A major (and unfortunate) milestone has been crossed this past week. Measurements of atmospheric levels of carbon dioxide passed 400 parts per million, the highest in millions of years. Others have commented on how worrying this milestone is for the planet. But what I want to focus on here is how important it is that we even know that this milestone has been passed.

Our understanding of atmospheric carbon dioxide levels is actually relatively new, and it began with research starting in the 1950s. It was only through years and decades of dedicated monitoring of atmospheric carbon dioxide levels that we began to get a sense of how human activities were affecting the composition of the global atmosphere. And without that understanding, we wouldn't have any hint of the problems of global climate change that we face over the coming decades. Of course, we don't have a lot of great solutions implemented to address those problems yet, but knowing about the problem is a fundamental first step.

These painstaking, long-term measurements of atmospheric carbon dioxide levels are an excellent example of a much bigger point: the importance of, and the difficulty of, conducting monitoring of ambient environmental conditions. Understanding how our environment is changing is essential to good environmental policy. But it is frequently very, very difficult to get good monitoring to be implemented in practice. For instance, the monitoring of atmospheric levels of carbon dioxide was – at multiple points – almost terminated because various government funding agencies determined that the monitoring data was not important enough, and not scientific enough, to support.

Understanding why these problems with monitoring occur, and what to do about them, is essential to good environmental policy, as the Economist notes here. I've put some ideas on how to address these problems in this article, but there's much more work to be done on the topic.