URBAN CHANGE - INTEGTRATED MODELING ENVIRONMENT (UCIME)

Annual Report for the National Science Foundation (NSF)

NSF Award ID: 9817761
Annual Report for Period: 02/2000 - 01/2001
Principal Investigators: Clarke, Keith C. and Couclelis, Helen
Organization: University of California, Santa Barbara
Official Title: An integrated Modeling Environment for Urban Change Research

Project Participants

Senior Personnel:

Name: Clarke, Keith C. (Dr. Keith C. Clarke)
Worked for more than 160 hours: Yes

Name: Couclelis, Helen (Dr. Helen Couclelis)
Worked for more than 160 hours: Yes

Graduate Students:

Name: Candau, Jeannette (Ms. Jeannette Candau)
Worked for more than 160 hours: Yes

Name: Liu, Xiahang (Ms. Xiahang Liu)
Worked for more than 160 hours: Yes

Name: Goldstein, Noah (Mr. Noah Goldstein)
Worked for more than 160 hours: Yes

Name: Robinson, Timothy H. (Mr. Timothy H. Robinson)
Worked for more than 160 hours: Yes

Name: Onsted, Jeff (Mr. Jeff Onsted)
Worked for more than 160 hours: Yes

Name: Kelly, Melissa (Ms. Melissa Kelly)
Worked for more than 160 hours: No

Name: Ungerer, Matthew (Mr. Matthew Ungerer)
Worked for more than 160 hours: No

Organizational Partners

- US Geological Survey (USGS).
- Los Alamos National Laboratory (LANL).
- University of Utricht - Dr. Peter Burrough, transfer of PCRaster modeling software to the project.
- US Environmental Protection Agency (EPA).

Other Collaborators or Contacts

- Collaboration with Prescott College, Arizona, Dr. Will Orr.
- Collaboration with Penn State University, Dr. Toby Carlson and PhD student Traci Athur.
- Collaboration with the University of Massachusetts, PhD student Elisabete Alves Da Silva, implementation of the model in Oporto, Portugal.
- Collaboration with the County and City of Santa Barbara, specifically the regional Economic Community Project (ECP) (with support from the Community Environmental Council (CEC)) PhD student Jeff Onsted, implementation of "See the Future" model for the City.

Activities and Findings

Project Activities and Findings:

- Have been working on the new release of the model code (Version 3.0) in collaboration with a programmer at the EPA.
- Revised the UCIME project web page (http://www.geog.ucsb.edu/~kclarke/ucime/index.html).
- Project Gantt Chart completed.
- Finalized the implementation of the model in Oporto, Portugal, a collaboration with Elizabete Alves Da Silva.
- Completed two papers on the Portuguese case studies.
- Continued the collaborative urban growth modeling effort in Mexico City, UNAM.
- Drs. Couclelis and Clarke successfully completed a semester long seminar at UC Santa Barbara entitled on Urban Growth Modeling, 10 graduate students participated. The seminar web page is http://www.geog.ucsb.edu/~kclarke/ucime/seminar2000.htm.
- Conference presentation at the URISA 2000 Conference, Orlando, Fl.. (August)
- Conference presentations given at the IV International Conference on GIS and Environmental Modeling, Banff, Canada. (September)
- Project team members participated in workshops on "Landuse Modeling" and "The Theory of Integrated Modeling" at the IV International Conference on GIS and Environmental Modeling Conference in Banff. (September)
- Conference presentations given at GIScience 2000 Conference, Savannah, Georgia. (October)
- Conference presentation at the Artificial Life 7 Conference, Portland, Oregon. (October)
- Working on the integration of watershed modeling with the urban growth model.
- Hosted a UCIME research and review meeting at UCSB (March), 15 participants (USGS, UCSB, LANL and EPA).
- Goldstein, Liu, and Robinson received Summer Student Scholarships for Los Alamos National Laboratories, Los Alamos, New Mexico, and spent 2-5 weeks at LANL doing research.
- Monthly project team meetings, minutes posted on project web page.

