



CLIMATE CHANGE, NATURAL RESOURCES AND COASTAL MANAGEMENT

A WORKSHOP ON THE COASTAL ECOSYSTEMS OF CALIFORNIA, OREGON AND WASHINGTON

GENERAL REFERENCES AND WEBSITES

- **U.S. Climate Change Science Program**
<http://www.climatescience.gov/>

For example the following reports are recommended:

Abrupt Climate Change, Final Report, Synthesis and Assessment Product 3.4

Full Report <http://www.climatescience.gov/Library/sap/sap3-4/final-report/default.htm>

Brochure Summary <http://downloads.climatescience.gov/sap/sap3-4/sap3-4-brochure.pdf>

Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region (includes a chapter on (National Strategies)

Final Report of Synthesis and Assessment Product 4.1 is posted online. See also the EPA webpage. (posted 16 Jan 2009) <http://www.epa.gov/climatechange/effects/coastal/sap4-1.html>

Thresholds of Climate Change in Ecosystems, Final Report of Synthesis and Assessment Product 4.2.

- **U.S.G.S Global Change Science Website**
http://www.usgs.gov/global_change/
- **U.S. Forest Service Climate Change Resource Center**
<http://www.fs.fed.us/ccrc/>
- **U.S. Fish & Wildlife Service – Climate Change**
<http://www.fws.gov/home/climatechange/>
(Includes multiple links to climate change websites as well as current events within the U.S. Fish and Wildlife Service.)
- **U.S. Fish & Wildlife Service– Climate Change in the Pacific Region**
<http://www.fws.gov/pacific/Climatechange/>
U.S. Fish and Wildlife Service climate change website based specifically for the Pacific Northwest.
- **Climate Impact Group**
<http://ces.washington.edu/cig/>
Interdisciplinary research group studying the impacts of natural climate variability and global climate change (“global warming”) on the U.S. Pacific Northwest.
- **California Applications Program (CAP) and The California Climate Change Center (CCCC)**
<http://meteora.ucsd.edu/cap/> Climate information/forecasts for Calif. and surrounding regions.

- **The Wildlife Society's Climate Change Library**
<http://joomla.wildlife.org/ccbib/>
Offering a collaboration of publications and resources related to climate change.
- **Climate Ready Communities: A Strategy for Adapting to Impacts of Climate Change on the Oregon Coast** http://www.lcd.state.or.us/LCD/docs/publications/climate_ready_communities.pdf

RECOMMENDED READING BY THE WORKSHOP'S SPEAKERS

Plenary Session A – Foundational Presentations: Climate Change Scenarios, Downscaled Models and Effects to Coastal Natural Resource Management

Presenter: Jeff Burgett
Fish and Wildlife Biologist
US Fish and Wildlife Service
Honolulu, HI

Title: Climate Change and its Implications for Conservation and Policy

References/Citations: Moser, S.C. & A.L. Luers. 2008. Managing climate risks in California: the need to engage resource managers for successful adaptation to change. *Climatic Change* 87:309-322.

Hulme, P.E. 2005. Adapting to climate change: is there scope for ecological management in the face of a global threat? *J. Appl. Ecol.* 42:784-794.

Paterson, J.S., et al. 2008. Mitigation, adaptation, and the threat to biodiversity. *Cons. Biol.* 22:1352-1355.

Nielson, R.P., et al. 2005. Forecasting regional to global plant migration in response to climate change. *BioScience* 55:749-759.

Presenter: Dan Cayan
Climate, Atmospheric Sciences, and Physical Oceanography Research
Division, Scripps Institution of Oceanography, UCSD
and Water Resources Discipline, US Geological Survey
201 Nierenberg Hall
La Jolla, CA 92093-0224
(858) 534 4507
(858) 822 2028 fax
dcayan@ucsd.edu

Title: Climate Drivers for the Pacific Coast; Observed 20th Century Climate Change and Downscaled Models for the Pacific Coast; and Sea Level Rise

References/Citations: Cayan, D.R., E.P. Maurer, M.D. Dettinger, M. Tyree and K. Hayhoe, 2008: Climate Change Scenarios for the California Region. *Climatic Change*, published online, 26 Jan 2008, doi:10.1007/s10584-007-9377-6.

Cayan, D.R., P.D. Bromirski, K. Hayhoe, M. Tyree, M.D. Dettinger and R.E. Flick, 2008: Climate change projections of sea level extremes along the California coast.

Climatic Change, 87, (Suppl 1):S57-S73,
doi:10.1007/s10584-007-9376-7.

Cayan, D.R., S.A. Kammerdiener, M.D. Dettinger, J.M. Caprio, and D.H. Peterson. 2001. Changes in the onset of spring in the western United States. *Bulletin of the American Meteorological Society* 82:399-415

Field, D., Cayan, D. and F. Chavez, 2006: Secular warming in the California Current and North Pacific. Accepted for publication in *CalCOFI Reports*.

Katharine Hayhoe, Daniel Cayan, et al. 2004. Emissions Pathways, Climate Change, and Impacts on California. *PNAS*. August 24, 2004, vol. 101, no. 34, 12422-12427 www.pnas.org/cgi/doi/10.1073/pnas.0404500101

Knowles, N., Dettinger, M.D., and Cayan, D.R., 2006, Trends in snowfall versus rainfall in the western United States: *Journal of Climate*, v. 18, p. 4,545-4,559.

