NISS

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NISS Affiliates
NISS SAMSI University Affiliates
2006 Annual Meeting

April 28, 2006

Athens, GA

Agenda

8:00 AM	University Affiliates Breakfast
9:30	Welcome and Introductions
9:40	Report and Plans: NISS and SAMSI
10:30	Break
10:45	Three-Minute Madness
12:00 N	Lunch
1:30	Breakout Discussions •Role of Affiliates in Forming NISS Projects •Shared Postdoctoral Programs •NISS/SAMSI-Affiliate Communication
2:30	Breakout Discussion Reports
3:00	Adjourn
3:00-4:00	Informal Problem Session

Outline

- Developments at NISS
- Affiliates Program
  - Status
  - Events
- NISS Research
- NISS Initiatives
- SAMSI Developments
- SAMSI Programs

Developments at NISS

- Appointment of Nell Sedransk as associate director
  - Nell is also NISS member of SAMSI directorate
- Expanded activity in education statistics
  - ESSI-Statistics
  - NESSI
- New programs
  - New Research Fellowships
  - NISS/Odum Institute Postdoc Program
- Building expansion
- SAMSI renewal

Current NISS Affiliates

- **Corporate**: Avaya Labs, *Bell Labs*, Aventis Pharmaceuticals, General Motors, GlaxoSmithKline, ICAGEN Inc., Merck & Company, Metabolon, Inc., MetaMetrics, Inc., *Nuevolution*, RTI International, SAS Institute, SPSS, Telcordia Technologies, *Wyeth*, *Xerox Innovation Group*
- **Federal agency + national lab**: Bureau of Labor Statistics, Census Bureau, Los Alamos National Laboratory, National Agricultural Statistics Service, *National Cancer Institute*, National Center for Education Statistics, National Center for Health Statistics, National Institute of Standards and Technology, National Security Agency

Current NISS-SAMSI University Affiliates

University of California, *Berkeley* (Statistics), Carnegie Mellon (Statistics), *Connecticut* (Statistics), Duke (Statistics and Decision Sciences & Mathematics), Emory (Biostatistics), Florida (Biostatistics & Statistics), Florida State (Statistics), *George Mason*, Georgia (Statistics), Illinois Urbana-Champaign (Statistics), Iowa (Statistics), Iowa State (Statistics), Johns Hopkins (Applied Mathematics/Statistics), Michigan (Statistics & Biostatistics), Missouri-Columbia (Statistics), North Carolina State University (Mathematics; Statistics), North Carolina at Chapel Hill (Biostatistics; Mathematics; Statistics/Operations Research), Oakland (Mathematics/Statistics), Ohio State (Statistics), Pennsylvania State (Statistics), Purdue (Statistics), Rice (Statistics), Rutgers (Statistics), South Carolina (Statistics), Southern Methodist (Statistical Science), Stanford (Statistics), Texas A&M (Statistics), *Virginia Commonwealth* (Biostatistics)

2005 SPAIG Award
Presented to
NISS Affiliates -- 27 Academic Institution,
9 Government Agencies & Labs,
and 15 Corporations
For collaborations among these organizations through NISS programs leading to the dissemination of advanced statistical methods to corporate and federal agencies and communication of applied problems generated by those organizations to academic researchers. This award is recognition of excellence within the SPAIG concept.
AMERICAN STATISTICAL ASSOCIATION FOUNDED 1839

Affiliates Events: Jul-Dec 2005

Event	*Date*	*Location*
Technology Day: Metabolomics	**7/14/05**	**NISS**
IMSM ’05	7/25-8/2/05	NCSU
JSM Affiliates Meeting	**8/7/05**	**Minneapolis**
NISS/SAMSI JSM Reception	8/8/05	Minneapolis
SAMSI NDHS Opening Workshop	9/11-14/05	RTP
SAMSI FMSE Opening Workshop	9/17-20/05	RTP
The Future of Data Analysis: A Conference in Honor of Jon Kettenring	**9/30/05**	**Basking Ridge, NC (Avaya Labs)**
CMG Workshop	10/6-7/05	RTP
Complex Datasets …: in Memory of Yehuda Vardi (*)	10/21-22/05	Piscataway, NJ (Rutgers)
Workshop: Overarching Issues in Risk Assessment	**10/27-29/05**	**Ames, IA (ISU)**
SAMSI FMSE Credit Risk Workshop	10/31-11/2/05	NISS
SAMSI LVSS Transition Workshop	11/10-11/05	RTP
SAMSI Undergraduate Workshop	11/18-19/05	RTP

