Impurity Influence on Normal Grain Growth in the WAIS Divide 06A Ice Core, Antarctica

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High impurity loading leads to reduced grain growth rates in the WAIS Divide 06A ice core, West Antarctica, as shown by regression analysis of new data from this core. Grain sizes measured on thin sections cut from the core were compared to concentrations of soluble impurities and proxies of insoluble impurities measured on the remaining core over the same depth intervals. In general, samples with higher concentrations of several impurities, especially calcium, but also magnesium, sodium, and sulfate, showed smaller grain sizes. Physical understanding indicates that higher impurity loading reduces the grain growth rates.