

Reconciling Emissions for EPA: Bottom up versus Top down?

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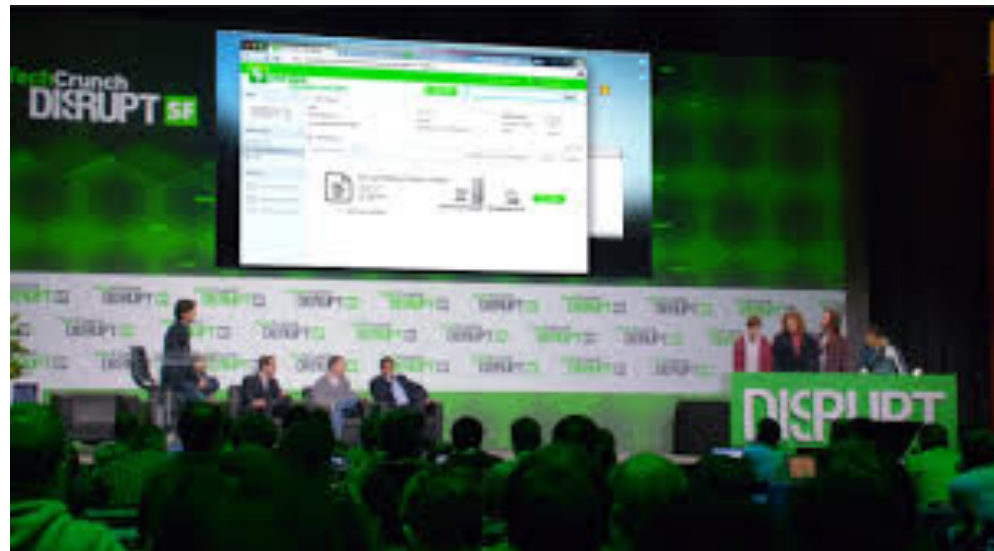
Thomas E Pierce
Deputy Director, AMAD

Setting the stage ...



Guilty pleasure:
HBO's "Game of Thrones"

Discussing top down vs
bottom up approaches on
"Silicon Valley"





EPA's efforts to better characterize emissions

Basic research --

National Center for Environmental Research (NCER)

Sheri Hunt, Acting Assistant Center Director for Air, Climate, and Energy Research – 2009 Grant Solicitation (12 grants funds, ~\$4 million total):

Title: Framework for Context-Sensitive Spatially- and Temporally-Resolved Onroad Mobile Source Emission Inventories, **Investigators:** [Frey, H. Christopher](#)

Project Period: May 16, 2010 - May 15, 2013 (Extended to May 15, 2014)

Title: Towards a Verifiable Ammonia Emissions Inventory for Cattle Feedlots in the Great Plains, **Investigators:** [Ham, Jay M](#)

Project Period: April 1, 2010 - March 31, 2013 (Extended to March 31, 2014)

Project Amount: \$499,875

Title: Coarse PM Emissions Model Development and Inventory Validation

Investigators: [Hannigan, Michael P.](#), **Project Period:** June 1, 2010 - May 31, 2013



EPA's efforts to better characterize emissions

Applied research –

National Risk Management Research Laboratory (NRMRL)

Primarily process based (bottom up) measurement studies,
e.g., biomass burning, ammonia from CAFOs

National Exposure Research Laboratory (NERL)

Refine existing modeling inventories (see Jia Xing)

Methods to develop inventories for models (such as BEIS, see Jesse Bash)

Inverse modeling to improve accuracy (see Shannon Capps)

Air, Climate, and Energy (ACE) National Program Office

Bridging basic/applied research and regulatory application (see Lee Riddick)



EPA's efforts to better characterize emissions ... to inform critical societal issues

Regulatory applications --

Office of Air Quality Planning and Standards

National Emissions Inventory (see Alexis Zubrow)

SPECIATE database

Sparse Matrix Operational Kernel Efficient (SMOKE) emissions system

-- emissions form the cornerstone of urban/regional air quality simulation models used in developing emission control standards to help the nation obtain clean air to protect the health of humans and the environment

Office of Air and Radiation

Focused on emission inventories for hemispheric and climate change issues
(see Terry Keating)