McGowan, J. A., D.R. Cayan, L.M. Dorman. 1998. Climate-Ocean Variability and Ecosystem Response in the Northeast Pacific. *Science* 10 July 1998: Vol. 281. no. 5374, pp. 210 – 217

van Wageningen and Cayan: Temporal and Spatial Distribution of Lightning
Fire Ecology Vol. 4, No. 1, 2008

Westerling, A.L., T.J. Brown, A. Gershunov, D.R. Cayan and M.D. Dettinger, 2003: Climate and Wildfire in the Western United States. *Bulletin of the American Meteorological Society*, 84(5), 595-604.

Plenary Session B – Coastal Ecosystems and Climate Change

Presenter: Spencer Reeder

Title: Bridging the Climate Change Data and Policy Gaps: How the West Coast States are Responding Locally and Coast-wide

References/Citations: None

Presenter: Steve Goldbeck
Deputy Executive Director
Climate Change and Legislation
(415/352-3611 steveg@bcdc.ca.gov)
Adam Parris
Coastal Planner
(415/352-3647 adamp@bcdc.ca.gov)

Title: Status and Needs of Coastal Zone Managers

References/Citations: (Resources recommended by the Coastal Zone Managers Group, Organized by NOAA)
<http://www.bcdc.ca.gov/>
<http://coastalmanagement.noaa.gov/welcome.html>

Presenter: Fred Piltz
Senior Environmental Scientist
Minerals Management Service
Department of the Interior
Camarillo, CA
Fred.Piltz@mms.gov

Title: West Coast Governors Agreement on Ocean Health: Action Plan & Priorities

References/Citations: The web site westcoastoceans.gov has links to the Action Plan and several other documents associated with the West Coast Governors Agreement on Ocean Health.

Presenter: Brian Baird
Assistant Secretary
Ocean and Coastal Policy
California Resources Agency
1416 Ninth St, Suite 1311
Sacramento, California 95814
Brian@resources.ca.gov

Title: West Coast Governors Agreement on Ocean Health: State perspectives on Climate Change Actions

References/Citations: I would recommend the people consult the website for the West Coast Governors Agreement which covers the overall effort, and includes the Action Plan that addresses the climate change issue: <http://westcoastoceans.gov/>

Concurrent Session A – Coastal Watersheds and Landscapes (hydrology and ecosystems)

Presenter: Noah Knowles
Research Hydrologist
USGS
Menlo Park, CA

Title: Projected Hydrologic Changes and Management Challenges Under CASCaDE Climate Change Scenarios

References/Citations: <http://cascade.wr.usgs.gov>
<http://modeling.water.ca.gov/hydro/model>

Presenter: Randall T. Hanson
Research Hydrologist
California Water Science Center
Water Resources Discipline
U.S. Geological Survey
San Diego, California

Title: Climate Variability and Change on Coastal Aquifer Systems

References/Citations: Hanson, R.T. Newhouse, M.W., and Dettinger, M.D., 2004, A methodology to assess relations between climate variability and variations in hydrologic time series in the Southwestern United States: *Journal of Hydrology*, Vol. 287, Nos. 1-4, pp. 253-270.

Dickinson, J.E., Hanson, R.T., Ferré, T.P.A., Leake, S.A., 2004, Inferring time-varying recharge from inverse analysis of long-term water levels: *Water Resources Research*, Vol. 40, No. 7, W07403, 15p.

Hanson, R.T. and Dettinger, M.D., 2005, Ground-water/Surface-water responses to Global Climate Simulations, Santa Clara-Calleguas Basin, Ventura County, California, 1950-93: *Journal of the American Water Resources Association*, Vol. 43, No.3, pp. 517 - 536.

Hanson, R.T., Dettinger, M.D., and Newhouse, M.W., 2006, Relations between climate variability and hydrologic time series from four alluvial basins across the southwestern United States: *Hydrogeology Journal*, Vol. 14, No. 7, pp. 1122-1146.

Edwards, B.E., Hanson, R.T., Reichard, E.G., and Johnson, T.A., 2009 (in press), Characteristics of southern California coastal aquifer systems: Chapter 5.2, in *“Earth Science In The Urban Ocean: The Southern California Continental Borderland”*, eds. Lee, H.J. and Normark, B., GSA Special Volume of the USGS Coastal Marine Geology Cabrillo Project, pp. ??-??

Hanson, R.T., Martin, P., Izbicki, J.A., Reichard, E.G., Land, M.T., and Edwards, B.E., 2009 (in press), Comparison of ground-water flow in southern California coastal aquifers: Chapter 5.3, in *“Earth Science In The Urban Ocean: The Southern California Continental Borderland”*, eds. Lee, H.J. and Normark, B., GSA Special Volume of the USGS Coastal Marine Geology Cabrillo Project, pp. ??-??

