



NRCSE

The Northwest Research Center for
Statistics and the Environment

The role of statisticians in international science policy

Peter Guttorp

University of Washington

Outline

Policy research is political!

The climate change story

Where is the action?

What can organizations do?

What can individuals do?

What can the community do?

Thanks

David Brillinger

Alison Cullen

Andrew Garratt

Bronwyn Harch

Denise Lievesley

Tom Louis

Sally Morton

Tanja Srebotnjak

Denis Trewin

Policy and politics

**2001 Israeli forces invaded Palestine
Statistical Office**

**Violation of Fundamental Principles of
Official Statistics (adopted 1994)**

“Soldiers entered the building by force. They ruined and confiscated equipment, computers and data including documentation from the Population and Household Census 1997. Blank cheques, copies of financial accounts and personal belongings of the employees apparently were taken.”

**(Letter from ISI President Dennis Trewin
to Israel’s ambassador to Australia)**

**Later discussed at UN Statistical
Commission**

Setting air quality standards

Determine health effects

Which pollutants?

Protect individuals from harmful exposures

Which individuals?

Determine a measurement program

Where do you measure?

Costs and benefits

The climate change story

History of IPCC :

Products

Assessments

Special reports

Climate data

Structure

Three working groups

Science

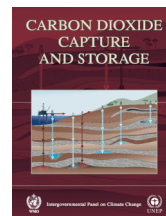
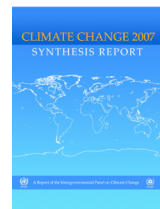
Effects

