Mathematical Modeling and Quantitative Methods Specialty Group
1998 Annual report

1. SPECIALTY GROUP STATEMENT

To aid and enhance research and teaching on mathematical models, statistical methods and other computational approaches in geography, and to promote their application in the form of scientific methodology in all subfields of geography.

2. 2000 SG DUES

Dues $3 (student $1)

3. OFFICERS

Chair	Vice-chair/treasurer
Harvey J. Miller	Jonathan Comer
Department of Geography	Department of Geography
University of Utah	Oklahoma State University
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Term: 1998 - 2000	Term: 1998 -2000

Board members

Sucharita Gopal	David Lemberg
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Term: 1998- 2000	Term: 1998-2000

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Term: 1998-2000

Student representatives

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Term: 1999 - 2000

4. SG ACCOMPLISHMENTS

a) Previous year's activities.

1) Revamping MMQM homepage. Using the webpage created by the previous chair as a foundation, we completely revamped the MMQM homepage and added some additional material including a full range of useful links.
See http://www.geog.utah.edu/geography/mmqm/

2) MMQM listserver. We also created an MMQM specialty group discussion listserver (mmqm@geog.utah.edu). Complete instructions can be found at the MMQM homepage.

3) Paper sessions at the Honolulu AAG

Wednesday, March 24

Demographic Modeling in Population Geography (Sponsored by Population and Mathematical Models and Quantitative Methods Specialty Groups)

Organizer: Andrei Rogers, University of Colorado-Boulder

Chair: Andrei Rogers, University of Colorado-Boulder

11:00 Andrei Rogers, University of Colorado-Boulder, Regional Fertility Patterns of Foreign-Borns in the United States: Their Impacts on Population Growth, Age Composition, and Spatial Distribution

11:20 Richard G. Rogers, University of Colorado-Boulder, Robert A. Hummer, University of Texas-Austin, Regional Variation in Race/Ethnicity, Nativity, and U.S. Adult Mortality

11:40 Ge Lin, University of Victoria, Assessing Education and Cohort Effects in US Mobility

12:00 Jacques Ledent, INRS-Urbanisation, Salahudin Muhidin, University of Groningen, Recent Population Movement in the Extended Jakarta Metropolitan Region

12:20 Frans Willekens, University of Groningen, Migration Analysis with Incomplete Data

Scale, Pattern, and Sampling in Spatial Analysis (Sponsored by Mathematical Models and Quantitative Methods Specialty Group)

Organizer: Harvey J. Miller, University of Utah

Chair: Arthur Getis, San Diego State University

1:00 Daniel A. Griffith, Syracuse University, So What is the Actual Size of Your Geographic Sample?

1:20 Andrew J. Krmenec, Northern Illinois University, Spatial Covariance, Scale, and Detection in Heterogeneous Maps

1:40 A-Xing Zhu, University of Wisconsin-Madison, D. Scott Mackay, University of Wisconsin-Madison, Lawrence Band, Univ of North Carolina-Chapel Hill, Sensitivity of Hydro-Ecological Modeling to Soil Landscape Parameterization

2:00 Atushi Masuyama, University of Tokyo, Atsuyuki Okabe, University of Tokyo, A Robust Clustering Method for Time Series Spatial Data and Its Application

2:20 Arthur Getis, San Diego State University, Hot Spot Identification

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Thursday. March 25

Applications of Voronoi and Delaunay Tessellations (Sponsored by IGU Commission on Modeling Geographical Systems and Mathematical Models and Quantitative Methods Specialty Group)

Organizer: Barry Boots, Wilfrid Laurier University

Chair: Barry Boots, Wilfrid Laurier University

2:15 Atsuyuki Okabe, University of Tokyo, Shino Funamoto, University of Tokyo, A Spatial Clumping Method Based on a Delaunay Triangulation and Its Application

2:35 James Pearce, University of Lancaster, Robin Flowerdew, University of Lancaster, Linking Point and Areal Data to Model Primary School Performance

2:55 Daniel B. Haug, Pennsylvania State University, Software Tools for Exploratory Analysis of Mapped Point Patterns

3:15 Barry Boots, Wilfrid Laurier University, Robert South, Bank of Montreal, Relaxing the Nearest Centre Assumption in Central Place Theory

