**SELECTED RESEARCH GRANTS AND CONTRACTS**

*USA COE ERDC Cold Regions Research Engineering Laboratory* - Quantification of electromagnetic, acoustic, thermal, and seismic signatures in near-surface soil environments to improve countermine sensor performance. PI: McDonald, 2019 ($1.5M).

*USA COE ERDC Cold Regions Research Engineering Laboratory* - Developing technologies to predict, monitor, and quantify critical climate and terrain controls on surface boundary layer processes to enhance military planning and operations. PI: McDonald, 2019 ($2.0M).

*NSF- Geomorphology and Land-use Dynamics Program - A multiple-technique approach for deconvolving tropical cyclone effects on Late Quaternary geomorphic change in arid southwestern North America.* PI's: Jose Luis Anatinao (Indiana Geological Survey), Eric McDonald (DRI), and Kam-Biu Liu (LSU), 2018 (DRI: $152k).

*US Army Yuma Proving Ground* – Geologic and terrain characterization for supporting Test Operations. PIs: E. McDonald and T. Minor, 2017 ($2.23M)

*USA COE ERDC Cold Regions Research Engineering Laboratory* - Modeling Linkages Among Soil-Terrain-Atmospheric Processes Critical for Military Operations in Extreme Environment. PI: McDonald, Co-PIs Minor, Sabol. 2016 ($5.2M).

*GBCESU*: Collaborative Project to assess regional soil dust emission for select areas of the SW US deserts (CRREL), Pi: E. McDonald, 2016 ($100k).

*Army Yuma Proving Ground*: Soil thermal characterization for the YPG Mine-Countermine test facility, McDonald, E., 2014 ($100k).

*NSF-Geomorphology and Land Use Dynamics/Global Change:* Millennial variability of hillslope dynamics and alluvial aggradation in semiarid regions: a view from the southern Hemisphere, Antinao, J.L., and McDonald, E.V., (PI's), collaborator: Maldonado (Chile), 2014 ($380k).

*DOE Los Alamos National Laboratory:* Soils Lab Analyses for LANL via ARS, 2013, PI: E. McDonald ($500k).

*DoD Army Night Vision Electronics and Sensor Directorate:* characterization of mineralogy of soil and dust samples related to brownout conditions, PI McDonald, 2013 ($37k).

*NASA EPSCOR* - Advanced computer vision, robotics, and visualization algorithms for improving planetary exploration and understanding, McDonald (Sub award: $125k).

*Army ERDC-NVSED*: CENTCOM dust characterization, McDonald, E., 2012 ($60k).

*US Army Yuma Proving Ground*: Environmental test data visualization, McDonald, E., 2012 ($100k).

*JIEDDO: NACCITEC* (National Counterterrorism/Counterinsurgency Integrated Test and Evaluation Center) Analysis of environmental characterization and monitoring of C-IED test ranges, McDonald, E., 2011 ($74k).

*US Army Research Office – Terrestrial Sciences*: Soil characterization for heavy vehicle test courses in Suriname: Tropic Test Center, U.S. Army Yuma Proving Ground, McDonald, E., 2011 ($35k).

US Army Yuma Proving Ground: Test Course Mapping, PI E. McDonald, 2011 ($400k).

*NSF-Geomorphology and Land Use Dynamics/Global Change*: Collaborative Research: Tropical cyclone imprint on late Quaternary alluvial fans of Baja California: Key for understanding arid regions landscape evolution, Antinao, J. L., McDonald, E.V. (PI's), Rhodes, E. (UCLA), 2010 ($328k).

*NSF*: *Geomorphology and Land Use:* Catalyzing new international collaboration on starting scientific collaboration on subjects related to the study of Late Quaternary alluvial fan systems in semiarid Chile, Antinao, J. L., and McDonald, E.V., 2010 ($25k).

*US Army Research Office – Terrestrial Sciences:* The 9th International Conference on Military Geosciences (ICMG), PI McDonald, 2011 ($18k).

*US Air Force Weather Agency, Offutt AFB*: Development of processed dust emission data in support of forecasting dust storm activity in USACENTCOM, McDonald, E.V., and Bacon, S., 2010 ($149k).

*US Army Research Office – Terrestrial Sciences*: Global Military Operating Environments (GMOE) Phase II: Linking natural environments, international security, and military operations, McDonald, E.V., 2009 ($1.8M).

*JIEDDO: NACCITEC* (National Counterterrorism/Counterinsurgency Integrated Test and Evaluation Center): Soil geophysical research and characterization of the YPG Joint Experimental Range Complex (JERC) in support of Counter-IED operations. E. McDonald, 2011 ($528k).

*US Army Yuma Proving Ground Cultural Resources Program*: Investigation of cleared circles features at YPG: Evidence for a non-anthropogenic origin, Rhode, D., and McDonald, E., 2009 ($190k).

