

Images of the Arctic (IOTA): Involving Northern Residents in Repeat Photography

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During the coming century the Earth's climate is expected to warm and precipitation patterns are expected to change. These changes are expected to be particularly pronounced in the Arctic. Repeat photography is a powerful tool for identifying changes that are occurring in the terrestrial Arctic system and then conveying that information to both the scientific community and the public. The most challenging aspects of repeat photography studies are associated with finding sources of historic photographs that have been well preserved and also locating the exact location where the photographs were taken. This project seeks to build capacity for future studies of environmental change in the Arctic by establishing an archival database where in georeferenced photographs of the Arctic could be stored for future repeat photography studies. In populating the database, existing georeferenced photographs from the scientific community will be acquired but emphasis will be placed on capturing images of the contemporary Arctic conditions by northern residents.

GPS-enabled digital cameras are provided to three communities on the North Slope of Alaska to enable students and adults to photograph their contemporary environment and to learn about the process of repeat photography. This project integrates with the curriculum adopted by the North Slope Borough School District and provides an entrée into science for northern residents. Photographs acquired under this program will be archived within the IOTA database to be developed in collaboration with the ELOKA program.

Archival photographs will also be acquired and compared to the contemporary photographs to address questions of the type and rates of environmental change that have occurred on Alaska's North Slope in the last several decades. I also propose to create web-based GIS tools that can be used to quantitatively analyzed repeat photo pairs for this project.

This project will contribute to our ability to answer pressing questions about changes in the Arctic environment over the historic period up and through the project period. Questions regarding the change in location (or stability) of vegetation communities on the landscape, rates of change in fluvial systems, and the prevalence of mass wasting activities such as coastal erosion can be addressed using this methodology. This project provides an important resource for monitoring change into the future. By providing a centralized, well publicized data archive for georeferenced photographs from all over the Arctic, future researchers will have less difficulty in locating photographs or the Arctic that can easily be relocated and rephotographed.

This project provides a simple yet innovative mechanism by which northern communities can become involved in climate change science. There are specific educational benefits to this project related to the collaboration of the scientific team with the local teachers and principals at the North Slope Borough School District. The project dovetails well with the Iñunpiaq Learning Framework that has been adopted by the NSBSD.