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Affiliates Events: Jan-Jun 2006

Event	***Dates***	***Location***
SAMSI ASTRO Opening Workshop	1/22-25/06	RTP
SAMSI FMSE Model Uncertainty Workshop	1/27/06	NISS
SAMSI NDHS Anomaly Detection Mid-Program Workshop (MPW)	2/3/06	NCHS, Hyattsville
SAMSI FMSE Transition Workshop	2/26-28/06	RTP
SAMSI NDHS Social Networks MPW	3/2/06	CMU
SAMSI NDHS Data Confidentiality MPW	3/13/06	NCHS
Workshop on Survey Costs	**4/18-19/06**	**NCES, DC**
Affiliates Annual Meeting	**4/27-28/06**	**Athens, GA**
Chemometrics Mini-Workshop	5/17-19/06	NISS
SAMSI Undergrad Workshop	5/22-26/06	NCSU
Interface 2006 (*)	5/24-27/06	Pasadena
SAMSI ASTRO Transition Workshop	6/11-14/06	Penn State

Affiliates Events: Jul-Dec 2006

Event	*Dates*	*Location*
SAMSI Summer Program on Multiplicity and Reproducibility in Scientific Studies	7/10-28/06	NISS
IMSM ’06	7/24-8/1/06	NCSU
NISS Fifteenth Anniversary Dinner	**8/5/06**	**Seattle**
JSM Affiliates Meeting	**8/6/06**	**Seattle**
NISS/SAMSI JSM Reception	**8/7/06**	**Seattle**
Summer School on the Design and Analysis of Computer Experiments	8/11-16/06	IRMACS, Simon Fraser U
SAMSI COMPMOD Opening Workshop	9/10-14/06	RTP
SAMSI HD/RM Opening Workshop	9/17-20/06	RTP
Sixth Annual Winemiller Conference: Methodological Developments of Statistics in the Social Sciences (*)	10/11-14/06	Columbia, MO (UMo)
Chemometrics Workshop	Fall 06	NISS
SAMSI NDHS Transition Workshop	10/06	RTP
Army Conference on Applied Statistics (*)	10/06	RTP

NISS People

- Director: Alan Karr
- Associate Director: Nell Sedransk
- Assistant Directors: Tom Gerig, Stan Young
- Administrative Assistant: Martha Williamson
- Staff Assistant: Katherine Kantner
  - Supported 50% by SAMSI
- Computer Systems Manager: James Thomas
  - Supported 30% by SAMSI
- Chair, Board of Trustees: Vijay Nair
- Vice-Chair, Board of Trustees: Lee Wilkinson
- Executive Committee: Bill Eddy, Jon Kettenring, Sally Morton, John Rolph, Dan Solomon, Jack Stenner, Jessica Utts