Presenter: Lorraine Flint
Research Hydrologist
USGS, CA Water Science Center
Sacramento

Title: Evaluating Future Hydrologic and Ecologic Changes in Coastal Watersheds

References/Citations: A description of the model used in this analysis can be found at:
<http://pubs.usgs.gov/pp/pp1703/b/>

Presenter: Joseph A. Hevesi
Research Hydrologist
U.S. Geological Survey
California Water Science Center
Placer Hall, 6000 J Street
Sacramento, CA 95819-6129
916-278-3274 (voice)
916-278-3225 (fax)

Title: Simulated Hydrologic Responses to Potential Climate Change for Mountainous Drainage Basins in California

References/Citations: U.S. Geological Survey, 2008, Documentation of computer program INFIL3.0-A distributed-parameter watershed model to estimate net infiltration below the root zone: U.S. Geological Survey Scientific Investigations Report 2008-5006, 98 p. (Online only) <http://water.usgs.gov/nrp/gwsoftware/Infil/Infil.html>

Hevesi, J.A., Flint, A.L., and Flint, L.E., 2003, Simulation of net infiltration and potential recharge using a distributed-parameter watershed model of the Death Valley region, Nevada and California: U.S. Geological Survey Water-Resources Investigations Report 03-4090, 171 p. <http://pubs.usgs.gov/wri/wri034090/>

Nishikawa, Tracy, Izbicki, J.A., Hevesi, J.A., Stamos, C.L., and Martin, Peter, 2004, Evaluation of geohydrologic framework, recharge estimates, and ground-water flow of the Joshua Tree area, San Bernardino County, California: U.S. Geological Survey Scientific Investigations Report 2004-5267, 115 p. <http://pubs.usgs.gov/sir/2004/5267/>

Rewis, D.L., Christensen, A.H., Matti, Jonathan, Hevesi, J.A., Nishikawa, Tracy, and Martin, Peter, 2006, Geology, ground-water hydrology, geochemistry, and ground-water simulation of the Beaumont and Banning storage units, San Geronio Pass area, Riverside County, California: U.S. Geological Survey Scientific Investigations Report 2006-5026, 173 p. <http://pubs.usgs.gov/sir/2006/5026/>

Presenter: Anne Wein
Operations Research Analyst
United States Geological Survey
Western Geographic Science Center
Menlo Park, California

Title: Proposal for Economic Consequences of a Winter Storm Scenario and Analytical Methods

References/Citations: Jones L.M., et al. 2008. The ShakeOut Scenario, U.S. Geological Survey Open File Report 2008-1150, California Geological Survey Preliminary Report 25, version 1.0, <http://pubs.usgs.gov/of/2008/1150/>

U.S. Army Corps of Engineers. 2007. Performance Evaluation of the New Orleans and Southeast Louisiana Hurricane Protection System Final Report of the Interagency Performance Evaluation Task Force, Volume VII – The Consequences, <https://ipet.wes.army.mil/>

Presenter: Mark H. Huff
Inventory & Monitoring Coordinator
North Coast and Cascades Network
Mount Rainier National Park
55210 238th Ave E
Ashford, WA 98304-9751
Phone (cell): 253-306-4473
Email: Mark_Huff@nps.gov

Title: Monitoring of Ecological Reserves in a Changing Climate: Perspectives from National Parks

References/Citations: None

Presenter: Dr. Glenn R. Guntenspergen
Patuxent Wildlife Research Center
USGS

Title: Resilience of coastal wetlands to sea-level rise

References/Citations: None

Presenter: Jessica Halofsky
Research Ecologist
University of Washington/Forest Service
Pacific Wildland Fire Sciences Lab
Seattle, WA

Title: Climate change effects and adaptation options for forest ecosystems in the Western US

References/Citations: **Forest Service Climate Change Resource Center**
<http://www.fs.fed.us/ccrc/>

The Climate Change Resource Center (CCRC) is a reference Web site for resource managers and decisionmakers who need information and tools to address climate change in planning and project implementation on lands in the western U.S.

University of Washington Climate Impacts Group

<http://cses.washington.edu/cig/>

The Climate Impacts Group (CIG) is an interdisciplinary research group studying the impacts of natural climate variability and global climate change on the U.S. Pacific Northwest. Through research and interaction with regional stakeholders, the CIG works to increase the resilience of the Pacific Northwest to fluctuations in climate.

The Western Mountain Initiative

<http://www.cfr.washington.edu/research.fme/wmi/>

The Western Mountain Initiative (WMI) is a team of USGS and USDA Forest Service scientists working together to better understand and predict the responses of Western mountain ecosystems to climatic variability and change, emphasizing sensitivities, thresholds, resistance, and resilience.

Climate Change Science Program Synthesis and Assessment Product 4.4

<http://www.climate-science.gov/Library/sap/sap4-4/final-report/>

The U.S. Climate Change Science Program Synthesis and Assessment Product 4.4, entitled, "Preliminary review of adaptation options for climate-sensitive ecosystems and resources," gives information on possible adaptation options to protect climate-sensitive ecosystems.

