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Science and Technology in 21st Century Diplomacy

Nina V. Fedoroff

Science and Technology Adviser to the Secretary of State (STAS)
and to the Administrator of USAID

U. S. Department of State
Washington, DC



20th century science diplomacy

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www.villagevoice.com/.../nunn-lugar-in-1991.jpg

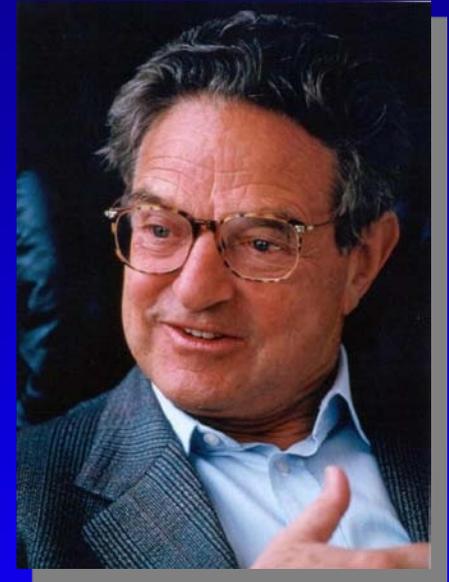


Senators Nunn and Lugar, 1991



Former Senator Nunn and Senator Lugar, 2007

www.worldpoliticsreview.com/images/CommentaryNews/nunnlugar0807.jpg



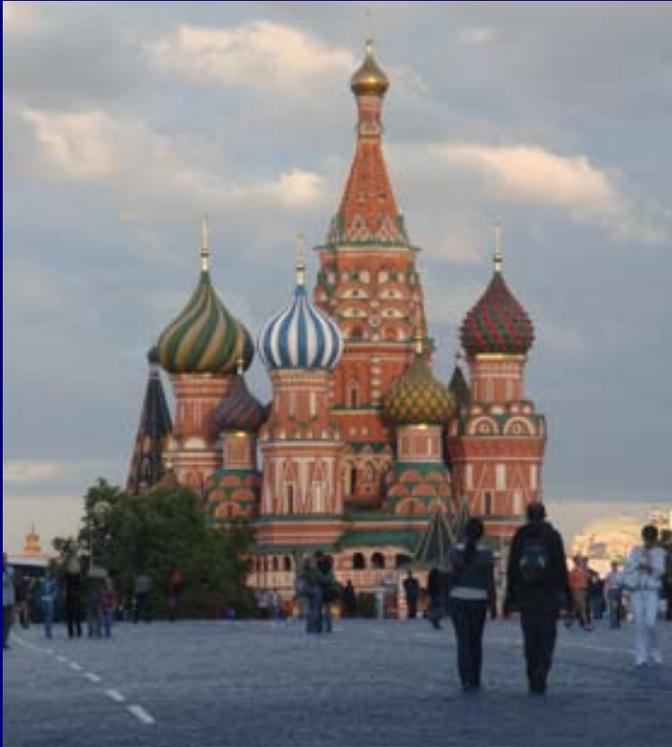
George Soros

www.worldaidscampaign.info/.../george_soros/



A new era in U. S.-Russian science cooperation

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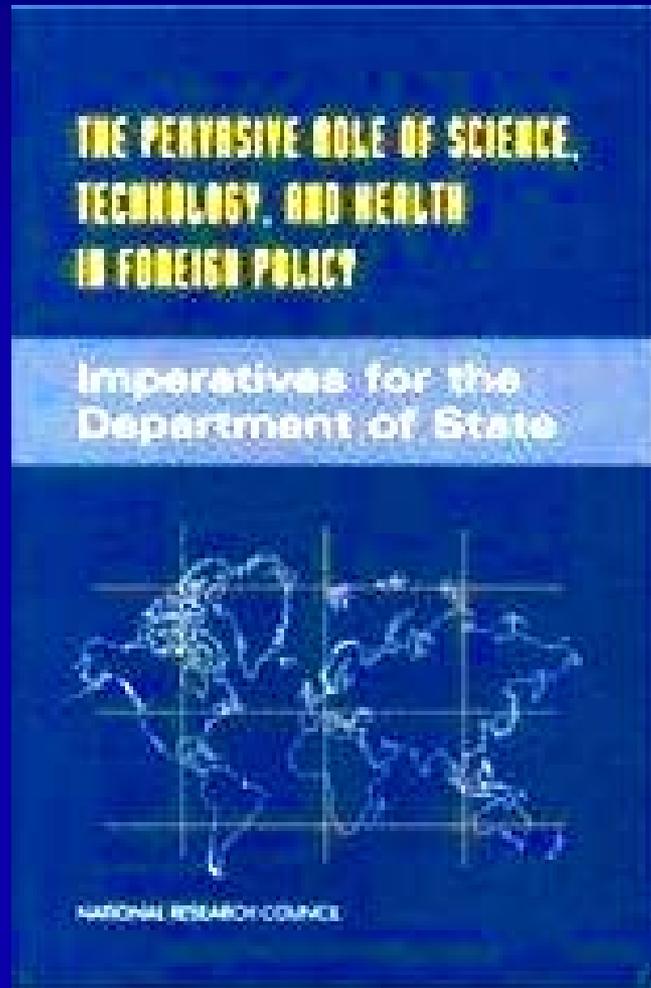
June 2009
Moscow, Russia
50th Anniversary of
RAS-NAS Collaboration





Science and the State Department

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Office of the Science and Technology Adviser to the Secretary of State
established by Secretary of State Madelaine Albright, 2000



