TEACHING SUSTAINABILITY BY LINKING ENVIRONMENTAL HISTORY AND POLITICAL ECOLOGY FOR EFFECTIVE FIELD-BASED PEDAGOGY

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HISTORY AND INTERNATIONAL STUDIES

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THE PROBLEM

- How do you tell the story of places that are strikingly different than they used to be?
- Legacies on the landscape can be erased, altered, overwritten, destroyed, neglected, and imprinted by more recent changes.
- Field courses are especially subject to this problem.

TERMINOLOGY AND DEFINITIONS

- Environmental History
  - Focus: environmental change and the ***narratives*** used to explain change
    - Effects of humans on natural systems
    - How the material world affects the social world
  - Methods: archives, assessments of environmental change (secondary data)
- Political Ecology
  - Focus: relationships between nature and society
    - Political dimensions of environmental change
    - Environmental effects of political, economic, and social change
  - Methods: surveys, interviews, mapping, remote sensing, environmental science (primary and secondary data)

COMMONALITY: ENVIRONMENTAL HISTORY AND POLITICAL ECOLOGY

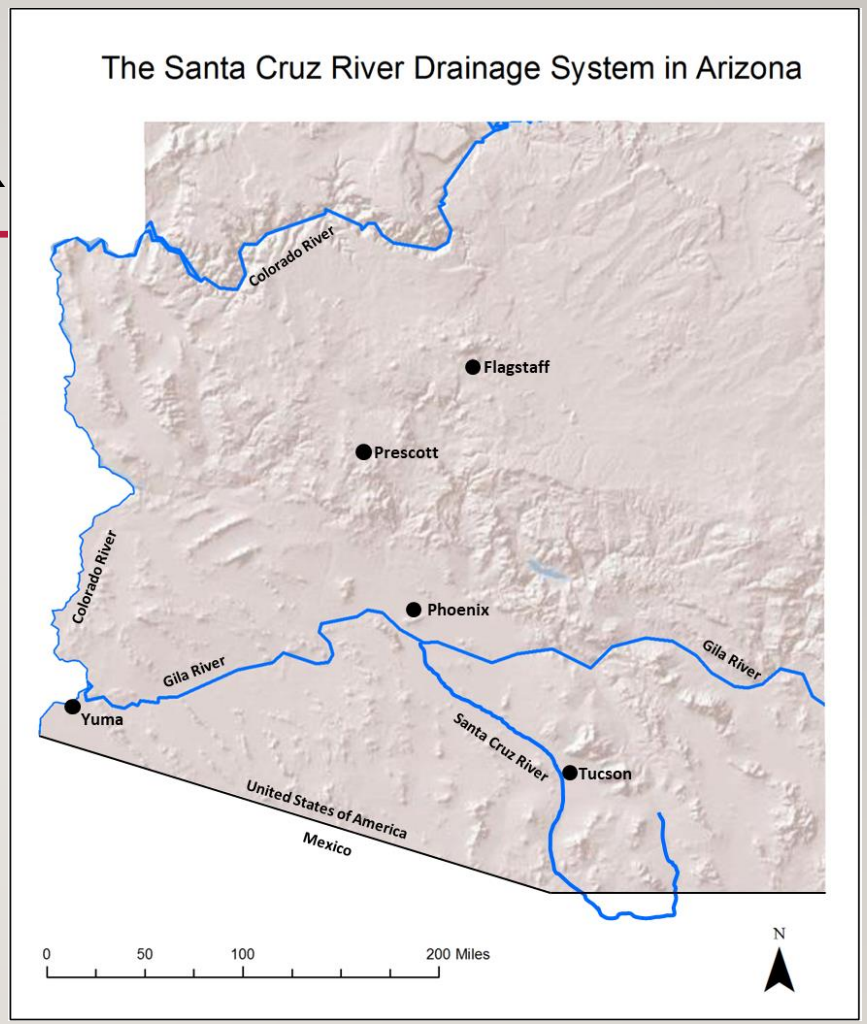
- Closely related disciplines
  - Explain change in environments and ecosystems over time and space
  - Share a focus on social, cultural, and biophysical connections to environments
  - Complimentary approach to environmental issues

- In field-based settings, combining environmental history and political ecology can provide a critical lens with which to examine the present and the histories that produced the sites in question.