Current NISS Postdocs

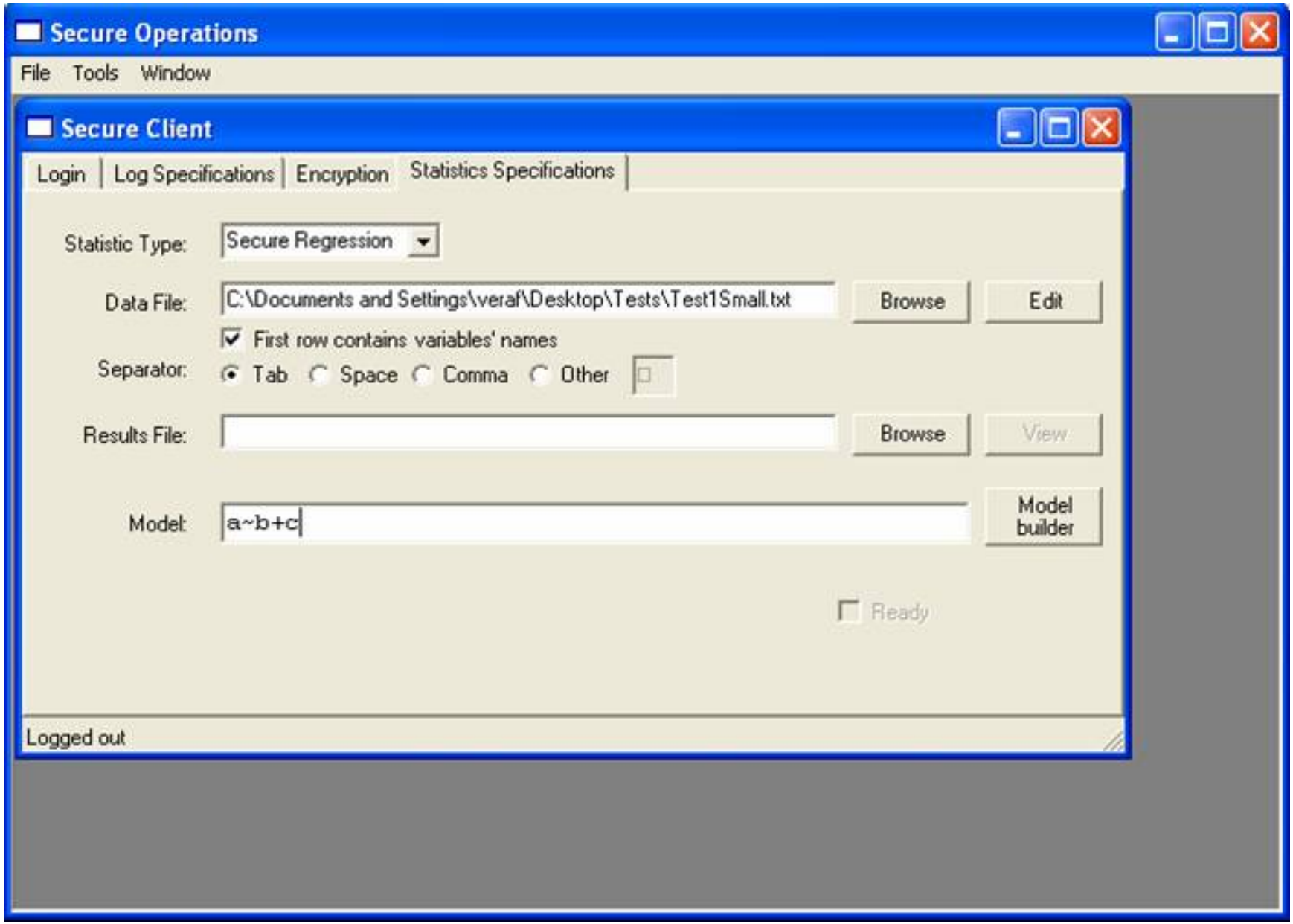
Name	**Ph.D. University**	**Came to NISS**	**Principal Activity**
Michael Last	UC Davis	2005	LWI
Anna Oganian	Catalonia Polytechnic	2003	Data confidentiality
Francisco Vera	South Carolina	2005	Data confidentiality
Mi-Ja Woo	Georgia	2005	Data confidentiality

NISS Director at Work

The Current NISS Research Portfolio

- Digital Government: tradeoffs between disclosure risk and data utility (= data quality)
  - Funding: NSF, BLS, Census, NASS, NCES
  - Affiliate participation: BLS, Census, NCES; CMU, Duke, ISU, Penn State, Purdue, SMU
  - New departures
    - Combinations of SDL methods
    - Preserving constraints
    - Transparency risk
    - Distribution-function-valued measures of risk
    - Secure Computation System

NISS Secure Computation System



Current NISS Research Portfolio

- Software engineering: lightweight instrumentation of fielded software
  - Funding: NSF ITR (CISE)
  - Collaborators: GA Tech, U MD, U WA, Vanderbilt
- Dynamics of social networks: Comparison of *p** and intelligent agent models
  - Funding: NSF MSBS (DMS & SBE)
  - Affiliate participation: CMU, Duke, NCSU, UNC

