

The Forthcoming Freezing of the European West Coast is Seemingly a 'Divine Retribution'

Michael Gurevitz

Department of Plant Molecular Biology and Ecology
George S. Wise Faculty of Life Sciences, Tel Aviv University
Ramat Aviv 69978, Tel Aviv, Israel

The history of humanity is often described by the rise and fall of empires. The major incentive of these empires besides conquest and enlargement of territories was based on the belief 'the gold is there, just need to grab it', and so the military aggression was usually accompanied by massive killing and looting of hard-labor goods of subjugated societies. Although the decline of empires defeated by stronger increasing powers could have been described in terms of a 'punishment' over their crimes, some past empires, particularly those with strong naval fleets at the West coastal line of Europe (e.g., Great Britain, France, Spain, Portugal, The Netherlands, Germany, Belgium, Denmark, Sweden, Norway) * were never really 'punished' for their imperialistic sins. Only in the 20th century, they had to give up their occupations, mostly in Africa and Asia, as humanity founded international agreements and geographical division of the world, supported by the United Nations established after World War II. Interestingly, these Western European countries enjoyed thus far winter surface temperatures higher approximately by 10°C than the zonal mean at equivalent latitudes, which together with the comfortable outlet to the sea enabled the development of strong marine forces. The moderate winter conditions raised a debate among oceanographers and climate scientists as to the basis of this temperate weather. The common assumption has argued that the relative higher temperatures stem from westerly winds extracting heat from the warm Gulf Stream, that initiates at the Gulf of Mexico and the Caribbean's, crosses the Atlantic Ocean and warms up the climate of Western Europe (actually, the entire Northern hemisphere). Others have suggested that the mild weather results largely from release of heat accumulated during the summer at the North Atlantic's shallow surface layer, transported predominantly by south westerly winds blowing toward Europe (ref. 1). Overall, it was accepted that the Gulf Stream had an important role in regulating the climate of the Northern hemisphere as warm winds heading northward collide with cold winds blowing from the North southward thus alleviating the winter temperatures at the European West coast. This 'thermohaline circulation', or 'Atlantic Meridional Overturning Circulation' (AMOC), is a large-scale ocean conveyor belt driven by differences in temperature and salt content (affecting the water's density). As warm water flow from the equator to the poles, they cool and some evaporation occurs, which increases the amount of salt, and so the dense water sink deep in the ocean, and when slowly being pulled back to the surface to warm up in a process called 'upwelling', the circulation is complete. This process leads to a continuous mix of the ocean accompanied by global energy distribution.

However, according to recent scientific studies (refs. 2, 3), these weather conditions are slowly changing due to alterations in the entire Atlantic heat circulation system. Consequently, the Gulf Stream appears to be more sluggish and within the present century is expected to move away

from the European coastal line toward the middle of the Atlantic Ocean. Although it may sound like a realization of a science fiction horror movie, or perhaps reminiscent in a way of Saramago's book 'The Stone Raft' (a 1966 fiction about the break of the Iberian Peninsula from Europe and drift towards the Middle Atlantic), it is an unfortunate reality. Importantly, the increased global heating of Earth resulting from industrial activities of humanity contributes to the global change in weather, affecting as well the warm winds and ocean currents responsible for the temperate climate. As a result of the impairment of these winds and currents, the temperatures at the European west coastal line are expected to decline by 10-15°C in average, leading to colder winters, stronger storms and floods, and freezing conditions worsening Northward reaching arctic temperatures up at Norway.

For approximately half of the world population with superstitious and prejudice ideas, as well as religious perception and basic faith in the so called 'reward and punishment', this global change in weather and forthcoming freezing conditions at the Western Coastal line of Europe may seem like a 'heavenly punishment' on their past colonial sins. Yet, adopting a more realistic perception, this change in climate also teaches us that thousands of years of balanced weather and comfortable conditions do not guarantee a similar continuation. We should take into account that life on Earth may always be at risk of a swift, unprecedented natural catastrophe, as well as due to foolish man-born disastrous provocations.