Mitigation

Task forces

Data and scenarios

Greenhouse gas inventories



Working group I

Bureau: 8 members

2 co-chairs

No statisticians

6 vice chairs

Fourth Assessment Report

11 chapters

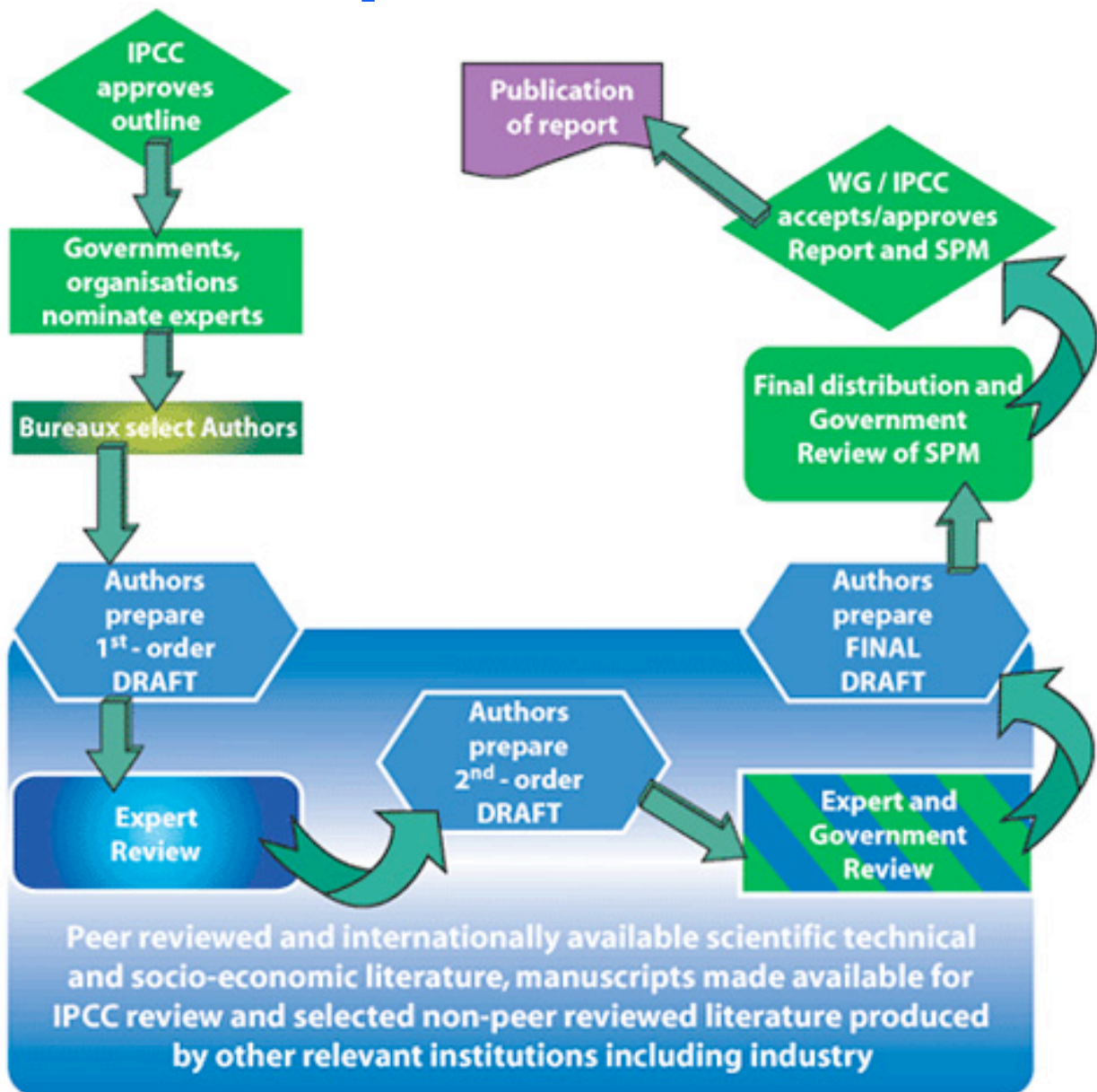
22 coordinating lead authors

(1 statistician—Francis Zwiers)

700 authors (some more than once)

(4 statisticians—Claudia Tebaldi (2), Rick Katz and Reinhard Furrer)