Current NISS Research Portfolio

- Bioinformatics
  - Chemical informatics
    - Funding: NIH
    - Affiliate participation: NC State
    - Other collaborators: Harvard, MIT
  - Software products
    - PowerArray
    - PowerMV
    - PharmID

Current NISS Research Portfolio

- ESSI-Statistics
  - Lead: AIR
  - Primary partners: NISS, RTI
  - Funding: US Department of Education
  - Current NISS engagement
    - Follow-up to 2004 Task Force on High School Graduation, Completion and Dropout Indicators
    - Data confidentiality
    - Effect sizes
- NESSI (NAEP ESSI)
  - Lead, primary partners, funding same as ESSI-Stat
  - NISS roles
    - 2 employees based in DC, involved in NCES-wide review
    - Research to model ability

Research Initiatives

- NSF Science of Design proposal: Leveraging Application Communities to Support the Design of Evolving Software Systems
  - Subset of LWI partners: GA Tech, UMD
- Experimental analysis of algorithms
  - Workshop at DIMACS: 4/06
- Survey modeling
  - Agent-based, SPC, …
  - Outgrowth of 4/06 survey cost workshop
- Evidentiary statistics
- Proteomics

NISS New Researcher Fellowships

- Purpose: Engage new researchers in ongoing NISS projects
- Structure
  - One-month visit to NISS (usually, in summer)
  - Continuing collaboration
  - Participation in follow-on proposals
    - At NISS
    - At home institution

New Researcher Fellowships

- Requirements
  - Ph.D. in 2000 or later
  - Employed by US industrial, governement or academic organization
- Awards
  - One month salary and benefits
    - Payable through NISS or home institution
  - Travel and living expenses for one-month visit to NISS
  - Possible additional support if matched by home institution

New Researcher Fellowships

- 2006-07 Program
  - Up to three awards
  - Applications due 6/15/06
  - Awards announced 7/1/06

NISS/Odum Institute Joint Postdoctoral Fellowship

- Supported jointly by
  - NISS
  - Howard W. Odum Institute for Research in Social Science (UNC-CH)
- Scientific focus
  - NISS: Education statistics, social networks, …
  - Odum: Analysis of National Survey of Child and Adolescent Well-Being
- Applications currently sought

Other Affiliates Initiatives

- Mobile Annual Meeting
  - 2006: Athens, GA, hosted by UGa
  - 2007: Washington, hosted by BLS (tentative)
  - 2008: NISS, to celebrate new building
  - Beyond: ????
- Workshops at affiliate sites
  - 10/05 Risk Workshop: Iowa State
  - 4/06 Survey Cost Workshop: NCES
- Affiliates Proposal Development Fund
  - No longer operating

