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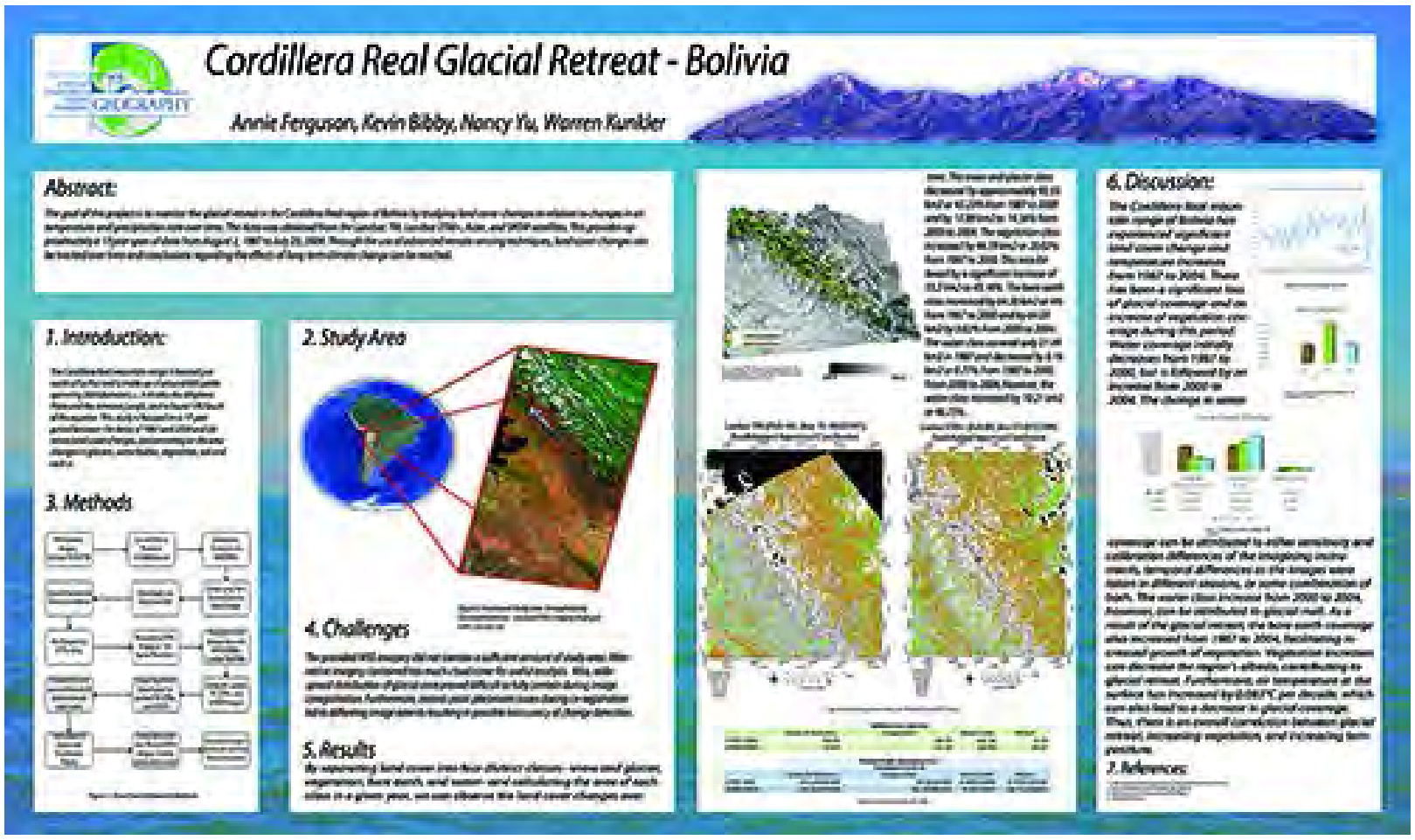
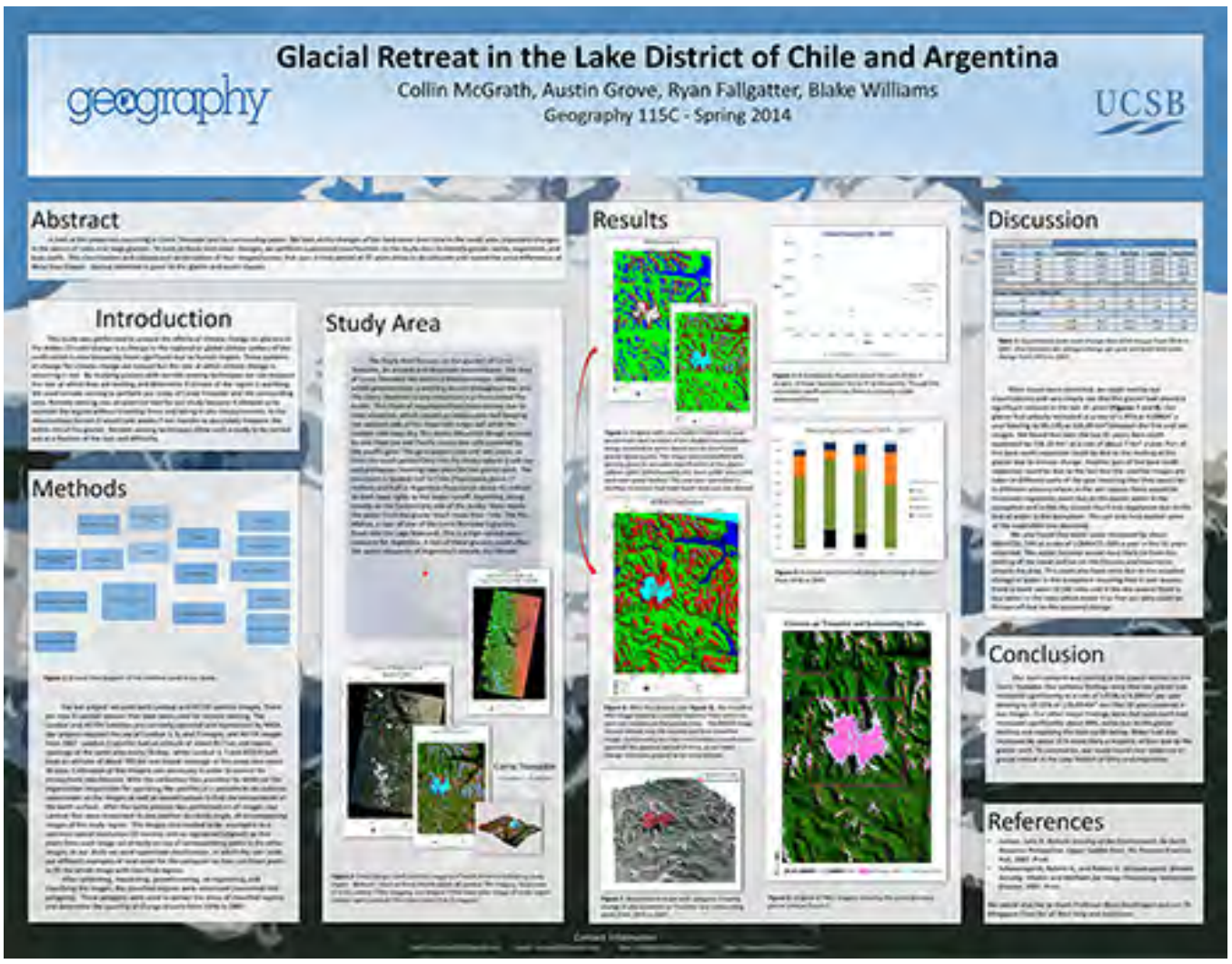


Cordillera Real Glacial Retreat—Bolivia

Annie Ferguson, Kevin Bibby, Nancy Yu, and Warren Kunkler
Department of Geography, University of California, Santa Barbara

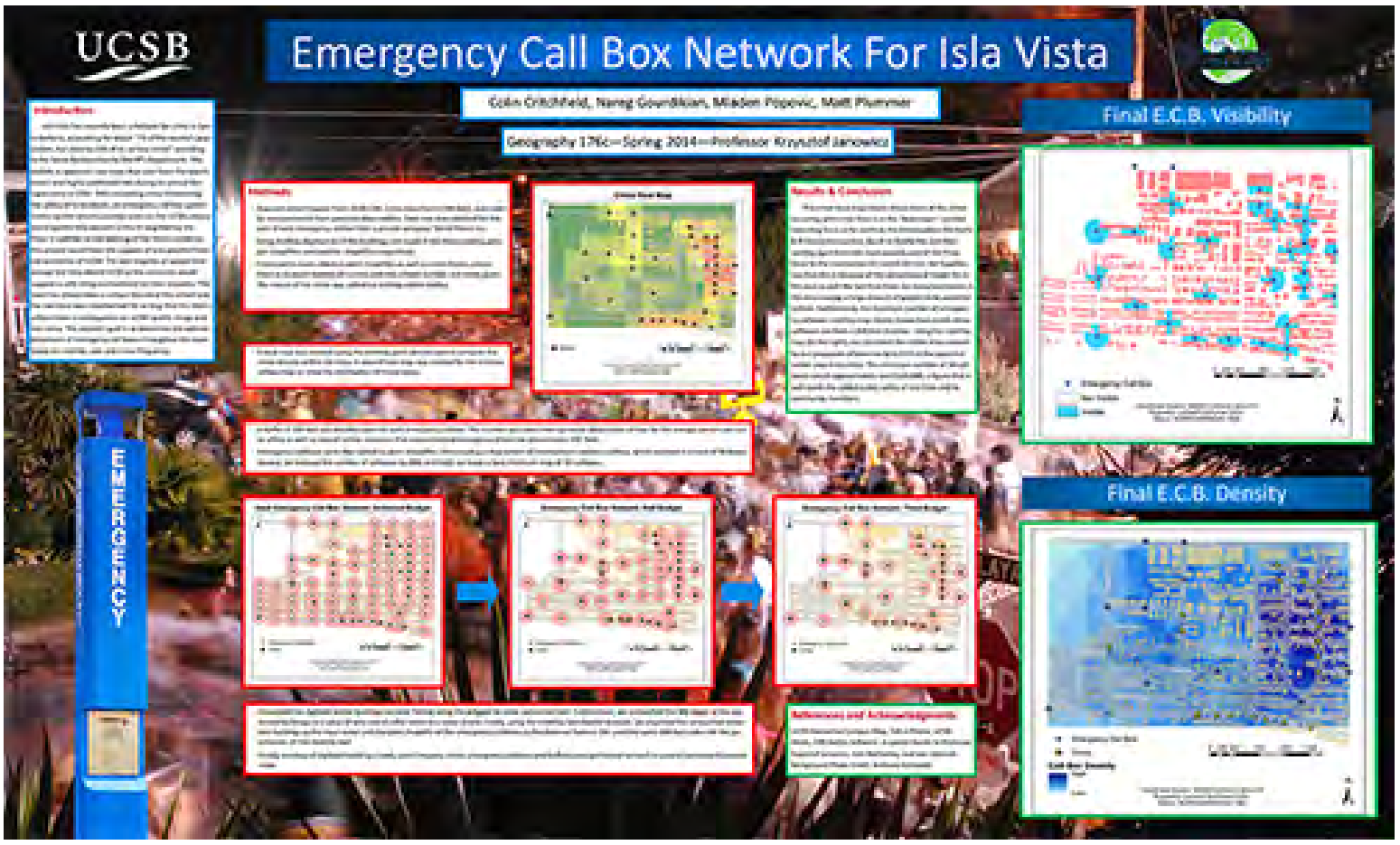
The goal of this project was to monitor the glacial retreat in the Cordillera Real region of Bolivia by studying land cover changes in relation to changes in air temperature and precipitation rate over time. Through the use of advanced remote sensing techniques, land cover changes were tracked, showing a significant loss of glacial coverage and an increase of vegetation from 1987 to 2004.



