**Minutes**
**UCIME Group Meeting**
**October 22, 2001**

**** Important dates and announcements:**

- Our welcome to Enki (Yoo Eun Hye, enki00@hotmail.com). She is a new student who will be working with SLEUTH/UCIME. Please take the time to go by and say hello.
- Our next UCIME meeting will be **11/26/01 at 9:00 am** in Keith's office.
- Those who would like to go to LANL, please contact Keith, as there are funds available.
- The Banff book is out. Still waiting on the CD.
- Our thanks to Jeannette for bringing bagels and cream cheese for the group.

**Attendees:** Keith Clarke, Helen Couclelis, Jeanette Candau, Noah Goldstein, Sean Mullin, Jeff Onsted, Xiaohang Liu, Melissa Kelly, Tim Robinson, Yoo Eun Hye and Martin Herold.

**Update Reports from each team member:**

**Noah:**

- Noah installed a new hard drive after his crashed last Thursday. (Yes, he just lost a hard drive 3-4 months ago. What he is doing with these hard drives is the question.) Some data was lost, but nothing major.
- He is working on a proposal for the EPA that is due in a few weeks about using urban growth models and fire models for risk assessment. It involves recreating past fire histories.
- He will be taking on a fellowship appointment at Santa Fe Institute for 1 month next summer working on social network disaster theory.
- He is writing a paper with Keith, and has been talking to Chris Funk about references. It involves back casting in a way similar to what global modelers do, and will include two different methods of using the Santa Barbara data.
- He has committed to a speaking engagement organized by Norm Johnson, on new perspectives on the social sciences.
- A meeting was held a few weeks ago to discuss major urban landuse classification, with the goal of unifying our classification methodologies throughout the various groups working in this area. Noah discussed some of the topics (urban park designation, agricultural land, greenhouses, rangeland, etc). The group met after the UCIME meeting to continue the discussion. The goal is to establish clear definitions for landuse types across all groups using the data, which should eliminate the situation, now of different class acreage determinations from the same data set.
- He attended the National Academy of Science Colloquium meeting on Agent Based Modeling and Emergent Phenomena in the Social Sciences. The meeting was at the beginning of October and took place in Irvine. Brian Berry, Douglas Kiel and Euel Elliott organized the meeting. There were workshops, of which one was on landuse change modeling (organized by Billy Lee Turner and co-sponsored by CSISS). Helen

attended the conference and gave a review paper on Agent Based Modeling. Conference organizers will be developing an online glossary and metadata standards for Agent-Based Modeling with the goal of improving shared knowledge and creating common terminology. No proceedings for the meeting are available but the session papers given are on the colloquium web (http://www4.nationalacademies.org/nas/nashome.nsf/73071e4e0498fbd885256808004f236b/89f7c00da788f7f585256a41006c7686?OpenDocument) .

**Helen:**

- Helen followed up on Noah's review of the meeting in Irvine. She spoke a bit about the history of Agent Based Modeling. Billy Lee Turner and a few others have been doing modeling with agents in a landuse change context for some time now. Her sense is that it adds an additional layer of complexity that might not be necessary. Agent Based Modeling can give the false impression that individual decisions can be represented/modeled. KLUG and METROPOLIS are examples of some of the earliest models of this type (1960's) and to a degree the approach has been recently rediscovered.
- Keith suggested that Agent Based Modeling might be an interesting topic for the final seminar for this NSF award. Potential software for a simulation modeling class might be StarLogo, A-Scape and Swarm (although it might be too complicated).

**Sean:**

- He continues to work at Planet Earth Science on the interface for UCIME. The functionality of the sliders has been replaced with set scenarios to facilitate closure. The sliders could be dropped back in when the models are truly integrated. Be sure to stop by Keyhole and review the interface. Sean will be continuing on the project through January.
- The tools of the interface are being created in Macromedia Director. You code behaviors that you drop onto items (buttons, etc). It has a cast (the behaviors or graphics), script (text) and a score (a listing of frames and channels).
- Sean is a singer in a band called Falsehood. They were in San Diego over the weekend doing a gig. We are hoping that he will give us soon promotional CDs.

**Jeannette:**

- She has finished her multiple calibration runs for her thesis. She is now concentrating on writing.
- She has also be supplying output for the UCIME interface project. She hopes to produce historical layers in gray tones.
- SLEUTH is running in pseudo parallel here on our workstations, no different than before. She is going to talk with Ron Matheny and Dave Hester about options. UCSB College of Engineering parallel research lab might be available.

- Upon finishing her master's thesis, she will be focusing her energies on a statistics paper and crafting her dissertation proposal (a comparison of model outputs from SLEUTH and Landis' modified CUF2).

**Xiaohang:**

- She has been working on her population density model, specifically curves. These require looking at different types of spatial units and matching their population density as interpolated from the census with structural characteristics such as transportation, distance, etc. The goal is to use only SLEUTH inputs and predict population density output for any time period, hence integrating to come up with population for a given time period. The first step is to estimate the total population for a given cluster and the second would then use interpolation techniques to define population on a finer scale inside of that cluster (blob), down to the pixel level.
- Keith is going to look for someone to help for her as results are needed soon.

