Expected - and less expected - effects of clouds on the Arctic climate system

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Clouds remain one of the most important - and most uncertain - sources of feedbacks in the climate system and this holds even more true for the Arctic than for many other regions, mainly because of a lack of detailed observations from this region.

One thing that sets the Arctic apart is the fact that the sun sets in autumn and doesn't come back until spring; hence solar radiation is less important than thermal radiation. But even in summer thermal radiation often rules the day, since the surface albedo is often relatively high - as long as there's ice and/or snow at the surface. Moreover, as long as there is snow and ice on the surface, the surface temperature is blocked from responding to changes in the surface energy budget. Also imagine this; you're flying on the space station and you look down at the Arctic to measure the albedo. You find that it is 63.5%. Now, how can you know that what you see the surface, and not thick low-level clouds, that are very common in the Arctic?

In this seminar I will try to review some of the understanding of Arctic boundary-layer clouds we have gained mainly from icebreaker-borne expeditions to the central Arctic Ocean over the last ~20 years, but I will also try to confront the paradox that most of what we know about the Arctic climate system is focused on the surface and especially the sea ice, and how it is melting away, while the changes to the climate are actually driven by changes to the energy fluxes either at the top of the atmosphere or at the lateral boundary to the extratropics - wherever that is.

This seminar will be webcast live at:
http://www.fin.ucar.edu/it/mms/fl-live.htm

Recorded seminar link can be viewed here:
https://www.mmm.ucar.edu/events/seminars

Thursday, 18 August 2016, 3:30 PM
Refreshments 3:15 PM
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