Presenter: Kathryn McEachern
Senior Plant Ecologist
USGS
WERC Channel Islands Field Station
Ventura, California

Title: Fog and the hydrologic regime of Santa Rosa Island, Channel Islands National Park:
Interacting effects of climate and vegetation recovery

References/Citations: None

Concurrent Session B – Bays and Estuaries

Presenter: Bruce Jaffe
Research Oceanographer
USGS, Santa Cruz

Title: Geomorphic response of estuaries to sea level rise and climate change

References/Citations: Jaffe, B.E., Smith, R.E., and Foxgrover, A.C., 2007, Anthropogenic influence on sedimentation and intertidal mudflat change in San Pablo Bay, California: 1856 to 1893. *Estuarine, Coastal and Shelf Science* 73 (1-2), 175-187, doi:10.1016/j.ecss.2007.02.17.

CASCade Project:

<http://cascade.wr.usgs.gov/index.shtml/>

Presenter: Patty Glick
Senior Global Warming Specialist
National Wildlife Federation
Seattle, Washington

Title: Sea-level Rise and Coastal Habitats in the Pacific Northwest: Application of a Model

References/Citations: www.nwf.org/sealevelrise

Glick, P., Clough, J., and Nunley, B. 2007. *Sea-level Rise and Coastal Habitats in the Pacific Northwest: An Analysis for Puget Sound, Southwestern Washington, and Northwestern Oregon* (Reston, VA: National Wildlife Federation).

Glick, P., Clough, J., and Nunley, B. 2008. *Sea-Level Rise and Coastal Habitats in the Chesapeake Bay Region: Technical Report* (Reston, VA: National Wildlife Federation).

Glick, P. and J. Clough. 2006. *An Unfavorable Tide: Global Warming, Coastal Habitats and Sportfishing in Florida* (Reston, VA: National Wildlife Federation and Tallahassee, FL: Florida Wildlife Federation).

Presenter: Eric Grossman
Research Geologist
U.S. Geological Survey/Coastal and Marine Geology Program
Santa Cruz, CA:

Title: Forecasting Response of Large River Deltas and Nearshore Ecosystems to Sea-Level and Climate Change in Puget Sound: “Estuary Squeeze”

References/Citations: <http://puget.usgs.gov/>
http://walrus.wr.usgs.gov/infobank/programs/html/staff2html/staff/Eric_Grossman.html

Presenter: Michelle Orr
Principal
Philip Williams & Associates | Environmental Hydrology
San Francisco, CA

Title: Planning for Sustainable Estuarine Restoration with Sea Level Rise

References/Citations: Michelle Orr, Stephen Crooks, and Philip B. Williams. 2003. Will Restored Tidal Marshes Be Sustainable? In: Larry R. Brown, editor. *Issues in San Francisco Estuary Tidal Wetlands Restoration*. San Francisco Estuary and Watershed Science. Vol. 1, Issue 1 (October 2003), Article 5.
<http://repositories.cdlib.org/jmie/sfews/vol1/iss1/art5>

Presenter: John Y. Takekawa PhD
Research Wildlife Biologist
USGS Western Ecological Research Center
SFB Estuary Field Station
505 Azuar Drive
Vallejo, CA 94592 USA
tel:707/562-2000; fax:707/562-3001
email: john_takekawa@usgs.gov

Title: Estuary-Nearshore Climate Change Effects and Relationship to Migratory and Listed Species

References/Citations: Seavy, NE, KE Dybala, and MA Snyder. 2008. Climate models and ornithology. *Auk* 125: 1-10.

Raucher, S. A., J. S. Pal, N. S. Diffenbaugh, and M. M. Benedetti. 2008. Future changes in snowmelt-driven runoff timing over the western U. S. *Geophysical Research Letters* 35: 16703, doi:10.1029/2008GL034424.

Barth, J. A., B. A. Menge, J. Lubchenco, F. Chan, J. M. Bane, A. R. Kirincich, M. A. McManus, K. J. Nielsen, S. D. Pierce, and L. Washburn. 2007. Delayed upwelling alters nearshore coastal ocean ecosystems in the northern California current. *Proc. Nat. Acad. Sci.* 104: 3719–3724.

Presenter: Scott W. Starratt
Research Geologist
Volcano Hazards Program
U.S. Geological Survey

Title: Sea Level and Climate Variability: Diatom Records from Coastal Marshes

References/Citations: Byrne, Roger, Ingram, B.L., **STARRATT, SCOTT**, Malamud-Roam, Frances, Collins, J.N., and Conrad, M.E., 2001, Carbon-isotope, diatom, and pollen evidence for late Holocene salinity change in a brackish marsh in northern California: *Quaternary Research*, v. 55, p. 66-76.

STARRATT, S.W., 2004, Diatoms as indicators of late Holocene freshwater flow variation in the San Francisco Bay estuary, central California, U.S.A.: *in* Poulin, Michel, ed., *Proceedings of the Seventeenth International Diatom Symposium*, Bristol, Biopress Limited, p. 371-397.

STARRATT, S.W., ed., 2007, *Pond Scum to Carbon Sink: Geological and Environmental Applications of the Diatoms: The Paleontological Society Papers*, v. 13, 193 p.

STARRATT, S.W., 2007, Diatoms in estuaries and tidal marshes: *The Paleontological Society Papers*, v. 13, p. 85-110.

