

Instructionally Related Activities Report Form

SPONSOR: Donald Rodriguez Linda O'Hirok

PROGRAM/DEPARTMENT: ESRM

ACTIVITY TITLE: ESRM Spring Speaker Series 2017 The Anthropocene

DATE (S) OF ACTIVITY: 2/23, 3/2, 3/9, 4/6, 4/13, 4/20

Please submit via email to the IRA Coordinator along with any supporting documentation at david.daniels@csuci.edu within 30 days after the activity. Thank you for your commitment to engaging our students!

A. ADDRESS THE FOLLOWING QUESTIONS:

- (1) PROVIDE A DESCRIPTION OF THE ACTIVITY;
 - (2) HOW DID THE ACTIVITY RELATE TO A COURSE(S) AND/OR LEARNING OBJECTIVES?
 - (3) WHAT DO YOU SEE AS THE STRENGTHS OF THE ACTIVITY?
 - (4) WHAT WOULD YOU SAY ARE/WERE THE ACTIVITY'S WEAKNESSES?
 - (5) HOW WOULD YOU IMPROVE THIS ACTIVITY FOR NEXT TIME?
 - (6) WHAT DID YOU LEARN FROM THE PROCESS?
 - (7) WHAT ARE STUDENT RESPONSES TO THE ACTIVITY? ATTACH STUDENT EVALUATIONS OR ASSESSMENTS (IN ACCORDANCE WITH FERPA RESTRICTIONS YOU MUST REMOVE ALL PERSONALLY IDENTIFIABLE STUDENT INFORMATION)
 - 8) GIVE A SUMMARY OF EXPENSES FOR THE ACTIVITY.
-

B. ATTENDEE LIST- SUPPORTING DOCUMENT:

In addition to the report form, *in a separate document*, attach to your email a list of attendees complete with each student major and grade level. This for IRA Committee reference only and will not be published on the IRA website. Include your name and the title of your IRA activity on the document.

C. IMAGES FROM ACTIVITY:

Finally, attach to your email up to 6 images demonstrating student participation (under 2 MB total) with captions/titles. Please attach these photos in .JPEG format directly to email. Thank you!

(1) PROVIDE A DESCRIPTION OF THE ACTIVITY

The environmental lecture series sponsored by the ESRM program in the spring of 2017 generally followed the theme of “The Anthropocene” with a range of talks that started by defining and describing the Anthropocene by searching for a geological marker, a golden spike so to speak, as marking the beginning of human impact as well as identifying recognizable ecological changes associated with human activities, to addressing human impact on climate change, particularly how precipitation patterns would change under a warming climate, and thusly those effects on the coastal environment in California, to human alteration of stream flow characteristics and subsequent ecosystem response when a dam is constructed at the headwaters of a major river, and finally culminating in a panel discussion of sustainability to commemorate Earth Day 2017. The ESRM Spring Lecture Series was planned to provide insight into local, national, and global environmental issues for the university and community.

The first lecture in the series was presented by Dr. Anne Chin, Professor of Geography at the University of Colorado Denver and Editor-in Chief of the journal *Anthropocene*, who spoke about “nine reasons you should care about the Anthropocene. Dr. Chin spoke inquired about identifying and marking the Anthropocene within a geological time frame, perhaps an Epoch which would be the signature of human activity and a distinct impact on natural processes. Identifying the Anthropocene has become important when viewed as a new term Anthropocene which has had exponential growth in the literature. The term was introduced by a chemist in 2000 and in 2013 the journal *Anthropocene* was established. Conferences from many disciplines have devoted special sessions to investigation of the Anthropocene. Dr. Chin’s discussion focused on “The Great Acceleration” (Steffan) that began with the atomic bomb and radionuclides in the soil as markers. This also marks the exponential increase anthropogenic effects. Prior to The Great Acceleration we had a wild biosphere and we mapped vegetation as a function of climate but now we must include Anthromes, Anthropogenic Biomes. In her nine questions, Dr. Chin addressed the “wilderness is dead” and the challenges of landscapes on the edge and understanding our changing planet. We need to care about sustainability and used increasing wildfire frequency with increasing temperature in the southwest United States as an example of loss of usable water resources. The Anthropogenic effects affect us directly. In conclusion, Dr. Chin encouraged us to design new conceptual frameworks and new integrating methods which requires interdisciplinary collaboration. Approximately 35 students and community members participated.