Redirecting Iraqi weapons scientists

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Dr. Alex Dehgan

US State Department,
STAS



Soviet-made Frog 7's



An electronic science library for Iraq

STAS

Dr. Susan Cumberledge, DoD DTRA; Dr. Ranjiv Khush, DoS/STAS; Dr. Alex Dehgan, DoS/NEA; Dr. Barrie Ripin, DoS; Dr. Ben Perman, DoD; Karan Nain, Pakistan

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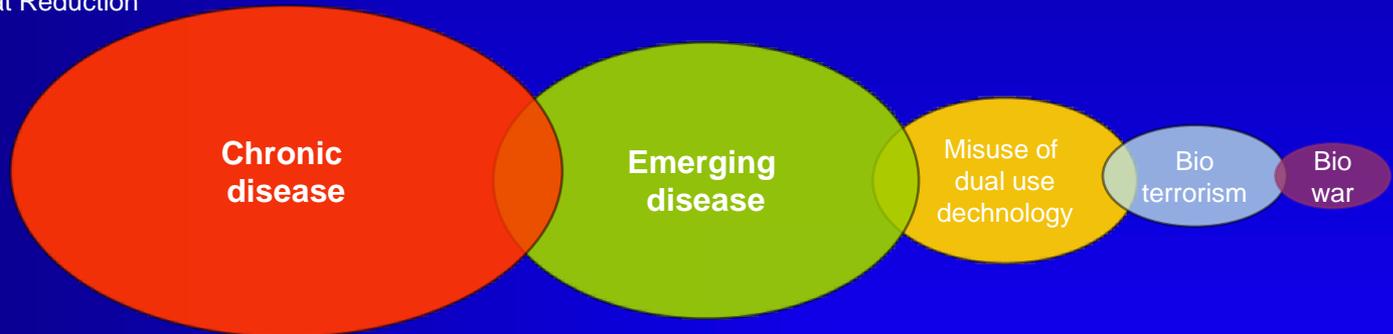


Science for Security: The Bio Example

“Dual Use” Science Collaboration = **Dual-Benefit**

Dr. Jason Rao
US State Department, Office of
Cooperative Threat Reduction

Spectrum of Bio-Risk



Hypothesis: The process of working together on hard life-science problems internationally will:

- 1) **Reduce the impact** of the left end of the spectrum
- 2) **Reduce the likelihood** of the right half of the spectrum
- 3) Provide some **transparency regarding capabilities and intent**
- 4) **Undermine popular support** for terrorism



Collaborative Science for Development

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APPNA
ASSOCIATION OF PHYSICIANS
OF PAKISTANI DESCENT OF NORTH AMERICA



