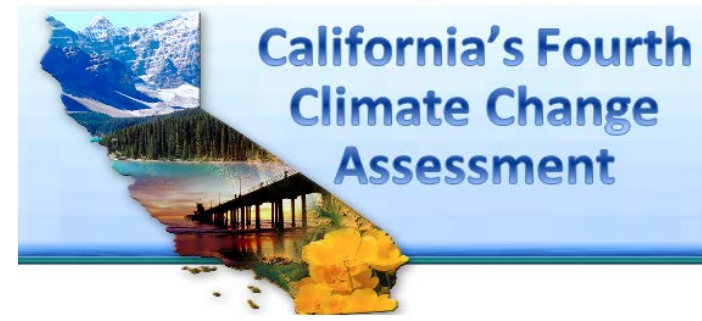


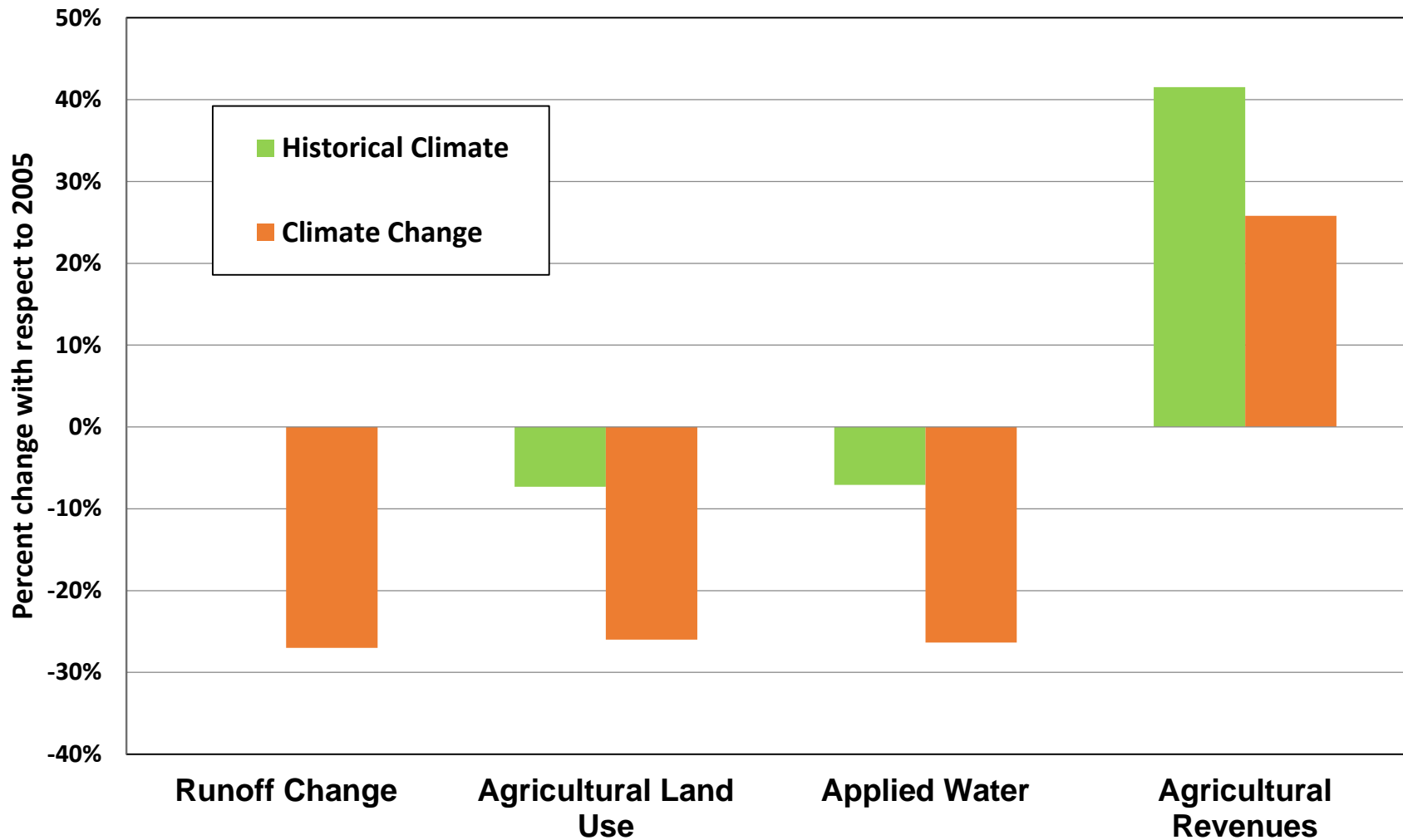
Economic and Environmental Implications of California Crop and Livestock Adaptations to Climate Change and Climate Policy