Glacial Retreat in the Lake District of Chile and Argentina

Collin McGrath, Austin Grove, Ryan Fallgatter, and Blake Williams
Department of Geography, University of California, Santa Barbara

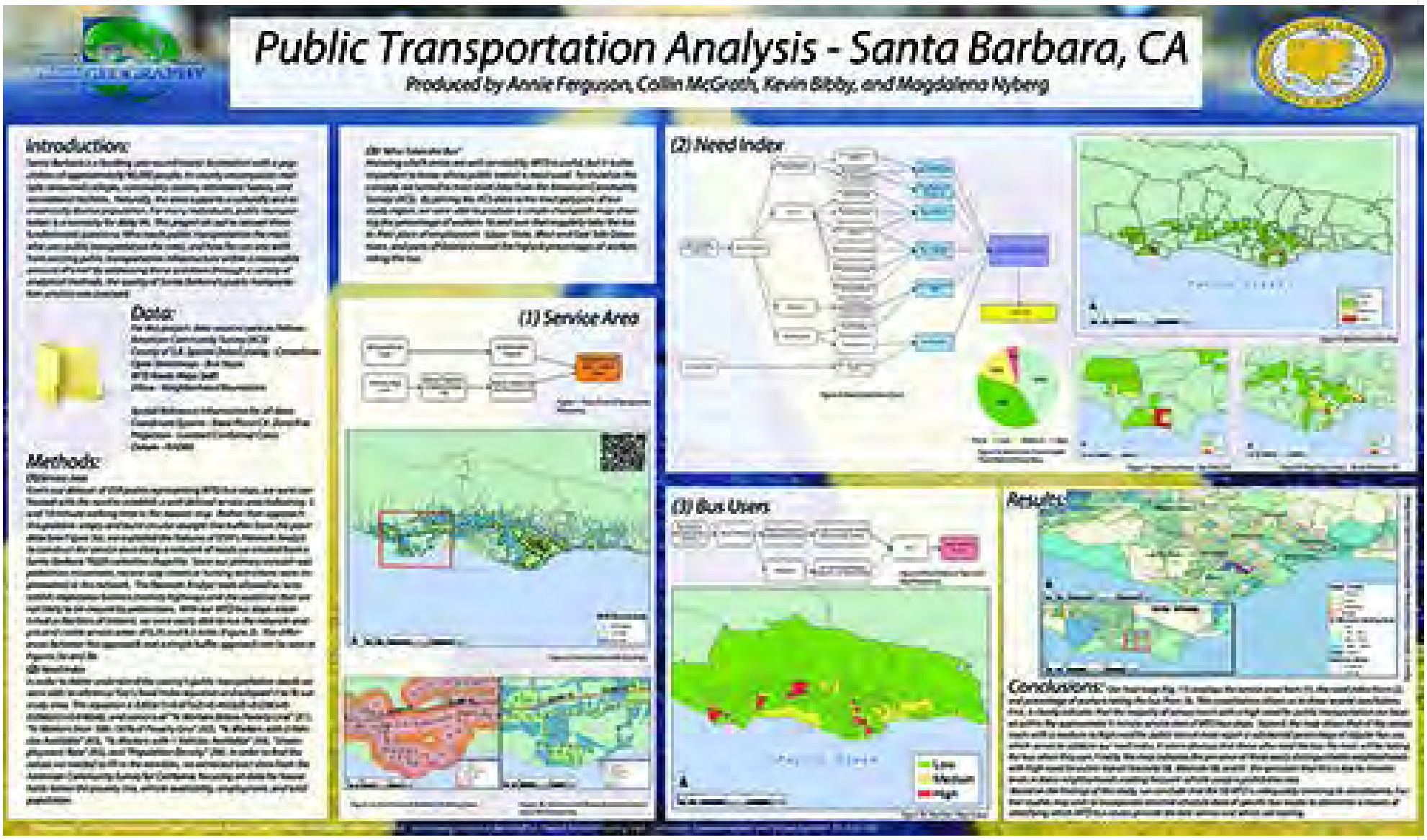
The effects of climate change on glaciers in the Andes are examined with remote sensing techniques to measure the rate at which lakes and large glaciers change over time in the Cerro Tronador area. To look at these land cover changes, supervised classifications are performed in the study area to identify glacier, water, vegetation, and bare earth over a time span of 31 years.



Emergency Call Box Network for Isla Vista

Colin Critchfield, Nareg Gourdikian, Mladen Popovic, and Matt Plummer
Department of Geography, University of California, Santa Barbara

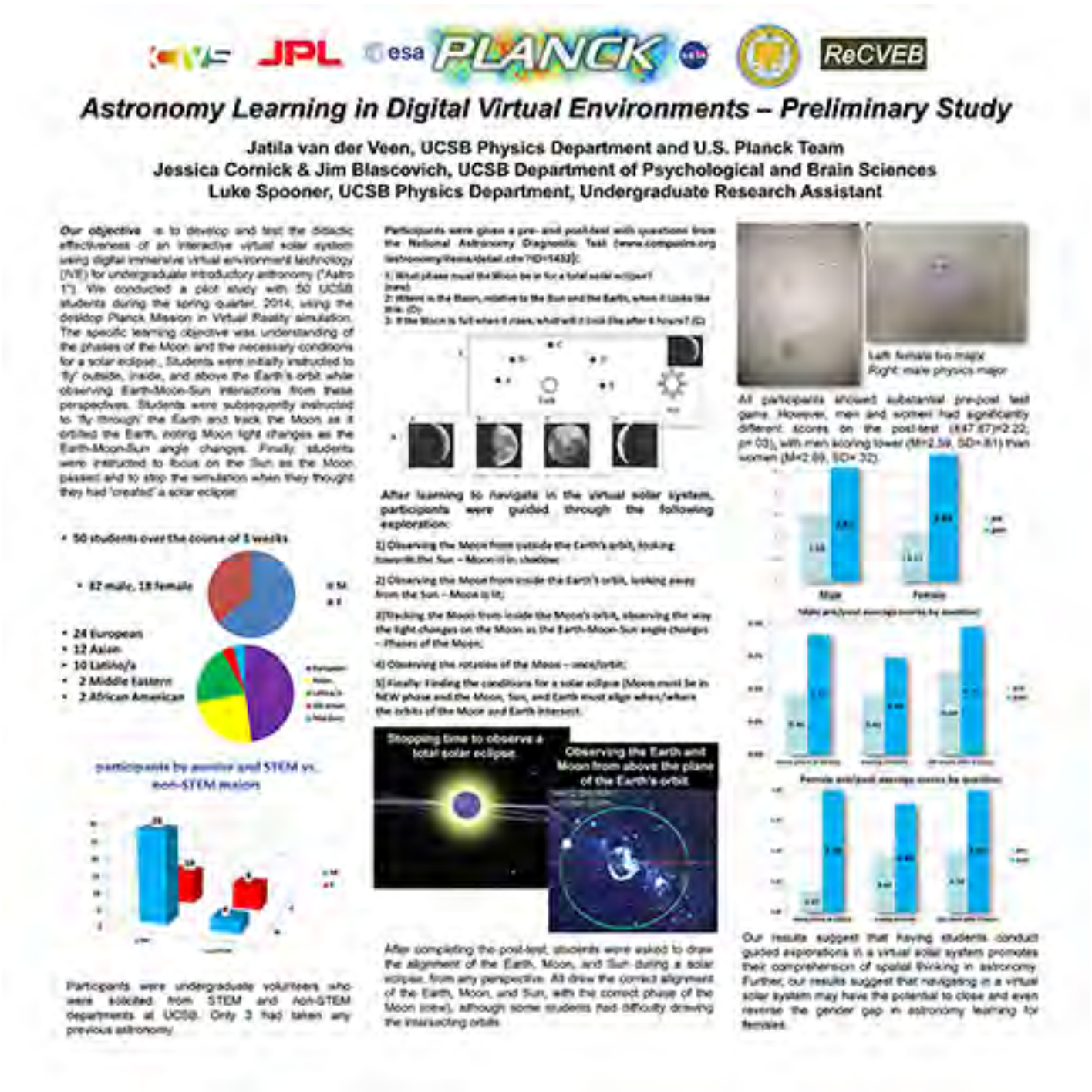
With increasing crime threatening the safety of Isla Vista residents, an emergency call box system similar to the one that exists on the UCSB campus would greatly help prevent crime in the community. Creating a heat map showing the greatest occurrence of crime in Isla Vista, the project goal was to determine the optimal placement of emergency call boxes throughout the town based on visibility, cost, and crime frequency.