3:35 John D. Radke, University of California-Berkeley, Vladimir Ulyashin, Intelligent Engines, Inc, Weighted Voronoi Diagram

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Friday, March 26

Location Modeling, Site Selection, and GIS (Sponsored by Mathematical Models and Quantitative Methods & GIS Specialty Groups)

Organizer: Thomas J. Cova, University of Utah

Chair: Thomas J. Cova, University of Utah

7:00 Theresa Mau-Crimmins, Western Michigan University, David Lemberg, Western Michigan University, The Educational Nature Center Preserve Problem

7:20 Yong Lao, California State Univ-Monterey Bay, GIS Supported Location Spatial Interaction Modeling for Branch Bank Evaluation: A Case Study

7:40 David Lemberg, Western Michigan University, The Subdivision Habitat Viability Problem

8:00 Richard Church, Univ of California-Santa Barbara, William J. Okin, Univ of California-Santa Barbara, Siting Reserves: Strategic Modeling

8:20 Thomas J. Cova, University of Utah, Richard Church, Univ of California-Santa Barbara, Integrating Models for Optimal Site Selection with GIS: Problems and Prospects

Transportation and Location Modeling (Sponsored by Mathematical Models and Quantitative Methods, Transportation Geography, and GIS Specialty Groups)

Organizer: Alan T. Murray, University of Queensland

Chair: Thomas R. Leinbach, University of Kentucky

9:00 Irene Casas, Ohio State University, Mei-Po Kwan, Ohio State University, Modeling Dynamic Behavior Using a GIS-Based Interactive Travel Simulator

9:20 Michael Kuby, Arizona State University, A Network Design and Project Sequencing Model for China's Railways

9:40 Roger R. Stough, George Mason University, Laurie Schintler, George Mason University, Brien Benson, George Mason University, Estimating the Future Region Wide Benefits of Intelligent Transport Systems

10:00 Samuel J. Ratick, Clark University, Michael Kuby, Arizona State University, Holly Morehouse Garriga, Clark University, A Mathematical Programming Model for Pipeline Scheduling

10:20 Alan T. Murray, University of Queensland, Rex Davis, University of Queensland, Evaluating Equity, Fairness, and Justice Concepts in Public Transport Service Provision

Mathematical Models and Quantitative Methods Specialty Group Business Meeting (6:45 pm to 8:00 pm)

Chair: Harvey J. Miller, University of Utah

Saturday, March 27

Research Issues in GIS for Transportation (GIS-T) (Sponsored by Transportation Geography, GIS, and Mathematical Models and Quantitative Methods Specialty Groups)

Organizers: Shih-Lung Shaw, University of Tennessee, Bruce A. Ralston, University of Tennessee

Chairs: Bruce A. Ralston, University of Tennessee, Shih-Lung Shaw, University of Tennessee

7:00 Bruce A. Ralston, University of Tennessee, Research Opportunities in GIS/T and Logistics

7:20 Harvey J. Miller, University of Utah, Yi-Hwa Wu, University of Utah, Ming-Chih Hung, University of Utah, GIS-Based Dynamic Congestion Modeling to Support Time-Critical Logistics

7:40 William J. DeWitt, University of Tennessee, GIS Diffusion and Implementation in Logistics and Transportation

8:00 Demin Xiong, Oak Ridge National Laboratory, Stephen R. Gordon, Oak Ridge National Laboratory, Communicating Real-Time Spatial Data in ITS

8:20 Shih-Lung Shaw, University of Tennessee, Design Considerations of Integrating Transportation Planning Information System with GIS

Accessiblity in Physical and Virtual Spaces (Sponsored by Mathematical Models and Quantitative Methods Specialty Group)

Organizer: Harvey J. Miller, University of Utah

Chair: Harvey J. Miller, University of Utah

11:00 Robin Flowerdew, University of Lancaster, Michael Gill, University of Lancaster, Measures of Population Distribution to Reflect Service Delivery Costs

11:20 Lauren M. Scott, San Diego State University, Helen Couclelis, Univ of California-Santa Barbara, Arthur Getis, San Diego State University, Intra-Metropolitan Accessibility in Proximal Space

