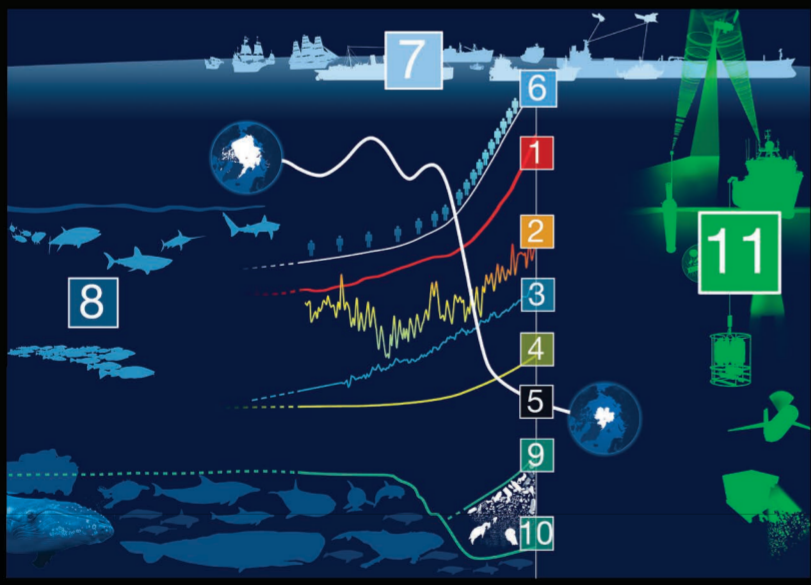
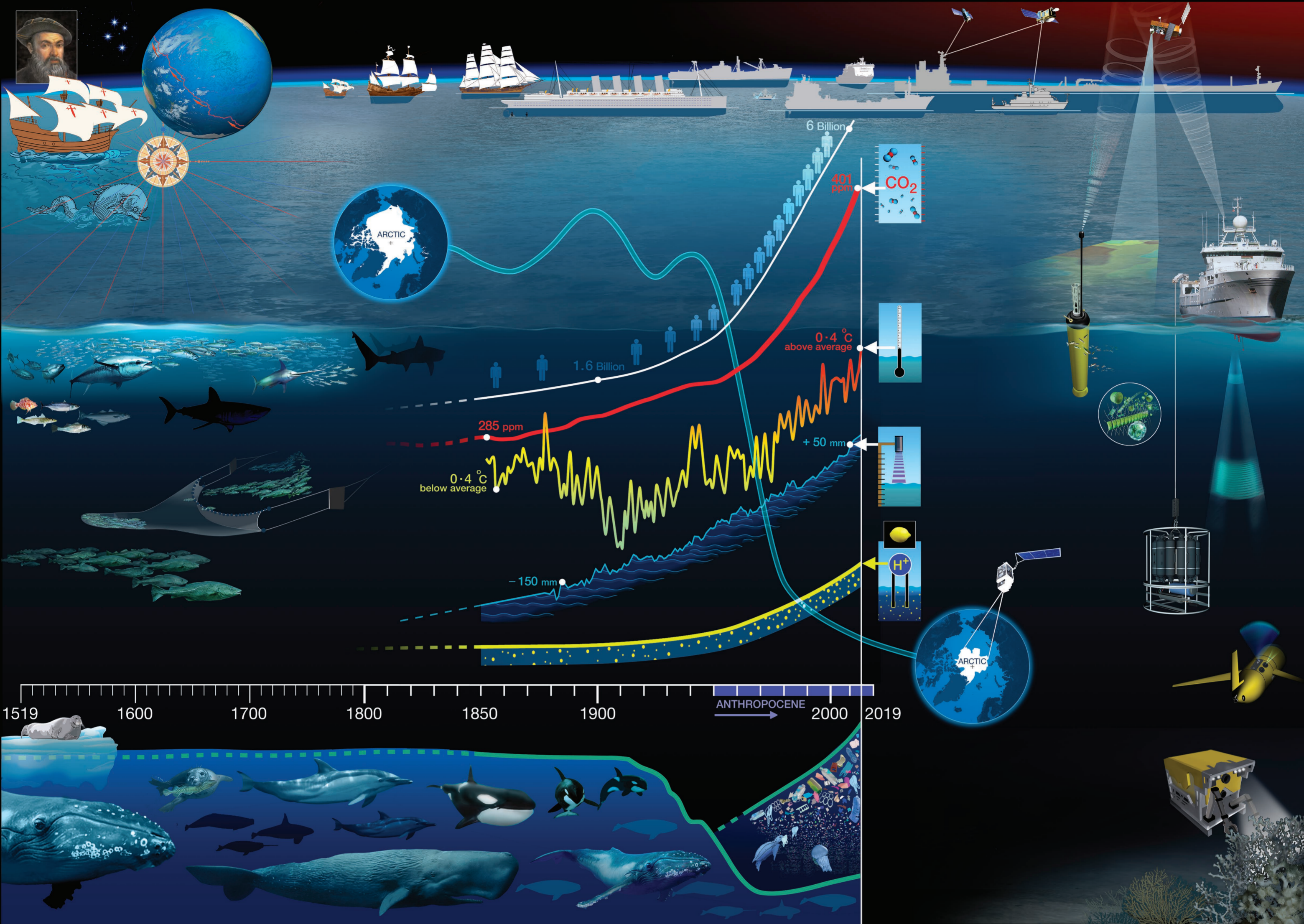


500 YEARS OF OCEAN CHANGE



- 1 Carbon Dioxide in the Atmosphere - NOAA
- 2 Sea Surface Temperature anomaly - ERSST4 . NOAA
- 3 Global Mean Sea Level - Church & White 2011
- 4 Ocean Acidity - adapted from Mackenzie *et al* 2011
- 5 Arctic Summer Sea Ice Cover - Kinnard *et al* 2011
- 6 Global Human Population - Kremer 1993 & US Census Bureau
- 7 The changing designs of ships
- 8 Stocks of large predatory fish
- 9 Plastic debris in the ocean - Barnes 2009
- 10 Populations of larger sea mammals - Christensen 2006
- 11 Ocean Observation - methods of taking measurements

The global ocean has changed dramatically since Ferdinand Magellan undertook the first circumnavigation of the world (1519-1522). The ocean has increasingly become a connecting element among nations and people. Human impact on the ocean has largely increased and this visual, based on scientific data, illustrates changes of temperature, sea level, acidity, Arctic ice cover, plastic pollution, stocks of larger animals, and shipping. Over recent years methods of measuring and observing the ocean have greatly improved and ocean observation is now ever more vital for understanding changes in the ocean and for informing policy makers. This graphic was produced by Glynn Gorick and by the Flanders Marine Institute VLIZ, in cooperation with the Oceans Past Initiative, the Oceans Past Platform and the ICES Working Group on the History of Fish and Fisheries WGHIST. It is a product of the H2020 'Sea Change' Ocean Literacy project.

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Image courtesy of Gorick/VLIZ/Sea Change

The Explorers Education Programme supports the need to take urgent action to combat climate change and its impacts on the ocean.



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