Presenter: Jaime C. Kooser
Reserve Manager
San Francisco Bay National Estuarine Research Reserve
Tiburon, CA
-and-
Marina Psaros
Coastal Training Program Coordinator
San Francisco Bay National Estuarine Research Reserve
Tiburon, CA

Title: Sentinel Sites: Using NOAA's National Estuarine Research Reserve System for Climate Change Research, Monitoring and Education

References/Citations: "Climate Change: Science, Education and Stewardship for Tomorrow's Estuaries":
http://nerrs08.elkhornslough.org/files/NERRS_Climate_Change_Strategy_Paper_7.30.08.pdf

Presenter: Robin L. Miller
Biogeochemist
U.S.G.S./WRD
Sacramento, CA

Title: Plant biomass carbon inputs, losses, and storage in re-established marshes in the Sacramento-San Joaquin Delta.

References/Citations: Miller RL, Fram M, Fujii R, and Wheeler, G (2008) Subsidence reversal in a re-established wetland in the Sacramento-San Joaquin Delta, California, U.S.A. *San Francisco Estuary and Water Science* 6(3) article 1. Available from:
<http://repositories.cdlib.org/jmie/sfewsvol6/iss3/art1>

Presenter: Brian A. Pellerin
Soil Scientist
USGS, CA Water Science Center
Sacramento

Title: The role of climate variability on constituent transport from an agricultural watershed

References/Citations: Hernes PJ, RGM Spencer, RY Dyda, BA Pellerin, PAM Bachand and BA Bergamaschi. 2008. The role of hydrologic regimes on dissolved organic carbon composition in an agricultural watershed. *Geochimica et Cosmochimica Acta*, 72: 5266-5277.

Presenter: Judith Z. Drexler
Wetland Ecologist
U.S. Geological Survey, California Water Science Center
Sacramento, CA

Title: Peat accretion rates, carbon storage, and sustainability of marshes in the Sacramento-San Joaquin Delta, California.

References/Citations: This research is part of the Rates and Evolution of Peat Accretion through Time (REPEAT) in the Delta project. We will soon have a web site with our new products

posted. Right now, if you would like more information please contact me at jdrexler@usgs.gov.

Concurrent Session C – Nearshore and Open Ocean

Presenter: Bruce Richmond
Geologist
USGS Coastal and Marine Geology Program
Pacific Science Center, Santa Cruz, CA

Title: West coast shoreline change over the last century: Results from the USGS National Assessment of Shoreline Change Studies.

References/Citations: Data and products for the USGS National Assessment of Shoreline Change Project can be accessed at:
<http://coastal.er.usgs.gov/shoreline-change/>

Presenter: David Revell, PhD.
Senior Associate
Philip Williams and Associates
San Francisco CA

Title: An Initial Assessment of the Impact of Sea Level Rise to the California Coast

References/Citations: None

Presenter: Patrick Barnard
Coastal Geologist
U.S. Geological Survey, Coastal and Marine Geology Program
Santa Cruz, CA

Title: A comprehensive, process-based modeling approach for assessing coastal flooding and inundation under extreme storm scenarios

References/Citations: Southern California Coastal Hazards Website:
http://walrus.wr.usgs.gov/coastal_processes/socalhazards/

Presenter: Brian Collins
Research Civil Engineer
U.S Geological Survey
Western Earth Surface Processes Team
Menlo Park, California

Title: Climate change based prediction of coastal cliff landslides near San Francisco, California

References/Citations: None

Presenter: Julie Thomas
Integrated Oceanography Division,
Scripps Institution of Oceanography,
UCSD
9500 Gilman Drive #0214
La Jolla, CA 92093-0214
858.534.3034; jot@splash.ucsd.edu

Title: Role of Ocean Observing Systems for Climate Change Studies

References/Citations: NOAA Climate: www.noaa.gov/climate.html
NOAA IOOS: <http://ioos.noaa.gov>
Southern California (SCCOOS): www.sccoos.org
Central and Northern California: (CeNCOOS): www.cencoos.org
Northwest (NANCOOS): www.nanoos.org

Presenter: Curt D. Storlazzi
Research Oceanographer
Coastal and Marine Geology Team
USGS Pacific Science Center
400 Natural Bridges Drive
Santa Cruz, CA 95060
cstorlazzi@usgs.gov, 831-427-4721

Title: The influence of climate change on coastal processes and benthic habitats: Past observations, present modeling, and future projections

References/Citations: Wingfield, D.K. and Storlazzi, C.D., 2007. "Variability in oceanographic and meteorologic forcing along Central California and its implications on nearshore processes" *Journal of Marine Systems*, v. 68, p. 457-472.

Storlazzi, C.D., Reid, J.A., and Golden, N.E., 2007. "Wave-Driven Spatial and Temporal Variability in Seafloor Sediment Mobility in the Monterey Bay, Cordell Bank and Gulf of the Farallones National Marine Sanctuaries" U.S. Geological Survey Scientific Investigations Report 2007-5233, 84 p. <http://pubs.usgs.gov/sir/2007/5233/>

Storlazzi, C.D. and Wingfield, D.K., 2005. "The Spatial and Temporal Variability in Oceanographic and Meteorologic Forcing along Central California: 1980-2002" U.S. Geological Survey Scientific Investigations Report 2005-5085, 39 pg. <http://pubs.usgs.gov/sir/2005/5085/>

Storlazzi, C.D. and Field, M.E., 2000. "Sediment distribution and transport along a rocky, embayed coast: Monterey Peninsula and Carmel Bay, California" *Marine Geology*, v. 170, no. 3-4, p. 289-316.

