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**The Atlantic Ocean:
The Growing Need for a Pan-Atlantic Agenda**

Food-for-Thought Paper

*Dan Hamilton and Paul Isbell
Center for Transatlantic Relations*

An increasingly important pan-Atlantic agenda has to do with the challenges and opportunities generated by the Atlantic Ocean itself. The Atlantic shares problems with other oceans -- pollution, degradation of marine and coastal ecosystems and marine biodiversity, and the looming effects of climate change. There are issues distinct to the Atlantic, however, that increasingly require pan-Atlantic attention.

Four of the Atlantic's seven marine fishing areas lead the world with 50 percent or more of stocks overfished, and in the other three areas up to 30 percent of fish stocks are overexploited. As traditional fishing grounds becoming less fruitful, fisheries move to new areas and stocks as catches diminish.¹ In addition, the Northeast Atlantic offers the clearest evidence to date that rising water temperatures are shifting the ranges and variations of warmer water marine organisms towards the poles. These changing patterns are creating new challenges for sustainable fisheries management and affecting fisheries catch probabilities, potentially benefiting the Arctic, and Atlantic temperate waters, at the expense of the Gulf of Mexico and Atlantic equatorial waters.

In addition, as global fishing fleets increasingly focus their efforts on the southern Atlantic as traditional stocks diminish, control of illegal, unregulated, and unreported fishing presents a growing challenge. There is a vacuum in terms both of national maritime governance structures in most littoral states and any overarching system of cooperative governance. Those regional fisheries commissions that exist have not proven particularly effective, nor do they cooperate very well.

The Atlantic also serves a unique function as the locus of the planet's thermohaline system, a global circulation pattern of currents that distributes water and heat from the Equator to the poles, reducing extremes in the planet's climate. Any change to this pattern could have untold effects all across the globe, and there are indications that change is underway. Thermohaline circulation is driven by the sinking of cold, salty water at high latitudes. Yet scientists have found that North Atlantic surface waters are becoming warmer and "fresher," i.e. less salty, and thus less dense, possibly altering the trajectory and force of the Gulf Stream, the North Atlantic Current, and overall global thermohaline circulation, with serious impacts on marine ecosystems, fishing grounds, coastal water quality and nutrient cycling, sea

¹ This draws in part on useful material in a recent German Marshall Fund report, *Fractured Ocean*, available at http://www.gmfus.org/wp-content/blogs.dir/1/files_mf/1354226179Richardson_FracturedOcean_Sep12_web.pdf

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levels and surface climate.² Some climate models project weakening of the Atlantic turnover process of up to 25 per cent by the end of this century. While the decreased influx of ocean heat could be compensated by future global warming caused by the insulating effect of carbon dioxide in the atmosphere, these two processes are unlikely to be equivalent or synchronous, and thus likely to have major disruptive effects on human activity, not just along coasts but across continents.

Third, the Atlantic plays a particularly important role in carbon storage. The oceans are the greatest carbon reservoirs, containing far more carbon than either the atmosphere or the terrestrial biosphere, and absorbing about a quarter of the carbon dioxide humans release into the atmosphere every year. While this process takes place everywhere across the ocean surface, cold salty water in the North Atlantic and in an ocean belt between 30 and 50 degrees south latitude absorb enormous amounts of gases before it sinks, and then transports them to much greater ocean depths, primarily at four polar convection points, three of which are in the Atlantic. Unfortunately, the oceans are not absorbing carbon dioxide as fast as humans are emitting it, and the high levels that are being absorbed by the Atlantic are raising acidity levels, with potentially cascading effects throughout the marine food chain and the overall structure of marine ecosystems.

Fourth, warmer oceans and rising sea levels interact to enhance the destructive potential of more powerful storms. Their impact may be greatest at select areas experiencing greater than average sea level rise -- such as the U.S. East Coast. Sea levels on the heavily populated stretch of coast from Cape Hatteras to Boston have accelerated roughly three to four times the global average. Researchers have extrapolated that sea levels at New York City could rise by up to 11.4 inches by 2100—in addition to the roughly 3 feet of average sea level rise expected worldwide by then.³⁴ Superstorm Sandy was fueled by much-higher-than-average sea-surface temperatures, but higher sea levels heightened its destructive impact. As coastal regions all along the Atlantic struggle to cope with future calamities, extremely expensive surge barrier projects such as those around London, Rotterdam and Venice are likely to remain exceptions. Just as important could be new mechanisms of pan-Atlantic exchange of best practice regarding integrated coastal risk management.

