



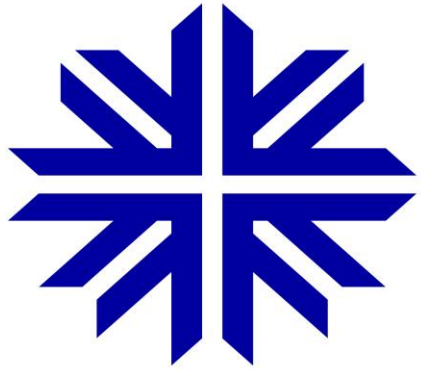
Extreme Weather and Impact on Marine Insurance Industry

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Munich Re America





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Sean M. Dalton
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<https://iumi.com/>

Agenda

- Exposures and risks
- Losses
- What has changed?
- Financial impact of extreme weather
- What can be done?



Exposures and risks



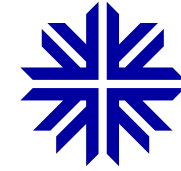
- Vessel
- Hull & machinery
- Protection & indemnity
- Cargo
- Transit
- Storage
- Ports and terminals
- Yacht / recreational marine facilities

Losses

- Bourbon Rhode
- MSC Zoe
- Yang Ming Efficiency
- Maersk Shanghai
- El Faro
- Svendborg Maersk
- MOL Comfort
- ITAL Florida Trieste
- Bai Chay Bridge
- Cosco Nagoya
- Helsinki Bridge
- APL China



Not frequency but definitely severity issue



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The maritime industry saw the number of total shipping losses of vessels **over 100GT** plummet during 2018 to **46** – the lowest total this century. While the number of losses has fallen significantly over the past year in particular, the number of shipping casualties or incidents (2,698) remains challenging, declining by less than 1%. Source: AGCS Safety and Shipping Review 2019

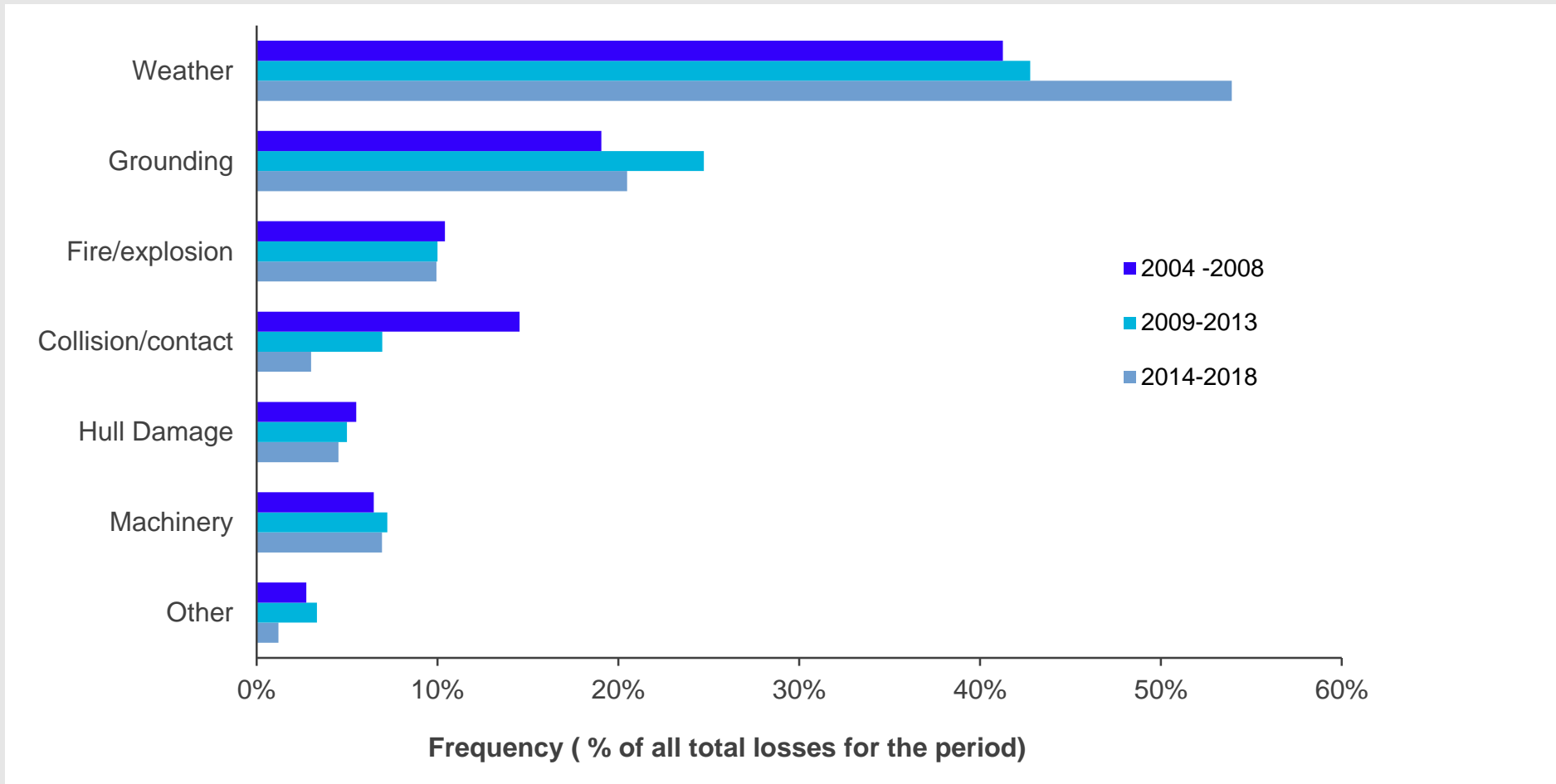
Investigations into the causes of shipping accidents show that over 30% of the accidents are caused by poor weather. Source: Global ship accidents and ocean swell-related sea states, Zhang 2017.

