



Statement of Qualifications

2013

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GEOS
INSTITUTE

ABOUT GEOS INSTITUTE

The Geos Institute is a nonprofit organization that uses science to help people predict, reduce, and prepare for climate change. To this end, the Geos Institute brings the best available science to community and natural resource planning processes, through its publications, consulting services, and bridge building between respected scientists and decision makers.

Based in Ashland, Oregon, the Geos Institute addresses the challenges of climate change through three primary initiatives: ClimateWise, Banking on Forests, and Green Solutions.

Our Staff, Board of Directors, and National Science Advisory Board work together to help ensure that individual citizens and government officials have access to the credible science they need to make informed, responsible decisions as they work to meet the challenges of a changing climate.

CORE OPERATING VALUES

WE HOLD THE FOLLOWING VALUES IN ALL OUR WORK:

Solution Oriented: We develop and advance solutions to the important climate change issues of our time. We work with unlikely allies and search in non-traditional places in this regard.

Science-Based: We believe rigorous, peer-reviewed scientific information is critical in the effort to create effective policy and solutions to climate change and land use.

People Matter: We link the vitality of ecosystems to the needs of people, putting science forward in a way that is accessible to non-scientists and creating solutions that address ecological, economic and social aspects of natural resource conflicts.

Culture of Excellence: We continually search for ways to improve all aspects of our work.

Results Driven: We measure our progress by the tangible change that results from our work.

Honest & Accountable: We believe in the power of honesty and accountability and put these values into practice upholding them in all our work.


SERVICES OFFERED

VULNERABILITY ASSESSMENTS

Geos Institute scientists, trained in Vulnerability Assessment through the National Conservation Training Center, assist managers and communities in identifying vulnerabilities among important resources and populations. We assess sensitivity, exposure, and adaptive capacity in relation to climate change trends, ongoing stressors, and uncertainty.

CLIMATE CHANGE SCIENCE ASSESSMENTS

Climate change science assessments provide a packaged report and online resource that summarize the most up-to-date climate projections, presented in maps, graphs, and language appropriate for scientists and non-scientists. In addition, we conduct a thorough literature review and include information on ecological and socioeconomic trends expected from climate change.



GIS AND CARTOGRAPHY

We provide custom and locally-specific analysis of spatial data, including data on land use, climate change, carbon storage, energy corridors, intact ecosystems, hydrology, and others. We can help identify potential climate refugia, areas of high importance for water resources, or corridors for wildlife facing climate change. Example services include: advanced spatial analysis, local climate change projections, interactive web mapping applications, habitat suitability modeling and mapping, and advanced geoprocessing tools for map automation.

PLANNING ON PUBLIC LANDS

Geos Institute has developed science-based strategies to help lessen and prepare forest ecosystems and people for the unavoidable impacts of climate change. We use the best available science to formulate and promote sound management policies. Our focus is on optimizing carbon storage, providing clean drinking water for communities, and ensuring habitat for wildlife and fish.

CLIMATE CHANGE PLANNING WORKSHOPS

Our ClimateWise team of scientists and facilitators is available to plan and implement workshops for local experts and leaders, elected officials, and/or the general public. ClimateWise workshops result in a common understanding of climate change impacts at the local level, identification of locally-specific vulnerabilities, and the development of prioritized adaptation strategies and actions for local communities, watersheds, or planning units, integrated across natural and human systems.

STREAM RESTORATION PROJECT PLANNING

We use a proven, multi-stakeholder model to work with communities to improve the connectivity of their river systems to maintain resilient floodplains in the face of a changing climate. Our Freeways for Fish Program restores fish habitat in the Rogue and Klamath Basins in preparation for changes in water availability due to climate change. Over the last 6 years, this program has worked steadily toward the goal of restoring fish access to 1,200 river miles in the Rogue Basin.

SCIENCE AND TECHNICAL STAFF

OVERVIEW

To accomplish the goal of the Science Program, our science staff are dedicated to: (1) keeping scientific credentials up to date through involvement with professional societies, publishing in peer-reviewed journals, presentations at science meetings and conferences, and developing materials and courses to train others in adaptation planning; (2) organizing conferences, symposia, workshops, and meetings on programs and policies of scientific importance; (3) updating our in-house databases and literature archives of key topics related to natural resource conservation and climate change planning; (4) engaging our National Science Advisory Board and national network of scientists in support of program objectives; (5) ongoing software trainings, experimentation and innovation; and (6) developing strategic relationships with others in the field of climate change adaptation and spatial analysis. All staff members have a minimum 10 years of experience in their field and natural science educational backgrounds.