Public Transportation Analysis, Santa Barbara, CA

Annie Ferguson, Collin McGrath, Kevin Bibby, and Magadalena Nyberg
Department of Geography, University of California, Santa Barbara

The adequacy of the public transportation system in Santa Barbara is evaluated using an overlay of MTD service areas with a transportation-need index, and data about people in the work force using public transportation.



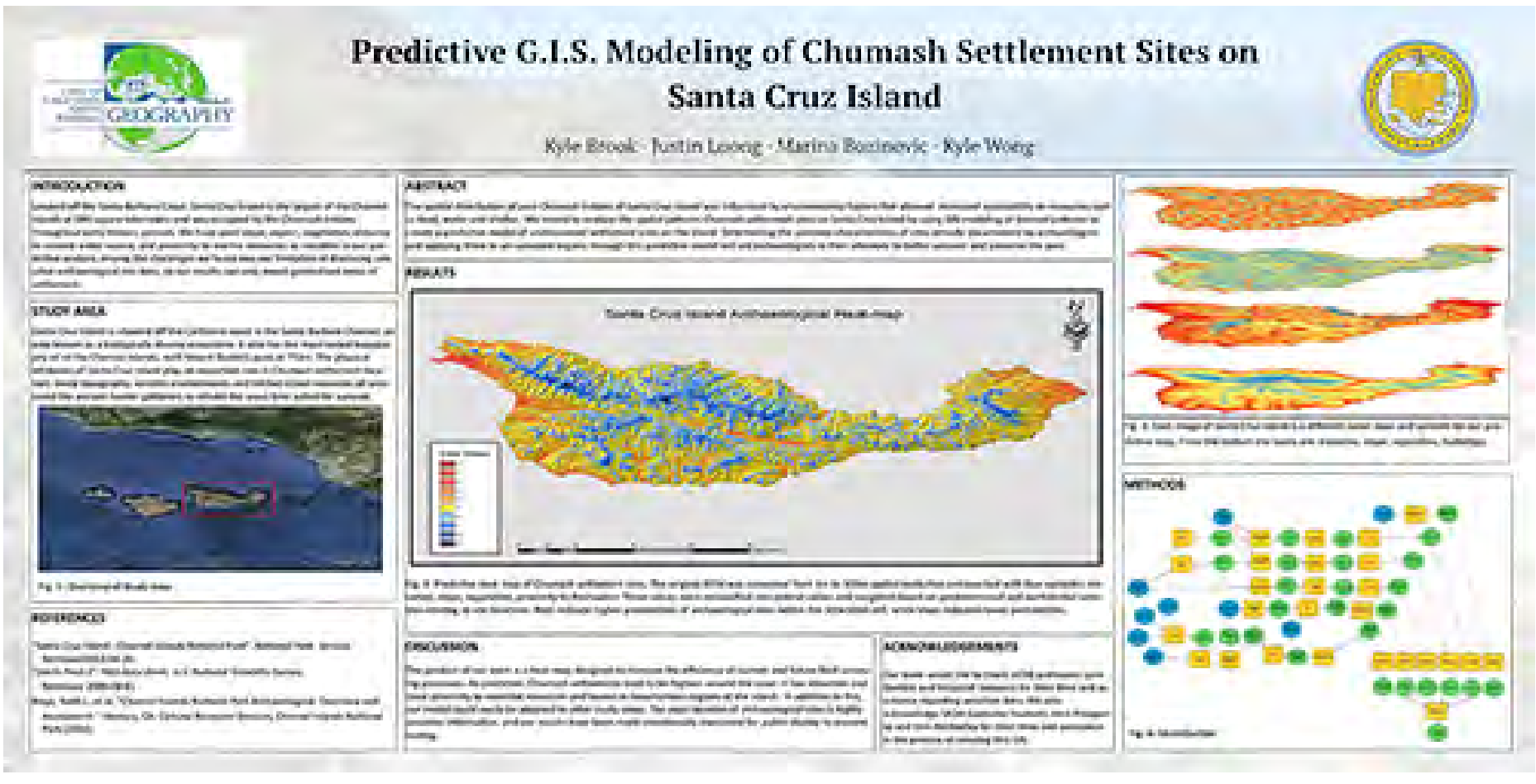
Astronomy Learning in Digital Virtual Environments—Preliminary Study

Jatila van der Veen
Physics Department and U.S. Planck Team University of California, Santa Barbara

Jessica Cornick and Jim Blascovich
Department of Psychological and Brain Sciences University of California, Santa Barbara

Luke Spooner
Physics Department, Undergraduate Research Assistant University of California, Santa Barbara

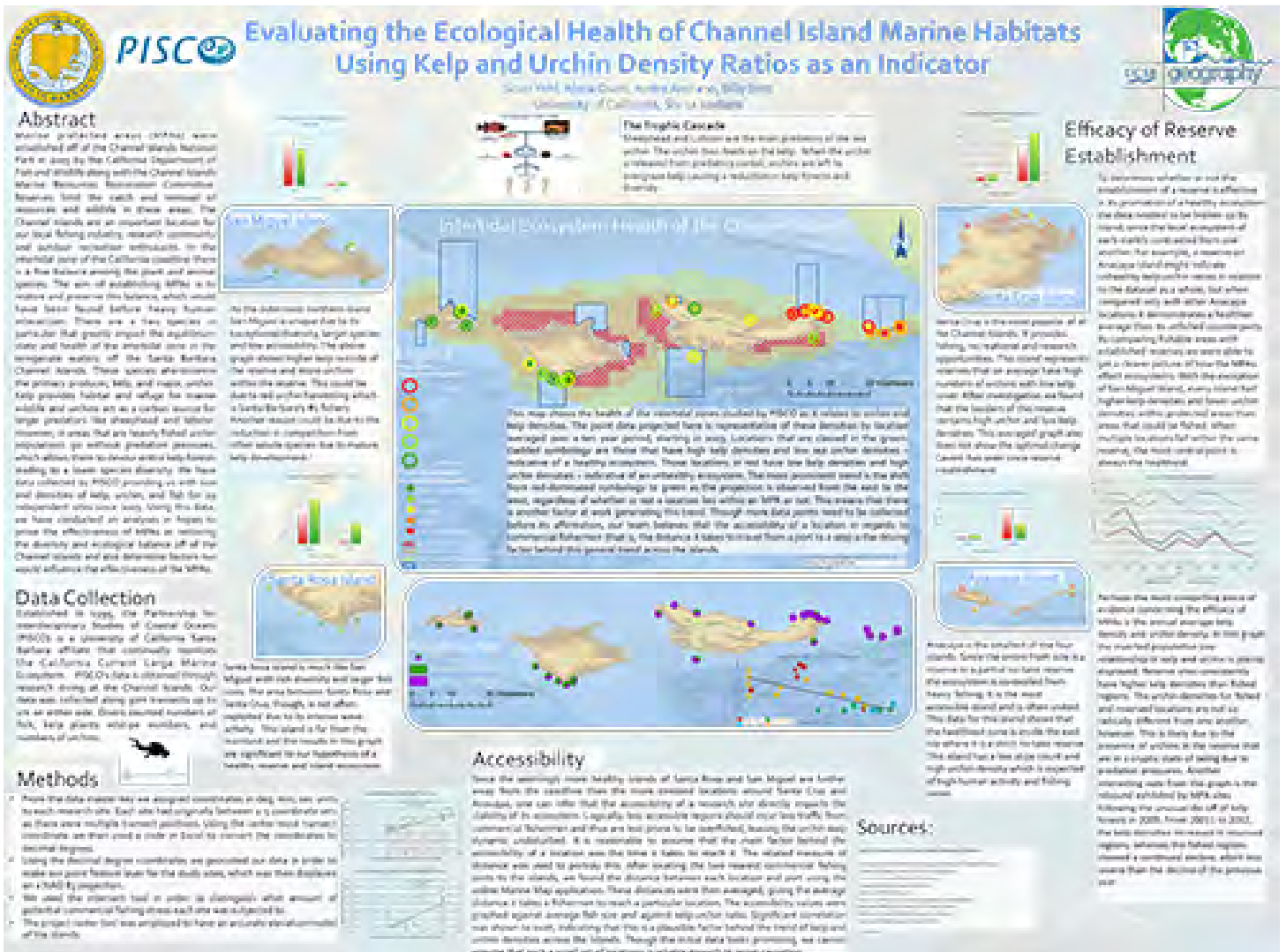
The objective of this project was to develop and test the didactic effectiveness of an interactive virtual solar system using digital immersive virtual environment technology (IVE) for undergraduate introductory astronomy (Astro 1). A pilot study was conducted with 50 UCSB students, using the desktop Planck Mission in Virtual Reality simulation.



Predictive GIS. Modeling of Chumash Settlement Sites on Santa Cruz Island

Kyle Brook, Justin Luong, Marina Bozinovic, and Kyle Wong
Department of Geography, University of California, Santa Barbara