CASE STUDY: SANTA CRUZ RIVER, ARIZONA

- Complicated environmental and social history
  - Long history of human alterations (>700-1,000 years)
- Dynamic and geographically distinct characteristics along the river
- Accelerating change in recent decades

CASE STUDY: SANTA CRUZ RIVER



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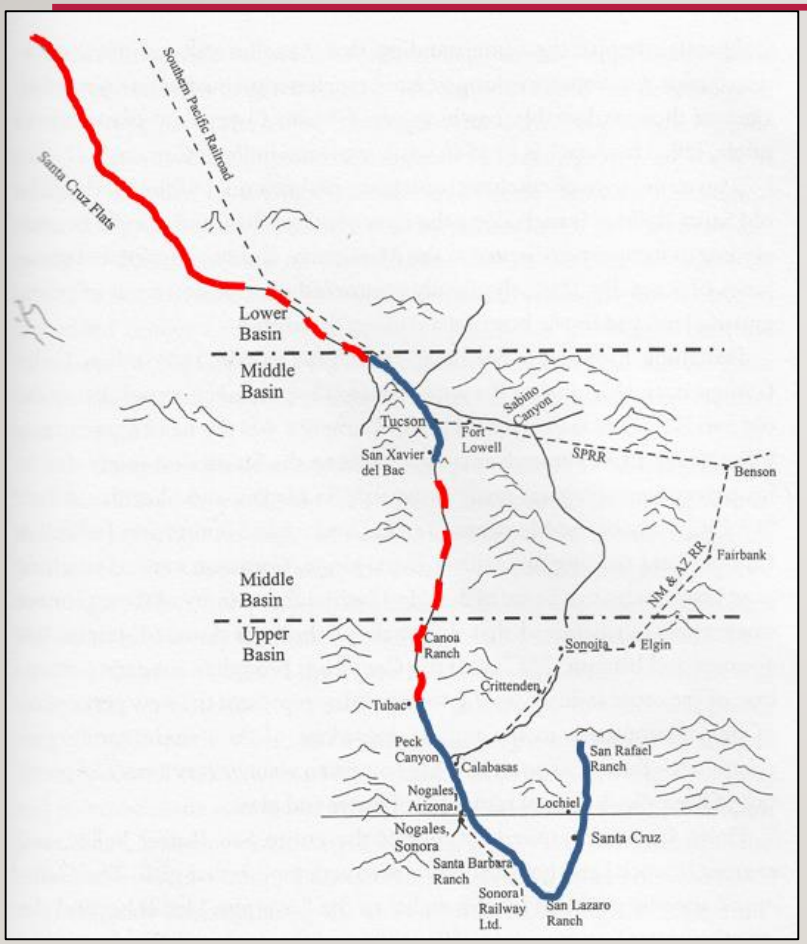

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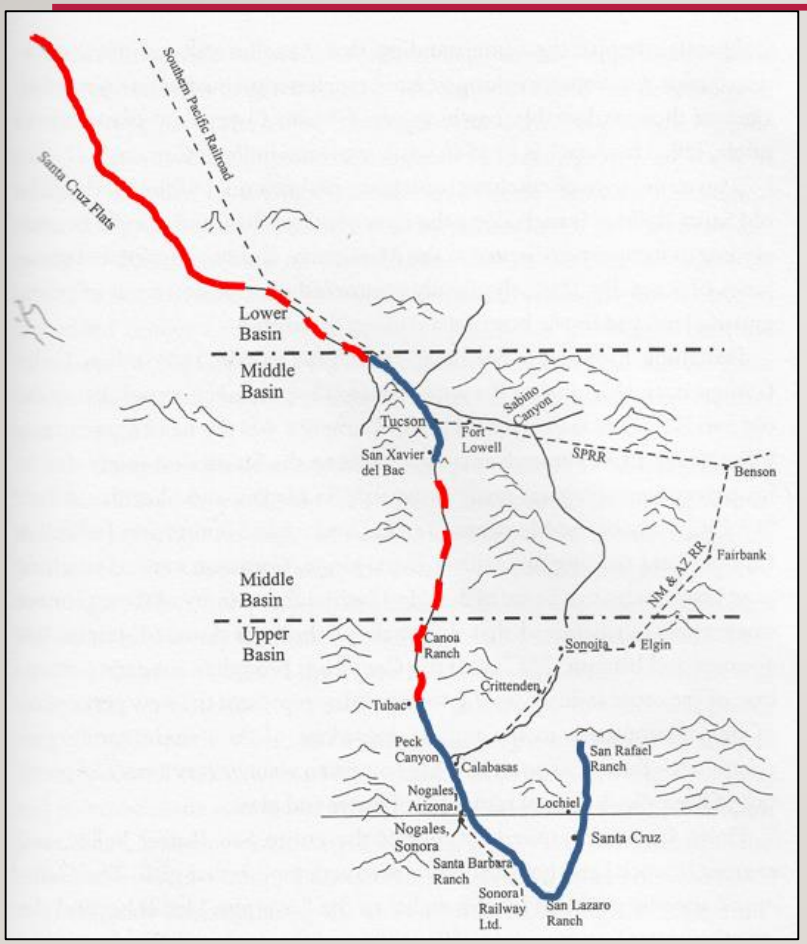

