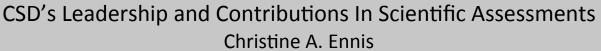


### **Research to Applications:**





## **CSD** and Assessments: A Large and Diverse Effort

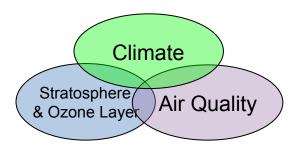
**CSD** Research



**Assessments** 



#### **Stakeholders**



### **The Bridging Function**

Translate from the language of science to the language of stakeholders

#### "State of scientific understanding"

- Periodic or one-time Reports
- "Rapid Science Synthesis" communications based on targeted laboratory or field work

#### **Policy relevant**

• Engagement with stakeholders is crucial

#### **Policy neutral**

Maintains credibility

- World Governments
- US Decision-Makers:
  - o Federal
  - o State
  - Localities
- Industry Decision-Makers
- Educators, Students, Public
- Scientific Community

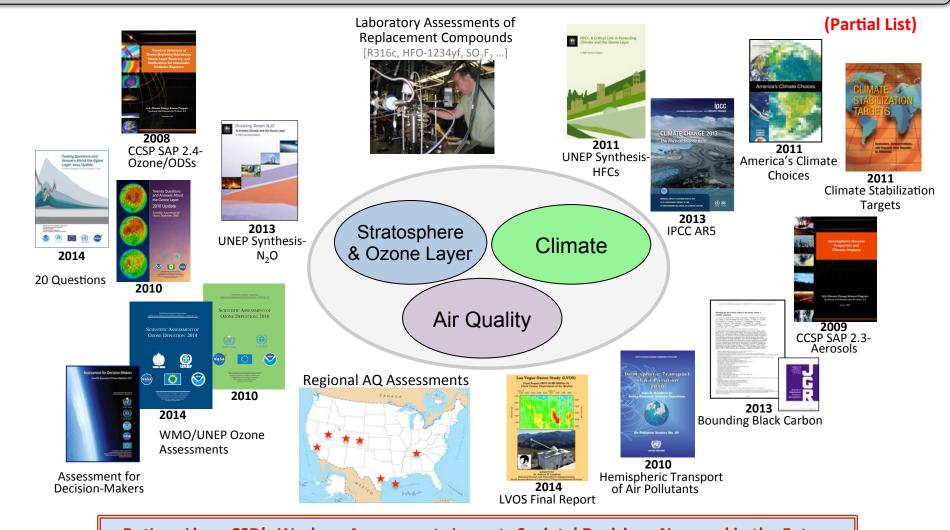
A wide range of roles: Leaders – Authors – Contributors – Reviewers – Coordination – Communication

**Covering all 3 major environmental issues:** Stratospheric Ozone Layer – Climate – Air Quality

Reaching a full spectrum of Stakeholders: local → global

With impacts that are far-reaching in space and time:  $| local \rightarrow g | lobal = local \rightarrow g |$ 

# The Constellation of CSD's Assessment Leadership and Contributions: 2008-2015



# Bottom Line: CSD's Work on Assessments Impacts Societal Decisions Now and in the Future (A few examples)

- Montreal Protocol Parties: Considering possible new provisions (HFCs; N<sub>2</sub>O)
- State and local AQ officials: Developing approaches to addressing national AQ standards that make use of findings of CSD-led field campaigns (CA, NV, CO, UT, TX)
- Industry leaders: Making investment decisions regarding new compounds they propose for applications (e.g., refrigerants, etc.) EXAMPLE: R316c = No!

# **A Look Ahead**

CSD is well positioned to continue leading and contributing to assessments that will inform decisions of the 21st century.