Jaroka – Tele-healthcare

Affordable Healthcare for Rural

isif^{asia} Pakistan using mobile phones and Internet



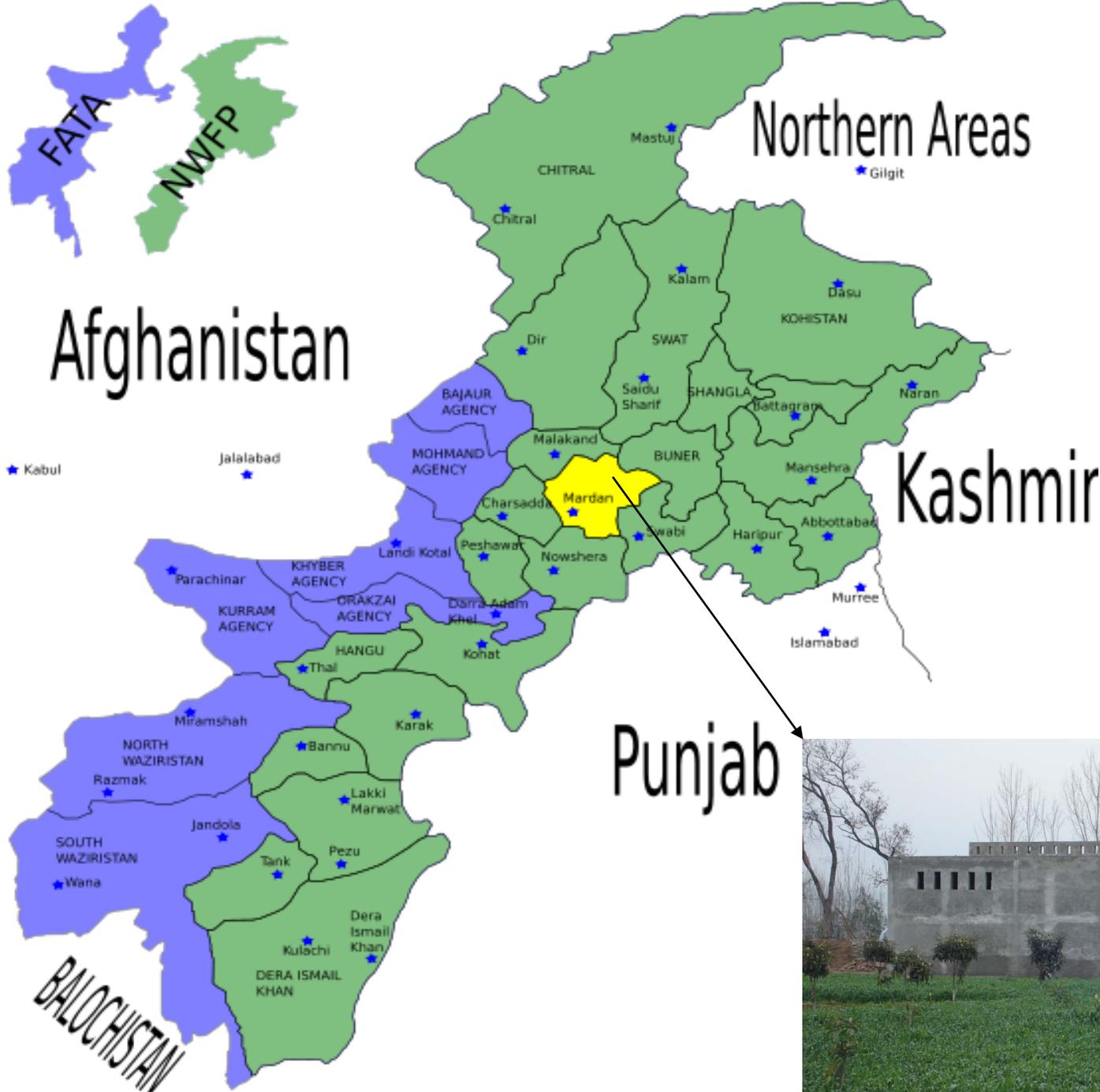
Tele-HealthCare.org

<http://media.photobu>



Digital Vision Program at Stanford University







Tele-healthcare in rural Pakistan

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This Encounter for Mujahida Bibi:

