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## Long-term measurements of atmospheric CO<sub>2</sub> concentration and its isotopes at a cool-temperate deciduous forest in Japan

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For a better understanding of the global carbon cycle, worldwide systematic measurements of CO<sub>2</sub> concentration are being made. Its carbon and oxygen isotopic measurements that give us useful information about the relative contributions of the terrestrial biosphere and the ocean in the carbon cycle and those of the photosynthetic and respiratory CO<sub>2</sub> components in the biospheric flux, have also been made at some stations. However, systematic measurements at sites influenced strongly by terrestrial biospheric activities are still insufficient, especially in the monsoon Asian region. Therefore, we have been measuring atmospheric CO<sub>2</sub> and its isotopic ratios at the Takayama site in a cool-temperate deciduous forest in central Japan since 1993 and 1994, respectively, together with the oxygen isotopic ratio in precipitation since 2002. In this paper, we will present secular trends and year-to-year variations of the concentration and the isotopic ratios obtained from the long-term measurements at the site, and discuss factors governing these variations.

Keywords: long-term measurement, CO<sub>2</sub>, stable isotope, forest ecosystem, carbon cycle