Fifth, there has been explosive growth in the size and number of marine "dead zones," areas where the deep water is so low in dissolved oxygen that sea creatures can't survive. Marine dead zones have grown ten-fold globally in the past 50 years and almost thirty-fold in the United States since 1960. All told, there are over 400 dead zones worldwide. Most are in the Atlantic.⁵ Many occur naturally, but human-induced changes, such as agricultural runoff, have expanded such zones and changed their nature. The New Jersey-size dead zone at the Mississippi's outlet into the Gulf of Mexico has received considerable attention. But a massive low oxygen zone off of West Africa is roughly the size of the continental United States and is growing, encroaching upon habitats of tuna, billfish and other species, forcing them into already overfished areas, accelerating the overfishing patterns described above.

² http://www.pik-potsdam.de/~stefan/Publications/Book_chapters/rahmstorf_eqs_2006.pdf;
<http://mgg.rsmas.miami.edu/groups/sil/submission.pdf>.

³ Asbury H. Sallenger, Kara S. Doran and Peter A. Howd, "Hotspot of accelerated sea-level rise on the Atlantic coast of North America," *Nature Climate Change* **2**, 884–888 (2012), 24 June 2012. doi:10.1038/nclimate1597;

⁴ <http://www.nature.com/nclimate/journal/v2/n12/full/nclimate1597.html>; Dutch climate models predict that the North Sea will rise about 16 inches by 2050 and up to 13 feet by 2200. Robert Lee Hotz, "Keeping our Heads above Water," *Wall Street Journal*, December 1-2, 2012.

⁵ <http://www.whitehouse.gov/sites/default/files/microsites/ostp/hypoxia-report.pdf>; Robert J. Diaz and Rutger Rosenberg, "Spreading Dead Zones and Consequences for Marine Ecosystems," *Science*, Vol. 321 no. 5891, pp. 926-929, 15 August 2008; DOI: 10.1126/science.1156401; NASA Earth Observatory;
http://www.fishupdate.com/news/fullstory.php/aid/14724/_Dead_zone_growing_in_Atlantic_billfish_affected.html

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Moreover, billions of bits of plastic are accumulating in a massive trash vortex to the east of Bermuda known as the Atlantic Garbage Patch. Although its east-west span is unknown, the patch covers a region between 22 and 38 degrees north latitude—roughly the distance from Cuba to Virginia. These are all phenomena appropriate for pan-Atlantic concern.

As these challenges advance, there is also growing attention to the opportunities and potential pitfalls that may accompany a surge in "blue growth," i.e. stepped-up efforts to harness the untapped potential of oceans, seas and coasts for jobs and growth.⁶ The European Commission has recently outlined a "blue growth" strategy, and others in the Atlantic Basin are considering similar initiatives. Such efforts tend to focus on such value chains as "blue energy," aquaculture; maritime, coastal and cruise tourism; marine mineral resources; and "blue" biotechnology. Proponents are hailing "blue growth" as a new frontier in economic development; critics are concerned that such activities may not be conducted with regard to sustainable practice.⁷

Finally, the rise in "blue economy" activities, coupled with greater maritime transport across the Basin and the growing pan-Atlantic nexus between drugs, arms and terror raise the need for more effective maritime security cooperation.

While various North Atlantic mechanisms to deal with some Atlantic Ocean challenges, there are few effective regimes in the South Atlantic and no pan-Atlantic mechanisms to deal with these and related challenges. And while coastal waters and much continental shelf lie within coastal countries' 200-mile "economic exclusivity zone", most of the Atlantic Ocean and its seafloor lie in "areas beyond national jurisdiction", where gaps in governance abound. The UN Conference on the Law of the Sea, the related International Seabed Authority (ISA) and the UN Convention on Biodiversity all cover certain aspects and activities of the oceans. But some countries, notably the United States, have not ratified the Law of the Sea Convention, and some activities, like deep seabed mining, are not covered by these conventions or regimes.

The Eminent Persons could spearhead efforts to draw attention to these pan-Atlantic challenges and to improve cooperation on ocean governance, maritime policy, pooling and sharing of surveillance systems and exchange of good practice, moving toward a more integrated framework for sustainable and safe shared development.⁸

⁶ Ecorys, Deltares, Oecanic, 2012, Blue Growth. Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts. Final Report. Study on behalf of the European Commission, DG MARE. <https://webgate.ec.europa.eu/maritimeforum/content/2946>; http://ec.europa.eu/maritimeaffairs/policy/blue_growth/documents/com_2012_494_en.pdf

⁷ <http://seas-at-risk.org/1images/Limits%20to%20Blue%20Growth%20-%20joint%20NGO%20position%20paper%20-%20FINAL.pdf>;

⁸ *Fractured Ocean*; http://www.earthgauge.net/wp-content/CF_Atlantic.pdf.