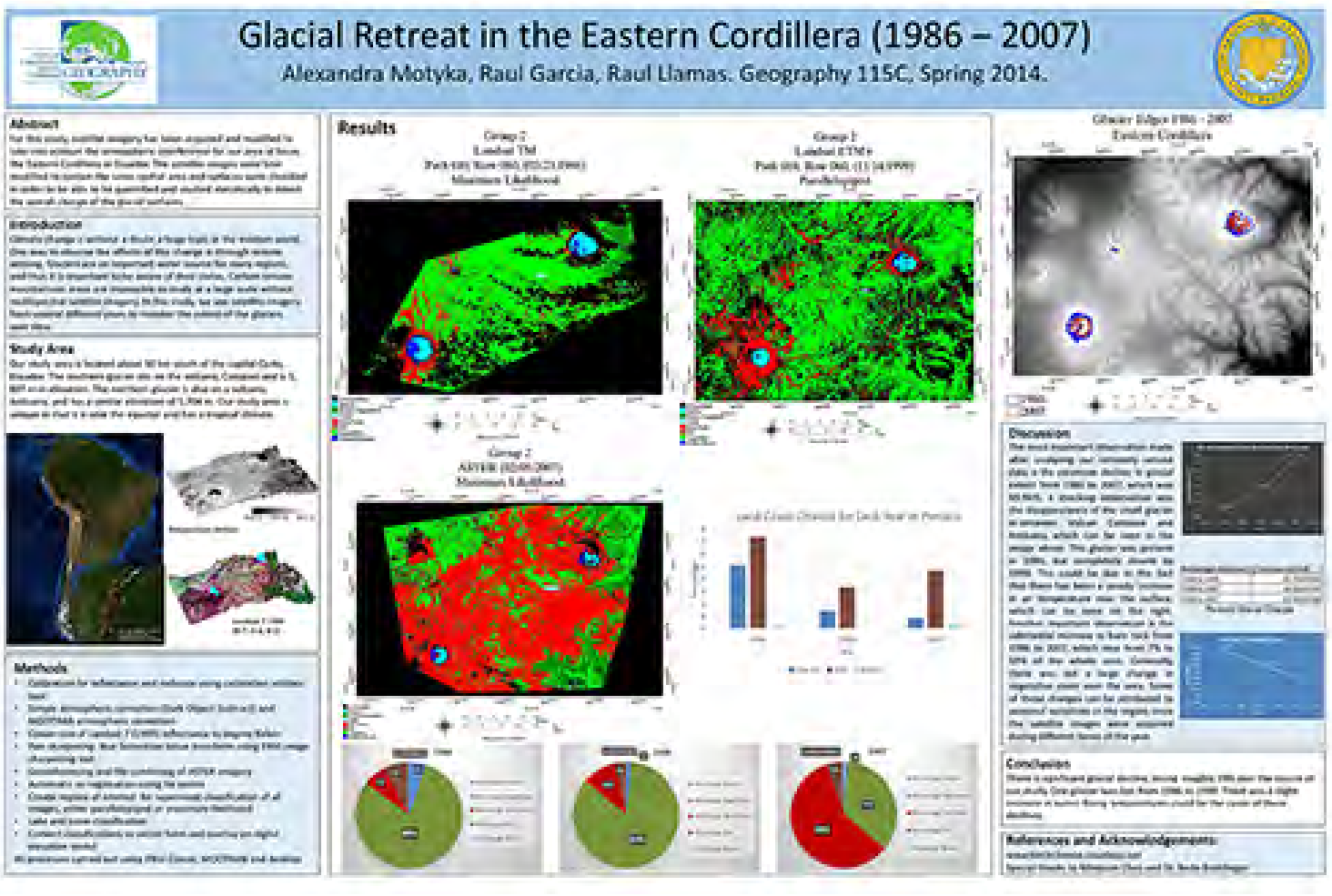
The spatial distribution of prehistoric Chumash Indian sites on Santa Cruz Island was influenced by the accessibility of resources such as food, water, and shelter. Determining the common characteristics of sites already documented by archaeologists and applying these criteria to un-surveyed regions, GIS modeling of known patterns was used to create a predictive model of undiscovered settlement sites on the island.



Evaluating the Ecological Health of Channel Island Marine Habitats Using Kelp and Urchin Density Ratios as an Indicator

Scott Yehl, Alana Osaki, Andre Arellano, and Billy Britt
Department of Geography, University of California, Santa Barbara

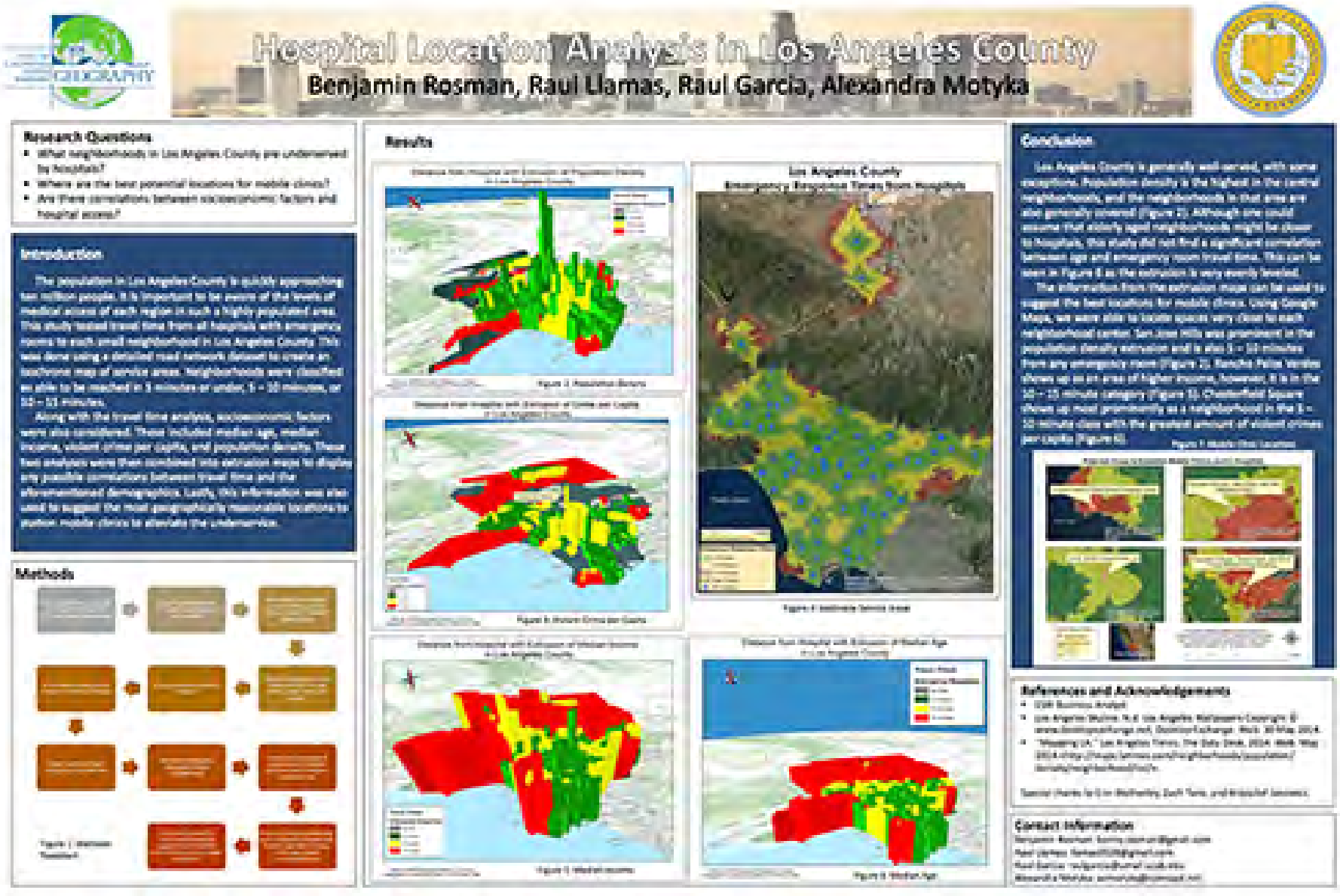
In the intertidal zone of the California coastline there is a fine balance among the plant and animal species. To restore and preserve this balance, Marine protected areas (MPAs) were established in 2003 to limit the catch and removal of resources and wildlife in these areas. Two species in particular greatly impact the equilibrium state and health of the intertidal zone in the temperate waters off the Santa Barbara Channel Islands—kelp and urchins. Kelp provides habitat and refuge for marine wildlife and urchins act as a carbon source for larger predators. However, in areas that are heavily fished urchin populations go without predation pressures, which allows them to devour entire kelp forests leading to a lower diversity of species. Data collected by PISCO provides information on size and densities of kelp, urchin, and fish for 29 independent sites since 2003. This data is used to analyze the effectiveness of MPAs at restoring the diversity and ecological balance off the Channel Islands.



Glacial Retreat in the Eastern Cordillera (1986–2007)

Alexandra Motyka, Raul Garcia, and Raul Llamas
Department of Geography, University of California, Santa Barbara

Satellite imagery was acquired and modified to take into account the atmospheric interference for the Eastern Cordillera in Ecuador in order to quantify the amount of glacial decline from 1986 to 2007.

