Trends in wave heights in the Brazilian coast and impacts on offshore activities

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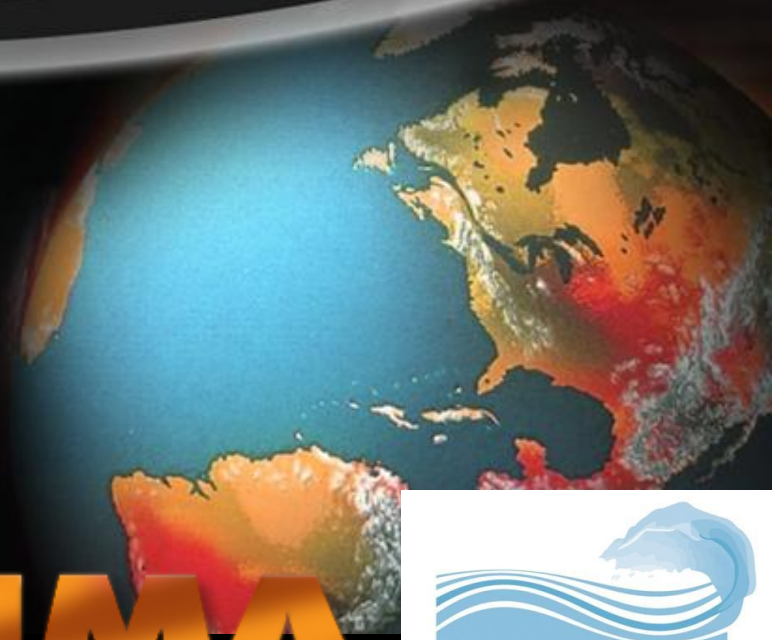
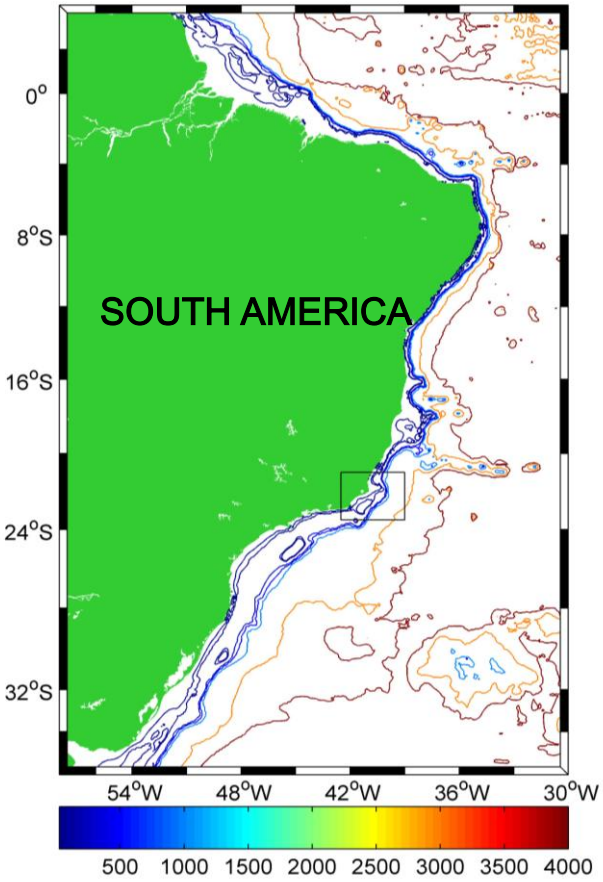
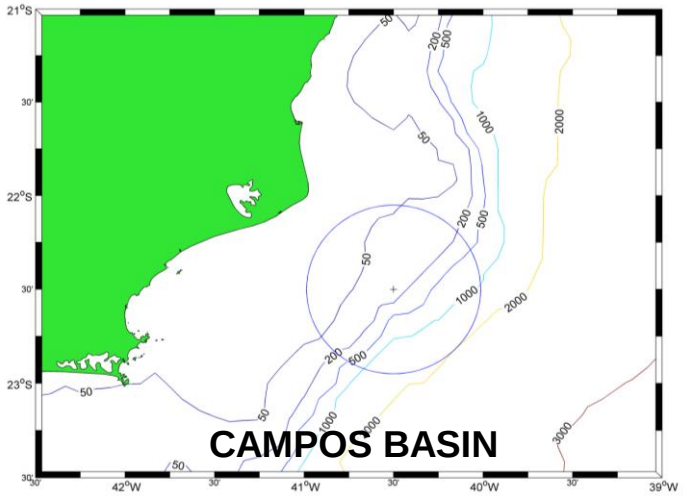