Qasim Vitals
Nasruddin

Bps: 135 **Bpd:** 85
Weight: 196.00 **Height:** 58.00
Temperature: 98.00 **Pulse:** 78.00
Respiration: 16.00 **BMI:** 41.0
BMI Status: Obesity II **Waist Circ:** 36.00
Head Circ: 22.00 **Oxygen Saturation:** 100.00

Qasim SOAP
Nasruddin

Subjective: Female patient for followup of HTN diagnosed 06 months back. Initially started on atenolol 100mg OD. Compliant with meds. No monitoring of BP at home. Last BP check 02 weeks ago. Feeling well, no headaches or fatigue at present. No leg claudication or previous history of heart disease. No depression, anxiety or h/o trauma ROS: Negative except as above. Allergies: NKDA Meds: Atenolol 100mg OD PMH: Hypertension + hyperlipdemia 06 months back PSH: None SH: Non smoker, Housewife FH: Father died suddenly of unknown illness

Objective: HEENT: No fundoscopic abnormalities Neck: No bruit, no JVD Chest: Clear breath sounds bilaterally Heart: Apical impulse not displaced, S1/S2, no murmurs, rubs Abdomen: Soft, non-tender, non-distended, BS +ve, no bruits, no organomegaly Extremities: No edema, no hair loss or skin changes. Peripheral pulses normal Neuro: Strength 5/5 bilateral all limbs, sensation intact. DTRs Symmetric B/l. -ve Babinski.

Assessment: Hypertension

Qasim Patient
Nasruddin Encounter

20,000 treatments since Sept 2008

12,000 IDPs treated since May 2009



Collaborative Science for Development

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<http://media.photobu>



<http://www.bloomberg-university.eu/apps/data?pid=avimage&iid=is6u4YvxAyDg>

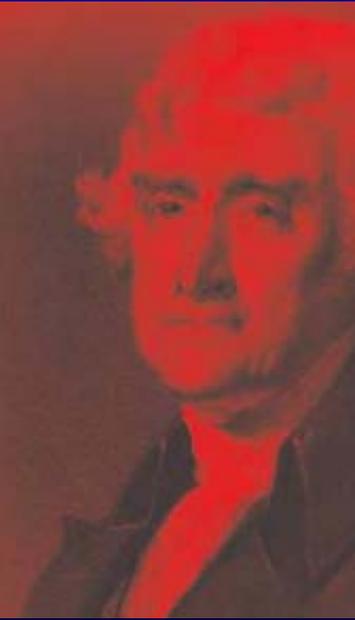


The Jefferson Science Fellows program

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"When I contemplate the immense advances in science and discoveries in the arts which have been made within the period of my life, I look forward with confidence to equal advances by the present generation, and have no doubt they will consequently be as much wiser than we have been as we than our fathers were . . ."

—THOMAS JEFFERSON, MARCH 3, 1818



JEFFERSON SCIENCE
FELLOW SHIPS

<http://www7.nationalacademies.org/Jefferson/>



Scientist Diplomats

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Dr. Osama Awadelkarim
Jefferson Fellow, 2006-7
US Department of State



Visiting a physics laboratory in Addis
Ababa University



Undergraduate technology students at
Adama University

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Science Diplomacy in South-East Asia

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Thermoacoustics Demonstration Lecture
Center for Environmental Research, Bogor
Agricultural University, Indonesia.

