



Climate impact of a regional nuclear weapons exchange: Improving the source assessment

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Nuclear winter is based upon the premise that nuclear weapons will produce numerous firestorms and large quantities of soot that can be lofted into the stratosphere causing significant surface cooling. Hence one of the key aspects to addressing the possibility of crop defeating global cooling is understanding the source. Unfortunately, high uncertainty is associated with the ability of buildings, especially those made of cement, to burn sufficiently to induce a firestorm. At DOE and DOD labs, a variety of efforts are underway to address this uncertainty and make scientific based judgements regarding soot production. For example, at Sandia a solar furnace and tower have been recently used to examine how various materials ignite and possibly combust under thermal fluences comparable to those found after a detonation. Likewise, experiments are being planned at the Large Blast Thermal Simulator (LBTS) at White Sands to begin examining shock-fire interactions---another crucial piece in this complex puzzle. Given this new experimental data, simulations are being run using combustion codes at both Sandia and Los Alamos to begin addressing how small scales fires initiated by a thermal fluence could possibly upscale into a firestorm. Next, results from these detailed source calculations can be used in various climate models, e.g., CESM or GEOS-5, to examine their impact on climate. And finally, given a scientifically defensible source it is expected that global cooling impacts (see Reisner et al., JGR-Atmos., 2018 for preliminary study) will be significantly less than suggested by nuclear winter advocates.

***Tuesday, 12 November 2019, 11:00 AM**

***Please note special day/time & location**

Refreshments 10:45 AM

NCAR-Foothills Laboratory, 3450 Mitchell Lane

FL2-1001 Small Auditorium

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