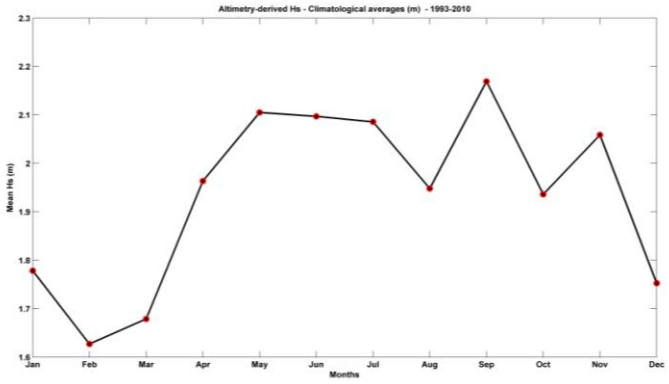
Presentation outline

- Establishing the context
- Research questions
- Methodology
- Trends
- Impacts of those trends on the offshore industry
- Can we explain why?
- Conclusions

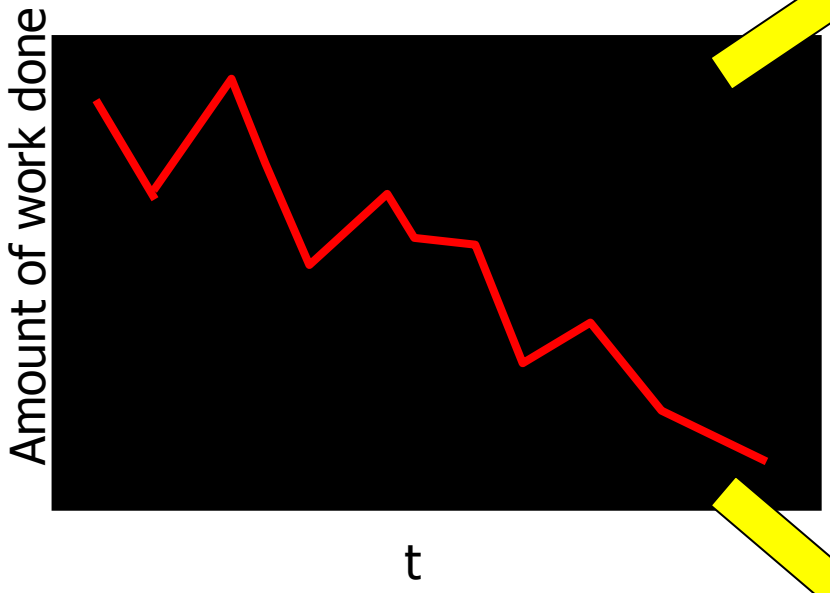
Establishing the context







An unexpected increase in downtime



http://www.gonomad.com/cruises/1203/svi.html

http://www.waterwaynews.com

Two questions proposed

Are the waves getting harsher in the Campos Basin?

If so, what are the impacts on the offshore industry?