Dr. Steve Garrett

Jefferson Fellow, 2008-9

US Department of State



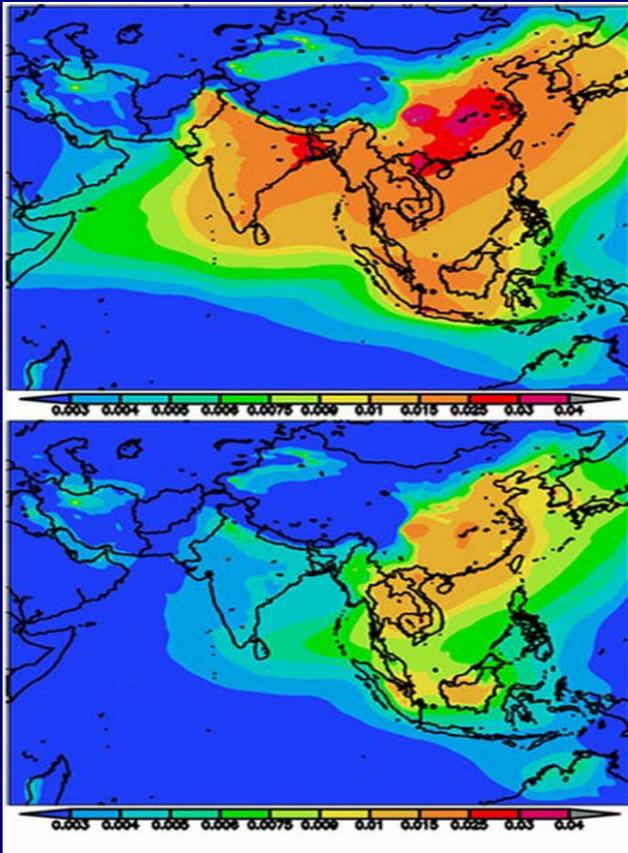
Engine Lab Visit and Demonstration Lecture
Sustainable Energy Research Center,
Phranakhon Rajabhat University, Bangkok.

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Particulate carbon: A growing problem

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The polluting effects of cooking with biomass (wood, cow dung) in South Asia: The upper image shows levels of pollution in 2005. The bottom image removes effects of biofuel cooking.

Dr. Phil Hopke
Jefferson Fellow, 2008-9
US Department of State



- Health hazard for the poor
 - Indoor Air Pollution
 - 1.6 million deaths/year
 - 38 million DALY
- Health hazard for the world
 - Soot is second to CO₂ in warming
 - 75% of Asian soot from biomass
 - Source of deforestation
 - Transboundary pollution

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Technology is IMPORTANT

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- Fans improve performance
 - Increase fuel flexibility
 - Reduce cooking time
 - Increase over control
 - Decrease toxic pollutants
 - Decrease soot production
- Fans require electricity
 - Available in India and China
 - Scarce elsewhere



Rice Husks in the Philippines

Alex Belonio
Winner of 2008
Rolex Award



Philips Woodstove for India

Field Test of 50 Units in India
“Wall Wart” Charger



Next-Generation Cook Stove Workshop

Asian Institute of Technology: 16-20 Nov 2009

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Garrett and Hopke will convene:

Small scale heat engine technologists

Combustion researchers

Form International Design Teams

Roadmap to reduce soot and address rural “energy poverty”

Cook stoves with combined heat and power

Broad Support and Participation

State Department Foreign Assistance

The 1st National Science Foundation/ASEAN Collaboration



Rice Husks in
the Philippines

Alex Belonio Winner of
2008
Rolex Award

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A Working Scientist Looks at Science in Latin America

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Dr. Tim DeVoogd
Jefferson Fellow, 2008-9
US Department of State

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What do STAS and the STAS office do?

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- Increase science literacy in the State Department
 - AAAS Science Diplomacy Fellows
 - Jefferson Science Fellows
 - Distinguished Jefferson Fellows Lectures
 - ESTH officers' training
 - Workshops and briefings

- Encourage international S&T collaboration
 - Conferences and workshops
 - Funding for international collaborative research



What does STAS do?

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May 2009
The Vatican
Rome, Italy



Transgenic Plants for Food Security in the Context of Development

15-19 May 2009 • Casina Pio IV





What does STAS do?

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“Transgenic Plants for Food Security in the Context of Development”



What does STAS do?

