Q1. What are two key variables or processes discussed in Serreze and Barry (2011) and how do they impact the climate system? Please answer in complete sentences and in your own words.

The article talks about the loss of sea ice. The process is basically that there is a reduction in insulation between the warm arctic ocean and the cold atmosphere. The melting of sea ice causes exposure to more dark ocean water and therefore absorbs more solar radiation and thus heats the ocean. This in turn causes the ice to melt more causing more radiation and this overall warming.

Another variable that is talked about is the Heat Flux Convergence.
It impacts the climate system by influencing how much solar radiation is absorbed or reflected by the surface of Earth. A reduction in snow cover exposes darker surfaces, increasing absorption of solar radiation, which leads to higher temperatures and stronger heat fluxes on land. Over the ocean, melting sea ice exposes dark water that also absorbs more heat, but the effects are felt mainly in autumn and winter as the ocean releases stored heat. This albedo feedback mechanism contributes to Arctic amplification, accelerating warming and influencing broader climate dynamics through changes in atmospheric and oceanic heat transport.

Q2. Describe two processes that occur in the Arctic and how they impact midlatitude climate or weather systems.
The two processes are sea ice loss and arctic warming. The warming arctic is affecting atmospheric circulation, potentially impacting weather patterns in midlatitude regions. Two mechanisms have been proposed to explain this connection. First, Arctic warming alters pressure fields, increasing the frequency of blocking events, which can disrupt weather systems in midlatitudes. Second, changes in Eurasian snow cover, influenced by Arctic conditions, also impact atmospheric circulation.

Work cited:
Serreze, M. C., & Barry, R. G. (2011). Processes and impacts of Arctic amplification: A research synthesis. *Global and Planetary Change*, 77(1-2), 85-96. https://doi.org/10.1016/j.gloplacha.2011.03.004

Walsh, J.E. (2014). Intensified warming of the Arctic: Causes and impacts on middle latitudes. *Global and Planetary Change,* 117, 52-63. https://doi.org/10.1016/j.gloplacha.2014.03.003

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