Climate a driver of language diversity

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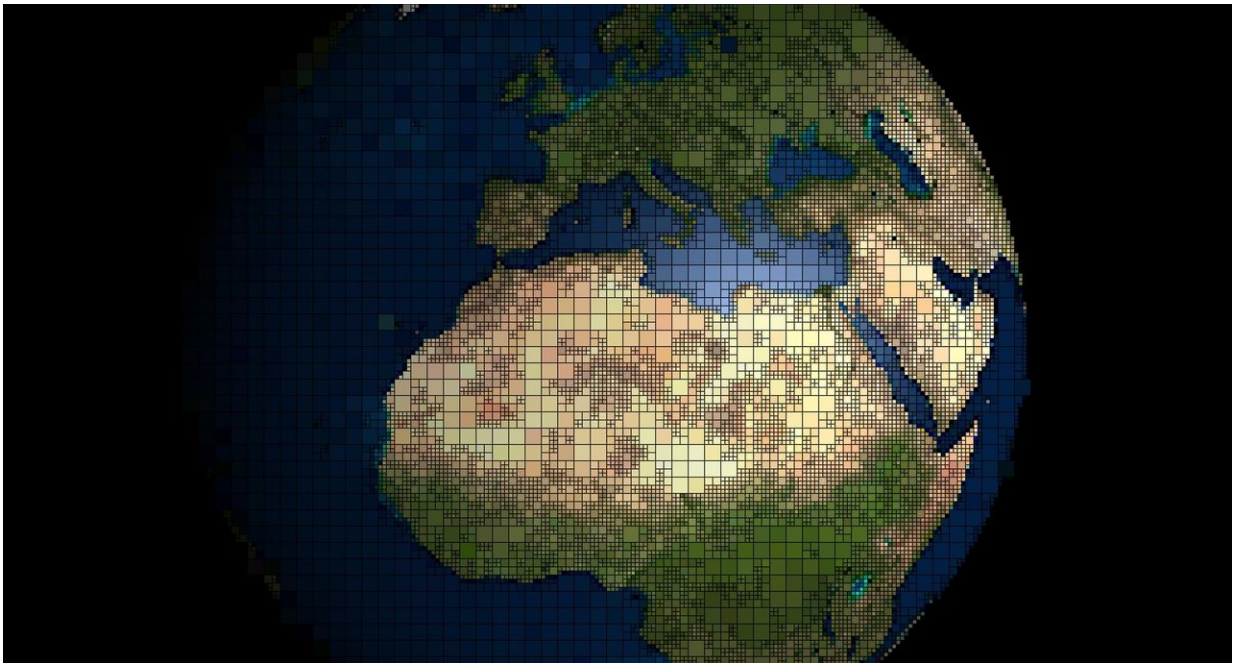

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A region's climate has a greater impact than landscape on how many languages are spoken there, new research from The Australian National University (ANU) shows.

The research team mapped language diversity around the world and found areas with more productive climates tend to have more languages.

"We were able to show that despite popular belief, climatic factors have

a stronger effect than landscape factors—like how mountainous it is, or how many rivers there are—when it comes to language diversity," ANU biologist Professor Lindell Bromham said.

The researchers think this could have a lot to do with food production—another driver of language diversity.

"If an area can reliably support food production for more of the year it may allow human groups to persist in smaller areas, so you can pack more different cultures into one region, and therefore more languages," Professor Bromham explained.

"If you're up in a region with a shorter growing season, or less reliable food productivity, you might need to make sure you've got links with other groups so you can support each other. It might be harder to form a small, isolated, self-sufficient band."

Professor Bromham said the study showed language diversity and biodiversity might both be affected by similar factors.

"Our results look a lot like a map of biodiversity," Professor Bromham said. "You could overlay a map of language diversity and a map of biodiversity and they'd show some very similar patterns.

"For example, there's more diversity around the equator, and less as you go towards the poles.

"If you've got an area where it's hard for animals to live, it's generally also hard for people to live there. So unsurprisingly, in those areas, there are less languages."

As part of the study, the researchers pin-pointed areas where language diversity could not be easily explained by factors like climate and

landscape alone. A few areas stood out.

The eastern Himalayas, west Africa and Papua New Guinea had far more unexplained language diversity than other parts of the world.

"Papua New Guinea is home to 10 per cent of the world's languages, despite taking up just 0.5 per cent of the world's land area. Incredibly, it not only has many languages, but languages that are fundamentally different from each other," said study lead Dr. Xia Hua.

"If we can understand what's driving this, I think we'd understand a lot more about the drivers of cultural diversity in general."

This could have extra significance in places like Australia that have experienced a high rate of language loss.

"Every language we lose is a rich source of information on the way languages have evolved. The more we lose, the harder it will be for us to understand language origins," Professor Bromham said.

"Biologists face the same problem—when we lose species to extinction we lose information about the evolutionary process that created those species."

The research has been published in *Nature Communications*.

More information: Xia Hua et al. The ecological drivers of variation in global language diversity, *Nature Communications* (2019). DOI: 10.1038/s41467-019-09842-2

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