Total losses 2004 – 2018

By cause, all vessel type (vessels > 500 GT)



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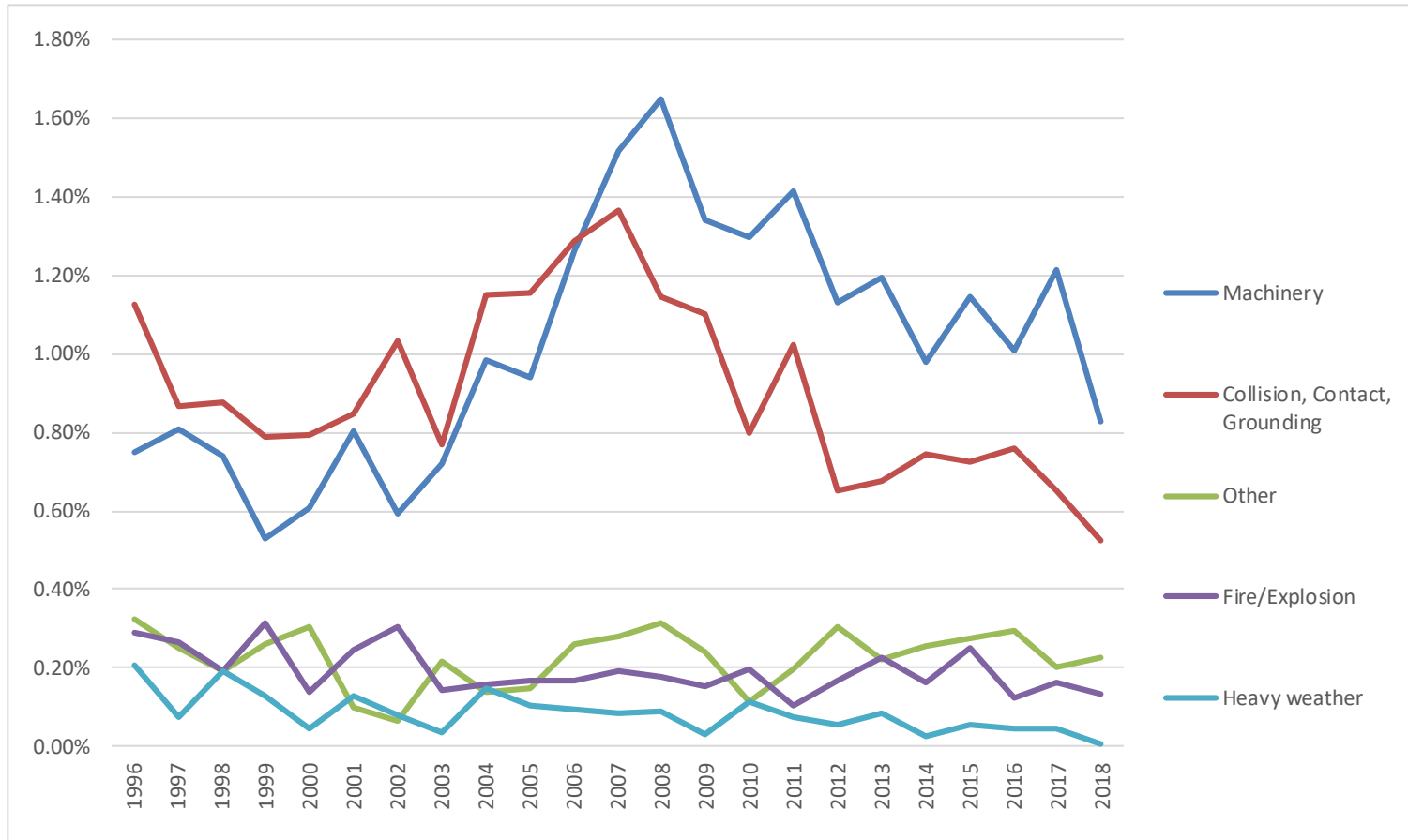


