Introduction
Each year since 2000, the NASA Goddard History of Winter (HOW) program has allowed teachers to develop an understanding of the consequences of one segment of the ideal Earth to its path around the sun. Scientists from NASA, CRREL, and Michigan Tech, supported by the Whitaker Foundation, and the science program at Northwood School in Lake Placid, New York, use the weather and the stratosphere in the ice and snow, consequences of the weather changes, as "teachers" in a tour of the study area. Snow in the air and on the ground, ice, its crystal structure and melt orientation, and the ecosystem consequences of snow and ice constitute the working content package. Teacher Professional Development Standards A, B, C, and D were the guiding principles in developing HOW with a content structure formulated as protocols to serve as a basis for the lesson plan and inquiry guides. The concept of HOW within NASA is to provide understanding of the WHY? and WHAT? of satellite remote sensing. The content is appropriate ground validation in that technique presented in protocols are identical to those used by professionals who study snow pits, evaluate features in snow metamorphism, and study thin sections of ice cores drilled in ice caps and glaciers.

Methodology
How participants come in teams consisting of a higher education faculty member, a pre-service science education student, an in-service science teacher, and optionally an informal education partner. The concept behind this configuration is to study the integration of HOW content, skills, and processes into all three staff learning settings. The team model implies a framework for sustainability and the program offers opportunities for follow-on support.

In addition to the training that participants receive while attending the working Lake Placid workshop, there are pre-HOW and post-HOW program components to support their learning experience. Online multimedia resources are available on the History of Winter website and are used both synchronously and asynchronously by the workshop and participants.

Field Results
How participants collect snow pit data including snow depth, temperature profiles, crystal grain size, hardness, and density. Ice core samples of the local lakes are analyzed through thin-section sampling.

An offshoot of the NASA Goddard Center History of Winter (HOW) Program, the Global Snowfall Network (GSN) launched in the winter of 2006 engages an international audience including both formal and informal education groups. The goal is to provide an interactive online data resource for educators and educators for the characterization of snowfall and related weather systems. The Global Snowfall Network has been accepted as an educational outreach program for the International Polar Year. Collaborations with other agencies and universities plus an IPG supported proposal on snow undersea HOW and the GSN are endorsed by the NASA Goddard Education Office and many of the Goddard Snow and Ice Teams scientists. Together these programs offer a unique, valuable, and proven outreach for the Cryosphere research program.

Snowflakes are like snow data points, their shape a record of atmospheric conditions at the time of their formation. The shapes of snowflakes vary over the winter season, with the source of a weather system and over the courses of a given snowfall. The objective of the Global Snowfall Network (GSN) is to create a global team of teachers, students, families, and researchers worldwide to identify snowflake types during the program of snowfall. The result is a unique and scientifically valid resource useful to meteorology and scientific modeling of Earth’s hydrosphere. The Global Snowfall Network (GSN), simultaneously a research program and an education program is presented as a simple, scientifically valid project that has the potential to spread the IPG message and produce a lasting resource to further scientific understanding of Earth’s hydrosphere through the study of snow.

Summary
The HOW Teacher as scientist (TAS) model is a flexible model. HOW enables teachers who are required to use inquiry-based facilitation in the classroom to experience inquiry themselves. Teachers with little science content background as well as those with Science degrees have participated in HOW working alongside of the science teams. Accommodations are made through differentiation of instruction to suit each group know with a mastery of the content that is appropriate for the transition to presentation in the classroom. Each year builds on the previous year ensuring a time series record of the history of winter’s stake learning experience.