

East Antarctic Ice Sheet fluctuations and global climate changes since the late Tertiary

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Global climate has been progressively colder and the cycles of glacial-interglacial become evident since late Tertiary. It's believed that large-scale and permanent ice sheet existed on East Antarctica at least 14Ma, but subsequent ice sheet fluctuations and its relations with global climate changes were not entirely understood. Ice-free areas of Antarctica, where there is no ice cover at present, can elucidate past ice sheet fluctuations directly. Since Antarctic Ice Sheet is separated by several drainage basins, we take it into account such a glaciological condition to reconstruct past Antarctic Ice Sheet fluctuations.

The concentration of in situ produced cosmogenic nuclides (e.g. ^3He , ^{10}Be , ^{14}C , ^{21}Ne , ^{26}Al , ^{36}Cl) in quartz provides the cumulative exposure time of the rock. Also, the ratios (e.g. $^{26}\text{Al}/^{10}\text{Be}$ ratio) of two cosmogenic nuclides indicate buried histories of rock. Ice-free areas of various parts of East Antarctica were investigated using this method. The aim of this study is to reconstruct of East Antarctic Ice Sheet fluctuations using exposure ages in various parts of East Antarctica, and to discuss relation between ice sheet fluctuations and global climate changes.

We found close relationship between the Antarctic ice sheet fluctuations with the global climate changes. We will discuss the ice sheet fluctuations of several areas of East Antarctica are using exposure ages.