

Why Black Carbon?

There is a tremendous amount of interest in Black Carbon in the Arctic. In 2010 the U.S State Department

If you google "Black Carbon Arctic" you get 1,800,000 results in 0.16 s

[PDF] [Arctic Climate Effects of Black Carbon](#)  

dust.ess.uci.edu/ppr/ppr_hogrc_orl.pdf

File Format: PDF/Adobe Acrobat - [Quick View](#)

Oct 18, 2007 – testimony regarding the effects of **black carbon** (BC) on **Arctic** climate. ...

There are three reasons why **black carbon** warms the **Arctic** more ...

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[Reducing Black Carbon Soot Would Slash Arctic Warming Two-Thirds ...](#)  

www.treehugger.com › [Science & Technology](#) › [science](#) - [Cached](#)

Feb 23, 2011 – In addition to burning fossil fuels and cookstoves, industrial processes such as brick production are also important sources of **black carbon** ...

[Strategy to Reduce Black Carbon Emissions Affecting the Arctic](#)  

cop15.state.gov/pressroom/133771.htm - [Cached](#)

Dec 17, 2009 – Strategy to Reduce **Black Carbon** Emissions Affecting the **Arctic**.

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[NOAA joins international effort to track black carbon in the Arctic](#)  

www.noaanews.noaa.gov/stories2011/20110418_blackcarbon.html - [Cached](#)

Apr 18, 2011 – Six nations are participating in a study that looks at the potential role of **black carbon**, or soot, on the rapidly changing **Arctic** climate. ...

[International effort launched to track black carbon in the Arctic ...](#)  

earthsky.org/.../international-effort-launched-to-track-black-carbon-... - [Cached](#)

May 22, 2011 – Scientists estimate that reducing **black carbon** emissions could reduce warming in the **Arctic** by about two-thirds over the next thirty years.

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A straight forward theory:

There are anthropogenic sources of soot that go up to the Arctic

It settles on the ice and snow and increases the surface albedo

Everything melts faster!

We can do something about this right away by decreasing sources.....(like burning coal and wood)

HOWEVER –

There are current studies showing that:

(1) Arctic black carbon is decreasing

(2) Black carbon on the snow/ice is very hard to distinguish from naturally occurring background organic brown carbon

	2005-2007	1983-4 (Clarke & Noone)
<i>Greenland</i>		
Summit	2	2
Steffen's AWSs	1-10	
SGW Northeast	2	
Thule	4 (dust)	
Dye-2 melting surface	9	
Dye-2 melting subsurface	3	
<i>Canada</i>		
Hudson Bay	7	21
Eureka	3	
Resolute traverse	5	
Cambridge Bay	3	
Sturm traverse	8	
<i>Alaska</i>		
Barrow	8	15
McCall Glacier	7	

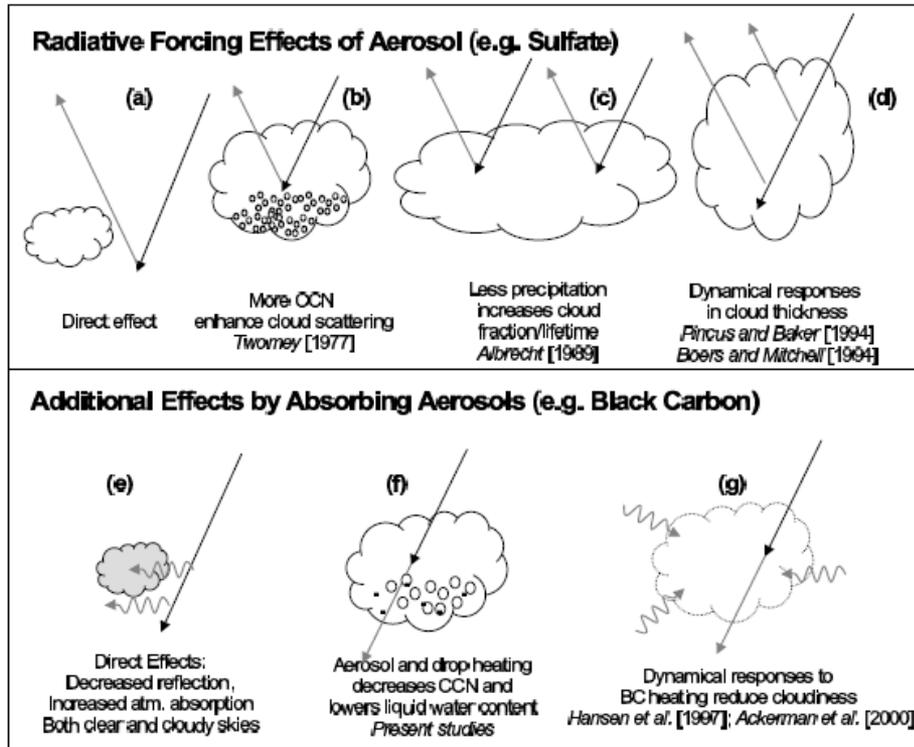


A second Arctic carbon effect is the smoke from forest fires.....some recent studies indicate that the smoke layers stay up in the atmosphere and does not deposit on the surface.....a possible summer-time cooling effect?

Black carbon radiative heating effects on cloud microphysics and implications for aerosol indirect forcing: 1. Extended Köhler theory

William C. Conant, Athanasios Nenes and John H. Seinfeld

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A third black carbon effect is the possible influence of black carbon on modifying cloud properties.....

Figure 1. Direct and indirect radiative effects of aerosol, divided into those effects unrelated to aerosol absorption (a)-(d), and those related to aerosol absorption (e)-(g).

Black Carbon and its effect on Arctic climate is COMPLICATED