*US Army Research Office – Terrestrial Sciences*: Global Military Operating Environments (GMOE): Linking natural environments, international security, and military operations, McDonald, E.V., 2008 ($1.2M).

*US Army Yuma Proving Ground*: Desert terrain characterization in support of Natural Environments Testing at YPG, McDonald, E., 2008 ($500k).

*US Army ERDC CRREL*: Soil and geomorphic analysis of thin-wire test sites, YPG, McDonald, E., 2008 ($80k).

*National Geospatial Analysis Agency*: Desert Soil characterization for detection of buried landmines and unexploded ordinance, Sabol, D., Caldwell, T.G., and McDonald, E., 2007 ($300k).

*US Army Research Office – Terrestrial Sciences*: LandPro: Army landscape dynamics support program, Bullard, T., and McDonald, E., 2007 ($1.0M).

*US Army Yuma Proving Ground*: Desert hot weather test studies: Desert terrain characterization in support of Natural Environments Testing at YPG, McDonald, E., 2007 ($1.8M).

*NSF Collaborative Research - Hydrology*: Evaluating long-term impacts on final covers--Exhumation of the ACAP test sections, Albright, W., and McDonald, E.V., 2006 ($180k)

*NSF Geomorphology*: Where does desert dust originate? Geomorphic and climatic control on the evolution of dust sources in the Mojave Desert, USA 2006, Sweeney M., and McDonald, E., 2006 ($80k).

*California Dept. of Water Resources*: Salton Sea and regional air quality, McDonald, E., Sweeney, M., and Etyemezian, V., 2006. ($246k)

*Santa Catalina Conservancy*: Installation of radio frequency network and meteorological stations, Catalina Island Conservancy, PI E. McDonald, 2006 ($32k).

*DOD/ARMY STTC*: Visualization of desert terrain conditions in support of military operations: Phase II, McDonald, E., 2006 ($69k).

*DOD/ARMY STTC*: Visualization of desert terrain conditions in support of military operations Phase I, McDonald, E., 2006 ($73k).

*NSF MRI*: Acquisition of an X-ray Diffractometer, J. Engelbrech, J. Gillies, H. Moosmuller. J. McConnell, and E. McDonald, 2005, ($313k).

*US Army Research Office – Terrestrial Sciences*: Forecasting desert terrain conditions for military operations: Phase II, McDonald, E., 2005 ($7.4M).

*Air Force Research Laboratory*: Avionics prevention of sand induced circuit card and electrical interconnect system corrosion research, McDonald, E., and Bullard, T., 2006 ($99k).

*US Army Research Office – Terrestrial Sciences*: Forecasting desert terrain conditions for military operations: Phase II. E. McDonald, 2005 ($2.8M).

*US Army Yuma Proving Ground*: Desert Terrain Characterization in support of Natural Environments Testing at YPG, McDonald, E., 2005 ($2.97Mk).

*US Army Center for Health Promotion and Preventative Medicine* (awarded through YPG): Enhanced particulate matter surveillance: Southwest Asia, McDonald, E., Englebrecht, J., Gillies, J., and Gertler, A., 2005 ($1.8M)

*Encapco Technologies LLC*: Uranium oxide soil stabilization study for Yuma Proving Ground, AZ, M. Young, V. Etyemezian, T. Caldwell, J. Gillies, H. Moosmuller, E. McDonald, 2005 ($488k).

*US Army Research Office*: Analysis of Iraq soil and dust samples of assessment of possible cause of weapons malfunction in Iraq, McDonald, E.V., 2004 ($40k).

*US Army Yuma Proving Ground*: Yuma tank Dust test, PI E. McDonald, 2004 ($133k).

*State of California Department of Water Resources*: Ecosystem restoration of the Salton Sea, E. McDonald, V. Etyemezian, J. Gillies, M. Sweeney, T. Caldwell, 2004 ($286k).

*Southwest Division Navy Facilities Engineering Command*: Geomorphic mapping in support of the NTC ITAM Program, McDonald, E. and Bullard, T., 2003 ($185k).

*US Army Research Office – Terrestrial Sciences*: Forecasting desert terrain conditions for military operations: Phase I. E. McDonald (DRI), A. Gillespie (U of Washington), R. Amit (Israel Geological Survey), Y. Enzel (Hebrew University), 2003-2012 ($2.8M).

NSF - Biotic Controls: Biotic and Abiotic Controls on Soil Inorganic Carbon Dynamics in Arid Ecosystems: A Three-component Study to Evaluate the Effects of Global Change in the Mojave Desert. M. Giles, J. Arnone, and E. McDonald ($799k).

*US Army Integrated Training and Management Program*: Integrated site planning and restoration in support of the US Army National Training Center, McDonald, E. and Caldwell, T. 2003 ($243k).