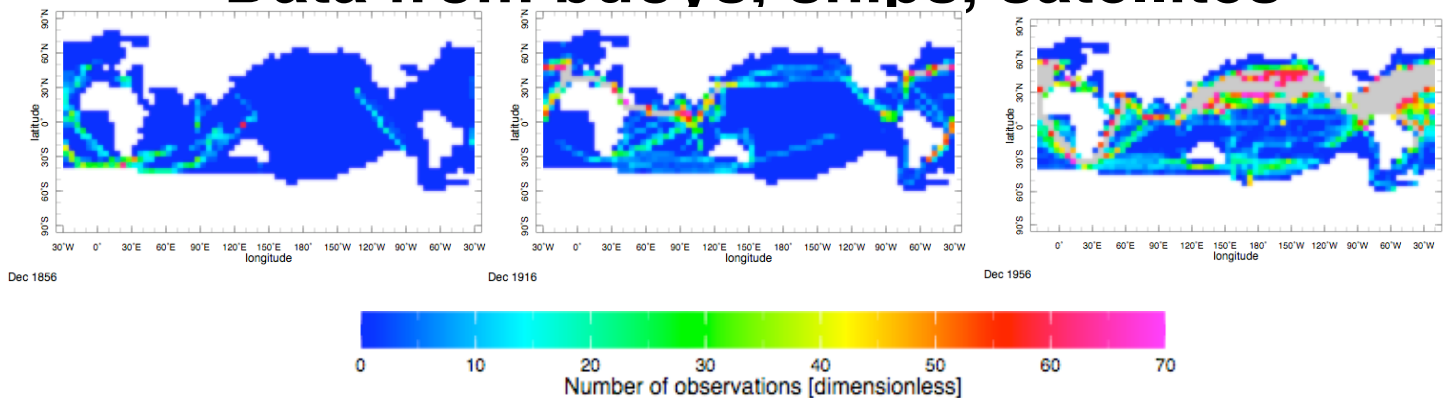
The assessment process



Hot research topics in statistical climatology

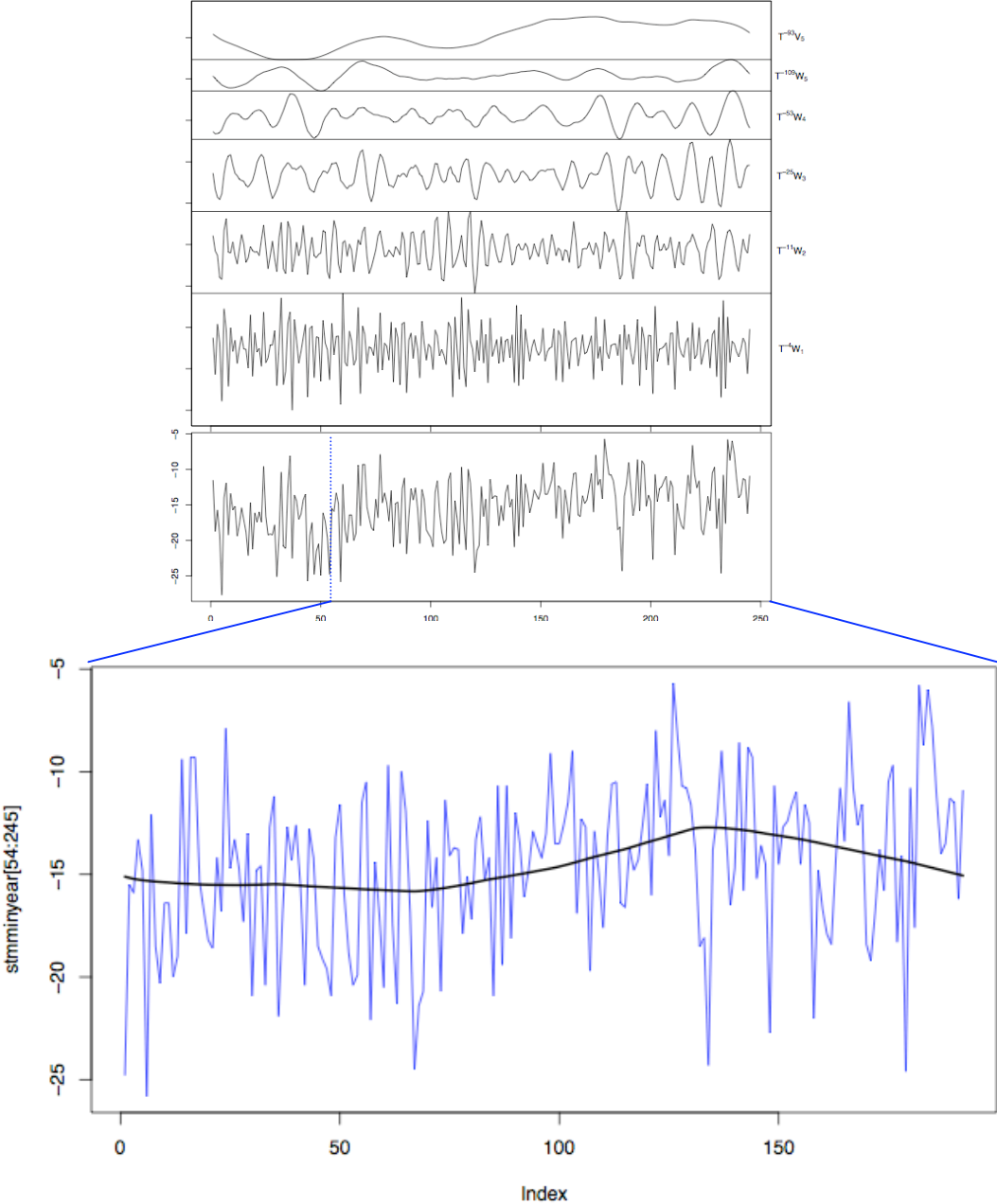
Ocean surface temperature record record

Data from buoys, ships, satellites



Trends in extreme climate/weather

Nonstationary in time and space



Model uncertainty and its consequences on prediction

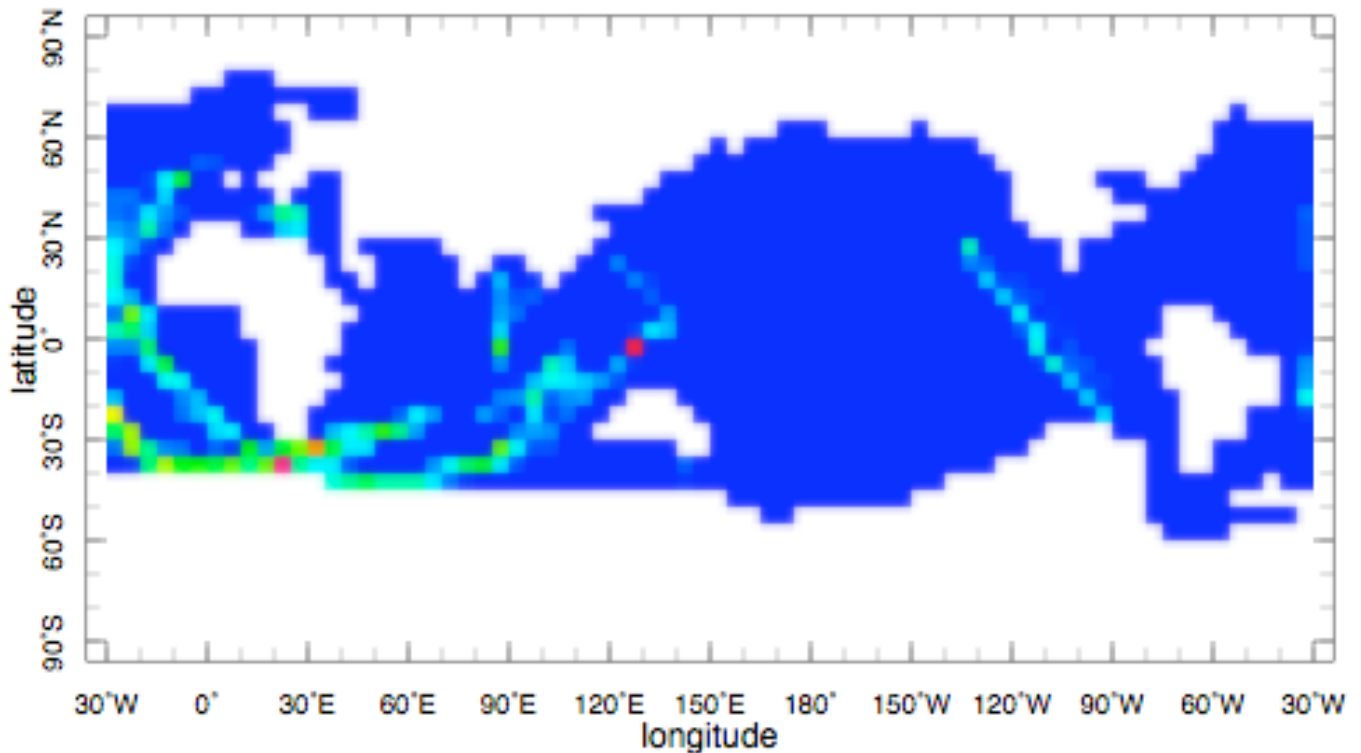
Data uncertainty

Model uncertainty

Foundations of ensemble methods

Forcing scenarios

Downscaling and regional prediction



Dec 1856

Stochastic tools

Cloud models

Precipitation

Comparison of regional models

A regional climate change story

“No Oregon crop better illustrates the sensitivity to and risk of climate change than the state’s high-value, and high-value-added, winegrape harvest.”

What proportion of Oregon agricultural land grows wine?

0.07%

What proportion of Oregon’s industry is wine?

0.2%

Where is the international environmetrics action?

UN Statistical Commission

**Chief Statisticians from 24
countries**

UN Statistics Division •

Environment Statistics •

Methodology

Data collection

Technical cooperation

Coordination

**Intersecretariat Working Group on
Environment Statistics**

Work Session on Water Statistics

ENVSTATS newsletter

UN Environment Programme •

Scientific Advisory Groups

IPCC

Ecosystem Conservation Group

**The Joint Group of Experts on the
Scientific Aspects of Marine
Environment Protection (0/10)**

**The Scientific and Technical Advisory
Panel (0/6)**

**The United Nations Scientific
Committee on the Effects of Atomic
Radiation (0/21)**

What are our professional organizations doing?

International Statistical Institute

**Representative to UN Statistics
Commision**

**Ad hoc responses to particular
issues (Israel, Argentina)**

IBS