Storlazzi, C.D. and Griggs, G.B., 2000. "The influence of El Niño-Southern Oscillation (ENSO) events on the evolution of central California's shoreline" *Geological Society of America Bulletin*, v. 112, no. 2, p. 236-249.

Presenter: John Y. Takekawa PhD, Research Wildlife Biologist
USGS Western Ecological Research Center
SFB Estuary Field Station
505 Azuar Drive
Vallejo, CA 94592 USA
tel:707/562-2000; fax:707/562-3001
email: john_takekawa@usgs.gov

Title: Seabirds and their Marine Environments: Movements, Dynamic Habitats, and Change

References/Citations: None

Presenter: Brian Wells
Research Fishery Ecologist
Fisheries Ecology Division
Southwest Fisheries Science Center
110 Shaffer Road
Santa Cruz, CA 95060

Title: Linkages between climate variation and the pelagic ecosystem of the CA current

References/Citations: Goericke, RB and 16 coauthors. (2007) The state of the California current, 2006-2007: regional and local processes dominate. *CalCOFI* 48:33-66.

Peterson, B and 25 coauthors. (2006) The state of the California current, 2005-2006: warm in the north, cool in the south. *CalCOFI* 47:30-74.

Wells, B.K., J. Field, J. Thayer, C. Grimes, S. Bograd, W. Sydeman, F. Schwing, and R. Hewitt. 2008 Untangling the relationships among climate, prey, and top predators in an ocean ecosystem. *Marine Ecology Progress Series*. 364:15-29

Presenter: Maria Brown
Superintendent
NOAA's Gulf of the Farallones National Marine Sanctuary
San Francisco, CA

Title: Climate Change Effects and Management Response along the North-central California Coast

References/Citations: Higgason, Kelley and Brown, Maria. 2008 Proceedings of the First Biennial Ocean Climate Summit: Marine Sanctuaries Conservation Series ONMS-08-05. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 50 pp.
www.sanctuaries.nos.noaa.gov

Day 2

Plenary Session C – Management and Species Challenges

Presenter: Terry L. Root
Senior Fellow—University Faculty
Woods Institute for the Environment
Professor by Courtesy in Biological Sciences
Stanford University
Stanford, CA 94305-6055
root@stanford.edu Tel: 650-736-1296
<http://terryroot.stanford.edu/>

Title: Wildlife Responses to Climate Change (Terrestrial) and Management Challenges

References/Citations: Selected Recent Publications

 Root, T.L., J.T. Price, K.R. Hall, S.H. Schneider, C. Rosenzweig, J. A. Pounds. 2003. [“Fingerprints' of global warming on animals and plants”](#). *Nature* 421, 57-60.

Parmesan, C., T. L. Root, and M. R. Willig. 2000. “Impacts of extreme weather and climate on terrestrial biota”. *Bulletin of the American Meteorological Society* 40: 443-450.

Sorenson, L. G., R. Goldberg, T. L. Root, M. G. Anderson. 1998. “Potential effects of global warming on waterfowl populations breeding in the Northern Great Plains”. *Climatic Change* 40: 343-369.

Schneider, S. H. and T. L. Root. 1996. “Ecological implications of climate change will include surprises”. *Biodiversity and Conservation* 5: 1109-1119.

 Root, T.L. and S.H. Schneider. 1995. [“Ecology and Climate: Research Strategies and Implications”](#). *Science* 269: 334-341.

 Root, T.L., and S.H. Schneider. 1993. [“Can large-scale climatic models be linked with multi-scale ecological studies?”](#), *Conservation Biology* 7: 256-270.

 Root, T. 1988. [“Energy constraints on avian distributions and abundances”](#). *Ecology* 69: 330 - 339.

Root, T. 1988. “Environmental factors associated with avian distributional limits”. *Journal of Biogeography* 15: 489 - 505.

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Root, T. 1988. *Atlas of Wintering North American Birds: An Analysis of Christmas Bird Count Data*. University of Chicago Press, Chicago, Illinois.

Presenter: Ellie Cohen
Executive Director
PRBO Conservation Science
3820 Cypress Dr. #11
Petaluma, CA 95954
ecohen@prbo.org
707-781-2555, ext. 318

Title: Managing for Change: Adaptive Conservation Strategies

References/Citations: Nicole E. Heller, Erika S. Zavaleta [Biodiversity management in the face of climate change: A review of 22 years of recommendations, *Biological Conservation*, Volume 142, Issue 1 \(January 2009\)](#)

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See PRBO Conservation Science's website on climate change, birds and conservation at <http://www.prbo.org/climatechange>

For an overview on conservation and adaptation see: Preliminary Review of Adaptation Options for Climate-Sensitive Ecosystems and Resources
www.climate-science.gov/Library/sap/sap4-4/final-report/

See the regional guidebook: The Sierra Nevada Climate Took Kit
www.sierranevadaalliance.org/publications/publication.shtml?type=pgm02

See "Wetland Restoration and Projected Impacts from Climate Change" white paper, San Francisco Bay Joint Venture, Nov. 2008, www.sfbayjv.org

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See www.realclimate.org, an excellent, up-to-date climate science web site for “climate science by real scientists.”

