Carbon Monoxide Concentration and Isotope Measurements in New Zealand

R. Moss[1], G. Brailsford[1], M. Manning[2] and H. Schaefer[1]

[1]National Institute of Water and Atmospheric Research (NIWA), Wellington, New Zealand; 64-4-386-0534, E-mail: Rowena.Moss@niwa.co.nz
[2]Victoria University of Wellington, Wellington, New Zealand

Carbon monoxide (CO) is a highly reactive atmospheric trace gas, with a lifetime between 2 and 4 months. The reaction of CO with the hydroxyl (OH) radical is the dominant removal process for both species. As a result, changes in CO can dramatically alter the oxidative balance of the atmosphere and have an impact on a wide range of other trace gases. Each source of CO has a unique isotopic signature, so measuring δ^{13}CO for example, can provide more detailed information on where change is occurring. In contrast, ^{14}CO is mostly produced by neutrons interacting with nitrogen to form ^{14}C, which is then oxidised into ^{14}CO. As a result, ^{14}CO can be used as an effective tracer for the OH radical (*Manning et al*, 2004). More than 20 years of measurements of CO and its isotopes will be presented, based on samples collected from NIWA's clean air station at Baring Head (41.4°S), near Wellington, New Zealand.

References:

Manning, M. R., et al., (2005), Short-term variation in the oxidizing power of the atmosphere, *Nature*, 436(7053), 1001-1004.

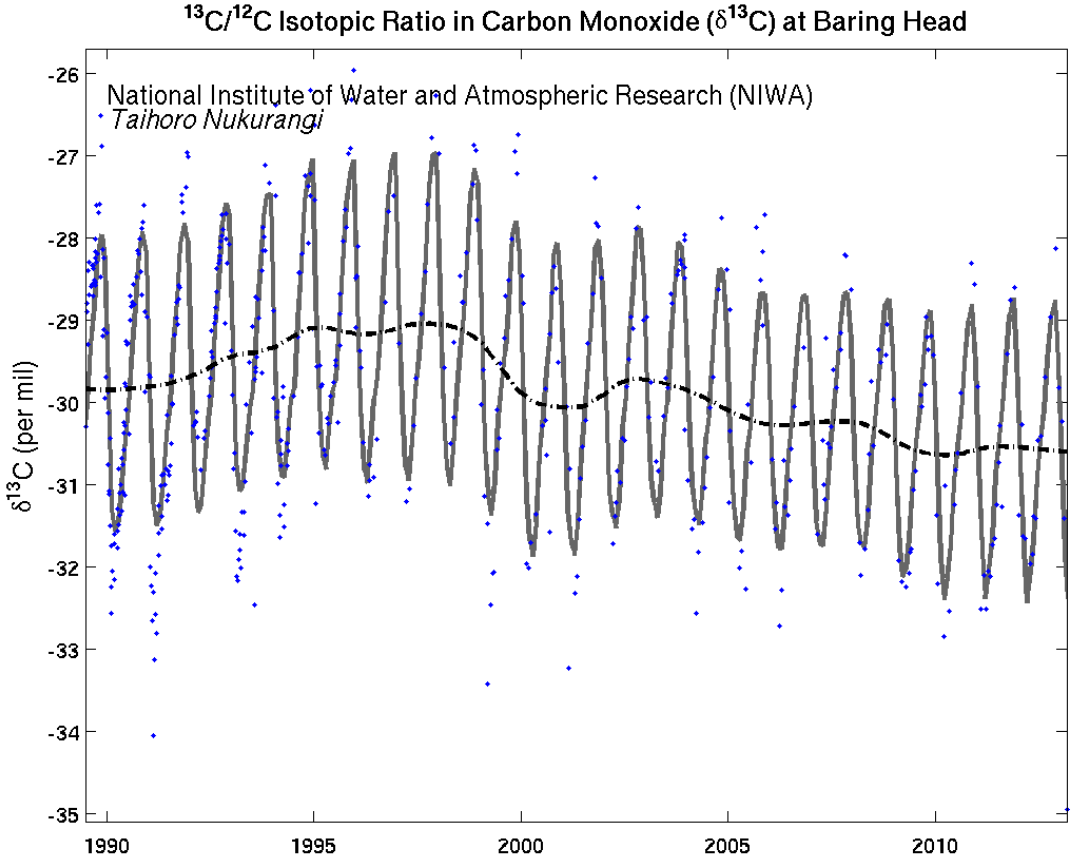

Figure 1. Time-series of δ^{13}CO from Baring Head, New Zealand.