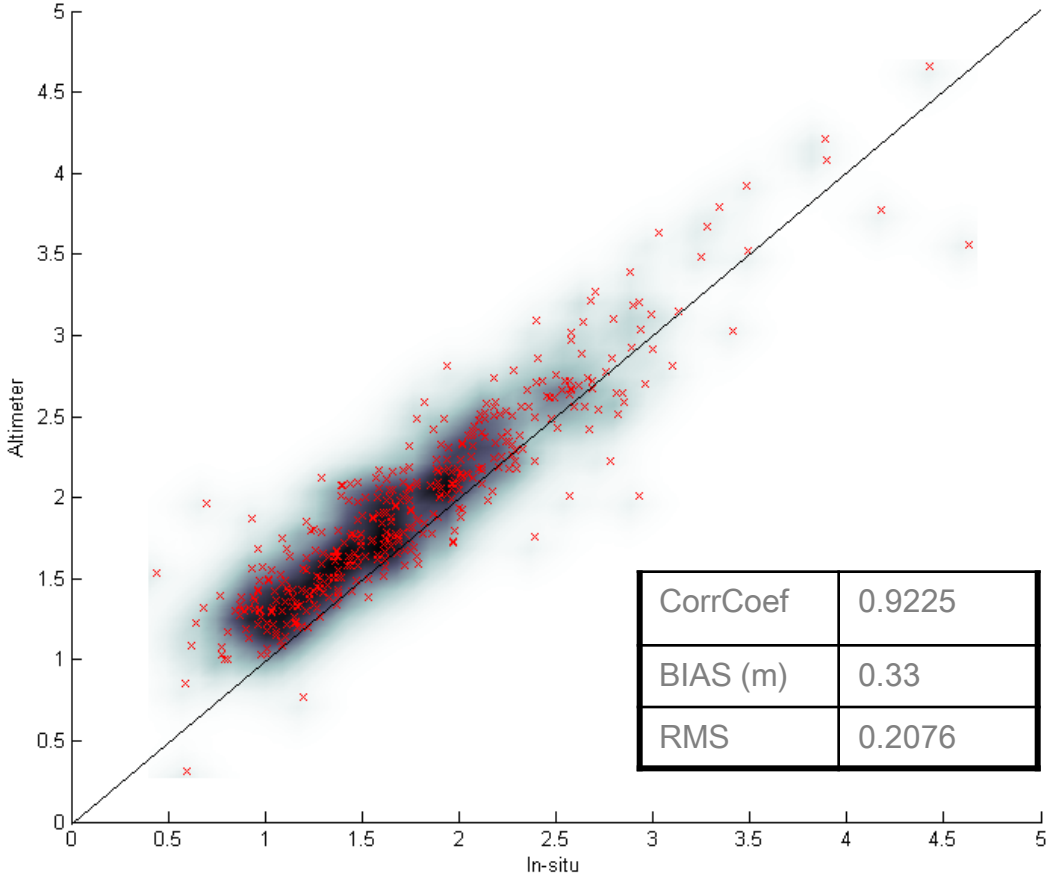
Methodology

- The tricky task of gathering a long-enough Hs dataset to detect trends
- How reliable is that?
- Observing trends
- Translating a shift in the wave climate to downtime evolution – the definition of an indicator

Gathering a long-enough dataset

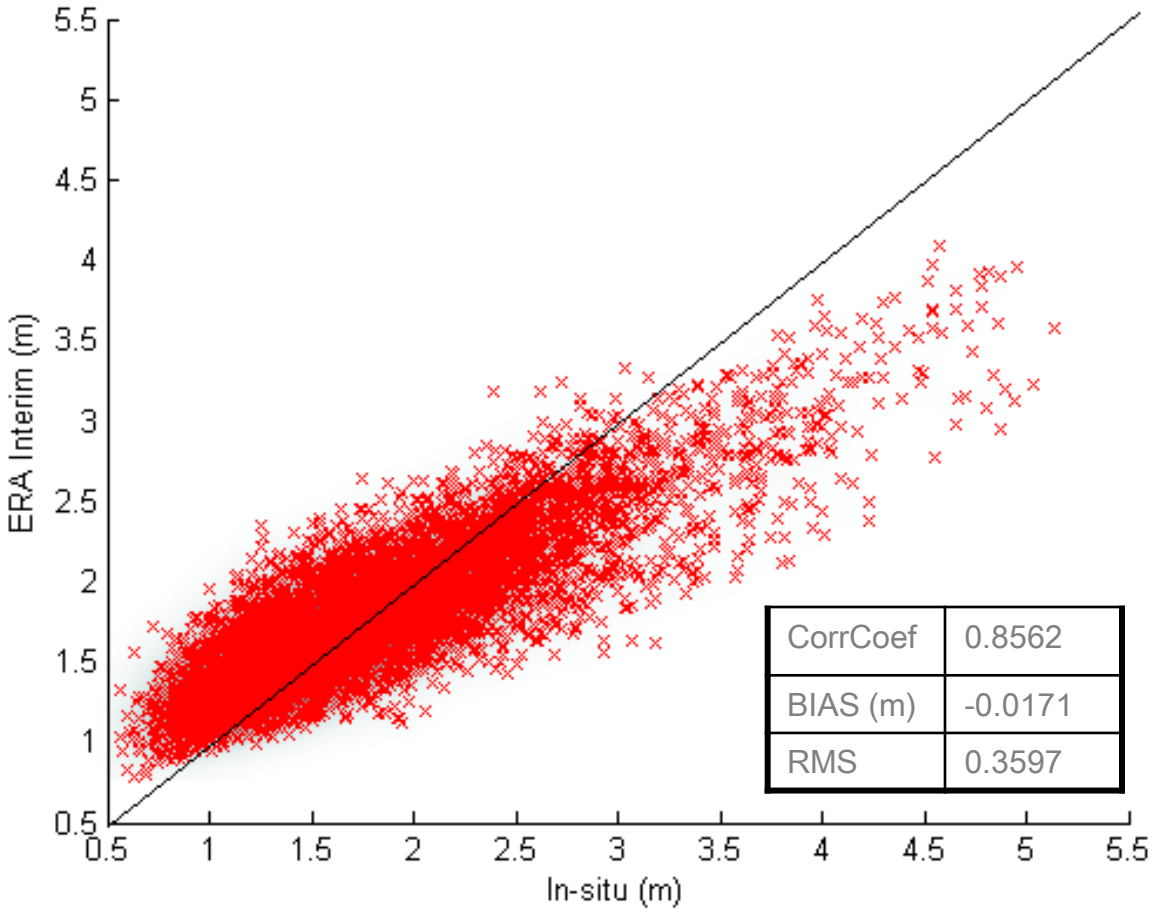
- *In-situ* (FSI-3D) data
  - Reliable but short time span (2005 – 2010)
- GlobWave calibrated Hs data
  - Reliable and long (1992-2010) dataset, but temporal resolution is poor
- ECMWF ERA – Interim Reanalysis
  - Long (1989-2010) and good temporal resolution but not so accurate.