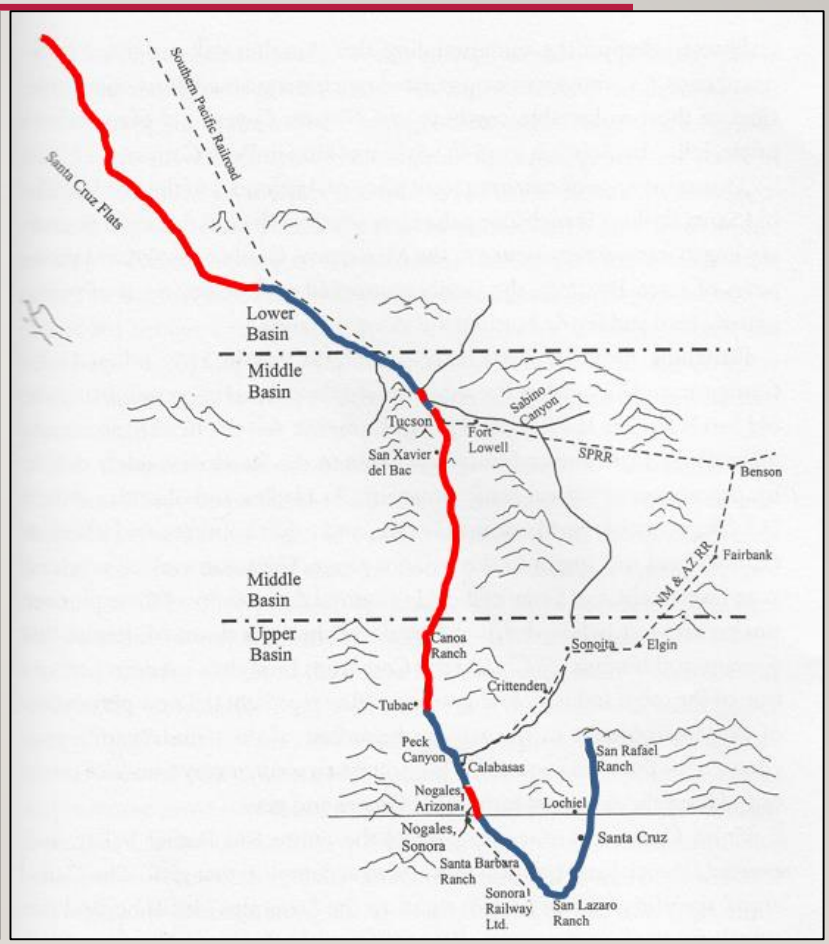

CASE STUDY: DESERT RIVER/DESERT COMMUNITIES FIELD COURSE

- Topics
  - Environmental change on the river over time
  - Connections between diverse communities and the river in its various forms
  - Legal, political, regulatory, economic, and cultural framings of water
  - Ongoing and future changes to the river and the communities it links together

