



Polar STEAM
Education. Art. Science.

"Icy Archives: Unlocking Earth's Climate Secrets"

Some trends in ice cores are easier to see than others. Light vs dark layers visibly show patterns of winter vs summer seasons in some ice cores. In addition to visible changes, the chemistry of the ice also varies by season and detailed measurements can reveal seasonal patterns even when they are not visible.

How might trends in these measurements vary seasonally?

Signal Background Information -

Group 1: ECM (Electrical Conductivity Measurements)

ECM measures the electrical conductivity of ice and can detect changes in acidity over time. The change in acidity can provide scientists with information about the chemical composition of the atmosphere over time. Impurities like salts and acids can indicate volcanic eruptions and other environmental events.

Group 2: Black Carbon

Black carbon is a measure of wildfire activity as it is a product of incomplete combustion of fossil fuels and biomass. Wildfires tend to occur seasonally, with the bulk of fires occurring in late summer to early fall (depending upon location).

Group 3: Sodium

Sodium levels in ice cores can be linked to the amount of salt sea ice is carrying and can indicate oceanic conditions and storm activity. Sodium tends to be higher in snow deposited in winter due to more sea ice, increased wind, and/or changes in ocean currents.

Group 4: Sulfur

Sulfur Dioxide is one of the dominant gases released during a volcanic eruption. Spikes in Sulfur can indicate volcanic activity. Sulfur is also associated with biological productivity, specifically phytoplankton blooms.