Other Affiliates Initiatives

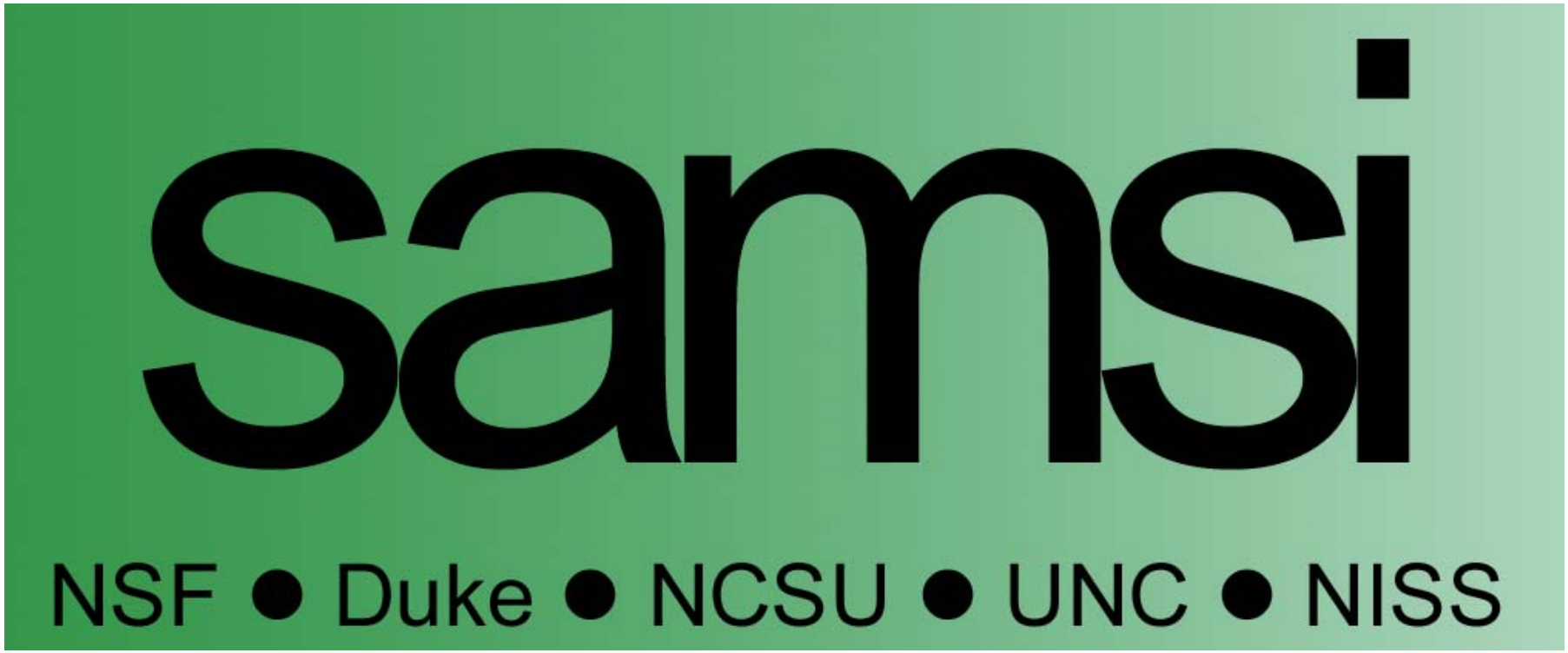
- Conference co-sponsorship
  - MMR 2004, QPRC 2004, …
  - Interface meetings
    - NISS will host 2008 Interface
- Events hosted by affiliates
  - 10/05 Vardi Memorial Conference: Rutgers
  - 10/06 Winemiller Conference: U of Missouri
  - See http://www.niss.org/affiliates/affiliates-events.html
- All of these are ARA-eligible

Building Expansion

- Needed to accommodate
  - Larger NISS called for by Strategic Vision
  - Larger SAMSI called for by renewal proposal
- Rough parameters
  - 9,500 square feet on two floors
  - Extend southeast from current building
  - Contain offices, large classroom, informal meeting space
  - $3M (?????)
  - Construction starts early 2007
  - Occupancy: 1/1/2008

NC AIA Award

- O’Brien Atkins receives NC AIA 2005 Design Award for existing 16,000 square building, built in 1997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SAMSI Summary

- Positive third-year review in 3/05
  - Full funding for 2005-07
  - Strong pressure to become truly national
- Renewal proposal for 2007-12 due 6/1/06
  - Significantly increased scale: $3.5M/year
  - Institutes are not centers
- Site visit: 10/9-11/06
- New space
- Evolving directorate
  - Currently, Jim Berger (Duke), Chris Jones (UNC), Alan Karr/Nell Sedransk (NISS), Ralph Smith (NCSU)

SAMSI Programs

- 2-3 research programs per year, at interfaces
  - Involve both statistics and applied math
  - Often involve probability, computational sciences, OR
- 2005-06
  - Astrostatistics
  - Financial Mathematics, Statistics and Econometrics
  - National Defense and Homeland Security
    - Agricultural Systems
    - Anomaly Detection
    - Data Confidentiality
    - Social Networks

SAMSI Program Structure: Events

- Opening workshop
  - Tutorials (.5 day)
  - Workshop (2 days)
  - Working Group formation (.5 day)
- Working groups
  - Meet weekly
  - Research carried out by subsets of working groups
- Mid-program workshop(s)
- Closing workshop
- Transition workshop