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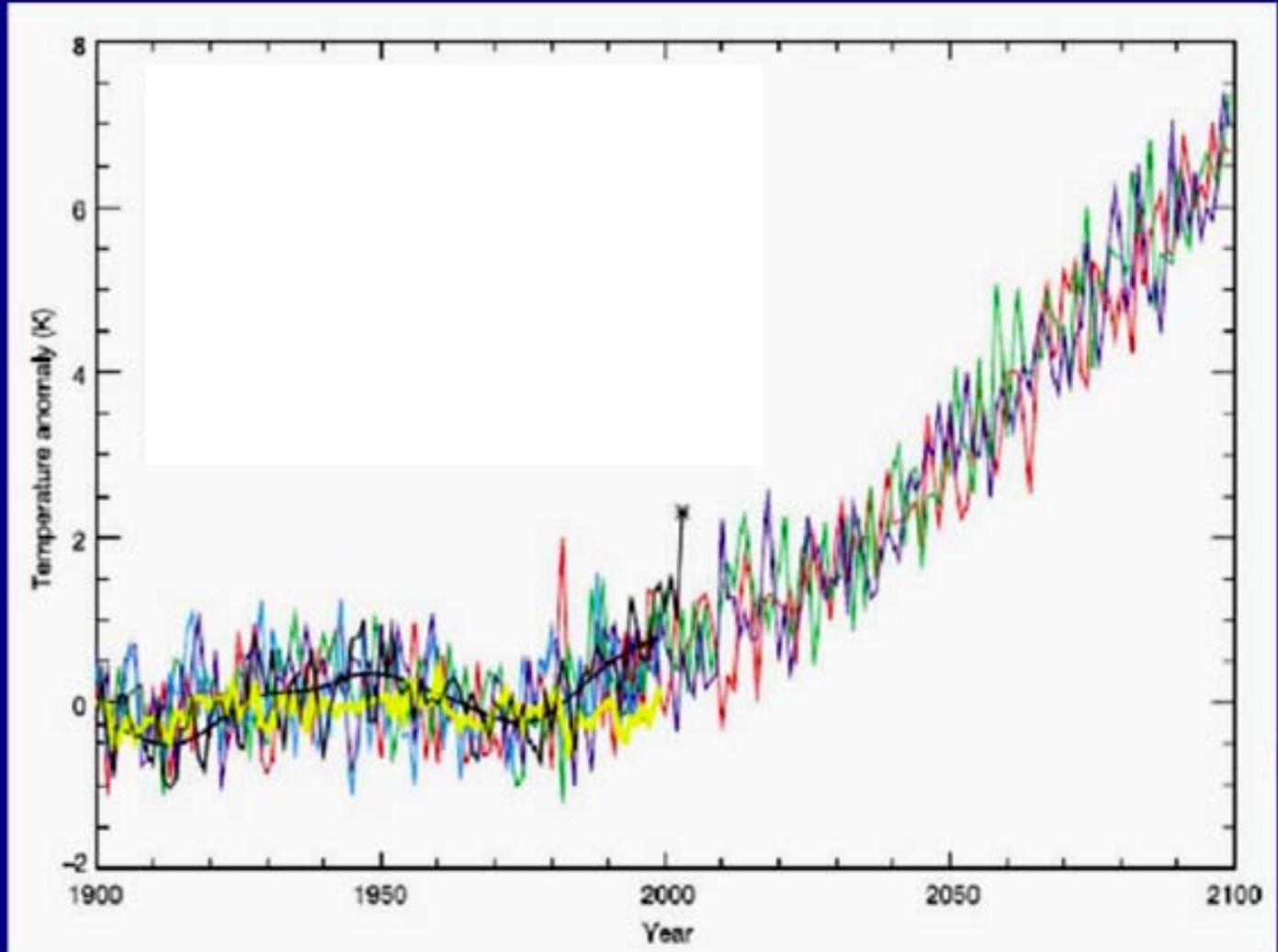
Febrary 2009
Svalbard, Norway

“Impact of Climate Change on Agriculture”



