



The Cryosphere and Atmospheric Chemistry (CATCH): Research challenges and opportunities for collaboration

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The cold regions on Earth are undergoing significant climate change. Yet many underlying chemical, biological, and physical processes and feedbacks are still poorly understood strongly motivating continued research in cold regions. Such research inherently requires cooperation among researchers and programs across national boundaries to achieve science objectives. CATCH is an emerging activity of the IGAC (International Global Atmospheric Chemistry) project and is endorsed by SOLAS (Surface Ocean-Lower Atmosphere Study). CATCH facilitates interdisciplinary and international research with a focus on interactions between snow, ice, ocean, aerosols, and clouds in cold regions. CATCH science addresses cold region research challenges to help reduce model uncertainties and improve climate predictions. Here we give an overview of scientific aims and strategy to develop collaborative research teams and projects. Particular areas of interest include: sea ice changes, atmosphere-ice-ocean interactions and their impacts on atmospheric chemistry; feedbacks between climate change and atmospheric chemistry mediated by changes in the cryosphere; the production, processing and climate impacts of aerosols and cloud precursors; ice cores as archives of past environmental change, and the influence of background atmospheric chemistry on the fate of pollution. CATCH seeks to link research on a fundamental, molecular level with larger scales targeted by field and satellite observations, as well as modeling.