The second lecture in the series, *A Field Guide to the Anthropocene*, was given by Dr. John Lambrinos, Associate Professor of Horticulture at Oregon State University. Dr. Lambrinos discussed what the Anthropocene is, how did we get here, and what does it mean and proceeded talk about evidence and the unique characteristics within the chronostratigraphic chart that indicate golden spikes-stratotypes found in Greenland ice cores showing heavy isotopes of water. He particularly focused on changes in climate during the Holocene (12,000 BP) when global temperature continues to rise and the 10,000 years of megafaunal extinction which is increasing at an exponential rate. His posed the questions “have humans changed the environment enough to leave records in the strata? Where is the fingerprint”? Dr. Lambrinos presented a vast array



concentration in ice cores in Antarctica, geological records, radiogenics, change in biogeochemical cycles (nitrogen), sedimentation altered due to levees (New Orleans) resulting in a decrease in prairie grass and subsequent increase in surface erosion. In conclusion, Dr. Lambrinos discussed human evolution from hunter gatherers and their “paleo diets” to agrarian societies and domestication of animals to the industrial revolution and present with extended life spans and our exponential increase in resource use per capita. His final comments were “focus on the processes, take responsibility, and stay optimistic”. Approximately 40 students and community members attended the lecture.

The third speaker in the series was Dr. Hengchun Ye, Professor of Geosciences and Environment at California State University, Los Angeles. Dr. Ye’s presentation “ how precipitation would change under a warmer climate” introduced the audience to the basics of what is precipitation, most of us did not really know more than “rain”. She instructed us about the hydrologic cycle and how cloud types are related to precipitation and how they are all influenced by temperature. Most importantly, Dr. Ye informed us about what climatologists are able to predict and are not able to predict at this time. As temperature atmospheric energy increases (latent heat), water vapor holding capacity increases, transportation of water vapor increases with heavier cloud cover, potentially more precipitation, and greater atmospheric instability. She suggested that the models show that in more arid places such as southern California precipitation may be less frequent but more intense. Based on the data and models Dr. Ye presented, she asked the audience two research questions: has precipitation shifted towards more convectional types of events and if yes, does that shift explain the increasing intensities and extremes? Students were enthusiastic. These questions prompted much debate among the students as well as a discussion about providing meteorology and climatology courses. Approximately 35 students and community members were in attendance.

Our fourth presenter was Dr. Antony Orme, Professor Emeritus Department of Geography and the Environment, University of California Los Angeles. Dr. Orme spoke about our “changing California coast” and discussed rates of change as functions of geological change (10^3 years), lifetime change (10^1 - 10^3 years), and short-term change from waves, currents, and tides ($<10^1$ years). He focused on coastal management challenges. Long-term changes primarily addressed the effects of vertical and lateral tectonic mobility as well as eustatic sea level changes. These included changes in ocean volume and basin capacity, tectonism, isostasy, and geoidal changes. Evidence is clearly seen in multiple late Pleistocene marine terraces and shore platforms on the Channel Islands and Ventura coast. Dr. Orme also addressed the difficulty interpreting sea level change relative to tectonic change. The latter half of his presentation focused on recent coastal management issues, particularly urban development on beaches and sea cliffs, the impacts of dams restricting downstream sediment transport to nourish beaches, and the effects of groins and breakwaters on beach sediment transport. His final comments were that we need to “apply basic principles” to understanding coastal processes and managing the coastline. Our coastline is forever unstable and we need to have wise management practices. Students were very enthusiastic about Dr. Orme’s presentation because they are familiar with the “territory”. They continued their discussions with him at dinner. Approximately, 62 students and community members participated.



