



Is it Possible to increase the Accuracy of Environmental Measurements?

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Human activity is increasing the concentrations of green house gases (GHG) in the atmosphere which has resulted in substantial temperature increases. Many countries have entered into agreements to limit and / or decrease GHG emissions. This requires precise measurements by region to clearly evaluate GHG emissions, sinks and evolution as well as mitigation strategies. High precision measurements are a key requirement to study and evaluate the global carbon cycle and its effect on climate change.

Calibrating the analytical instruments used to make atmospheric measurements are often done using standards prepared in synthetic air. There are significant differences between synthetic air and natural air which introduce bias into some measurement; therefore natural air is preferred. This presentation will examine the natural air and isotopic mixture preparation process and the role of precisely characterized materials, highlighting stability of isotopic mixtures in natural air. Emphasis will focus on adjustment of isotope ratios to more closely bracket sample types without the reliance on combusting naturally occurring materials, thereby improving analytical accuracy