

**Report to NASA on a
Workshop on Sea Ice Data Assimilation**

Held at the

**Naval Academy,
Annapolis, MD**

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1 Executive Summary

NASA's Earth Science Enterprise (ESE) aims to understand the Earth system including the effects of humans on the environment. The value of data assimilation (DA) to operational weather forecasting is well recognized, but it has only been comparatively recently that its application to climate research has been initiated. Within this context, a number of DA projects with specific application to sea ice are now under way. This workshop on sea ice DA was organized to assess overall progress made by these projects and to help to address recommendations in a joint effort to enhance the productivity of this area of research.

The workshop objectives, key strategic areas, priority recommendations, and metrics are summarized below. This is followed by background section. The main body of this report consists of three sections: issues and strategies, recommendations and metrics. Information on the agenda of the meeting, the list of attendees and the summary of presentations may be found in the appendices.

The following objectives were set out for this meeting:

- To provide recommendations to NASA on how to improve the collective productivity of data assimilation projects both current and future, including:
 - Collaborations and links between projects and expert groups
 - Generic and specific improvements to NASA datasets
- To generate informal links between related projects that can help to address the complexities of data assimilation. This community is one in which mutual support may be particularly useful given that that the projects are pilot projects.
- To agree on the key technical issues that need to be addressed to make progress with data assimilation. In particular, to agree on a consensus approach, if appropriate (building on, or modifying the approach recommended by NSIDC at their workshop as reported in Weaver et al., 2000).
- To consider how progress may be assessed with data assimilation: milestones, evaluation criteria, and priorities.

In order to build sound strategies the workshop identified five essential areas in the DA procedures as:

- Formulating science questions to be answered,
- Preparation for assimilation
 - Selecting and constructing a model and DA methods and determining their error characteristics,
 - Selecting forcing and assimilation data and determining their errors,
- Performing model simulations with DA, and
- Evaluating the model results with respect to the questions posed.