STAFF	TITLE
Dominick DellaSala, Ph.D.	President and Chief Scientist
Marni Koopman, Ph.D.	Climate Change Scientist
Brian Barr, M.S.	Aquatic Habitat Restoration Program Manager
Jessica Leonard, GISP, B.A.	Spatial Analysis Program Manager
Cindy Deacon Williams, M.S.	Senior Fellow

STAFF PROFILES

DOMINICK DELLASALA, PHD, PRESIDENT AND CHIEF SCIENTIST

Dominick is an internationally renowned author of over 150 technical papers, including the award winning “Temperate and Boreal Rainforests of the World” (www.islandpress.org/dellasala). Dominick has given plenary and keynote talks ranging from academic conferences to the United Nations (Earth Summit II). He has appeared in National Geographic, Science Digest, Science Magazine, Time Magazine, Audubon Magazine, National Wildlife Magazine, High Country News, Terrain Magazine, NY Times, LA Times, USA Today, Jim Lehrer News Hour, CNN, MSNBC, “Living on Earth (NPR),” and several PBS wildlife documentaries. He has testified in congressional hearings in defense of the Endangered Species Act, roadless area conservation, national monument designations, forest protections, and climate change among others. For his efforts to help foster national roadless area conservation and support designation of new national monuments, he received conservation leadership awards from the World Wildlife Fund in 2000 and 2004, the Wilburforce Foundation in 2006, and was twice nominated for conservation awards for his work as a whistleblower while on the U.S. Fish & Wildlife Service spotted owl recovery team.

MARNI KOOPMAN, PHD, CLIMATE CHANGE SCIENTIST


Marni takes a lead role in developing and executing ClimateWise projects to help local communities and federal land managers prepare for a changing climate. She serves as Project Lead in ClimateWise projects around the West, bringing communities the science they need to assess their vulnerabilities and helping them develop climate change strategies that are integrated across both natural and human communities. She is currently working with a group of national adaptation leaders to develop a handbook and training module on vulnerability assessment and adaptation planning. Marni has also worked on developing climate-informed conservation blueprints for the Klamath-Siskiyou ecoregion and the Colorado Plateau. Marni joined the Geos Institute's staff after completing postdoctoral research with the Forest Service's Rocky Mountain Research Station. That research investigated the effects of climate change on wildlife and wildlife habitat by working with a team to model climate stress and assess the level of state planning for climate change in the State Wildlife Action Plans. Marni has expertise in climate change effects on wildlife, metapopulation ecology, vulnerability assessment, and adaptation planning. Marni holds a B.A. in Environmental Studies from the University of California at Santa Barbara, a M.S. in Wildland Resource Science from the University of California at Berkeley, and a Ph.D. in Ecology from the University of Wyoming.

BRIAN BARR, MS, AQUATIC HABITAT RESTORATION PROGRAM MANAGER

Brian is an aquatic ecologist with over 16 years of experience on trout and salmon restoration in the Pacific and intermountain west. He holds a bachelor's degree in zoology from Miami University and a master's degree in fisheries and wildlife science from Virginia Tech. Over the past nine years, Brian has focused his attention on improving fish passage conditions in the Rogue and Klamath Rivers of southern Oregon and northern California, restoring river, floodplain, and streambank conditions, and assessing the effects of livestock grazing on creeks and springs in the Cascade-Siskiyou National Monument. Recently, he has turned his attention to the emerging impacts of climate change, how those impacts are likely to affect communities and natural resources, and what we can do to prepare ourselves and the resources we depend upon to withstand these effects. Brian currently serves as program director for our Green Solutions initiative, which works to integrate watershed restoration practices into water management systems.

JESSICA LEONARD, GISP, BA, SPATIAL ANALYSIS PROGRAM MANAGER

Jessica directs our Spatial Analysis Program, with an emphasis on preparing local climate change projections for communities and agencies planning for climate change. She has developed custom python scripts to facilitate the conversion of raw climate data into aesthetically pleasing and educational projection maps. She has a wide range of GIS and cartographic experience at the municipal, planning, and scientific levels. Jessica also assists with the mapping needs of the rest of the programs at the Geos Institute, such as integrating spatial datasets to map forests with high carbon stores, mapping fish habitat and passage impediments to aid aquatic biologists and land managers with restoration efforts, assessing land owners and pollutants within drinking water surface water



source areas, and various other program needs as they arise. She is a Certified GIS Professional (GISP) from the GIS Certification Institute (GISCI), holds a B.A. in Geography from Augustana College in Illinois and a Graduate Certificate in Geographic Information Systems from Portland State University.