### **Some Examples**

Already in progress	Time Frame	CSD roles					
IGAC "Tropospheric Ozone Assessment Report"	2014-2017	O. Cooper (co-lead)					
SPARC 2 <sup>nd</sup> Water Vapor Assessment (WAVAS-2)	2008 to ~2016	K. Rosenlof (co-lead)					
Regional Assessment: SONGNEX (Shale Oil and Natural Gas Nexus)	2015 deployment	J. de Gouw (lead)					
Regional Assessment: FIREX (Fire Influence on Regional and Global Environments Experiment)	2015-2019 deployments	J. Roberts, C. Warneke, and J. Schwarz (co-leads)					
Laboratory Assessments of Replacement Compounds (HFO-1234ezy, HCFC-133a,)	ongoing	J. Burkholder (lead) with several CSD co-investigators					

Expected	Time Frame
WMO/UNEP Ozone Assessment	2017-2018
IPCC AR6	TBD
JPL Kinetic Data Evaluation	Fall 2015
Aviation	TBD

# **Poster Preview**

Stakeholder Spectrum

	Name Annual of the Date of the		Organizing	CSD		Top	pics Address	<b>ed</b> Air Quality	nid Govern	U.S. Fodoral	U.S. States	cision-Makey	Wentor-Student	clentific Community
	2	Montreal Protocol Ozone-Layer Assessment—	Body World Meteorological	Roles  Cochair (1), Steering Committee (1).	Impact Informs the decisions of the Parties to the	Depletion	Change	Degradation	Wo	9	40,	9,	2	7
	SCHOOL SECURE 200	Scientific Assessment of Ozone Depletion: 2014, and Assessment for Decision-Makers (WMO, 2014)	Organization (WMO); United Nations Environment Programme (UNEP)	Cochair (1), Steering Committee (1), Authors (3), Contributors (4), Reviewers (5), Editor/Coordinator (1)	United Nations Montreal Protocol agreement that protects the ozone layer (all nations of the world are signatories)				•	•	•	•		•
The state of the s	<b>○ ■ ○</b>	Montreal Protocol Ozone-Layer Assessment— Scientific Assessment of Ozone Depletion: 2010 (WMO, 2010)	WMO UNEP	Cochair (1), Steering Committee (2), Lead Authors (1), Authors (5), Contributors (1), Reviewers (7), Editor/Coordinator (1)	Informs the decisions of the Parties to the United Nations Montreal Protocol agreement that protects the ozone layer (all nations of the world are signatories)		_		•	•	•	•		•
	iço:	Synthesis Report—Nitrous Oxide ( <i>Drawing Down N2O to Protect Climate and the Ozone Layer</i> ) (UNEP, 2013)		Co-Lead Coordinator (1) Authors (2)	Informs international decisions related to nitrous oxide emissions				•	•	•	•		•
	C. 50.72 (C100)27 2013	International Climate Assessment—Climate Change 2013: The Physical Science Basis (IPCC, 2013)	Intergovernmental Panel on Climate Change (IPCC)	Lead Author (1) Review Editor (1)	Informs international discussions related to climate	1			•	•	•	•		•
	24	Synthesis Report—HFCs: A Critical Link in Protecting Climate and the Ozone Layer (UNEP, 2011)	UNEP	Lead Author (1) Contributors (2) Reviewers (2)	Informs international decisions related to the use of hydrofluorocarbons (HFCs), especially in the context of the Montreal Protocol				•	•	•	•		•
		Hemispheric Transport of Air Pollution 2010 (UNECE, 2010)	United Nations Economic Commission for Europe (UNECE)	Authors (2)	Informs the UNECE Convention on Long- Range Transboundary Pollution, a 1979 international agreement that fosters cooperation on air pollutant emissions				•	•	•	•		•
	Parameter Comment of the Comment of	U.S. CCSP Synthesis and Assessment Product 2.4: Ozone, ODSs, and UV Radiation (2008)	U.S. Climate Change Science Program (CCSP)	Agency Lead (1) Convening Lead Authors (2) Lead Authors (2) Editors (2)	Informs U.S. policymakers in their efforts to formulate effective strategies for preventing, mitigating, and adapting to the effects of global climate change				•	•	•	•		•
	With the transfer	U.S. CCSP Synthesis and Assessment Product 2.3: Aerosols (2009)	U.S. CCSP	Lead Author (1)	Informs U.S. policymakers in their efforts to formulate effective strategies for preventing, mitigating, and adapting to the effects of global climate change				•	•	•	•		•
American Character	WW.	America's Climate Choices (U.S. NRC, 2011)	U.S. National Research Council (NRC)	Panel member, overall project (1) Panel member, "Advancing the Science of Climate Change" report (1)	Identifies scientific advances needed both to improve our understanding of the integrated human-climate system and to devise more effective responses to climate change				•	•	•	•		•