Making SAMSI Truly National

- Deputy Director
  - 2 year, rotating position, filled from national statistics or applied math community
  - Multiple, negotiable roles
- National program leadership
- National participation in working groups
  - Earlier this year: teleconference + previously shared material
  - Currently: teleconference + shared workspace
  - Next year: full-scale video conferencing

2006 Summer Program

- Multiplicity and Reproducibility in Scientific Studies
  - July 10-28, 2006
- Leaders
  - Peter Mueller (M.D. Anderson Cancer Center), Juliet Shaffer (UC Berkeley), Peter Westfall (Texas Tech, Chair); Stan Young (NISS, Local Scientific Coordinator); James Berger (SAMSI, Directorate Liaison), and Ray Carroll (Texas A&M, NAC Liaison)
- Foci
  - Reproducibility
  - Subgroup Analysis
  - Massive Multiple Testing
- Information
  - http://www.samsi.info/programs/2006multiplicityprogram.shtml

2006-07 Programs

- Development, Assessment and Utilization of Complex Computer Models
  - Subprograms on Environmental/Ecological Models, Uncertainty in Models of Granular Materials, Engineering, Biological Modeling, Methodology
  - Leaders: Susie Bayarri (Valencia, Chair), Bruce Pitman (Buffalo), Peter Reichert (EAWAG), Tom Santner (Ohio State), Darren Wilkinson (Newcastle); Dave Higdon (LANL Liaison), Scott Mitchell (Sandia Liaison), Derek Bingham (Simon Fraser; Liaison to the Canadian NPCDS); James Berger (SAMSI; Directorate Liaison); Mary Wheeler (Texas; NAC Liaison)
  - Information: http://www.samsi.info/programs/2006compmodprogram.shtml

2006-07 Programs

- High-Dimensional Inference and Random Matrices
  - Program Leaders: Iain Johnstone (Stanford, Chair), Peter Bickel (UC Berkeley), Helene Massam (York), Douglas Nychka (NCAR), Craig Tracy (UC Davis); Chris Jones (SAMSI; Directorate Liaison), G. W. Stewart (Maryland; NAC Liaison),
  - Information: http://www.samsi.info/programs/2006ranmatprogram.shtml

SAMSI Programs for 2007-08

- Summer Program on Dynamic Treatment Regimes and Multi-Stage Decision Making: June 18-29, 2007
  - Leaders: Marie Davidian (NCSU), Susan Murphy (Michigan)
- Random Media
  - Leaders: TBA; Ralph Smith (SAMSI; Directorate Liaison); Rick Durrett (Cornell; NAC Liaison)
- Risk Analysis, Extreme Events and Decision Theory
  - Leaders: Alicia Carriquiry (Iowa State), Dipak Dey (Connecticut), Wolfgang Kliemann (Iowa State), Stephen Pollock (Michigan); Alan Karr (NISS: Directorate Liaison); Lawrence Brown (Penn; NAC Liaison)
- Wireless Environmental Sensor Networks
  - Leaders: Paul Flikkema (NAU, Chair), Zoe Cardon (Connecticut), Jim Clark (Duke), Don Estep (Colorado State), Deborah Estrin (UCLA), Mark Hansen (UCLA); Nell Sedransk (NISS; Directorate Liaison); Bin Yu (UC Berkeley; NAC Liaison)

Scientific Influence of NISS (i.e., Affiliates) on SAMSI

- 2003-04: INT, DMML
- 2004-05: LVSS
- 2005-06: NDHS
- 2006-07: Computer Models
- 2007-08: Risk Analysis

Potential Programs for 2008-09

- Sequential Monte Carlo methods for scientific computing
- Mathematical and statistical models for neuronal activity
- Agent-based modeling in the social sciences
- Algebraic techniques in statistics and systems biology

Suggestions for Future Programs

- Dynamic networks and their applications
- Psychology program, including psychological brain imaging
- Environmental mapping/spatial epidemilogy
- Nanotechnology of ??? (Brainstorming session in Fall 2006 at Purdue)
- Random graphs
- Quantum computation
- Uses of simulation in optimization
- Mesoscale molecular modeling
- [Environmental] Toxicology
- Functional data [in ???]
- Flow control
- Visual analytics