

^7Be activity inferred enhanced stratospheric signals at Mt. Lulin, Taiwan

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Abstract

During winter monsoon, subtropical jet stream has higher chances to approach south and close to Taiwan, which enhances stratosphere and troposphere air mass vertical transport through its passage. The interaction between monsoons and the jet system could efficiently bring air down from the upper troposphere/lower stratosphere to the lower troposphere. The signature of the influence of higher altitude air incursion is demonstrated by ^7Be , CO, O₃, and relative humidity measured at Mt. Lulin in central Taiwan. Stratospheric signals, such as ^7Be , Terrestrial ^{210}Pb , might be able to quantify winter monsoon air mass from continental surfaces. Most CO is anthropogenic which could be an index of fossil fuel burning. The objective of a year-long data analysis is to explore the potential for estimating a contribution to surface ozone from stratospheric and upper tropospheric air for seasonal variations using ^7Be as tracers. There is a need for further study on the link of stratospheric intrusion and winter monsoon which may be a factor to the devastating air quality in Taiwan.

Key word: Beryllium-7, stratospheric intrusion