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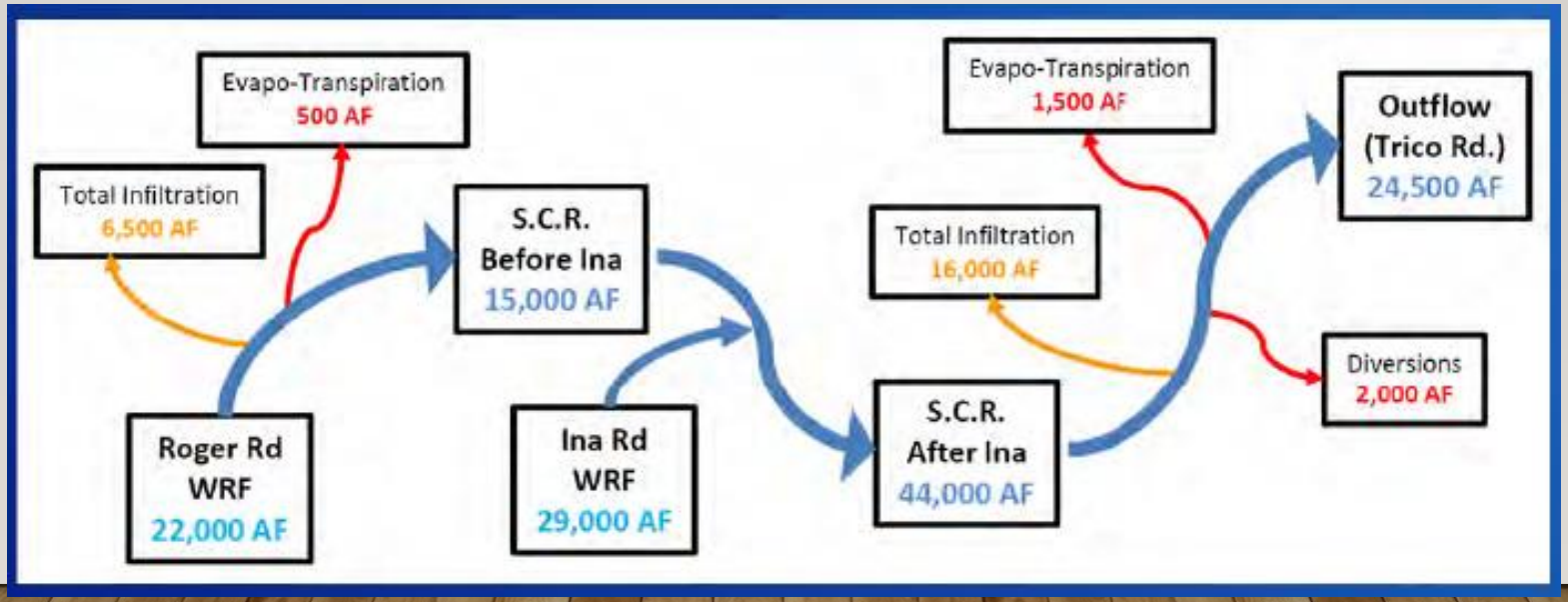

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- Site visits
  - Spanish mission and gardens
  - Cattle ranch on formerly perennial reach of river
  - Tucson's Barrio Viejo and post-war neighborhoods
  - Central Arizona Project canal and wastewater treatment plant
  - Audubon and city restoration sites

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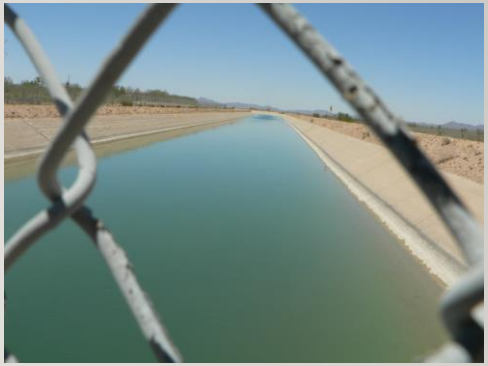

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THE LONG VIEW: CHANGES ON A DESERT RIVER

- Environmental History
  - settlement patterns, social dynamics of water use, urban development, capitalism and colonial encounters, racial and gendered experiences in Tucson
- Political Ecology
  - arroyo formation, effects of grazing on upland and riparian vegetation, flooding and runoff, fire suppression, natural and anthropogenic climate change, urban ecology

CONFOUNDING FLOWS

- Formerly perennial sections of the river are now dry
  - Because of groundwater pumping, land degradation, and a long-term climatic drying trend
- Valuable riparian and aquatic habitat has been lost
  - extinction of endemic species
- What used to look like this…now looks like this

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  - Because of treated sewage effluent
- Creating valuable native habitat in new places
  - out of place?
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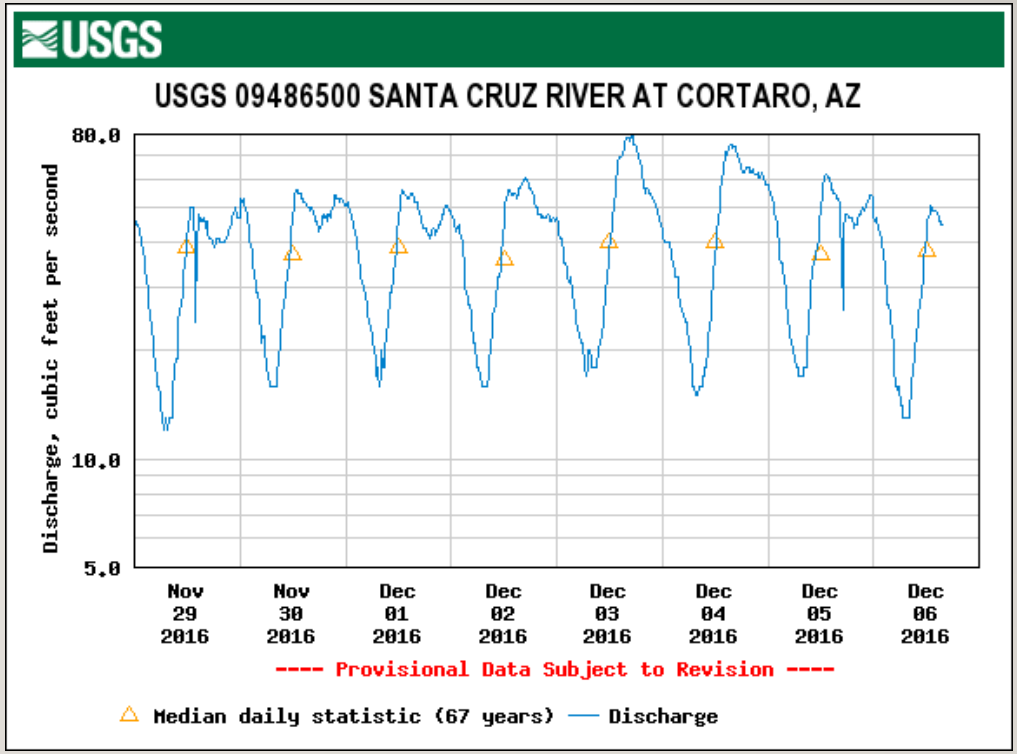
- High Tide in Tucson



