

# Earth on acid: The present and future of global acidification

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Climate change and extreme weather events grab the headlines, but there is another, lesser known, global change underway on land, in the seas, and in the air: acidification.

It turns out that [combustion of fossil fuels](#), smelting of ores, mining of coal and metal ores, and application of [nitrogen fertilizer](#) to soils are all driving down the pH of the air, water, and the soil at rates far faster than Earth's natural systems can buffer, posing threats to both land and sea life.

"It's a bigger picture than most of us know," says Janet Herman of the Department of Environmental Sciences at University of Virginia in Charlottesville.

Herman and her colleague, Karen Rice of the USGS, discovered that despite the fact that they worked on different kinds of acidification in the environment, they were not well informed about the matter beyond their own specialties. So they have done an extensive review of science papers about all kinds of environmental acidification and are presenting their work in a poster session on Tuesday, 6 Nov., at the annual meeting of the [Geological Society of America](#) (GSA) in Charlotte, North Carolina, USA.

Acidification is both a local and global problem, since it can be as close as a nearby stream contaminated by mine tailings or as far-reaching as the world's oceans, which are becoming more acidic as sea water absorbs

higher concentrations of carbon dioxide that humans dump into the atmosphere by [burning fossil fuels](#).

Coal gives a [double whammy](#) by being the biggest contributor of anthropogenic carbon dioxide to the global atmosphere as well as creating regional acidification. Coal burning is famous for creating [acid rain](#), which had dramatic environmental impacts on forests, streams, and lakes in eastern North America and Europe and led to major policy changes.

"It's not at all clear that other regions are considering such policy restrictions to be important," Herman says, regarding places where population growth is expected to increase acidifying activities.

Normally, acids in the environment are buffered by alkaline compounds released by the weathering of minerals in rocks. The problem today, according to Herman, is that the rate of acidification by human activities has outstripped the weathering rate and buffering capacity of the planet.

In their work, Herman and Rice look at the population projections by country over the next four decades to see where the increased industrialization and agriculture will likely lead to new acidification hot spots. Their hope is that by doing this people can anticipate the problem and plan to mitigate the harmful environmental effects, says Herman.

**More information:** [gsa.confex.com/gsa/2012AM/fina ... /abstract\\_207495.htm](http://gsa.confex.com/gsa/2012AM/fina.../abstract_207495.htm)

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