

## **GOALS, STRATEGY, ETC.**

**Goals:** To generate ideas and formulate plans for research directed toward the clarification of atmospheric ice nucleation processes in the context of the overall ICE initiative. Develop the background material and rationale for activities to be incorporated into the ICE prospectus or proposal.

**Scope of work:** The IN-WG activities will address both homogeneous and heterogeneous nucleation, and will approach these problems from the perspectives of laboratory experiments, cloud observations, theory and modeling.

**Strategy:** In view of the recognition that the full array of atmospheric ice nucleation questions will not be resolved even within the projected five or ten years of the ICE initiative, the *fundamental strategy* will be to aim for one 'small victory' while maintaining a broad attack on the full range of problems. 'Small victory' is considered to be the successful linking of ice nucleus measurements to ice crystal observations in one simple cloud type.

The most likely candidate for the 'simple' cloud type is the wave cloud. By looking at both continental and maritime wave clouds (say, Colorado Rockies and Olympic Peninsula) a range of cloud parameters can be reached. In addition, the west coast clouds might at times be influenced by incursions of Asian dust, giving a chance to explore that dimension of the problem. (The role of dust as IN connects with questions of global variability, anthropogenic impacts and others.) In series of wave clouds, the preconditioning or formation of IN by evaporation can be examined.

In the category of broad attack, prominence will be given to laboratory experiments on ice nucleation mechanisms and to field studies on the origins and composition of IN. Mechanisms of particular interest are deposition below and above saturation with respect to water for various aerosols, and the possibilities of IN generation or conditioning by evaporation and within clouds. Instrumentation to measure IN is a high priority need.

Education activities and efforts to expand the circle of researchers addressing atmospheric ice nucleation problems will also be integral parts of the IN-WG plans.