reserving, loss adjusters

Post-event

• Footprint availability for exposure assessment
• Data source limitations such as
  – Coverage
  – Resolution
  – Costs
  – Timing
Thank you

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Underwriting Modelling

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