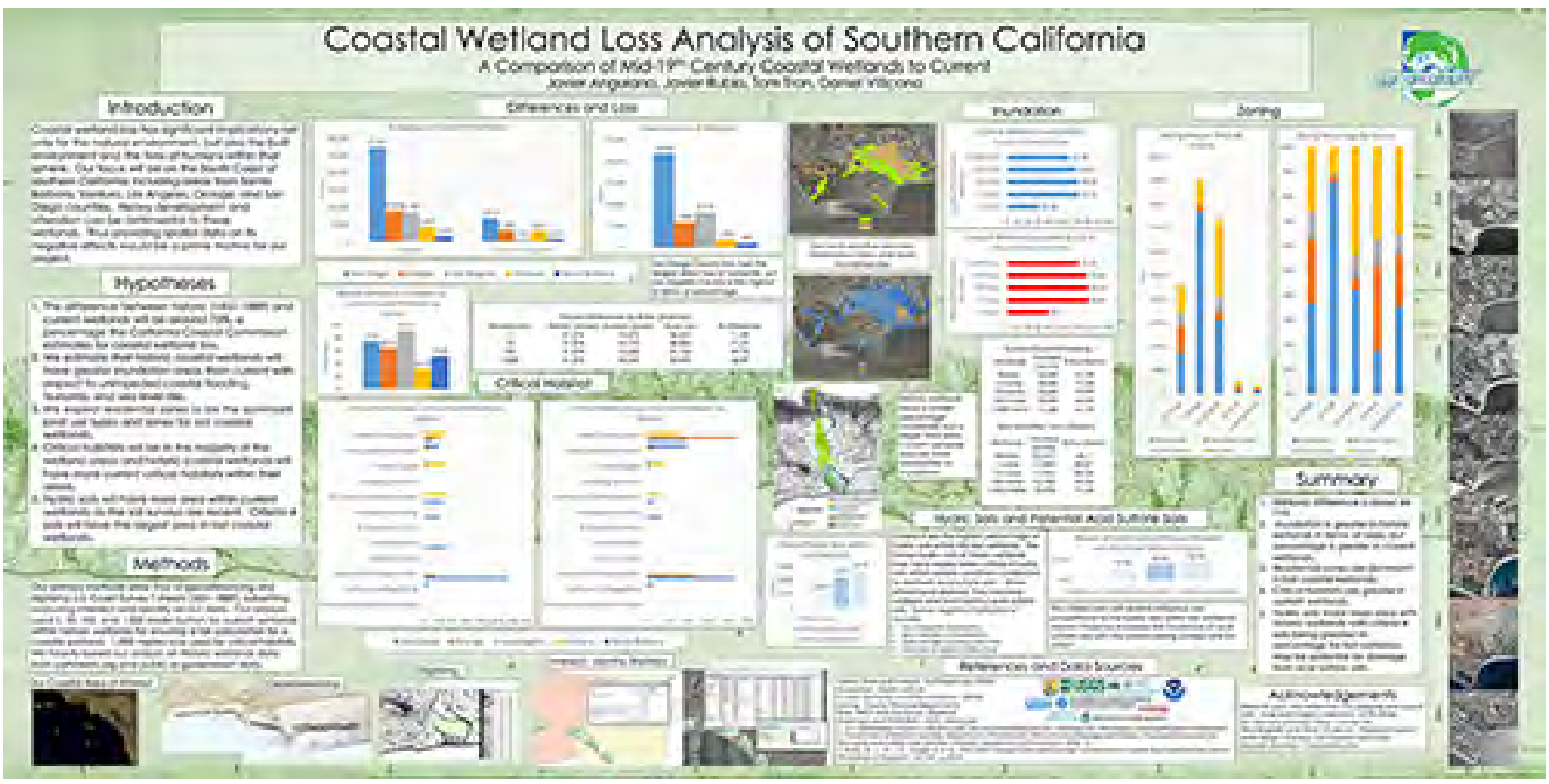


Hospital Location Analysis in Los Angeles County

Benjamin Rosman, Raul Llamas, Raul Garcia, and Alexandra Motyka

Department of Geography, University of California, Santa Barbara

Using a detailed road network dataset to create an isochrone map of service areas in Los Angeles County, this study tested the travel time from hospitals with emergency rooms to each small neighborhood in the area. In addition, socio-economic factors were plotted to identify possible correlations in travel times to the hospital, with the objective of identifying optimal locations for mobile clinics to be stationed to in under-serviced areas.

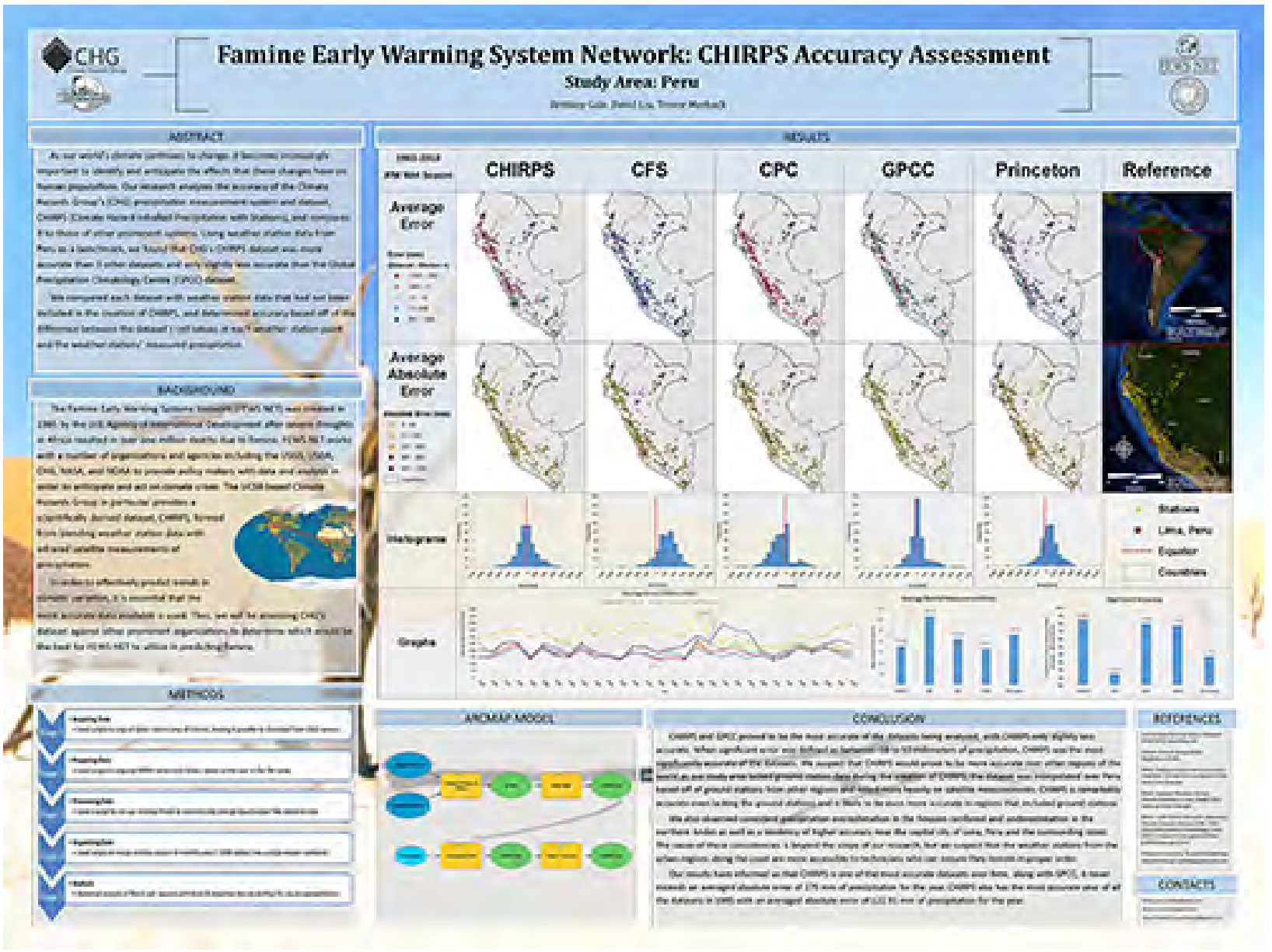


Coastal Wetland Loss Analysis of Southern California

Javier Anguiano, Javier Rubio, Tom Tran, and Daniel Villicana

Department of Geography, University of California, Santa Barbara

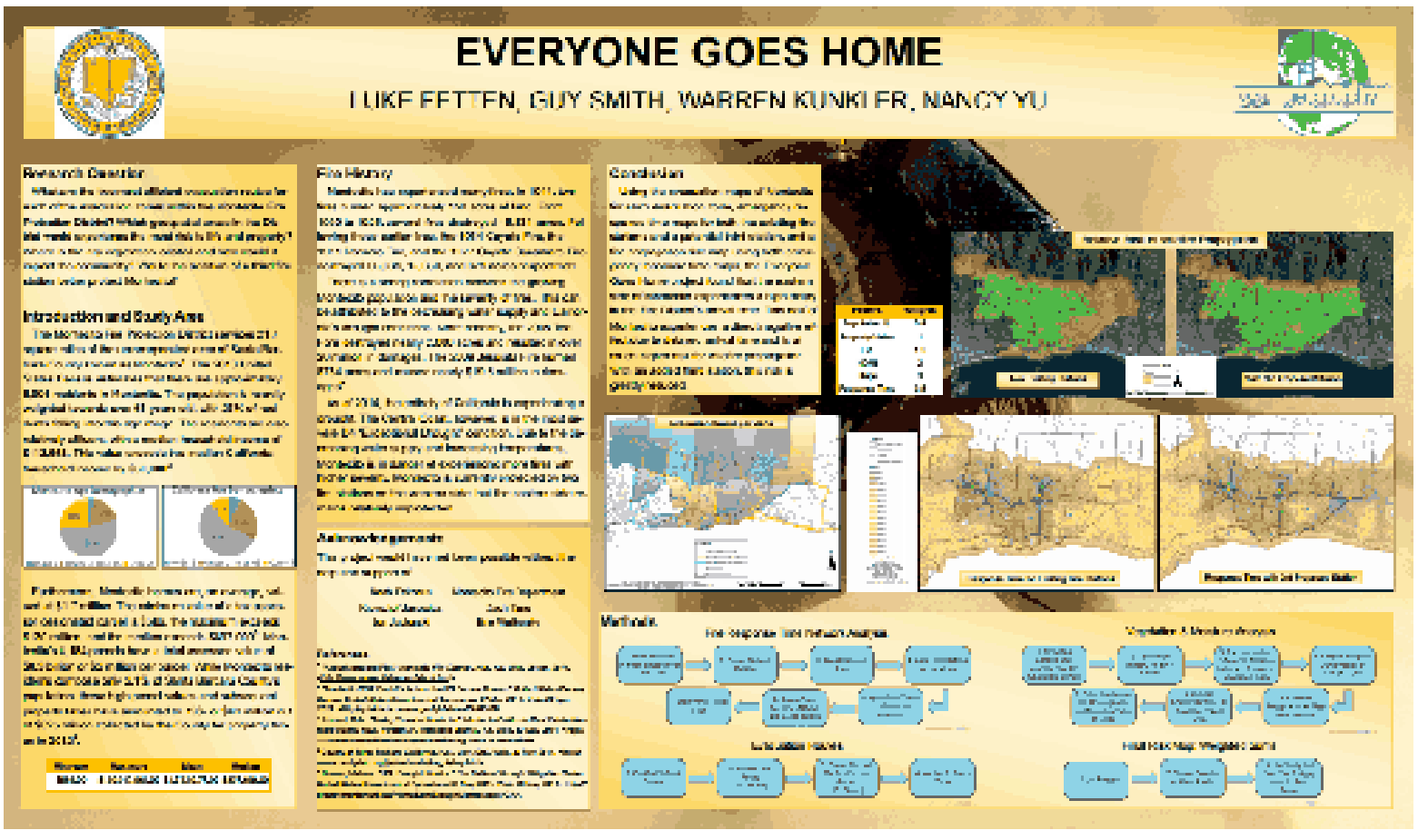
Change in the California Coast has particularly impacted the southern California coastal wetlands, which have ecological, commercial, educational, and other important functions and values. Using GIS analysis, this study quantifies wetland loss, zoning, critical habitats, inundation, and hydric soils, providing information on the implications of coastal wetland loss as well as services that they provide.