For an excellent resource on wetlands and climate change, see the Association of State Wetland Managers:

http://www.aswm.org/science/climate_change/climate_change.htm#1

Plenary Session D – Adapting Our Management and Decision Making

Presenter: Stephen H Schneider
Professor
Stanford University
371 Serra Mall
Stanford, CA 94305-5020
(650) 725-1296
shs@stanford.edu

Title: Climate Change Policy -- Expecting the "Unimaginable Surprises" & Actions to Consider

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Presenter: J. Michael Scott
Senior Scientist & Leader
U.S. Geological Survey
Idaho Cooperative Fish & Wildlife Research Unit
College of Natural Resources
PO Box 441141
University of Idaho
Moscow, Idaho 83844-1141
208-885-6960
mscott@uidaho.edu

Title: Managing for Change in Coastal Area Refuges

References/Citations: Baron, J. S., S. H. Julius, J. M. West, L. A. Joyce, G. Blate, C. H. Peterson, M. Palmer, B. D. Keller, P. Kareiva, J. M. Scott and **B. Griffith**. 2008. Some guidelines for helping natural resources adapt to climate change. *International Human Dimensions Programme on Global Environmental Change Update* 2:46-52.

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Presenter: Jan Thompson
Biologist/Engineer
Coordinator, Priority Ecosystem Studies, San Francisco Estuary,
USGS, Menlo Park, CA 94025
Phone: 650-329-4364
Email: jthompson@usgs.gov

Title: CASCaDE A decision tool for examining the effect of climate change on the San Francisco Delta Ecosystem

References/Citations: <http://cascade.wr.usgs.gov/>

Presenter: Kathy A. O'Halloran
Natural Resources Staff Officer for the Olympic National Forest
kohalloran@fs.fed.us
360-956-2430

Title: Using Existing Information to Development Adaptation Strategies-- Olympic NF Case St

References/Citations: **SAP 4.4**
US Climate Change Science Program Synthesis and Assessment Product 4.4 (SAP 4.4), Chapter 3:
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Concurrent Session D – Aquatic Biota

Presenter: Bill Peterson
Oceanographer
NOAA/Fisheries
Northwest Fisheries Science Center

Hatfield Marine Science Center
Newport, OR

Title: Forecasting returns of coho and Chinook salmon in the northern California Current: a role for high-frequency long term observations

References/Citations: Peterson, W.T. and F.B. Schwing. 2003. A new climate regime in Northeast Pacific ecosystems. *Geophysical Research Letters*. 30(17), 1896. doi:10.1029/2003GL017528.

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<http://www.nwfsc.noaa.gov> (see "Ocean Index Tools").

Presenter: Gordon H. Reeves
USDA Forest Service
Pacific Northwest Research Station
Corvallis, OR

Title: Effects of Climate Change on the Freshwater Life-history of Anadromous in the Pacific Northwest

References/Citations: Crozier, L. and R.W. Zabel. 2006. Climate impacts at multiple scales: evidence for differential population responses in juvenile Chinook salmon. *Journal of Animal Ecology* 75:1100-1109.

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Presenter: Larry R. Brown
Research Biologist
U.S. Geological Survey, California Water Science Center
Placer Hall, 6000 J Street
Sacramento, CA 95819-6129

Title: Increased water temperatures from CASCaDE climate-change scenarios: implications for selected California fishes

References/Citations: <http://cascade.wr.usgs.gov>

Presenter: Jeff Kershner
Center Director
USGS/Northern Rocky Mountain Science Center
Bozeman, MT.

Title: Are current native trout strategies adequate in a warming climate?

References/Citations: Hilderbrand, R.H., and J.L. Kershner. 2000. Conserving inland cutthroat trout in small streams: how much stream is enough? *North American Journal of Fisheries Management* 20:513-520.

Keleher, C.J., and F.J. Rahel. 1996. Thermal limits to salmonid distributions in the Rocky Mountain region and potential habitat loss due to global warming: a geographic information system (GIS) approach. *Transactions of the American Fisheries Society* 125: 1-13.