**Melissa:**

- She has been working on her dissertation proposal and in doing so compiling a committee. The idea is to develop habitat health indicators based on aerial photography. The topic is evolving towards indicators of landuse change where the change impacts (both positively and negatively) the functionality of an ecosystem (fragmentation, diversification, etc). A numeric evaluation and ranking system could be developed to quantify the analysis. Is the riparian corridor functioning? Are past, present and future changes positive or negative? Maybe focusing on the geometry of change (connectivity, proximities, etc) and the timing of that change (fast, slow, sequencing, etc) would be a way to go.
- She will be starting the 1976 landuse layer here soon.

**Jeff:**

- Jeff hasn't done any presentations since our last meeting but he has meet with ECP various times. They have been restructuring and Jeff has been getting new members up to speed.
- He has been working on the webification of the SCOPE model. There is a working version on the web and the new one will be coming soon. Please check it out at Default_XREF_styleREFhttp://zenith.geog.ucsb.edu/scope_new. It is being done in VB script, which has an associated learning curve. The steps should be for the UCIME team to run it through its paces, then the ECP board and then the rest of the world.
- The difference with the new version of the model is that it predicts a population decline for the South Coast, where the year 2000 was the maximum population and from now on out the model predicts that it will go down. This is in contrast to the Economic Forecast Project, Santa Barbara County, etc. The cause might be from the replacement of small with larger houses, high housing prices, higher income households, a demographic switch, aging populations, the number of retirees, smaller families,

approaching build out, etc. UCSB is only 400 students shy of reaching the cap of the maximum number of students.

- He has begun the write up of the housing, population, and business sectors. He needs to do a literature review. These will segue into his master's thesis. Coupling Scope with SLEUTH is another issue being addressed, which will be a two-way exchange. Good news is that SLEUTH and Scope forecast numbers are close.
- His next presentation will be for the Carpinteria Valley Association.
- Jeff is now off the ECP payroll and is being funded by UCIME.

**Tim:**

- Tim applied for a second round of funding through UC Marine Council, with an improve proposal and further developed study. The proposal was recommended to go off campus to a UC wide competition. He is hopeful that funding will be online by winter term.
- The proposal writing process led into a detailed documentation of how his fieldwork will go this winter as he develops nutrient export coefficient models for various watersheds here on the South Coast. A good amount of his summer has gone into installing the equipment needed to conduct the proposed research (stream gauging stations, auto-samplers, etc). The desire is to couple the output of the model with SLEUTH such that water quality can play a roll in how SLEUTH predicts urban growth.
- Ready for the exclusion layers are groundwater recharge and riparian setback (rural, urban, agriculture, coast) layers. He will be working with Noah to finalize their incorporation. He presented a print out of each with a description of the multiple layers and references that went into each. He worked with the County of Santa Barbara's Water Agency to assure a collaborative effort. These layers would work right into a green scenario for a model run.
- Tim organized a presentation on the results from the first year creek sampling done by the terrestrial side of the Santa Barbara Coastal LTER. It was a Watershed Science Group gathering and was well attended.

**Martin:**

- He has been working with SLEUTH as his dissertation topic addresses the combination of remote sensing and urban modeling, specifically using spatial metrics to model urban areas. His interests are in mapping of the urban extent at different scales and intraurban discrimination from remote sensing.
- This summer he has been working on a conterminous US dataset from various sources. He is waiting for Modis data (Alan Strahler), which should be online soon. This means that we will be able to run SLEUTH on the entire lower 48 States. The problem of Modis data is that it was designed to work in Africa and the imagery we get for the US is a bit distorted because of the projection.
- He presented last week at the Geography colloquium his dissertation topic, which is Remote Sensing and Spatial Metrics for Urban Area Mapping. He will be looking at data with different scales to look at spatial structure.

**Keith:**

- The LANL money is here and is designed for collaborative efforts between UCSB and LANL. This means that we can go to LANL anytime during the year for one to four weeks. Keith is going, Helen would like to go and Mark Probert will be going to learn MPI. There is also support for one UCSB student all year. Noah might be the recipient of that funding.
- Elisabete Da Silva invited Keith to Portugal (Lisbon/Oporto). They have two papers in press, one in **Environment and Planning** and the other in **Computer, Environment and Urban Systems**. One looks at the process of calibration and the other focuses on the prediction results from the two cities of the study (Oporto and Lisbon). The next phase of her dissertation research was to run a Charette, which was held while Keith was there. This entailed bringing about 80 stakeholders to the table to discuss urban grown and what that actually means on a local scale. Both cities are experiencing massive urban growth.
- Please check out the discussion board on the Gigalopolis web page. There have been some good and informative debates.
- ECP needs a general plan scenario. Jeff will take the lead on that and a report card is needed for the next meeting on 11/5.
- He reviewed a paper for IJGIS on a SLEUTH application to Atlanta. The paper was well done and should be shortly in press.
- While at the Geocomputation meeting in Brisbane, crossed paths with Paul Box from the University of Utah who is working with SLEUTH. They have implemented the model in Swarm and demonstrated their results, which is a huge breakthrough.