Famine Early Warning System Network: CHIRPS Accuracy Assessment

Brittany Gale, David Liu, and Trevor Merback
Department of Geography, University of California, Santa Barbara

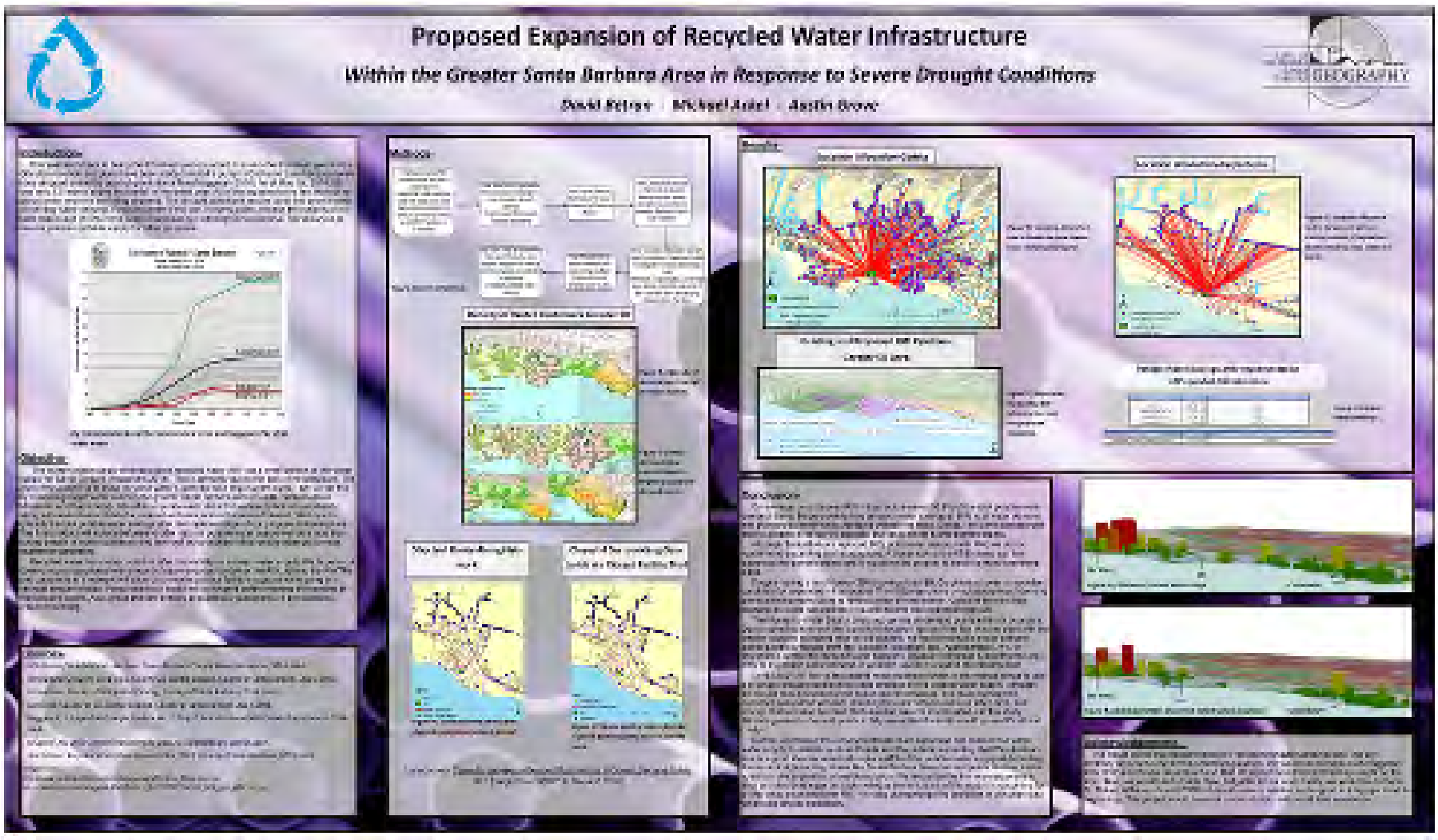
As our world's climate continues to change, it becomes increasingly important to identify and anticipate the effects that these changes have on human populations. This research analyzes the accuracy of the Climate Hazards Group's (CHG) precipitation measurement system and dataset, CHIRPS (Climate Hazard InfraRed Precipitation with Stations), and compares it to those of other prominent systems. Using weather station data from Peru as a benchmark, CHG's CHIRPS dataset was found to be more accurate than three other datasets and only slightly less accurate than the Global Precipitation Climatology Centre (GPCC) dataset.



Everyone Goes Home

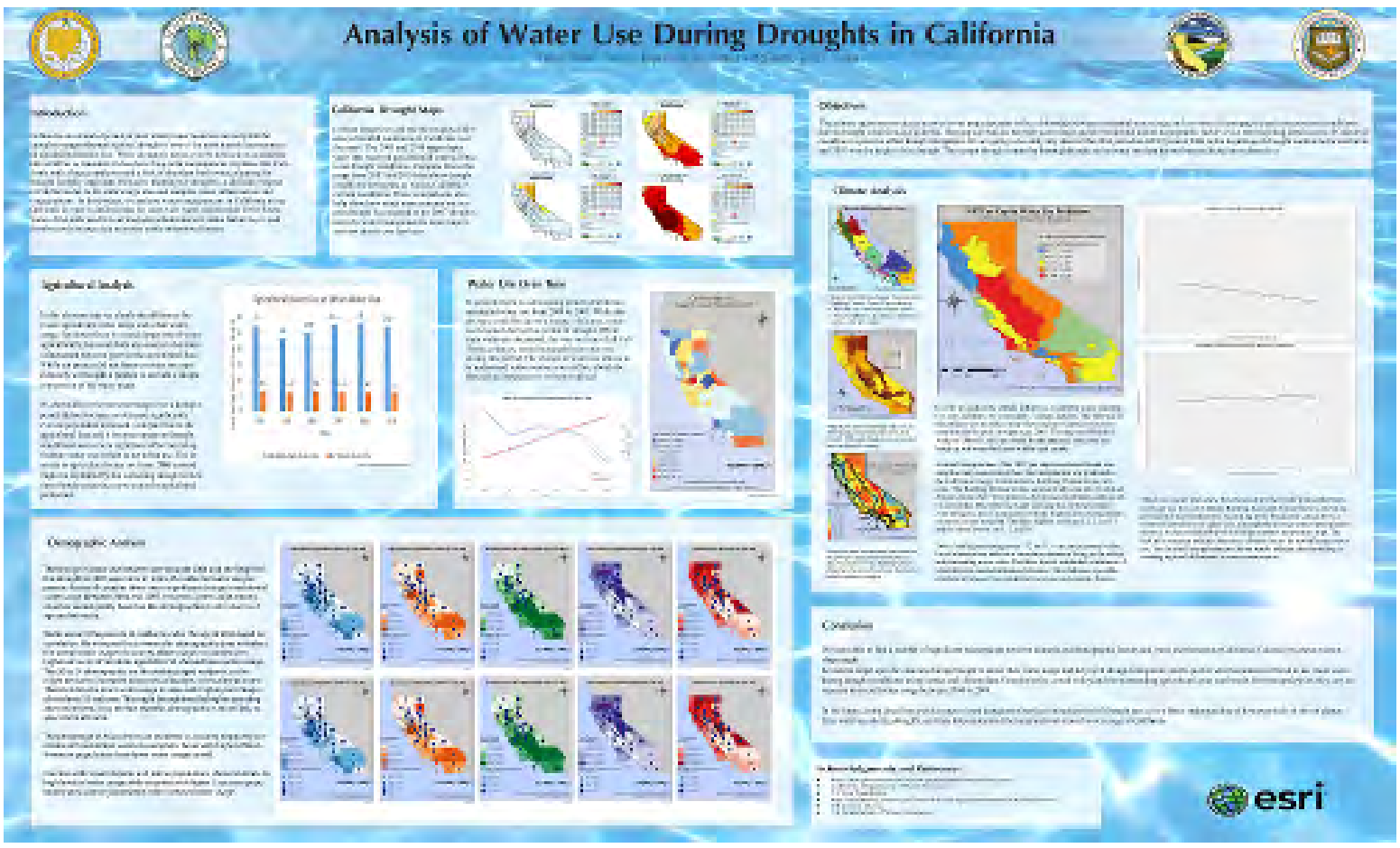
Luke Fetten, Guy Smith, Warren Kunkler, and Nancy Yu
Department of Geography, University of California, Santa Barbara

This project identifies the areas with the most dense vegetation that are at greatest risk for fire in the Montecito Fire Protection District, as well as the most efficient evacuation routes. The study suggests that the addition of a third Fire Station would greatly reduce the risk.



Proposed Expansion of Recycled Water Infrastructure within the Greater Santa Barbara Area in Response to Severe Drought Conditions
David Betran, Michael Ackel, and Austin Grove
Department of Geography, University of California, Santa Barbara