Daniel A. Sumner, Josue Medellin-Azuara, Hyunok Lee, Yolanda Pan

January 25, 2017



Previous studies have found potential economic impacts on California Crop farming



Medellin-Azuara et al. (2012) Climatic Change

Study objectives

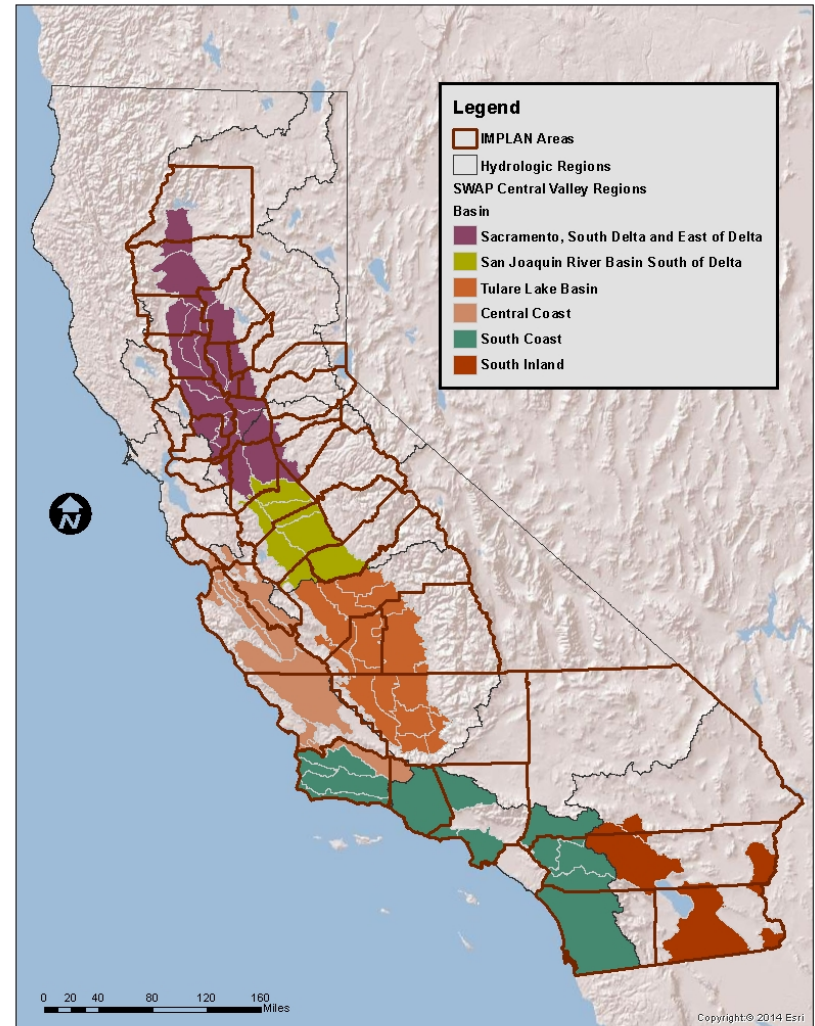
- Economic implications of climate change for crop and livestock farming
- Analyze environmental implications of alternative adaptation in reconciled ecosystems
- What are the potential changes in:
 - Irrigated area, cropping patterns, water use and revenues
 - Feed crops for dairies and livestock
 - Pasture areas in the Sierra Nevada and the coastal range



Modeling Crop Farming

The SWAP Model

- > 90% of agriculture coverage
- 20 crop categories
- Currently does not include livestock and dairies sector
- Employed in past climate change studies, drought and water quality applications



Modeling of Dairies

Water supply side

- Economic viability of growing feed crops: alfalfa, silage corn
- Changes in the total number of cows
- Migration of dairies within the state and out of the state

Regulations

- Manure disposal
- Air emissions
- Nitrate management



Modeling of Livestock

A sector of three segments

- Three segments
 - Cow-calf
 - Feeder
 - Feedlot
- Changes in area of irrigated and rainfed pasture
- Changes in regulations

Change in snowpack