Testing their reliability – Altimeter data

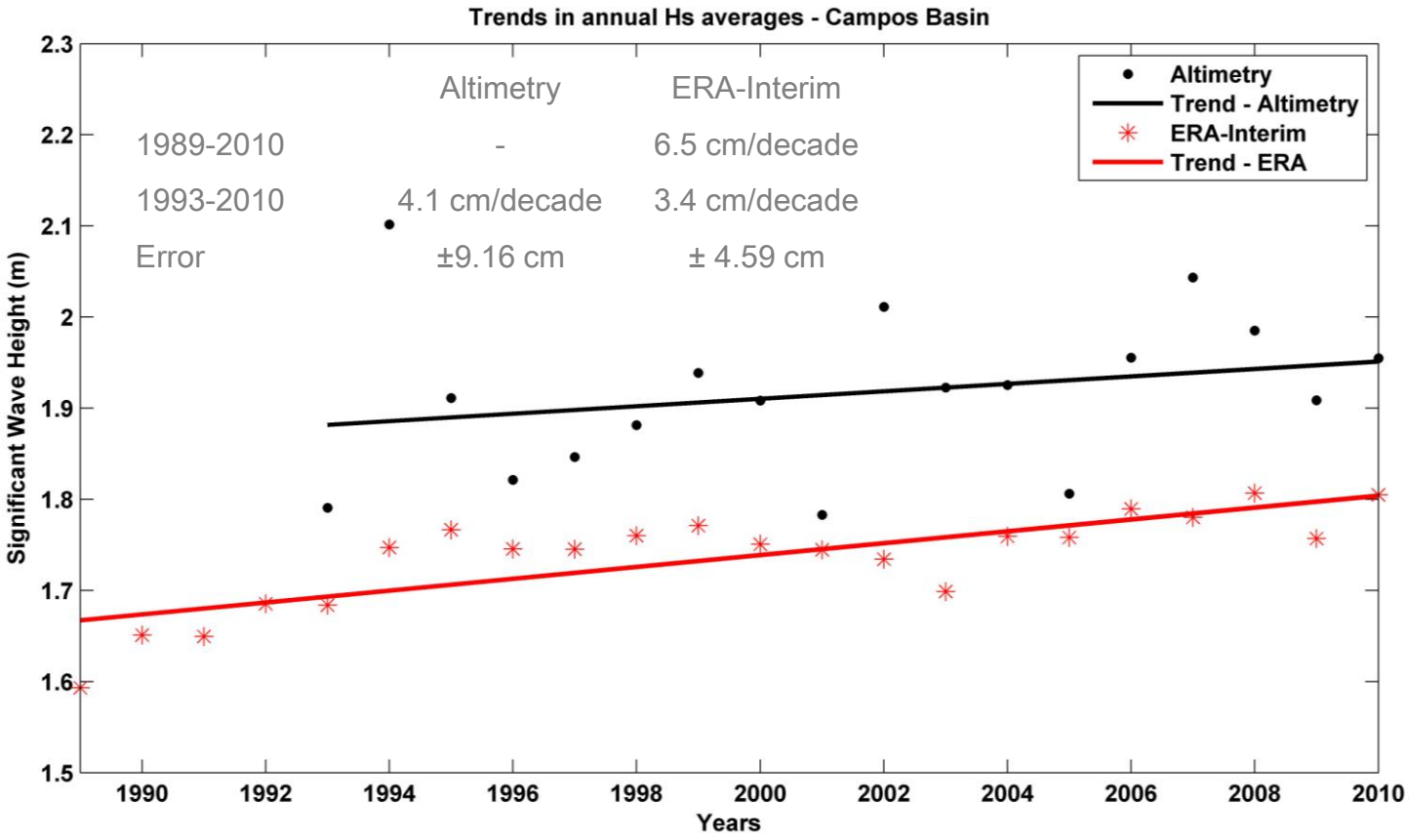


CorrCoef	0.9225
BIAS (m)	0.33
RMS	0.2076