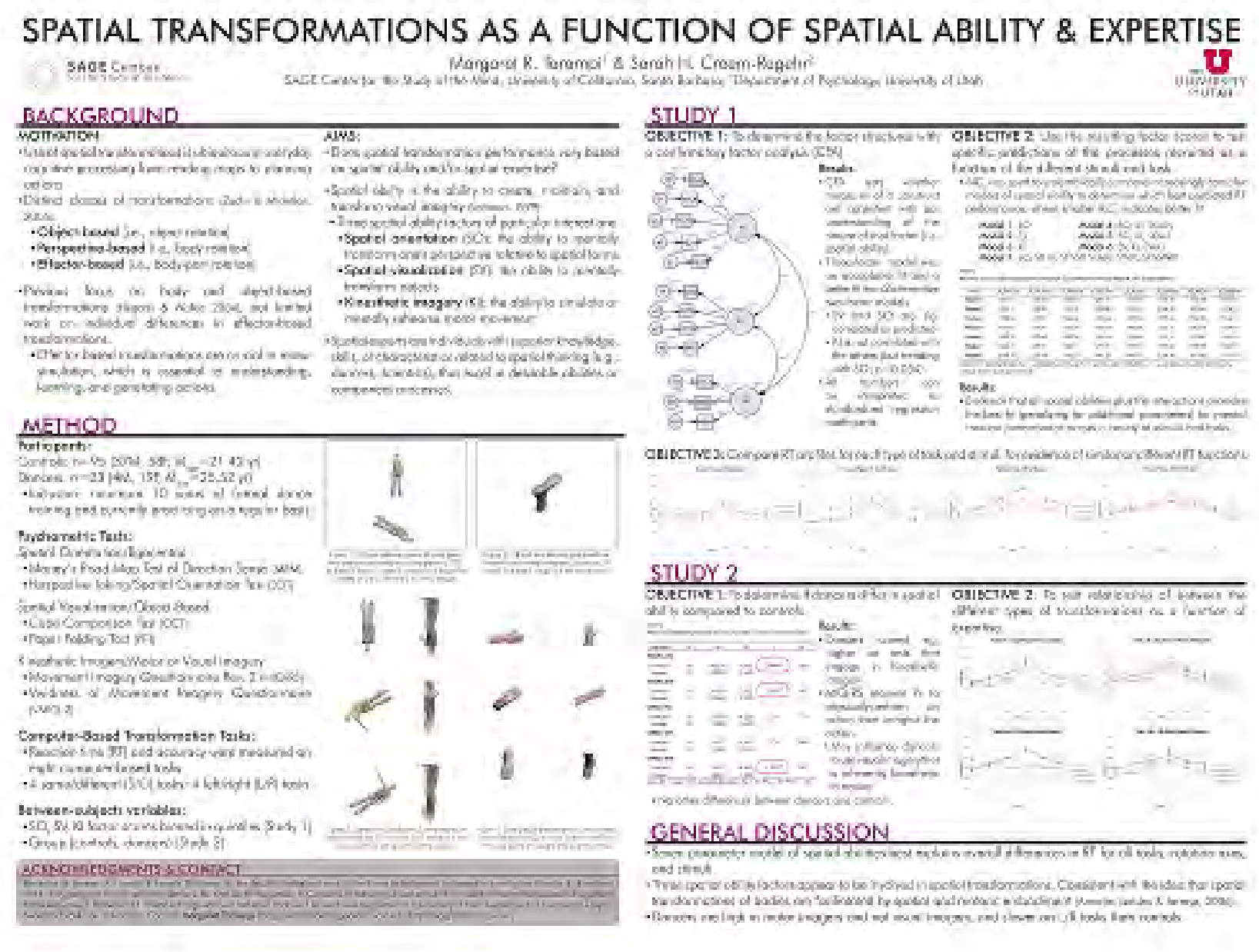
As drought conditions intensify, water districts must diversify the water supply. This project attempts to increase the role of recycled water as a water source, by proposing an expansion to the existing recycled water infrastructure for Goleta, Santa Barbara, Montecito, and Carpinteria, focusing on major water uses such as agriculture and landscaping. Network analyst tools allow for the allocation of each treatment plant's capacity while accounting for distance. An impedance equation causes the allocation tool to focus on points that are clustered and near treatment plants before allocating water to more distant demand points. This study quantifies potable water savings as a result of the proposed infrastructure.



Analysis of Water Use during Droughts in California

Thira Khor, Travel Martinus, Elizabeth McBride, and Emily Owen
Department of Geography, University of California, Santa Barbara

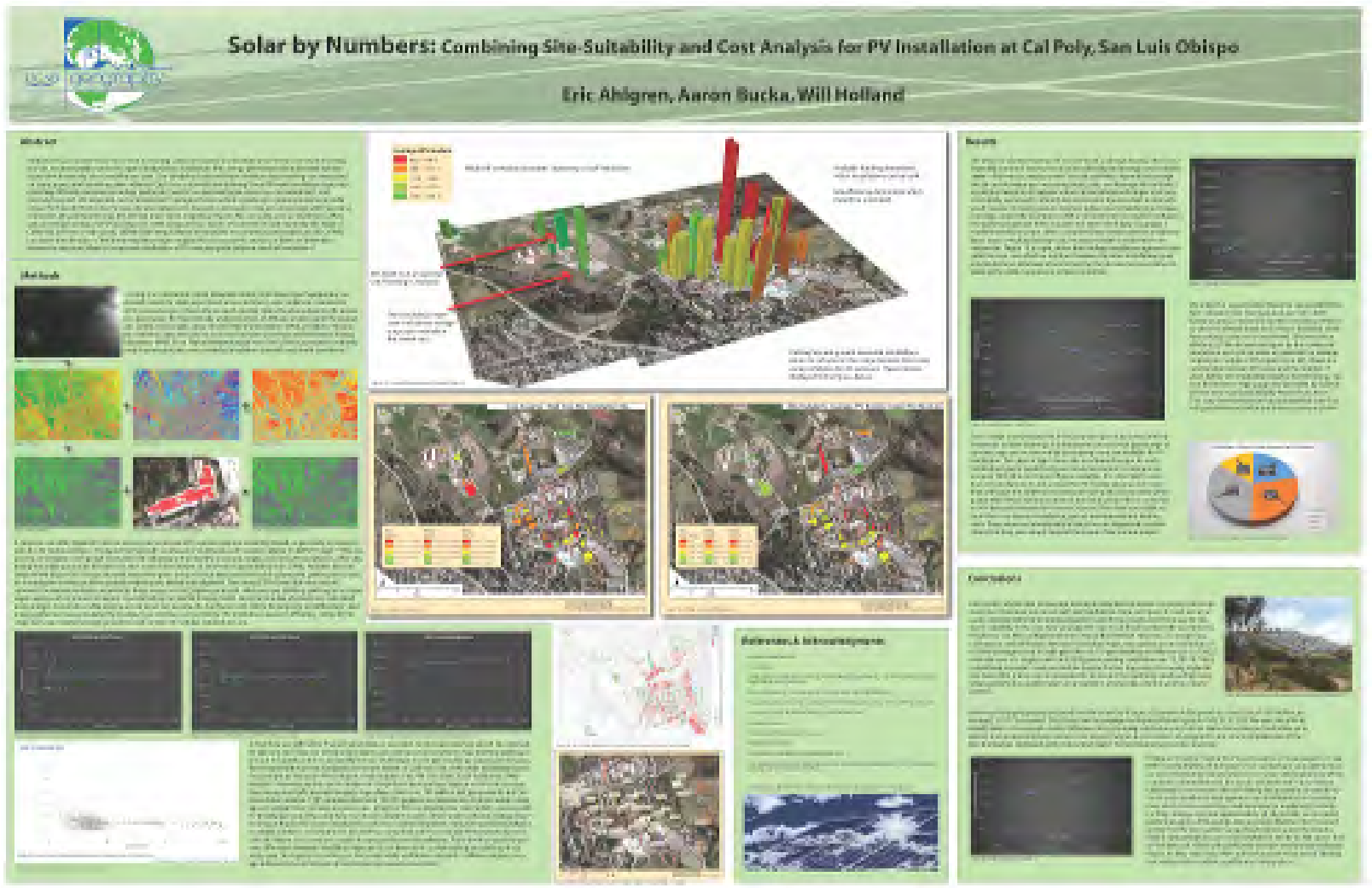
Defined as an extended period of time where water resources are not plentiful enough to support human activity, drought is one of the most harmful environmental conditions, having long-term consequences. In places like California with a large population and a lack of abundant fresh water, planning for drought is highly important. However, planning for drought in California is a difficult prospect due to the state's large area and complex water infrastructure and usage patterns. Using GIS tools, this project analyzes water usage patterns in California so as to inform plans for state-wide water conservation in the future.



Spatial Transformations as a Function of Spatial Ability and Expertise

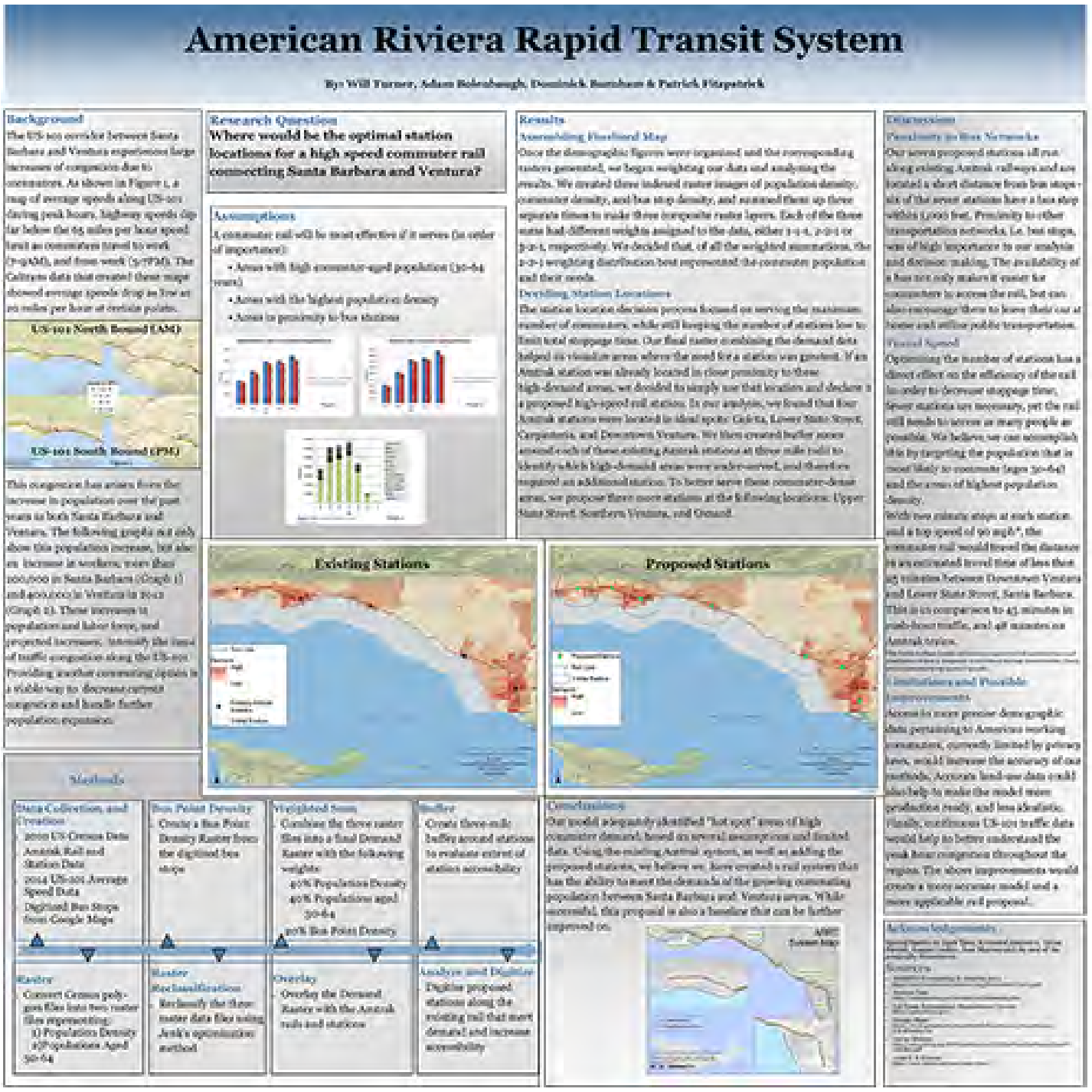
Margaret R. Tarampi
SAGE Center for the Study of the Mind, University of California, Santa Barbara;
Sarah H. Creem-Regehr
Department of Psychology, University of Utah

Discussing spatial orientation, spatial visualization, and kinesthetic imagery, the project explores whether spatial transformation performance varies according to spatial ability and/or spatial expertise.



