International Cryosphere Climate Initiative
www.iccinet.org

February 28, 2022

Topic: Research and systematic observation (SBSTA). Views on possible themes for the 14th meeting of the Research Dialogue, SBSTA 56

ICCI and its associated Cryosphere scientific community welcome the opportunity to share views on the role of the Research Dialogue, and possible themes for its 14th meeting at SBSTA 56.

Role of the Dialogue:

The Research Dialogue is a valuable forum for scientific information to be shared, especially on highly relevant and recent research, in order to inform climate action, as well as to identify the most pressing future research needs. In this manner, the Dialogue frequently provides the most up-to-date information for implementation of the Paris Agreement and the Convention, in support of enhancing the ambition of climate action. It is important to maintain and build upon this forum, increasing its relevance as a regular interface between the science community, Parties, Observer organizations and other stakeholders in the UNFCCC context.

ICCI wishes to suggest the following potential themes for the 14th meeting of the Research Dialogue, to be held in conjunction with SBSTA 56:

Slow Onset, High Impact Processes and Irreversibility:

Ice sheets and land glaciers are paradoxically among the most sensitive elements of the climate system to temperature rise, yet among the slowest to react. Several lines of research in the past 12 months (some not included in AR6), especially regarding Antarctica but also the Hindu Kush Himalaya and other water resource-important land glacier systems, indicate significant potential for these slow onset processes to be triggered at lower temperatures than previously calculated, with less potential to slow or reverse them on even centenniel timescales. This points to implications for both timing and scale of needed emissions reductions, as well as essentially permanent impacts of overshoot scenarios.

Complex Feedbacks Between Elements of Cryosphere and Global Climate:

Changes in the Cryosphere mediate extensive and highly complex feedbacks to the global climate system, with implications for climate ambition. Permafrost thaw for example leads to greater carbon emissions, which will continue without possibility for mitigation (unlike anthropogenic emissions) for more than a century post-thaw. Other such feedbacks include the melting of ice sheets, which does not only contribute to sea-level rise, but increasingly appears key to changes in ocean currents and heat transport around the globe. Extensive, multiple global feedbacks also arise from loss of Arctic summer sea ice: including potential extreme heat events (adding to dry conditions that lead to boreal fires and peatland loss and their emissions), accelerated ice loss from Greenland (further disturbing ocean currents), and increased thaw of permafrost (and therefore, greater CO2 and methane emissions).