Research Training:

- GIS skills.
- Modeling experience.
- General research preparation and conference presentations.
- Population density can be partially modeled using returns from the Dense Meteorological Satellite program.

Education and Outreach Activities:

- Revised and update regularly the project web page at http://www.geog.ucsb.edu/~kclarke/ucime/index.html.
- Hosted a UCIME research and review meeting at UCSB, March.

Publications and Products

Journal Publications:

Candau, Jeannette. 2000. Visualizing Modeled Land Cover Change and Related Uncertainty. First International Conference on Geographic Information Science, GIScience 2000. Savannah, Georgia, USA, October 28-31, 2000. (Abstract of the paper, pdf file)

Candau, Jeannette, Steen Rasmussen and Keith C. Clarke. 2000. Structure and Dynamics of a Coupled Cellular Automaton for Land Use/Land Cover Change. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September 2 - 8, 2000. (Abstract of the paper)

Candau, Jeannette. 2000. Calibrating a Cellular Automaton Model of Urban Growth in a Timely Manner. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September. (Abstract of the paper)

Candau, Jeannette and Keith C. Clarke. 2000. Probabilistic Land Cover Modeling Using Deltatrons. URISA 2000 Conference. Orlando, FL; August. (paper)

Candau, Jeannette. 2000. Modeling Land Cover Change Using Modified Cellular. Aurora Partnership Conference. Charleston, South Carolina; November. (Presentation).

Clarke, Keith C., and Leonard J. Gaydos. 1998. Loose-coupling a cellular automation model and GIS: long-term urban growth prediction for San Francisco and Washington/Baltimore. Geographical Information Science. Vol. 12, No. 7, pp. 699-714.

Couclelis, Helen and Xiahang Liu. 2000. The geography of time and ignorance. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September. (Abstract of the paper)

Couclelis, Helen. 2000. A Plenum Ontology of Spatial Change. First International Conference on Geographic Information Science. Savannah, Georgia, USA, October. (Abstract of the paper, pdf file)

Goldstein, Noah, Jeannette Candau and Max A. Moritz. 2000. Burning Santa Barbara at Both Ends: a study of fire history and urban growth predictions. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September. (Abstract of the paper)

Goldstein, Noah. 2000. Do Cities Learn From Getting Burned?. Artificial Life 7 Workshop Proceedings, Edited by C.C. Maley and E. Boudreau. Portland Oregon, August. (Abstract of the paper)

Liu, Xiaohang. 2000. Urban Growth Modeling: a change amendment perspective. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September. (Abstract of the poster)

Liu, Xingong and Michal E. Hodgson. 2000. Data Model and Operators for a Vector Field. First International Conference on Geographic Information Science. Savannah, Georgia, USA, October. (Abstract of the paper, pfd file)

Sutton, Paul. 2000. Progress in empirical measurement of the Urban Environment. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September. (Abstract of the paper)

Ungerer, Matthew. 2000. Implementation of cellular automata models in a raster GIS dynamic modeling environment. 4th International Conference on Integrating GIS and Environmental Modeling (GIS/EM4). Banff, Alberta, Canada, September. (Abstract of the paper)

Books or Other One-time Publications:

Web/Internet Sites:

- http://www.geog.ucsb.edu/~kclarke/ucime/index.html
- http://www.geog.ucsb.edu/~kclarke/ucime/seminar2000.htm

Other Specific Products:

Contributions

Contributions within the Discipline:

Contributions to Other Disciplines:

Contributions to Education and Human Resources:

- PhD student Paul Sutton, supported by the project, was hired as an Assistant Professor at the University of Denver.

Contributions to Resources for Science and Technology:

Contributions beyond Science and Engineering:

Special Requirements

Objectives and Scope: None.
Change in Objectives or Scope : None.
Special Reporting Requirements: None.
Unobligated Funds : Less than 20% of current funds.
Anima, Human Subjects, Biohazards : None.