Testing their reliability – ERA Interim

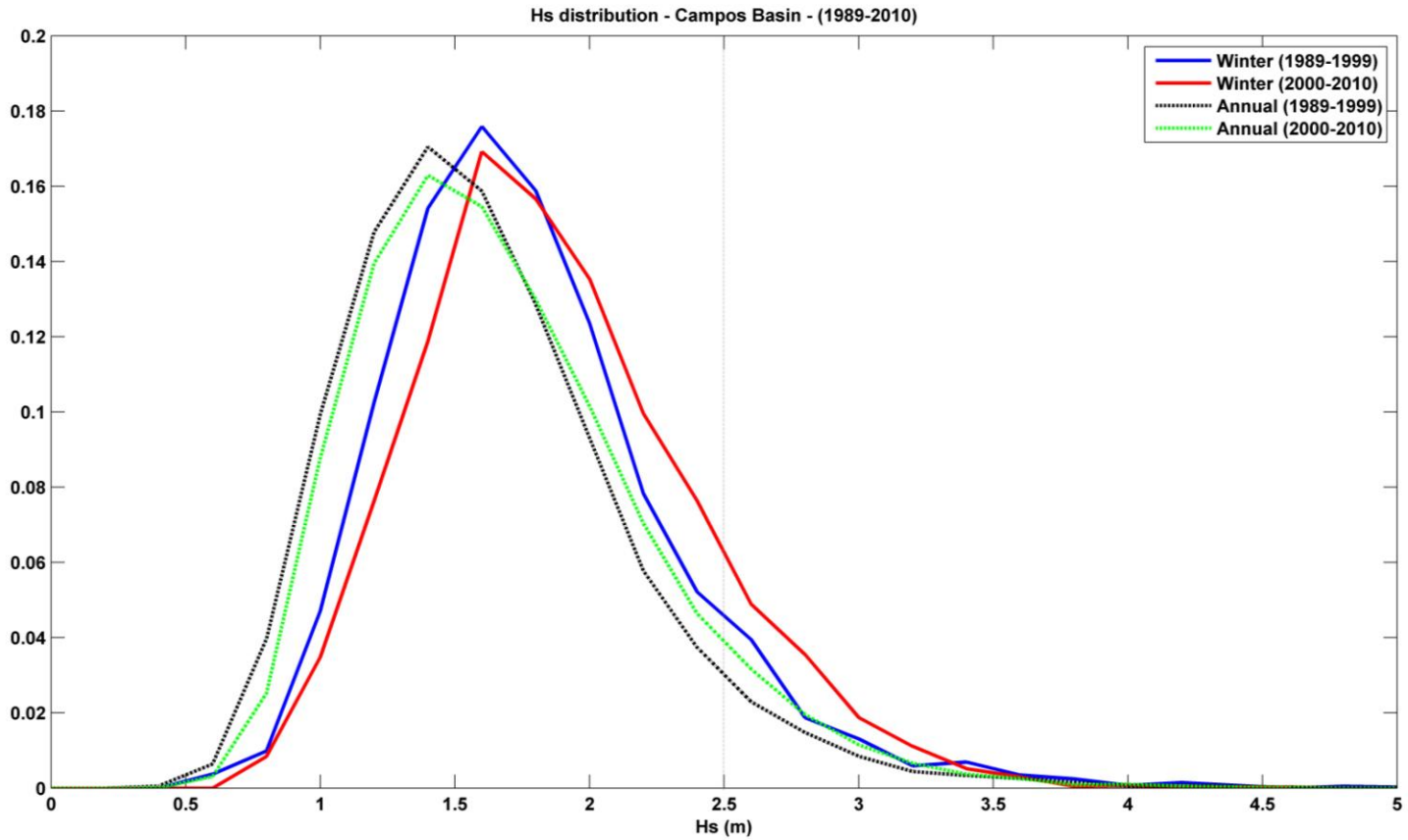


Observing trends in Hs

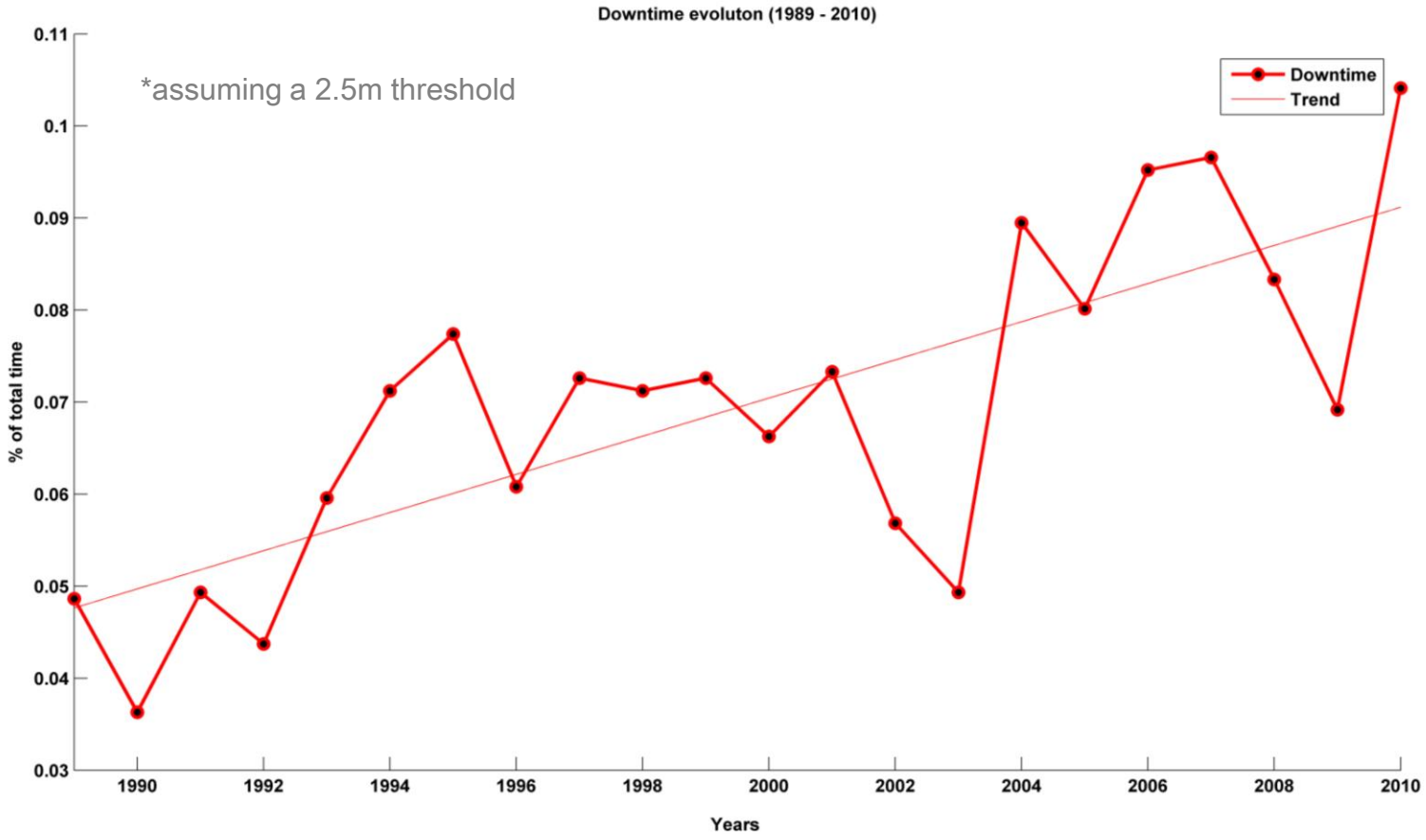


	Altimetry	ERA-Interim
1989-2010	-	6.5 cm/decade
1993-2010	4.1 cm/decade	3.4 cm/decade
Error	±9.16 cm	± 4.59 cm

