



## INTERNATIONAL ICE CHARTING WORKING GROUP (IICWG)

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August 5, 2016

The Honorable Charles F. Bolden, Jr.  
Administrator  
National Aeronautics and Space Administration  
300 E. Street SW, Suite 9L39  
Washington, DC 20546  
(Via e-mail: [Charles.Bolden@nasa.gov](mailto:Charles.Bolden@nasa.gov))

Dear Administrator Bolden;

**Re: NISAR Sea Ice Polarimetric Requirements**

We are writing as co-chairs of the International Ice Charting Working Group (IICWG) in regard to NASA's plans for a NISAR mission in 2020-2021.

The IICWG members comprise the major national ice services in the world and have the mandates from their respective governments to monitor and chart sea ice and iceberg conditions in their respective areas of interest. The group has benefited from NASA's satellite programs for global sea ice and iceberg monitoring and looks forward to future successes, including the sea ice freeboard observing capabilities of IceSAT-2, slated for launch in 2017-2018.

The IICWG is also interested in NASA's plans to develop a dedicated InSAR mission in collaboration with the Indian Space Research Organization (ISRO) that may be available for launch in 2020-2021. The NASA-ISRO Synthetic Aperture Radar (SAR) mission, or NISAR, will make global integrated measurements using L-band and S-band SAR sensors that can contribute significantly to enhancing the ice services' capabilities for global sea ice characterization.

Our understanding is that present Level 1 science requirements guiding the NISAR sea ice global observing strategy support the use of L-band single polarization for global observations geared mainly toward continuing measurements of sea ice dynamics. We think it is important for NASA to consider the possible use of NISAR in at least a dual-polarization mode to provide for additional global sea ice characterization applications, similar to those planned by ISRO using the S-band over a limited Antarctic sea ice region. As reflected under the NISAR Tracking Sea Ice and Monitoring Permafrost Mission Theme, this proposed L-band dual-polarization global sea ice observing approach is consistent with NASA's recognition that, together with sea ice dynamics, knowledge of ice thickness distribution and sea ice types is critical to understanding causes and mechanisms driving changes in global sea ice conditions.



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Although NISAR will have the capability of acquiring quad-pol observations, mainly for agricultural applications, we understand that constraints in spatial resolution and coverage may prohibit such a mode for global sea ice. Still, sea ice characterization can be greatly improved with the availability of dual polarization observation options (HH+HV, VV+VH, or VV+HH) routinely collected over the Polar Regions even if the spatial resolution is slightly impacted. We would like for you to consider dual polarization L-band as an option to maximize the usefulness for the NISAR mission to the sea ice community.

If there are questions or you would like further information, please do not hesitate to contact us through the IICWG Secretariat noted below.

Sincerely,

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