

CULTURES

MELTING THE ICE CURTAIN

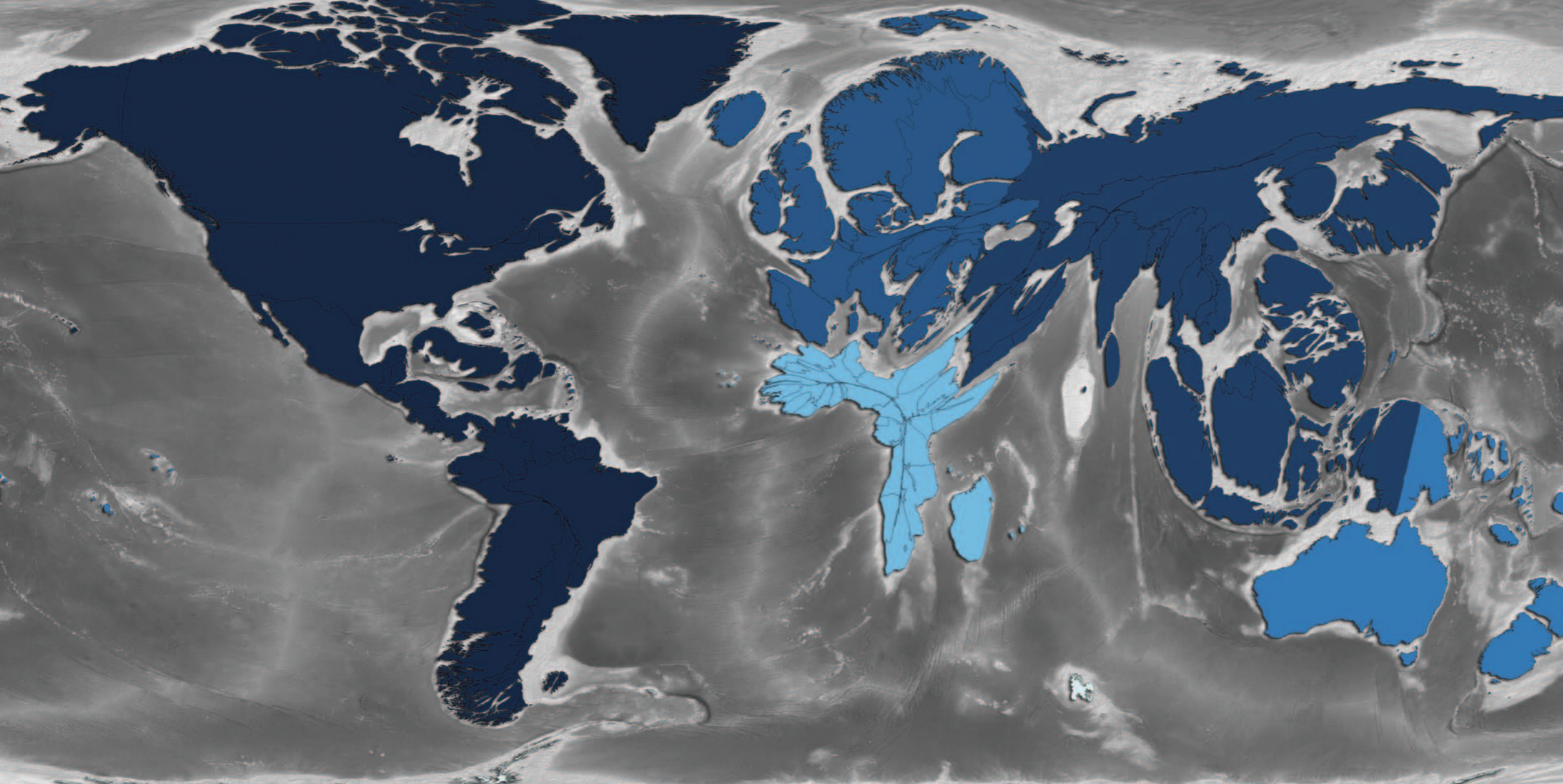
Two islands, divided by an international border and separated by geopolitics, are on the verge of being reunited. But will fractured US-Russian relations stand in the way?