2017 Spring Speaker’s Series was Dr. Richard Marston, Professor Emeritus Department of Geography, Kansas State University who lectured on “the effects of Jackson Lake Dam on the Snake River and its floodplain, Grand Teton National Park”. Dr. Marston described the history and construction of Jackson Lake Dam in 1906 by the Bureau of Reclamation before the establishment of Grand Teton National Park. An additional reservoir constructed downstream and subsequent scheduled releases from Jackson Lake Dam ultimately lowered the magnitude and frequency of floods in the Snake River Valley. The stability of the Snake River exhibited a complex response to the human-induced change in flow regimes. Near major tributaries the Snake River increased in total sinuosity and rates of lateral channel migration. Away from the major tributaries, the river experiences fewer avulsions and a decrease in sinuosity. Vegetation maps were constructed to compare changes and it was determined that vegetation is directly related to the number of years since that portion of the floodplain was last occupied by the channel. The vegetation has changed from a flood-pulse dominated mosaic to a more terrestrial-like pattern of succession. These vegetation changes have direct implications on bald eagle habitat, moose habitat, fish habitat, safety of rafting and canoeing, and biodiversity at the community and species level. Students were particularly intrigued by the river flow-vegetation-wildlife habitat dynamics. Dr. Marston suggested it is time to redo this study and many students were eager to volunteer. Approximately 55 students and members of the community were in attendance.

The final component of the ESRM 2017 Spring Speaker Series included a panel discussion on Sustainability to celebrate Earth Day 2017. Participants included Laura Maher, Laine MacTague, Susan Cousineau, Ron Whitehurst, Pat Browne, and Jill Santos. Approximately 55 students and community members were in attendance. Most of the panel discussants attended the ESRM 2017 Spring Speaker Series lectures. Students appreciated the panel discussion as an opportunity to incorporate the information they learned during the lectures to discuss ideas to improve their environments.

(2) HOW DID THE ACTIVITY RELATE TO A COURSE(S) AND/OR LEARNING OBJECTIVES?

All five speakers and panel discussants touched upon the goals and objectives of the course taught by professors Anderson, Patsch, Steele, O’Hirok, Hartman, Woo, Maher (ESRM), Clarke (Communication), Wakelee (Political Science), Cartwright, Dilly, Norris, Alvarado, Alarcon (Biology), consisting of but not limited to: BIOL 200 Principles of Organismal and Population Biology, BIOL 312 Marine Biology, COMM 450 Environmental Communication, BIOL 433 Ecology, HIST 342 Environmental History, and all ESRM courses. Lectures were attended by students representing all those majors listed and others from across the campus. The lectures were podcasted on ESRM.ZONE

(3) WHAT DO YOU SEE AS THE STRENGTHS OF THE ACTIVITY?

Dialogue among disciplines.



ARE/WERE THE ACTIVITY'S WEAKNESSES?

Attracting a more diverse groups of students and disciplines. But these types of lectures compete with other discipline activities.

(5) HOW WOULD YOU IMPROVE THIS ACTIVITY FOR NEXT TIME?

Better advertising.

(6) WHAT DID YOU LEARN FROM THE PROCESS?

Students are very stimulated by the discussions and we need to incorporate more of those discussions in our classes.

(7) WHAT ARE STUDENT RESPONSES TO THE ACTIVITY? ATTACH STUDENT EVALUATIONS OR ASSESSMENTS (IN ACCORDANCE WITH FERPA RESTRICTIONS YOU MUST REMOVE ALL PERSONALLY IDENTIFIABLE STUDENT INFORMATION)

(8) GIVE A SUMMARY OF EXPENSES FOR THE ACTIVITY.

B. ON SEPARATE DOCUMENT, PLEASE ATTACH ATTENDEE LIST (PERSONALLY IDENTIFIABLE INFO REMOVED)

Attached

C. PLEASE INCLUDE UP TO 6 IMAGES AS ATTACHMENTS TO YOUR SUBMISSION

Podcasts of lectures are on ESRM.ZONE