	A STATE OF THE STA	Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia (U.S. NRC, 2011)	U.S. NRC	Chair (1)	Provides information for societal choices regarding future greenhouse gas emissions				•	•	•			
Rapid Science syntheses     Stakeholder briefings     Peer-reviewed publications  Regional AQ Climate Assessments	Regional Assessments via Field Campaigns:	NOAA/ESRL/CSD	Mission Lead (all) Principal Investigators (dozens from CSD)	Supports air quality and climate decision making at state and local levels in the U.S., especially with regard to meeting U.S. National Ambient Air Quality Standards				• • • •	•	•	•	•	•	
	Stakeholder briefings     Peer-reviewed publications	Laboratory assessments of climate and ozone- layer impacts of proposed new compounds	NOAA/ESRL/CSD	Lead (1) Principal Investigators (several)	Enables industry to make decisions about potential replacement compounds before they make a substantial investment, at a savings for both industry and consumers				•	•		•		•
Laboratory Assessments Replacement Compound		Assessments of climate and ozone-layer impacts of aviation	ICAO; Scientific Community	Principal investigator (2)	Informs decisions of the aviation industry and of governments				•	•		•		•
[6136_160-01344_60f1]	Samp Assistance and Samp Assistance and Samp Assistance and Samp Assistance	Assessments of climate and air quality impacts of shipping	NOAA CSD	Principal investigator (2)	informs decisions of the shipping industry and of governments				•	•		•		•
	March Charles and	Twenty Questions and Answers About the Ozone Layer: 2014	WMO UNEP	Coauthor (1) Contributor (1) Reviewers (2) Coordinating Editor (1)	Used worldwide by decision makers at all levels; and by educators, students, and the general public		-		•	•	•	•	•	•
	© 1 € M (A) C	Twenty Questions and Answers About the Ozone Layer: 2010		Lead Author (1) Reviewers (2) Coordinating Editor (1)	Used worldwide by decision makers at all levels; and by educators, students, and the general public		-		•	•	•	•	•	•
E E	and have to	Bounding the Role of Black Carbon in the Climate System: A Scientific Assessment (IGAC; JGR 2013)	International Global Atmospheric Chemistry project (IGAC) of the International Geosphere- Biosphere Programme(IGBP)		Informs research efforts, climate modeling, and policy discussions regarding black carbon				•	•	•	•		•
######################################	A CONTRACTOR OF THE PARTY OF TH	Impact of Megacities on Air Pollution and Climate (WMO/IGAC, 2012)		Lead Author (1)	Useful for both scientific communities and policy makers dealing with urbanization, air quailty management, and climate change				•	•	•	•		•
	<b>2 20 ≈</b>	Atmospheric Lifetimes Report (SPARC, 2013)	Stratopshere-troposphere Processes and their Role in Climate (SPARC)—World Climate Research Programme (WCRP)	Lead Author (1) Reviewers (2)	Provides an assessment of atmospheric lifetimes of trace gases for use by researchers and for scientific assessments of climate and the ozone layer				•	•	•	•		•
	© Drive Marked State Annual Co.	Assessment of the Role of Halogen Chemistry in Polar Stratospheric Ozone Depletion (SPARC, 2009)	SPARC (WCRP)	Steering Committee members (2) Reviewers (2)	Resolved a major issue regarding the chlorine monoxide dimer and confirmed the scientific community's understanding of halogen chemistry related to the polar ozone layer				•	•	•	•		•
		Laboratory Kinetic Data Evaluation #17 (JPL, 2011)	Jet Propulsion Laboratory (JPL) National Aeronautics and Space Administration (NASA)	Panel Member (1)	Provides evaluated chemical kinetics and photochemistry information that underpins scientific research and assessments on climate, air quality, and the ozone layer				•	•	•	•		•
	STATE OF THE STATE	Aqua-VIT intercomparison of water vapor measurement techniques (Atmos. Meas. Tech., 2014)	SPARC NASA	Lead Author (1) Coauthors (2) Referees (2)	Supports improved climate projections by helping to resolve discrepancies among water vapor measurements on different platforms and made by different instruments				•	•	•	•		•

= Impetus = Additional