Between eastern Russia and the western edge of Alaska sit two small islands: Big Diomedes and Little Diomedes. The islands are separated by just four kilometres of ocean, the international date line and the Russian-United States border.

Both islands once had small yet established Iñupiat populations. The border was arbitrary: a small stretch of water (or a frozen bridge in winter) which was crossed easily and often by both sides. However, when Russian-US relations deteriorated after World War II, the Soviets established a permanent military base on Big Diomedes and forcibly removed the people living there to the mainland. Big Diomedes became separated from Little Diomedes behind an invisible 'ice curtain', and it has been a reminder of estranged friends and family for almost 70 years.

'The populations of both islands have been physically separated since 1948, which has caused great pain on both sides,' says Tandy Wallack, president of Circumpolar Expeditions. Wallack runs a project reuniting separated families, funded in part by Alaska's National Park Service. In July, she crossed the Bering Strait accompanied by a small group of Little Diomedes inhabitants, and travelled along Russia's northeast coast, where Big Diomedes Iñupiat had been dispersed. 'As we travelled up the coast of Chutkotka, we found relatives all the way along,' she says. 'It was incredibly exciting, even though English and Russian translators were needed throughout.' The native Ignaluk language has faded on both sides since the separation.

The Russian meeting was the first of a two-part effort towards a larger reunion on Little Diomedes next year. It's a plan that continues to be complicated by the increasingly tense political relations between the US and Russia - since the crisis in Ukraine the ice curtain has hardened again. 'The logistics will take a lot of work and many will have to apply for passports,' says Wallack. 'But the underlying objective is clear and simple - to have a meal together, laugh, cry and remember a shared heritage.'



CARTOGRAMS

COAST LINES

BY BENJAMIN HENNIG

The question about the length of the world's coastlines is not as easy to answer as it would initially seem. The British mathematician and meteorologist Lewis Fry Richardson was among the first to investigate this phenomenon of the fractal nature of boundary lines in the early twentieth century. The rougher coastlines are, the more of a fractal nature they have and the more difficult it becomes to determine their length since this changes when looking at it using different scales and resolutions.

Richardson's fellow mathematician, Benoit Mandelbrot, further investigated this phenomenon by looking at the

length of the coast of Britain. He explained how the length of a coastline increases the smaller the ruler used for measuring. This has become known as the Coastline Paradox, since it suggests that the length of a coastline theoretically is infinite, or undefinable.

These theoretical notions do not even consider the dynamic nature of planet Earth. The geography of coastlines constantly changes, and sometimes quite significantly within a short period of time. In addition, the large differences in tidal influences add to the difficulty in getting more precise approximations, even with geospatial technologies having improved our capabilities of measuring such phenomena considerably in recent times.

Measuring the length of a coastline therefore is complex, and any induction will remain imperfect. Any statements of length need to be treated with caution as the totals vary depending on the approach used. For example, the World Factbook states the total length of coastlines in the world as 1.16 million kilometres. The World Resources Institute, meanwhile, states a total figure of 1.63 million kilometres in one of its studies.

When comparing the lengths of coastlines of different countries, it is therefore more important to use a consistent mathematical approach to measuring to get a clearer picture of how countries and continents compare globally. For the data used in this month's cartogram, the estimates from the previously mentioned sources were both taken into account and combined to avoid under-

representation of smaller islands but also to get a more complete picture of the varying estimates that exist.

The cartogram shows each country of the world resized according to the total length of its coastline. It is therefore a representation of each country's share of the world's coastlines. In addition, the different regions are coloured in shades of blue, with the darkest shade (the Americas) representing the region with the largest share of the world's coastlines and the lightest shade (Africa) the smallest share. Africa's relatively small share might look surprising given its land area, but can be explained by it having a much more regular coastline that has far fewer indentations such as inlets, bays or gulfs compared to other regions. Canada, by contrast, has the most complex geography of its coastlines and is therefore the country with the longest coastline regardless of which estimations are used in our calculations.

Coasts are the locations where land meets the world's oceans. The fact that we find it almost impossible to determine their real lengths only adds to the fascination of these areas where about 44 per cent of the world's population live within a distance of 150 kilometres.

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