Claims frequency of hull claims > 500,000 USD

Paid & outstanding as reported, no IBNR reserve added



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as of 31 December 2018

NoMIS
Nordic Marine
Insurance Statistics

Types of losses



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- Hull damage (due to vessel pounding)
- Machinery damage
- Cargo damage
 - Containers overboard
 - Deck cargo
 - Water damage / leaking hatches
- Loss of vessel stability
 - Parametric rolling

Causes of loss

- European Maritime Safety Agency (EMSA) – annual overview of marine casualties and incidents 2015:
- 44% of casualties involve cargo ships with general cargo (34%) and container ships (17%) making up largest contribution (2011-2014).
- Loss of control largest “nature of casualties” making up 24% of casualties. Defined as “a total or temporary loss of the ability to operate or maneuver the ship, failure of electric power, or to contain on board cargo or other substances.”
- Causation? 67% were attributed to a human erroneous action.
- Recommendations? 60% focus on improving operational practices and human factors.

Causation: Other Factors



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- Vessel Age
- Vessel Condition (Maintenance)
- Multiple Factors

Murphy's Laws

1. In any field of endeavor, anything that can go wrong, will go wrong.
2. Left to themselves, things always go from bad to worse.
3. If there is a possibility of several things going wrong, the one that will go wrong, is the one that will cause the most damage.
4. Nature always sides with the hidden flaw.
5. If everything seems to be going well, you have obviously overlooked something.

VIA 9GAG.COM

Containers



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- Annually 130 million containers with cargo in excess of \$ 4 trillion dollars are transported aboard vessel.
- Containerships carry up to 70% of cargo on deck.
- Containerships have grown in size at an amazing pace. 1970 first fully cellular containerships had capacity of 1,000 to 2,500 TEUs, present day ULCS approaching 24,000 TEUs capacity.
- 2014 to 2016 total containers lost at sea averaged 1,390 with 56% of those lost being attributed to catastrophic events. Source: World Shipping Council Report, Containers Lost At Sea – 2017 Update.

Ports and terminals

- 2012 Superstorm Sandy
- Port of NY / NJ sustained major damage
 - Equipment / property damage
 - Cargo Damage
 - > 16,000 vehicles
- \$ 2.5 to \$ 3 billion marine insurance loss (marine made up > 10% of P&C market loss but accounts for 1% premium).
- Storm hit on October 29, 2012, port not reopened to commercial traffic until November 4, 2012.