CINDY DEACON WILLIAMS, MS, SENIOR FELLOW

A fisheries biologist by training, Cindy currently facilitates ClimateWise workshops to help communities prepare for a changing climate. She also assists the Geos Institute in writing articles for publications in scientific journals. She has over 25 years of experience as a policy analyst and field biologist working with conservation organizations, governmental agencies, and the California legislature. Cindy helped write natural resource laws in California and Washington, D.C. to protect endangered species, water resources, and wetlands, and assisted the Bureau of Land Management and USDA Forest Service in development of regional federal land management plans for the Pacific Northwest and Columbia River Basin. Cindy holds a B.S. in Biological Sciences from Oregon State University and a M.S. in Biological Sciences from California State University at Sacramento.

FEATURED PROJECT SUMMARIES

CLIMATEWISE CLIMATE CHANGE PROJECTIONS AND ADAPTATION PLANNING

PROJECT SUMMARY: ClimateWise is a science-based process developed to address the need to plan for the impacts of climate change. Key to the success of ClimateWise is the integration between planning for natural and human communities in ways that create new synergies and collaborations. Because every area has unique values as well and vulnerabilities, climate change strategies that reduce the impacts of current and projected change are best developed at the local level. ClimateWise helps communities understand the risks associated with climate change and decide what actions to take to protect their community’s infrastructure, natural resources, culture, economy, health, and safety.

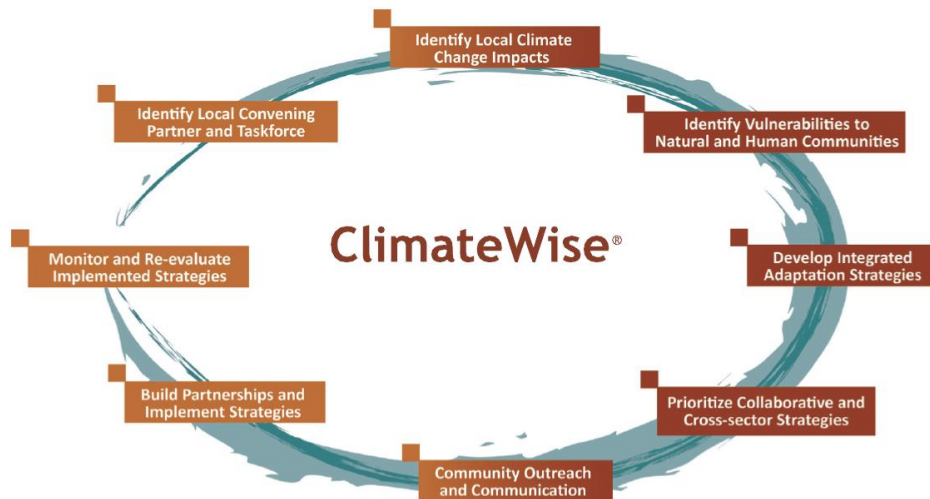


FIGURE 1. INDIVIDUAL STEPS IN THE CLIMATEWISE PROCESS.

REGIONS SERVED:

- ✓ Missoula County, Montana
- ✓ San Luis Obispo County, California
- ✓ Fresno, Tulare, Kings, and Madera Counties, California
- ✓ Deschutes Basin, Oregon
- ✓ Klamath Basin, Oregon
- ✓ Upper Willamette Basin, Oregon
- ✓ Rogue Basin, Oregon

CLIMATE-INFORMED CONSERVATION BLUEPRINTS

PROJECT SUMMARY: Our conservation blueprints take into account not only current areas of conservation importance, but also potential future stability and the need for species to move in response to a changing climate. The blueprints pull together available spatial data on climate change impacts, landscape condition, current and future land use threats, and important habitat for focal species.

The goals of the blueprints are to:

- 1) guide conservation investment;
- 2) advise management approach;
- 3) build interest in conservation and climate change; and
- 4) improve planning for energy development and transmission.

