To David Kennedy

David,

We received an extremely positive response to the workshop. Sandy MacDonald sent a note to me yesterday saying that several people had stopped him to say what a great meeting it was.  Many of the participants said the same thing in closing plenary session or to me personally after the workshop.  From my standpoint we attained the workshop's primary goal of identifying actions that NOAA can take together with partners to improve predictions of Arctic weather and climate and related impacts, including predictions of sea ice and linkages to lower latitudes.  From that perspective I would say the groups really came together, and their recommendations exceeded my expectations.  We still have much work to do in analysis and synthesis over the next few weeks, but have a lot of good material to work with.  I've attached powerpoint summaries of recommendations from some of the groups to give you a sense of their recommendations.

A few summary points on the workshop itself:

* **This NOAA Science Challenge Workshop had strong cross-agency involvement and support.** All five LOs helped to fund the workshop (coordinated through the AA Climate Board), the NOAA Arctic Task Force team provided enthusiastic support and contributions from team members, and the NOAA Research Council unanimously endorsed the workshop.  Although there was no NMFS participant at the workshop itself, NMFS was involved in the organizing committee and on the program committee. So all lines ultimately played a role in this workshop. There was also substantial interagency engagement, with strong Navy involvement , NSF, and representatives from USARC and IARPC.  The workshop had over 80 participants, split roughly 50-50 between NOAA and external.
* **This was the first NOAA Science Challenge Workshop to go to this level of specificity on actions.** It is intended to contribute toward an implementation plan out to approximately 2020.  You and others provided specific information on US and NOAA Arctic Strategic goals to help focus discussions on national and NOAA priorities.  Information was also provided on US interagency and international efforts for which coordination should be considered.
* **Breakout groups were organized about three major predictions issues: Arctic weather and hazards predictions; Arctic climate predictions; and Arctic-midlatitude linkages.**  The predictions groups explicitly included predictions of sea ice.

While it will take some time to fully synthesis all of the recommendations we received, **certain themes stood out.**

* **Sea ice is clearly the dominant prediction issue,** directly affecting many of impacts.  Improving these predictions is a high priority for NOAA and stakeholders, and supports NOAA's Arctic Strategy and Vision Goals.  Several specific actions are recommended.  Strengthening partnerships in this area with Navy and Environment Canada through the NOAA/EC bilateral agreement would likely convey significant benefits at relatively small cost.
* **All groups recommended strong engagement with the WMO/WWRP Polar Prediction Project, particularly related to the Year of Polar Prediction Project planned for 2017-2019.** One group said to "Jump into PPP/YOPP with all three feet", another that "NOAA should develop an action plan for NOAA's engagement and support of YOPP".  If this action is supported by leadership it seems a useful and relatively low cost step.
* **There was strong support for a NOAA Arctic Testbed** that could integrate and focus several activities.  Connections with the external community and Canada should be considered.  The development of user-based metrics for the Testbed could also provide benefits at relatively low cost.
* **Observations were a high priority across the groups.** Specific priorities are problem dependent, but a number of no or low cost actions were suggested.  Taking better advantage of existing observations was emphasized (data assimilation is one means of doing this).  Several satellites relevant for Arctic predictions will be launched in the 2016-17 time frame, so use of this data needs to be optimized.  There is also a proposed field campaign, MOSAiC, being coordinated with YOPP that is intended to support improved Arctic predictions, particularly for sea ice.  NOAA should strongly consider involvement in this campaign.
* **Many recommendations were also provided related to modeling.**  One was to take advantage of the existing North American Multi-Model Ensemble (NMME), with a targeted focus on predictions in the Arctic.  Specific deficiencies were identified that cut across weather and climate predictions groups; e.g., Arctic clouds.  While the focus of this workshop was from hours out to a few seasons, many of the modeling challenges confronting weather predictions in the Arctic are common to those confronting climate change projections.

**Next Steps**

* **Synthesize the findings and develop a report to be presented to the NOAA Research Council**. Briefings as requested for the AA Climate Board, NOAA Arctic Task Force and others.

**Other Recommendations**

* **Consider additional "sister" workshops on core Arctic issues.** Unfortunately, we lacked NMFS participation at this Workshop, although we would really have liked to have had it.  If there are further workshops that involve NMFS as well as other lines that would benefit from connections to the atmosphere-ocean-ice predictions that were the focus of this workshop, I and others here would be happy to help