

ICARP III Activity



Title of activity Linkage between Arctic Change and Mid-latitude Weather Extremes		
Type of activity Workshops/Journal Paper	Date November 2013-September 2015	Place Iceland, Seattle, Barcelona, Japan
Main organizer(s) (name and/or organization) and additional partners IASC Atmospheric Working Group and CliC; Coordination with the WWRP Polar Prediction Program (PPP)		
Abstract The potential for ongoing large temperature and other changes in the Arctic to impact mid-latitude extreme weather events has societal, economic, and scientific impacts. The issue is, however, complex and controversial as the time period for observing such linkages is short [<10 years] and involves understanding the direct forcing by Arctic changes on a chaotic climatic system. ICARP III, through support of IASC and CliC, have held two workshops: community wide during November 2013 in Iceland, and a small journal paper preparation meeting in Seattle during September 2014. Products are an accepted paper in <i>Journal of Climate</i> and an all-day session at the <i>ICARP III symposium</i> in Japan during April 2015. Based on previous workshops and literature reviews, different researchers reached different conclusions on potential Arctic change/mid-latitude weather linkages from essentially the same data. From ICARPIII synthesis and new analyses, consensus has improved. There is general agreement that there will be no net mid-latitude cooling, only a potential for severe events. While not definitive, the last five early winters (December-January 2009-10 through 2013-14) show evidence of Arctic/mid-latitude weather linkages. The Arctic community can make progress with the hypothesis that linkages will be regional, episodic, and based on amplification of existing weather patterns such as Greenland atmospheric blocking and the Siberian High, and their downstream impacts. Linkages are the result of a combination of internal climate variability, new lower-tropospheric Arctic temperature anomalies, and mid-latitude teleconnections. This science is emerging. New approaches together with additional Arctic observations can contribute to improved skill in extended-range weather forecasts.		
Main contributions to ICARP III¹ in terms of the ICARP III priorities² Linkages of severe mid-latitude weather to continued Arctic change can and will occur		

¹ List a few key statements (findings, priorities, recommendations) that you would like to see reflected in the overarching ICARP III products

² ICARP III priorities:

- identify Arctic science priorities for the next decade
- coordinate various Arctic research agendas
- inform policy makers, people who live in or near the Arctic and the global community
- build constructive relationships between producers and users of knowledge

over the next decades, forming a major Arctic Science Priority.

Policy makers and the larger community need to understand that these linkages are episodic (varying from month to month and year to year) and that Arctic influences are one of several factors influencing severe weather events, including random chaos, ocean temperatures, and connections to the tropics.

The east coasts of North America and Asia are particularly vulnerable, as a mechanism for linkages is the amplification of existing weather patterns determined by the location of Greenland and the Siberian High Pressure region.

The scientific community should support the Year of Polar Prediction (YOPP, 2017-19) to increase Arctic observations and improve weather forecast models.