References

1. Seager, R., Battisti, D.S., Yin, J., Gordon, N., Naik, N., Clement, A.C. and Cane, M.A. (2002) Is the Gulf Stream responsible for Europe's mild winters? *Royal Meteorological Society (A)*, 128(586), 2563-2586.
2. Palter, J.B. (2015) The role of the Gulf Stream in European climate. *Annual Review of Marine Science*, 7, 113-137.
3. Wharton, J.H., Renoult, M., Gebbie, G., Keigwin, L.D., Marchitto, T.M., Maslin, M.A., Oppo, D.W. and Thornalley, D.J.R. (2024) Deeper and stronger North Atlantic gyre during the last glacial maximum. *Nature*, 532, 95-100.

*The British Empire was the largest of its kind, controlling at certain times approximately a quarter of the globe (130 dominions, colonies, protectorates, mandates and other territories). The occupied colonies included large areas of North America, territories in Central and South America, various South Atlantic islands, Australia and New Zealand, South and Southeastern Asian countries like India, Burma, Ceylon, Sri Lanka, Malaya and Singapore, the entire Middle East, and the African countries Gambia, Sierra Leone, the Gold Coast, Nigeria, Rhodesia, South Africa, Egypt, Sudan, Uganda and Somalia.

France occupied about 90 colonies. In Africa: Algeria, Tunisia and Morocco, parts of present Burundi, Rwanda, Tanzania, Namibia, Cameroon, Gabon, Congo, Central African Republic, Chad, Nigeria, Togo, Ghana, as well as northeastern New Guinea, Samoa and numerous Micronesian islands. The French were one of the major colonizers of South East Asia and India, competing with the Dutch and British empires, while capturing Vietnam, Laos and Cambodia. In the Middle East they colonized Syria and Lebanon during the decline of the Ottoman empire. In North America the French colonized Canada, Acadia, Hudson Bay, New-Foundland and Louisiana, as well as part of Illinois and areas along the Mississippi River. In South America they occupied Guiana, as well as some Caribbean islands (e.g., Cuba).

The Portuguese empire conquered 52 colonies: the Azores, Madeira, Cape Verde, São Tomé and Príncipe around the African coast, Cochin, Goa and Colombo on the Indian sub-continent, Macao and Nagasaki in East Asia, Mozambique and Angola in Africa, and Brazil in South America.

The Spanish Empire conquered 44 colonies and controlled vast portions of the Americas, Africa, various Asian and Oceanian islands, as well as various European territories.

The Dutch Empire occupied 29 territories mostly in North and South Americas, several African countries (e.g., Ivory Coast, Ghana, South Africa, Angola, Namibia, Senegal and even South Africa); In the Southeast and Oceania: Indonesia, Sri-Lanka and Malaysia. A few of the Antilles, Suriname and Guyana. In Europe: Belgium and Luxemburg. Interestingly, Aruba, Curaçao and Sint Maarten are constituent countries still represented by the Dutch kingdom.

Germany conquered 20 colonies mostly in Africa including parts of present-day Burundi, Rwanda, Tanzania, Namibia, Cameroon, Gabon, Congo, Central African Republic, Chad, Nigeria, Togo, Ghana, and northeastern New Guinea, Samoa and numerous Micronesian islands.

Denmark conquered 9 colonies including the Faroe Islands, Iceland, Greenland and what became the US Virgin Islands.

Sweden conquered 8 colonies at various durations including Fort Christiansborg/Fort Frederiksborg, Fort Batenstein, Fort Witsen and Carolusberg. In the Americas they colonized Guadeloupe, Saint-Barthélemy, New Sweden and Tobago.

Norway conquered 6 territories including the Faroe Islands, Iceland, and Greenland, and interacted closely with the Viking kings of Sweden and Denmark. The Nordic Vikings reached not only Canada, but also distant cities deep in Russia and the Mediterranean world.

Belgium conquered 3 colonies: the Belgian Congo, Rwanda and Burundi and Lado Enclave in South Sudan.