

Abstract

“Ice core as archives of past climate and atmospheric composition”

Carlo Barbante, University of Venice

The exploration of past climate and environment prior to instrumental records is based on the interpretation of archives. The most important archives are the historical data, polar and temperate ice sheets and glaciers, tree rings, speleothems, oceanic and lacustrine sediments, peat bogs, surface and subsurface temperature profiles (from boreholes). Ice cores are definitely among the best existing archives because they provide information on many different parameters of the climate system.

The European Alps are a valuable observation area for anthropogenic emissions as they are located in one of the most industrialized regions of the world. They are heavily influenced by the presence of international highways, industries, refuse incineration plants and the greatest density of winter sport infrastructure of any mountain area. Snow deposited on the Alps documents the effects of anthropogenic emissions in Europe and mountain glaciers can be used as natural archives for studying historical trends of pollutants such as heavy metals, and organic compounds.

Polar ice, on the other side can be used for long climate reconstruction of the past climate, since ice cores maintain on the same archive both the forcing factors and the causes of climate change on the same archive.