

Introduction to AMPS Essays

The footprints of hydroelectric Arctic mega power stations (AMPS) have disrupted the thermal equilibrium of the subarctic and Arctic regions. With hemispheric climate implications, AMPS heat pollution directly alters the temperature and chemistry of the air, water, and land. In addition, AMPS have greatly suppressed many of the natural cooling regulators of the climate.

An example of one of many different AMPS thermal footprints is the reversal of the Arctic's albedo from natural new snow surfaces reflecting about 90 percent of the sun's light rays (radiation) to the albedo for the AMPS ice free reservoir and downstream river waters and estuaries absorbing about 93 percent of the sun's energy. (See Figure1) Pre-AMPS, during the six months of summer (May through October), most of the sun's radiation was reflected off of the natural snow and ice surfaces and back into space. Post-AMPS, the ice free surfaces areas of the AMPS mega reservoirs are heat sinks, absorbing the incoming solar energy.

Until the advent of the AMPS, at no time in the geologic history of the Arctic has the spring runoff been seized, stored by, and heated in large reservoirs allowing some of the largest rivers in the world to flow unfrozen throughout the long winter.

The AMPS largest thermal footprint may be the emissions of water vapor, a powerful green house gas, from these warm downstream dam discharges, from November thru April, into the cold and dry Siberian air.

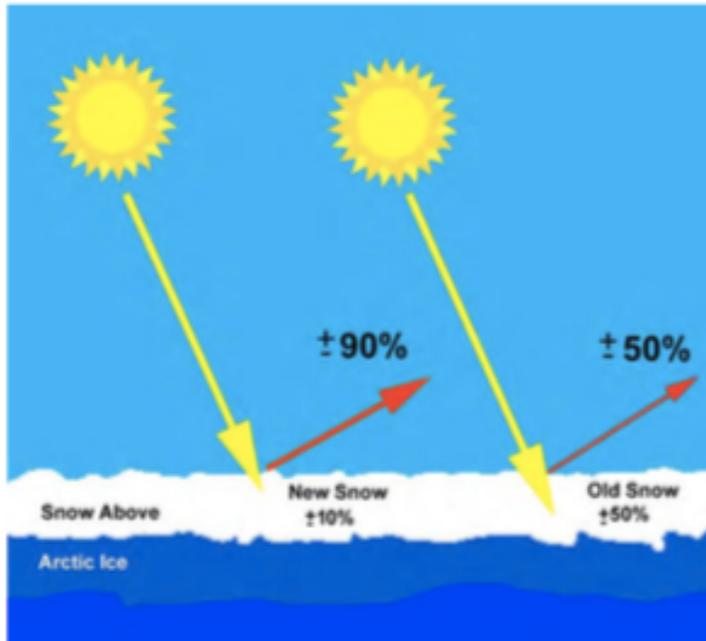
Analyzing NOAA's climatological data, pre-and post-AMPS, corroborate the heat pollution from their thermal footprints. The AMPS may be the driving mechanism warming the Arctic and a major driver of climate change and global warming.

Since the 1950s many of the Arctic's rivers have had a series of cascading AMPS built on them. The evaporation of their relatively warm winter discharges is an immense and continuous greenhouse gas causing Arctic temperatures to warm much faster than the rest of the planet.

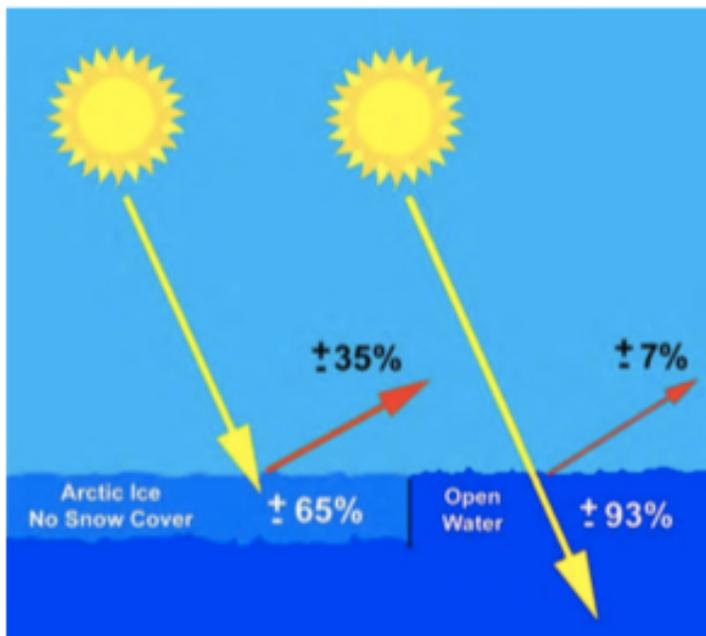
A consensus of the Arctic and climate scientific community is that the Arctic Ocean and its climate are both very sensitive to alterations of freshwater flows and humidity. With this well recognized sensitivity and the new scope of AMPS footprints, it is not unreasonable to connect these footprints with climate change.

In my book, **Arctic Blue Deserts**, I present and explain the impacts and dangers of radically altering the natural water cycle of Arctic rivers. My series of AMPS Essays and data analysis corroborate a 1950 Soviet plan to use water vapor emissions to warm the Arctic's climate.

Understanding the Arctic's Albedo



Lighter surfaces, like snow and ice, reflect about 90 percent of the incoming solar radiation. (Source: R. Georgitis)



Darker surfaces, like open water, absorb about 93 percent of the incoming solar radiation. (Source: R. Georgitis)

Figure 1