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Rieman, B.E., D. Isaak, S. Adams, D. Horan, D. Nagel, C. Luce, D. Myers. 2007. Anticipated climate warming effects on bull trout habitats and populations across the interior Columbia River basin. *Transactions of the American Fisheries Society* 136:1552-1565

Presenter: Alec G. Maule
Leader, Ecology & Environmental Physiology Section
USGS, WFRC, Columbia River Research Laboratory
Cook, WA 98605

Title: The use of bioenergetics modeling to predict effects of climate change on individual fish, fish populations and fish communities

References/Citations: None

Concurrent Session E – Nearshore Habitats, Bays and Estuaries

Presenter: Eric Miller
Senior Scientist
MBC Applied Environmental Sciences
Costa Mesa, CA

Title: Regime shift, NPGO, PDO, and the southern California kelp forests: the effect of climate variability on coastal resources, 1967-2007

References/Citations: <http://www.o3d.org/npgo/videos-images.html>

Presenter: Dr. M. Tim Tinker
Research Wildlife Biologist
USGS-WERC Santa Cruz Field Station
100 Shaffer Rd., Long Marine Lab
Santa Cruz, CA, 95060

Title: Using long term research on sea otters and kelp forest food webs to study the effects of climate change on coastal ecosystems

References/Citations: <http://www.werc.usgs.gov/otters/>
<http://www.seaotterresearch.org/>

Presenter: Ronald M. Thom
Staff Scientist
Marine Sciences Laboratory, Pacific Northwest National Laboratory
1529 West Sequim Bay Road
Sequim, WA.
ron.thom@pnl.gov

Title: Climate driven dynamics of eelgrass (*Zostera marina* L.) along the U.S. Pacific Coast: resilience and vulnerability of a critical nearshore fisheries habitat

References/Citations: None

Presenter: Mary McGann
Research Geologist
DOI, U.S. Geological Survey, Coastal and Marine Geology Team
Menlo Park, CA 94025
mmcgann@usgs.gov

Title: Foraminifera: a tool for dating and assessing climatic and ecosystem change in estuarine and marine environments

References/Citations: This paper discusses a nearly 4,000-year climate record from San Francisco Bay based on the foraminiferal record: McGann, Mary, 2008, High-resolution foraminiferal, isotopic, and trace element records from Holocene estuarine deposits of San Francisco Bay, California: *Journal of Coastal Research*, v. 24, no. 5, p. 1092-1109.

Concurrent Session F – Species/Population Management

Presenter: Dr. Franklin B. Schwing
Southwest Fisheries Science Center/ Environmental Research Division
NOAA Fisheries Service
Pacific Grove, CA
franklin.schwing@noaa.gov

Title: Think Like a Fish: How Climate Change Affects Marine Populations

References/Citations: CCSP. 2008. *The effects of climate change on agriculture, land resources, water resources, and biodiversity in the United States*. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. P. Backlund, et al. U.S. Department of Agriculture, Washington, DC., USA, 362 pp.

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Presenter: Stephen R. Palumbi
Professor of Biology
Director, Hopkins Marine Station
Pacific Grove, CA 93950
spalumbi@stanford.edu

Title: Are marine species adapted to current environmental gradients? Prospects for climate change

References/Citations: None

Presenter: Jaime Jahncke, PhD
Marine Ecology Division Director
PRBO Conservation Science
3820 Cypress Dr. #11
Petaluma, CA 95954
jjahncke@prbo.org
(707) 781-2555 ext. 335

Title: Seabird responses to variability in coastal upwelling at multiple time scales

References/Citations: None

Presenter: Diana Stralberg
Principal Scientist
PRBO Conservation Science
3820 Cypress Dr. #11
Petaluma, CA 95954
dstralberg@prbo.org

Title: Predicting Effects of Climate Change on Bird Distributions Across Scales and Ecosystems: How Species-based Modeling can Inform Management and Decision Making

References/Citations: PRBO distribution models and mapping tool:
<http://data.prbo.org/cadc2/index.php?page=climate-change-distribution>

California distribution modeling examples:

Loarie, S. R., B. E. Carter, K. Hayhoe, S. McMahon, R. Moe, C. A. Knight and D. D. Ackerly. 2008. Climate Change and the Future of California's Endemic Flora. *PLoS ONE* 3:e2502. [URL: <http://dx.doi.org/10.1371/journal.pone.0002502>]

Kueppers, L. M., M. A. Snyder, L. C. Sloan, E. S. Zavaleta and B. Fulfrost. 2005. Modeled regional climate change and California endemic oak ranges. *Proceedings of the National Academy of Sciences of the United States of America* 102:16281-16286. [URL: <http://www.pnas.org/content/102/45/16281.abstract>]

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Bakkenes, M., Alkemade, J.R.M., Ihle, F., Leemans, R., Latour, J.B., 2002. Assessing effects of forecasted climate change on the diversity and distribution of European higher plants for 2050. *Global Change Biology* 8, 390-407.

Huntley, B., Collingham, Y.C., Willis, S.G., Green, R.E., 2008. Potential Impacts of Climatic Change on European Breeding Birds. *PLoS ONE* 3, e1439.

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Wrap Up – Moving Forward and Closing Remarks

Presenter: Rebecca Shaw, PhD
Director of Conservation Programs
The Nature Conservancy of California
rshaw@tnc.org
201 Mission St 4th Floor
San Francisco
CA 94105

Title: Natural Systems Adaptation to Climate Change in California

References/Citations: None

Presenter: Dan Ashe
Science Advisor to the Director
U.S. Fish and Wildlife Service
1849 C St., NW
Washington, DC 20240
202.208.4700
Dan_ashe@fws.gov

Title: Later is Over: The imperative for transformation in conservation

References/Citations: Tom Friedman – *Hot, Flat and Crowded: Why We Need a Green Revolution and How It Can Save America.*
