**8th Grade Literacy Fusion Article: “Scientists have measured the impact of greenhouse gas on the Earth’s surface, and their findings are not good news”**

We’ve known that carbon dioxide concentrations have been dangerously high, and rising, for a while now. We’ve also known that the gas gets trapped in the atmosphere, causing the so-called greenhouse effect and leading to rising temperatures. But in new research published Wednesday in the journal Nature, scientists show for the first time the link between the rising CO2 and the rising greenhouse effect on the surface of the Earth, not just in a laboratory. And they directly attribute their findings to fossil-fuel emissions.

The scientists looked at how carbon dioxide perturbs the Earth’s energy balance through a measure called “radiative forcing.” They observed radiation wavelengths in Alaska and Oklahoma over the period of 11 years, from 2000 to 2010, finding that carbon dioxide was to blame for an increase in radiative forcing in both locations. They juxtaposed their data with a system that tracks CO2 emission sources, determining that much of it was caused by burning fossil fuels.

“We’ve shown the critical link that connects greenhouse gasses to what is pushing the system to a warmer place,” one of the study’s authors, Daniel Feldman of the Lawrence Berkeley National Laboratory, tells Quartz.

Feldman says the state of the Earth’s climate is governed by a balance between the energy we get from the sun, the energy the planet emits on its own, and what gets absorbed and reflected out into space. “When you add CO2 to the energy system, the energy gets rearranged and leads to a state that has higher temperature,” he says, calling the findings a “definitive fingerprint of CO2 on the forcing of the climate system, on how we’re ultimately affecting the planet on which we live.”

The conclusion matches up with previous predictions. “This study provides direct observational link and confirmation of what had been largely a theoretical modeling determination of the radiative forcing that drives the global warming component of current climate change,” Andrew Lacis, a NASA scientist who is unaffiliated with the report, tells Quartz.

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