Climate Change and Agriculture

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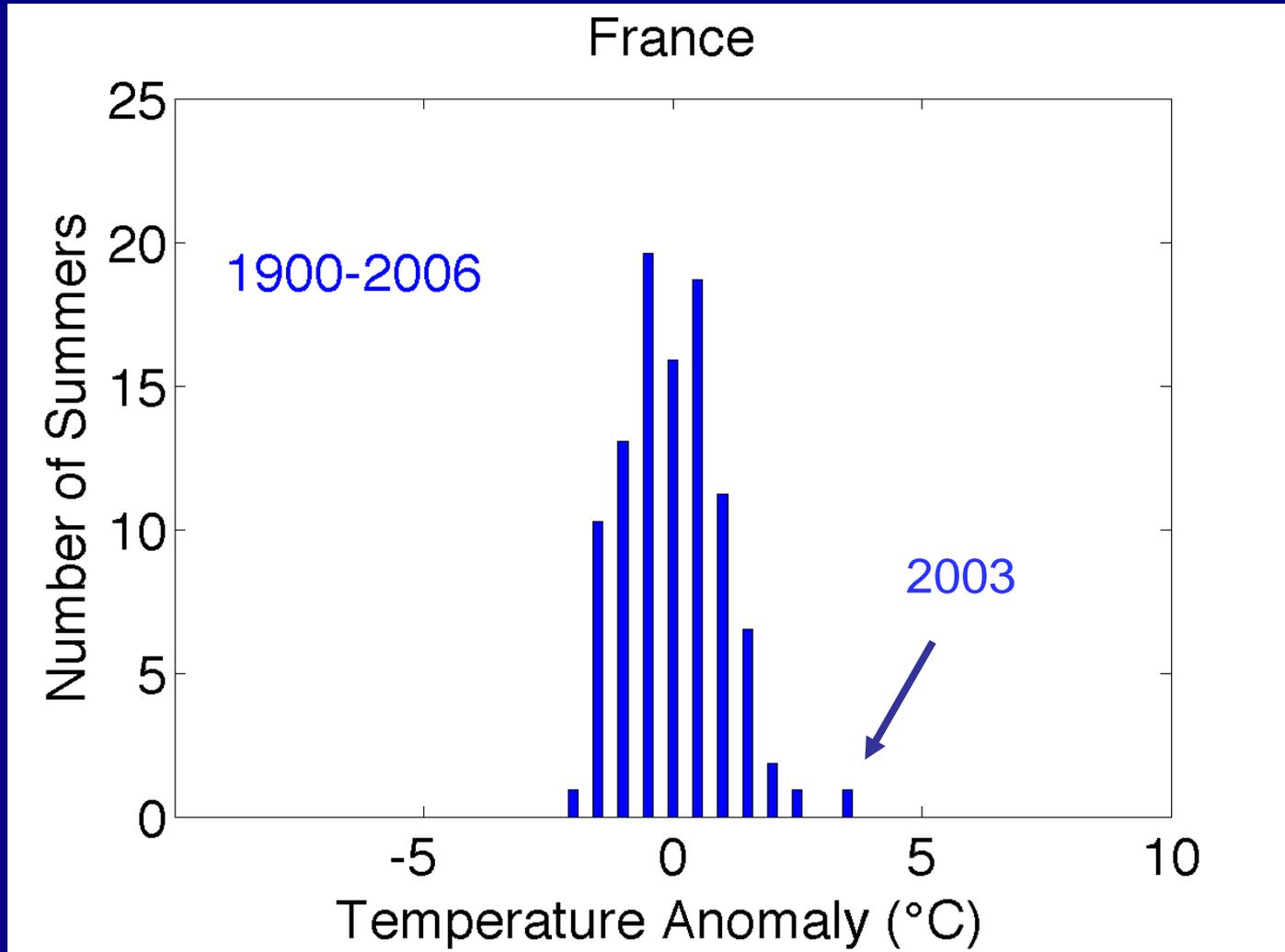


Stott et al, Nature 432:610 (2004)



Climate Change and Agriculture

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Slide courtesy of Dr. David Battisti



Science Diplomacy: Today.....and Tomorrow

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“On science and technology, we will launch a new fund to support technological development in Muslim-majority countries, and to help transfer ideas to the marketplace so they can create jobs. We will open centers of scientific excellence in Africa, the Middle East and Southeast Asia, and appoint new Science Envoys to collaborate on programs that develop new sources of energy, create green jobs, digitize records, clean water, and grow new crops. And today I am announcing a new global effort with the Organization of the Islamic Conference to eradicate polio. And we will also expand partnerships with Muslim communities to promote child and maternal health.”

President Obama’s Cairo Speech, 4 June 2009



21st Century Science Diplomacy

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