**Letter to JAMA re arms-length
evaluation of industry-sponsored
studies**

National professional organizations

Royal Statistical Society

Press & Public Affairs Officer

Working Group on Statistics and the Law

Panel on Statistics of Ecosystem Change

Parliamentary inquiries

American Statistical Association

Director of Science Policy

Media Experts

Task Force on Science Policy

Statements on Creationism and on Climate Change

What else can our organizations do?

NGO status at international conventions

Collaboration with other international scientific organizations

Proactive choices of topics to pursue

International liaison committee

Science Meets Parliament

Australia (FAST)

Canada (PAGSE)

What can individuals do?

Try to influence policy agencies

Expert groups

Public comment on government proposals

Communicate your findings

Go beyond just scientific publications

Learn to talk to journalists

Learn to talk to decisionmakers

Teaching journalists statistics

Statistics Sweden

**UW Communications degree: 5
credit requirement of methods**

**Can be satisfied by CS&SS 320:
Evaluating Evidence**

...has not been offered lately

RSS journalism award

What can our professional community do?

It is our duty to stop statements like:

“Current regional models project an additional warming of 2.7 degrees F above current averages by the decade of the 2020s, and approximately 5.4 degrees F by the decade of the 2050s”

**Don't be a one-armed scientist:
Refuse to provide a single number**

Where to go

Education

MS in statistics and public policy

Statistics education for journalists

Statistical communicators

Workshops

Modern statistics for scientists

Statistics for decisionmakers

Communication for statisticians

Networks

Final message

Get involved

Dare to speak out

What you do matters!