REGIONS SERVED:

- ✓ Pacific Coastal Rainforests
- ✓ Klamath-Siskiyou
- ✓ Colorado Plateau
- ✓ Puget Sound

FUTURE CLIMATE, WILDFIRE, HYDROLOGY, AND VEGETATION PROJECTIONS FOR THE SIERRA NEVADA, CALIFORNIA

PROJECT SUMMARY: The Geos Institute worked with state and federal agencies, along with NGOs, in a process led by EcoAdapt to develop a work plan for conducting vulnerability assessments and developing adaptation strategies for focal resources the Sierra Nevada Range of California. The Vulnerability Assessment Adaptation Strategies (VAAS) extends this project to all lands, rather than just Forest Service, in order to develop a large-scale vulnerability assessment and associated adaptation strategies for focal resources of the Sierra Nevada. Geos Institute provided spatial analysis of existing climate models is part of the science synthesis that provides a review of the relevant model projections and ecological research for the region. A series of workshops were conducted to provide training, resources, support, and tools for participants to apply similar efforts at locally relevant scales.

INTEGRATING SPATIAL DATASETS TO MAP FORESTS WITH HIGH CARBON STORES IN THE PACIFIC NORTHWEST

PROJECT SUMMARY: Management decisions regarding forests with high carbon stores are becoming increasingly important in determining the appropriate balance of land uses in an era of global climate change. Knowing the location and area where high-carbon forests occur, as well as their ownership and land-use status, is important for management decisions and policy analysis. Available information sources do not fully meet this need: some are out of date or unavailable to the public, while others are incomplete, inaccurate, or in conflict with each other. We partnered with Oregon State University to develop a transparent and spatially explicit method for locating forests with high-carbon stores that can be used to estimate the potential impact of alternative management decisions on forest carbon balance. Using GIS, we combined spatial data to identify forest areas with high biomass stores at the latest date when consistent region-wide data are available (circa 2010) and calculated area estimates of forests in different protection categories for a range of spatial/management units. The results indicate the utility of spatial dataset integration to address the limitations of individual datasets and inform forest management decision.

LITTLE BUTTE CREEK RESTORATION

PROJECT SUMMARY: The lower reaches of Little Butte Creek, among the most important salmon producing tributaries in the Rogue Basin, were straightened around 1950 with disastrous consequences for native fish. We worked directly with Oregon Department of Fish & Wildlife, River Design Group, Inc., and L & S Rock Products, Inc. to restore stream flow to one meandering reach of Little Butte Creek on the Denman Wildlife Area near Medford, Oregon. Returning the channel to its former course lengthened Little Butte Creek by nearly ½ mile and dramatically improved the quality of the habitat for native fishes (particularly salmon and steelhead). Stream channel restoration also expanded the amount of floodplain area along the stream’s banks. This will help reduce the depth of water during winter and spring storms, reducing the extent of flooding. Crews are now planting native trees and shrubs along the new stream bank areas.

ROGUE VALLEY GREENHOUSE GAS ASSESSMENT

PROJECT SUMMARY: Geos Institute, in collaboration with Rogue Valley Council of Governments (RVCOG), Energy Trust of Oregon, City of Ashland, and Jackson Soil and Water Conservation District (JSWCD), contracted with Good Company to conduct a Renewable Energy Assessment (REA) for Jackson and Josephine counties. The purpose of the REA is to review existing renewable energy projects and assess the potential for new renewable energy generation development that can create jobs, increase local energy security, buffer local economies from energy price volatility, reduce fossil-fuel dependency, and reduce the associated greenhouse gas emissions. The assessment considers the following power generation resources: energy efficiency, solar electric, wind, direct-fired biomass, landfill gas, anaerobic digestion, hydroelectric, and geothermal. The study provides a foundation of knowledge for planning economic development strategies around renewable energy generation opportunities.

PRACTITIONERS CONFERENCE ON CLIMATE CHANGE ADAPTATION: INTEGRATED STRATEGIES FOR HUMAN AND NATURAL COMMUNITIES

PROJECT SUMMARY: Geos Institute partnered with the Kresge Foundation in hosting the Practitioners Workshop on Climate Change Adaptation in Portland, Oregon in 2012. The purpose of this gathering was to exchange experiences, tools, and ideas among those who have been working on the ground to further climate change adaptation planning and implementation and to help the Kresge Foundation assess the impact of its climate change adaptation portfolio of grants.

GEOS INSTITUTE SELECT PUBLICATIONS LIST

SELECTED FROM OVER 200 PUBLICATIONS, INCLUDING PEER-REVIEWED PAPERS, BOOKS, WHITE PAPERS, AND OP-EDS.

Black, S.H., D. Kulakowski, B.R. Noon, D.A. DellaSala. 2013. Do Bark Beetle Outbreaks Increase Wildfire Risks in the Central U.S. Rocky Mountains? Implications from Recent Research. *Natural Areas Journal* 33(1):59-65.