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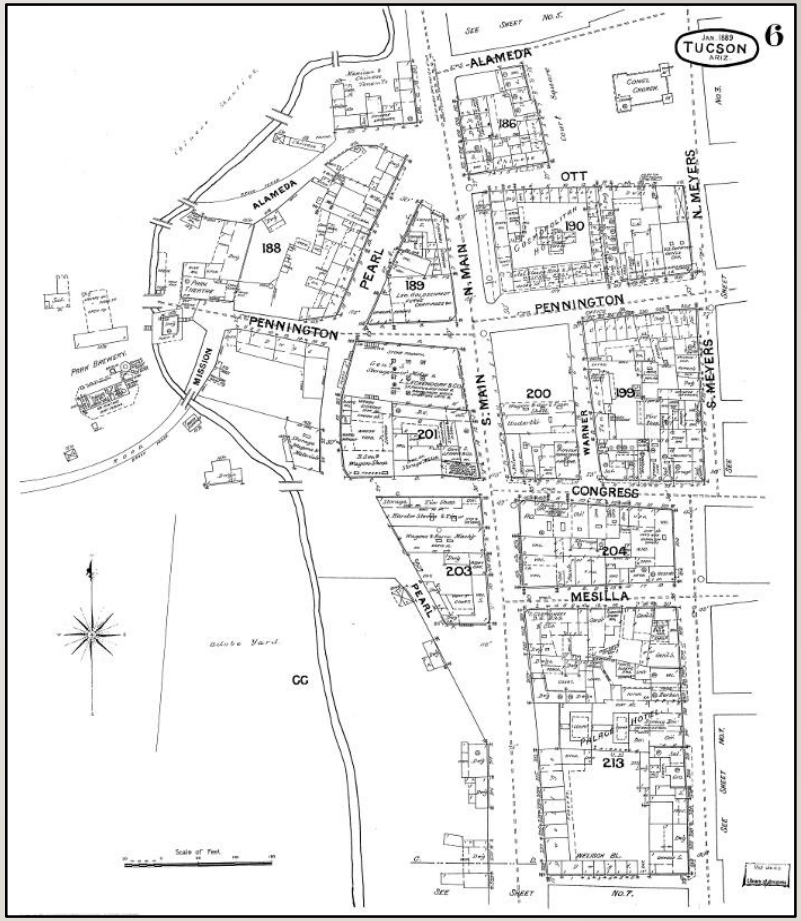
- Water with strange chemistry
  - Heavy metals, low dissolved oxygen, high levels of nutrients
- Amplified drought effects
- Ecological improvement after sewage treatment plant upgrades
  - Improved aquatic ecosystem, stressed riparian ecosystem
- Political Ecology examines these changes

ALTERED CULTURAL RELATIONSHIPS TO A CHANGING RIVER

- Settlement, migration, and development occurred as the river dried up and changed forever

- Environmental History helps us tell this story



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  - Cultural connections and uses were lost
  - New (weaker) relationships were forged
- Environmental History helps us tell this story

CONCLUSIONS: TEACHING SUSTAINABILITY IN THE FIELD

- Sustainability problems are never simply scientific, or biophysical, or social in nature
- Teaching sustainability requires simultaneous focus on social, historical, and biophysical factors
- Combining techniques from environmental history and political ecology can improve sustainability classes
  - Especially in field settings

QUESTIONS AND COMMENTS

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