11:40 David C. Wheeler, Ohio State University, Morton E. O'Kelly, Ohio State University, Network Topology and City Accessibility of the Commercial Internet

12:00 Mei-Po Kwan, Ohio State University, Representing and Measuring Hybrid-Accessibility in Space-Time Using GIS

12:20 Otto Huisman, University of Auckland, Pip Forer, University of Auckland, Individual Activities, Aggregate Patterns, and the Time-Geography University Student Life

4) Paper Competitions. The specialty group held two paper competitions at the Honolulu meeting, namely, a *student paper competition* and an *emerging scholar competition* (for professionals within six years of their terminal degree). The SG judges declined to award a prize in the student paper competition. The emerging scholar prize was awarded to Qing Shen (MIT) for his paper entitled "An approach to representing the spatial structure of the information society."

b) Future plans and directions

1) MMQM Newsletter and Webpage - Pat Pellegrini and Alan Murray (Ohio State University; Alan as of August 1999) have agreed to co-edit a new online MMQM newsletter. The newsletter will be linked to the MMQM webpage (which will undergo a major revision this summer since the SG Chair has just acquired and mastered MS FrontPage®).

2) Marketing MMQM - A detailed point of discussion at the business meeting was the disturbing decline in MMQM membership. This is part of a similar trend among many SGs and also reflects the declining membership in the AAG overall (a loss of approximately 200 over the last year). We discussed methods for reversing this trend and

in particular reaching out to the rising AAG membership interested in geographic information science and geocomputation.

We decided to re-open the discussion of a SG name change as part of a new marketing blitz. At this time, we are soliciting a second round of suggested names for the SG. We are looking for names that are more inclusive than MMQM. A good suggestion from the business meeting discussion is the need to attract *users* of quantitative methods in addition to *developers*.

Suggested names are being sent to the mmqm list server (mmqm@geog.utah.edu) or directly to the SG Chair and who will compile a list and send out it out via the listserver. We will then vote via email in order to achieve the maximum degree of input from the membership on this important decision.

5. MEMBERSHIP AND PARTICIPATION

See comments on "Marketing MMQM" above and the Treasurer's Report below. We are very concerned about the stagnant and declining membership in the SG. We are initiating discussions on how to reverse this trend. It seems to us that the major problem is our image: we seem to be identified with the so-called "quantitative revolution" (and therefore a relic of the past) rather than a SG with direct relevance to the cutting-edge trends in geography (particularly geographic information science). Also, we recognize that many AAG members think of MMQM as a "secondary" SG, i.e., a group to join as a complement to other substantive interests such as "population"

The goals of our emerging "marketing campaign" are to reach out to: i) the increasing number of AAG members with interests in geographic information science; ii) AAG members with "substantive" interests. In both cases, we wish to present MMQM as a valuable complement to geographers with those interests. One component of this could be changing the SG name to one with a more contemporary feeling.

On a more positive note, we are noticing a greater degree of participation among SG members. For example, at the Honolulu business meeting there were 20+ SG members in attendance; this is a substantial increase over recent years. Also, we added two student representatives during the Honolulu meeting, both of whom are enthusiastic and have good ideas for increasing participation and membership.

6. FINANCIAL REPORT

a. Account Information

Account Name: MMQM SG AAG
Address: Dept. of Geography
                    225 Scott Hall
                    Stillwater, OK 74077

Account Number: 0406-673558
Bank Name: Wells Fargo Bank, N.A.
Address: P.O. Box 6995
                    Portland, OR 97228-6995

b. Account Status

MMQM SG Account				
Date	**Credit(s)**	**Debit(s)**	**Balance**	**Comments**
01/01/98	**$1,377.45**		**$1,377.45**	**1997 carry-over**
03/23/98	**$685.00**		**$2,062,45**	**1998 Dues**
04/08/98		**$500.00**	**$1,562.45**	**1998 Paper Competition**

c. Income and membership history

Year	**1999**	**1998**	**1997**	**1996**	**1995**
Total Members	**219**	**244**	**285**	**339**	**309**
Dues Revenue	**$598**	**$685**	**$702**	**$339**	**$309**

Dues Structure before 1997: $1 per member

Dues Structure since 1997: $3 per non-student member
                            $1 per student member