Koopman, M.K. and J. Leonard. 2013. Future Climate, Wildfire, Hydrology, and Vegetation Projections for the Sierra Nevada, California: A climate change synthesis in support of the Vulnerability Assessment/Adaptation Strategy (VAAS) process. Geos Institute.

Cross, M. S., E. S. Zavaleta, D. Bachelet, M. L. Brooks, C. A. F. Enquist, E. Fleishman, L. Graumlich, C. R. Groves, L. Hannah, L. Hansen, G. Hayward, M. Koopman, J. J. Lawler, J. Malcolm, J. Nordgren, B. Petersen, D. Scott, S. Shafer, M. R. Shaw, and G. Tabor.



2012. The Adaptation for Conservation Targets (ACT) framework: A tool for incorporating climate change into natural resource management. *Env. Mgmt* DOI 10.1007/s00267-012-9893-7.
- DellaSala, D. A., P. Brandt, M. E. Koopman, J. Leonard, C. Meisch, and P. Herzog, and H. von Wehrden. 2012. Testing a climate change adaptation framework for the North America Pacific Coastal Rainforest: A report to Yale Science Committee. Geos Institute.
- DellaSala, D.A., J. M. Fitzgerald, B-G. Jonsson, J.A. McNeely, B. Delali Dovie, M. Dieterich, P. Majluf, S.C. Nemtzov, O.T. Nevin, E.M. Parsons, and J.E.M. Watson. In press, 2012. Priority actions for sustainable forest management in the International Year of Forests. *Conservation Biology*.
- Kershner, J., E. Mielbrecht, M. Koopman, and J. Leonard. 2012. A Climate-Informed Conservation Blueprint for the Greater Puget Sound Ecoregion. Prepared by EcoAdapt and the Geos Institute for the Sierra Club. Bainbridge Island, WA.
- Matsuoka, S., J.A. Johnson, and D.A. DellaSala. 2012. Succession of bird communities in young temperate rainforests following thinning. *J. Wildlife Management* DOI: 10.1002/jwmg.363.
- Noss, R.F., A. P. Dobson, R. Baldwin, P. Beier, C.R. Davis, D.A. DellaSala, J. Francis, H. Locke, K. Nowak, R. Lopez, C. Reining, F.A. Schmiegelow, S. C. Trombulak, and G. Tabor. 2012. Bolder thinking for conservation. *Conservation Biology* 26:1-4.
- Olson, D.M., D.A. DellaSala, R.F. Noss, J. R. Strittholt, J. Kaas, M. E. Koopman, and T.F. Allnutt. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74.
- Barr, B. R. 2011. Integrated strategies for a vibrant and sustainable central Oregon. Geos Institute, Ashland, Oregon.
- DellaSala, D.A., J.R. Karr, and D.M. Olson. 2011. Roadless areas and clean water. *Journal of Soil and Water Conservation* 66:78A-84A. doi:10.2489/jswc.66.3.78A.
- DellaSala, D.A (ed.). 2011. Temperate and Boreal Rainforests of the World: Ecology and Conservation. Island Press. Edited and coauthored all 11 chapters.
- Fleishman, E. D.E. Blockstein, J.A. Hall, M.B. Mascia, M.A. Rudd, J.M. Scott, W.J. Sutherland, A.M. Bartuska, A.G. Brown, C.A. Christen, J. Clement, D.A. DellaSala, et al. 2011. America's top forty priorities for policy-relevant conservation science. *Bioscience* 61 (4):290-300.
- Koopman, M.E., C. Deacon-Williams, A. Journet, R. Nauman, and J. Leonard. 2011. Future Climate Conditions in Missoula County and the Western Montana Region. Geos Institute, Ashland, Oregon.
- Koopman, M. E., J. Alban, B. Randall, M. Haggerty, and R. Rasker. 2011. Missoula County Climate Action: Creating a Resilient and Sustainable Community. Geos Institute, Ashland, Oregon.
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- DellaSala, D.A., J.R. Karr, T. Schoennagel, D. Perry, R.F. Noss, D. Lindenmayer, R. Beschta, R.L. Hutto, M.E. Swanson, and J. Evans. 2006. Post-fire logging debate ignores many issues. *Science* 314:51-52.
- DellaSala, D. A., and J. Williams. 2006. Northwest Forest Plan Ten Years Later – how far have we come and where are we going. *Conservation Biology* 20:274-276.
- Strittholt, J.R., D.A. DellaSala, and H. Jiang. 2006. Status of mature and old-growth forests in the Pacific Northwest, USA. *Conservation Biology* 20:363-374.