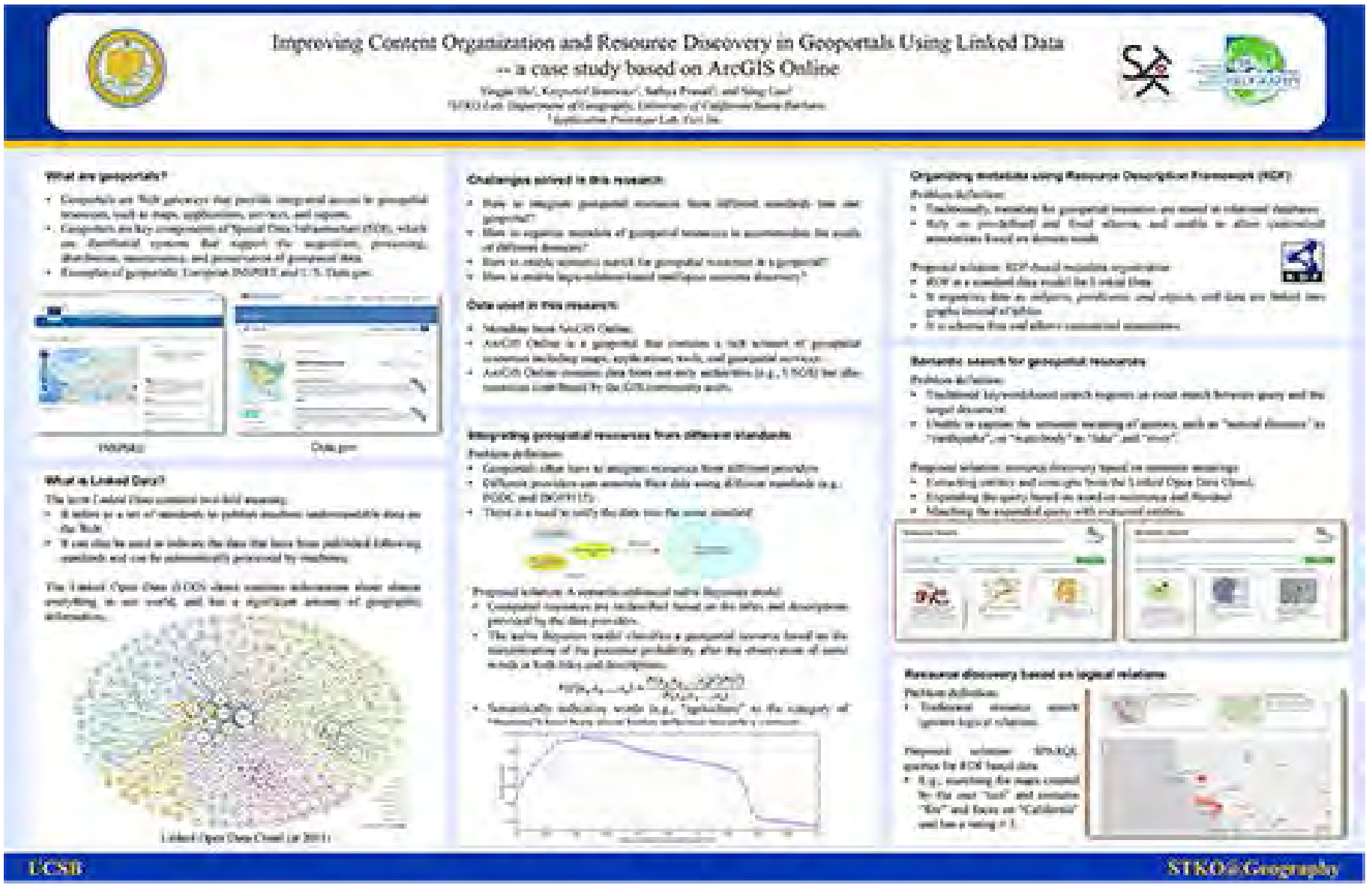
Solar By Numbers: Combining Site-Suitability and Cost Analysis for PV Installation at Cal Poly, San Luis Obispo

Eric Ahlgren, Aaron Bucka, and Will Holland
Department of Geography, University of California, Santa Barbara



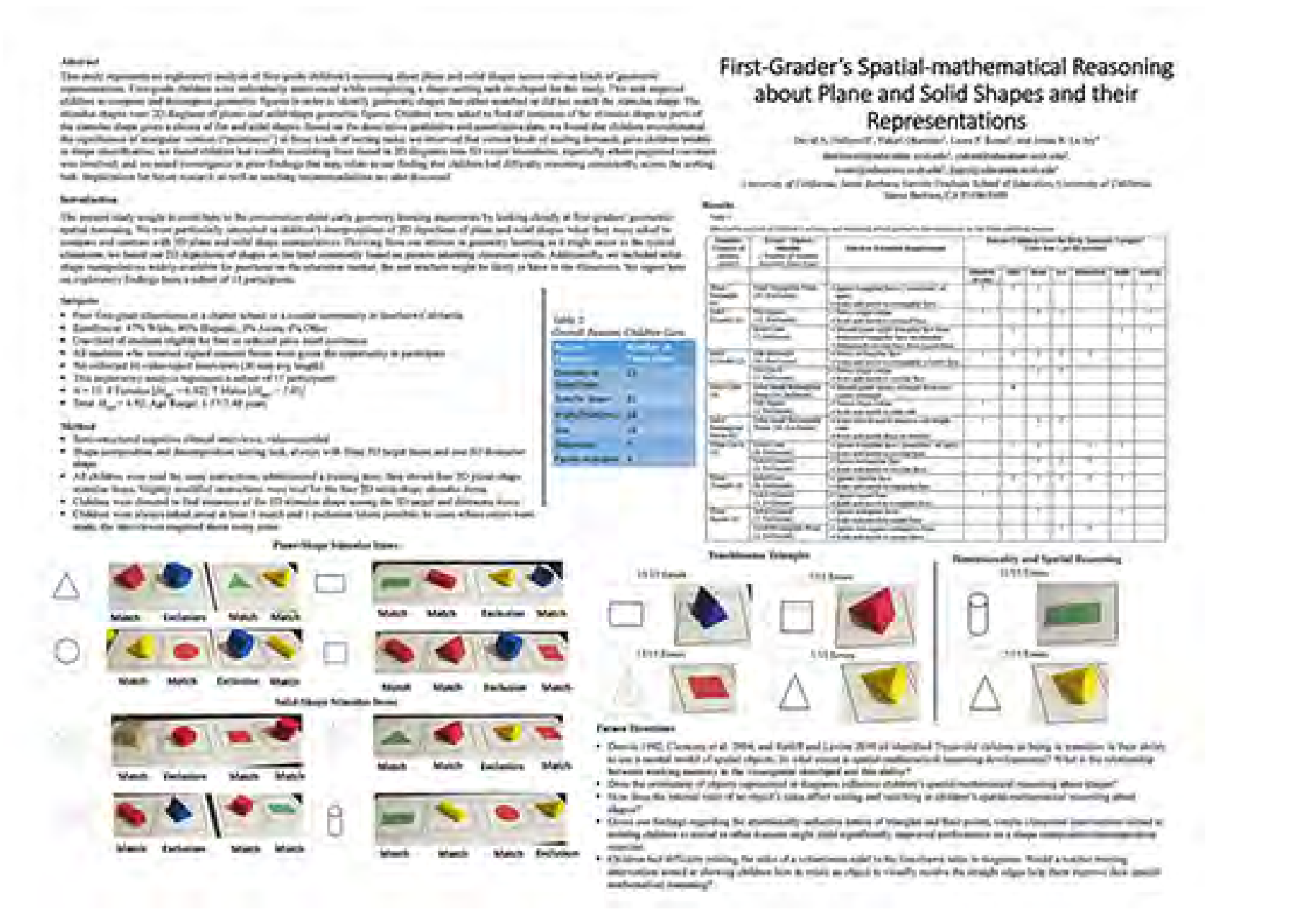
American Riviera Rapid Transit System
Will Turner, Adam Bolenbaugh, Dominick Burnham, and Patrick Fitzpatrick
Department of Geography,
University of California, Santa Barbara

Glacial Retreat in the Cordillera Blanca from 1987 to 2001
Eric Ahlgren, Hugh McAvoy, Clark Shao, and MingChen Shen
Department of Geography, University of California, Santa Barbara



Improving Content Organization and Resource Discovery in Geoportals Using Linked Data
Yingjie Hu, Krzystof Janowicz, Sathya Prasad, and Song Gao

STKO Lab, Department of Geography, University of California, Santa Barbara, Application Prototype Lab, Esri Inc.



First-Grader's Spatial-mathematical Reasoning about Plane and Solid Shapes and their Representations
David A. Hallowell, Yukari Okamoto, Laura F. Romo, and Jonna R. La Joy

Gevirtz Graduate School of Education, University of California, Santa Barbara