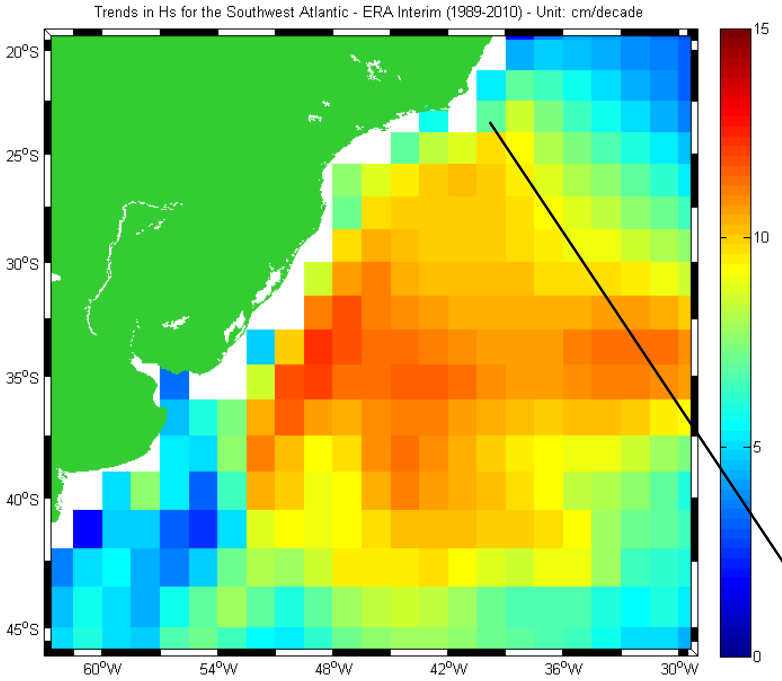
Observing trends in Hs

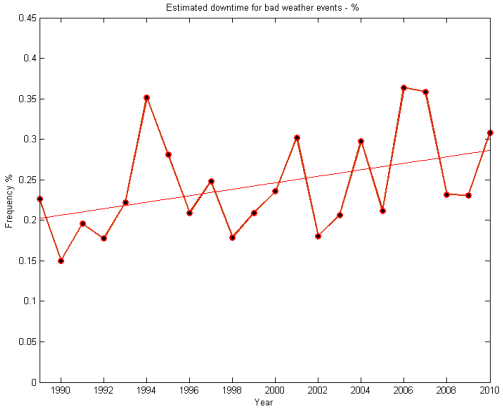


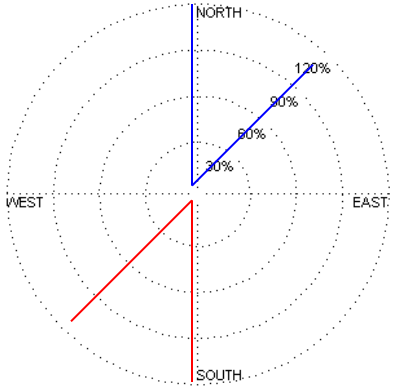
Translating trends into downtime

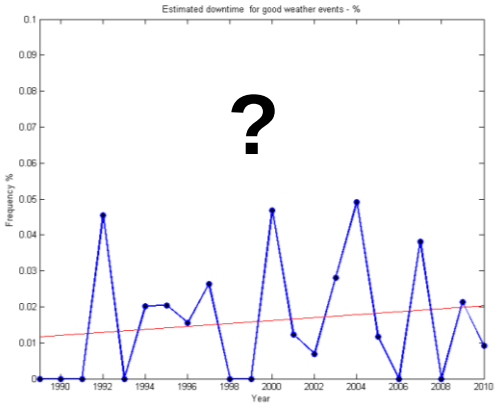


Can we explain why?









Conclusions

- Waves are getting harsher (1989-2010);
- The impact of such trend on offshore activities is represented by the evolution of downtime;
- Trend is probably associated to stronger storms in the SW Atlantic.

Thank you