US recreational marine - boat / yacht primary contributing factor of accidents & casualties 2018



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- 205 accidents
- 40 deaths
- 96 injuries

Conditions	Accidents	Deaths	Injuries
Wind – Strong (15-25 MPH)	265	48	108
Wind – Storm (over 25 MPH)	47	9	16
Waves – Rough (>2' to 6')	354	72	155
Waves – Very Rough (>6')	62	10	29

What has changed?



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- Vessel size, design and capacity
- Growth of ports
- Climate change
- Improved weather data and routing information
- Salvage capabilities
- Unknown vessel and port accumulation
- Increased competition and performance demands

Vessel size

- MSC GULSUN: 23,756 TEU capacity
- Cargo insured value > \$ 1 billion
- Evergreen mega ship order, 24,000 TEU capacity
- Unknown accumulation
- Non modellable

Financial impact of extreme weather

- Insured losses (marine coverages)
- Uninsured losses (delay / supply chain)
- Increased costs
- Challenges (severity and modelling)

What can be done?



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- Transparency regarding cargo aboard ship (container inspection and weighing)
- Review of current practices for adequacy (is more needed)
- Greater utilization of weather routing / prudent ship navigation in heavy weather

Improved cargo stowage

- Condition of hatch covers.
- Check lashing arrangements against cargo stowage manual.
- Verify container weights (IMO container weight mandate, July 1, 2016).
- Proper stowage within containers.
- Stowage of deck cargo (non-containerized).

Maritime transportation extreme weather task force report recommendations– February 2018



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- NOAA should seek to harmonize the interpretation of the definition of ‘heavy weather’ vs ‘extreme weather’ and engage in efforts to improve the policies that clarify vessel response in circumstances of extreme weather.
- Specifically, NOAA and the USCG should coordinate and pursue amendments to the International Safety Management Code¹ to require commercial safety management systems to incorporate avoidance policies or procedures for extreme weather.

Heavy weather recommendations



- Weather routing should be used to avoid adverse weather.
- In heavy weather, adjust course and speed to ease the vessel's motion.

How do marine insurers respond?



- Risk / exposure avoidance (not attractive or viable solution)
- Better quantify risks and exposures
- Address increase in both frequency and severity of losses attributable to nat cat / severe weather
- Learn and adapt approaches to better address changes with assets and liabilities that are insured
- Innovative approaches and solutions enabled by data / analytics, geospatial solutions, and improved modelling capabilities
- Develop risk adequate technical pricing approaches that are sustainable and offer necessary returns for capital providers
- Differentiate among risks in risk selection criteria, underwriting terms, and pricing

Final thoughts



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- **FACTFULNESS** by Hans Rosling with Ola Rosling and Anna Rosling Ronnlund:
 - Attention filter
 - Risk = danger X exposure
- **THE FIFTH RISK** by Michael Lewis:
 - Improvements in weather forecasting
 - Communication and awareness that “Threat is REAL”
- Challenges in addressing severity

Helpful Resources



- Marine Weather Ship Handling in Rough Seas – Japan P&I Club

<https://www.piclub.or.jp/wp-content/uploads/2019/04/Loss-Prevention-Bulletin-Vol.45-Full.pdf>

- Heavy Weather – Swedish Club

https://www.swedishclub.com/media_upload/files/Publications/Loss%20Prevention/Heavy%20Weather_2014-06-30.pdf

- Maritime Transportation Extreme Weather Task Force: A Report to Congress February 2018

https://www.cmts.gov/downloads/CMTS_Extreme_Weather_Report_Feb_2018.pdf

- MIAB Report on the investigation into the loss of 137 containers from the container ship CMA CGM G. Washington in the North Pacific Ocean on 20 January 2018

<https://assets.publishing.service.gov.uk/media/5e1dc891ed915d7c7c397896/2020-2-CMACGMGWashington.pdf>



Thank you for your attention!

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