*Charis Corporation*: Evaluation of soil hydrology at Ft. Irwin with respect to restoration practices, McDonald, E., and Caldwell, T., 2003 ($119k).

*DoD Army Integrated Training Area Management Program*: Geomorphic Mapping in Support of the NTC ITAM Program. PIs E. McDonald and T. Bullard, 2003 ($186k).

*International Arid Lands Consortium*: Direct measurement of flood water percolation in arid lands. Ofer Dahan (Ben-Gurion University), Eric McDonald (DRI), Yehouda Enzel (Hebrew University) Yosef Yechieli (Israel Geological Survey), 2003 ($98k).

*NSF-Biology*: Biotic and abiotic controls on soil inorganic carbon dynamics in arid ecosystems: a three component study to evaluate the effects of global change in the Mojave Desert, P. Verburg, J. Arnone, G. Marion, E. McDonald, 2003 ($800k).

*US Military Academy, West Point*: Environmental characterization of desert biomes for military testing, training and operations, McDonald, E., Gillies, J., and Redmond, K., 2003 ($47k).

*US Army Corp of Engineers-CERL*: Development of an archeological predictive model for the National Training Center, Ft. Irwin CA, Bullard, T. and McDonald, E., 2002 ($127k).

*NSF-MRI*: Acquisition of Analytical Equipment for Nutrient Analysis and Particle Size Determination in Ecological Studies, M. Auerbach, C. Fritsen, E. McDonald, P. Verburg, and J. Arnone, 2002, ($166k).

*US Department of Justice*: Soil-stratigraphic analysis of the age and origin of islands along the Snake River, Deer Flat National Wildlife Refuge, McDonald, E. and Bullard, T., 2001 ($118k)

Los Alamos National Laboratory: Soil sampling and laboratory analyses, 2001, E. McDonald ($93k).

*NSF-Tectonics*: Processes driving rock uplift and flexural deformation following convergent tectonics recorded by fluvial terraces, Ebro Basin, Spain, McDonald., E. and Lewis, C., 2001 ($210k).

*Ecology and Environment, Inc.*: Technical consultation on desert ecology in Kuwait: Concept for the Kuwait Center for Desert Land Research and Restoration, McDonald, E., 2001 ($12k).

*US Army Research Office – Terrestrial Sciences*: Basic research on the linkages among the soil-hydrologic-biologic system common to desert piedmonts, U.S. Army Yuma Proving Ground, McDonald, E., 2000 ($247k).

DOE LANL – Washington Group: 2000, Characterization of physical and chemical properties of contaminated soils and sediments at LANL, E. McDonald ($25k).

*DoD-DOE-EPA Strategic Environmental Research Development Program*: Analysis of desert shrubs along first-order channels on desert piedmonts: possible indicators of ecosystem health and historic variation, McDonald, E., 2000 ($88k).

*DoD Legacy Program*: Initial determination of a desert shrub origin for cleared or sleeping circles at the Yuma Proving Ground, McDonald, E., 1999 ($78k)

*NSF-Geology/Paleontology*: Combining cosmogenic nuclides and soil stratigraphy for alluvial fan chronology and regional correlation: Eastern Mojave, California, McDonald, E. and Gosse, J. (U. Kansas), 1999 ($300k).

*Los Alamos National Laboratory: Soil sampling and laboratory analyses, 1998, E. McDonald ($94k).*

*US ARMY Integrated Training Area Management Program*: Multiple contracts for soil-geomorphic analysis of desert lands – US ARMY National Training Center, Ft. Irwin CA, McDonald, E., 1998-2000 ($320k). Projects:

A. Pilot Project on Evaluation and Prediction of Soil and Surface Water as Related to Sustainability and Revegetation Ground
B. Development of soil sampling and analysis plan for the National Training Center
C. Assessment of soil erodibility at the National Training Center
D. Vegetation Sampling & Data Analysis at the National Training Center, Ft. Irwin
E. Soil Geomorphic Mapping of Tiefort Mt and East Langford Well Quadrangles at Ft. Irwin, CA
F. Land Degradation of Desert Ecosystems at the National Training Center, Ft. Irwin, CA

*National Geographic Society*: Active, long-term deformation of river terraces in the Spanish Pyrenees, Lewis, C., (LANL) and McDonald, E., ($20k) 1998.

*NSF – Hydrology*: Comparison of regional flood frequency responses to climatic variability in the Western U.S. during the late Holocene using modern, historical, and pre-historical information, House, K., and McDonald, E., 1998, ($201k).

*Los Alamos National Laboratory Seismic Hazards Program*: Soil stratigraphy and pedologic age estimates for seismic hazard trench investigations., Eric McDonald, 1997-1998 ($45k).

*DOE/LANL, Sitewide Environmental Investigation Program*: Hydrologic and geochemical characterization of key subsurface soils below the Pajarito Plateau, New Mexico, McDonald. E., 1997 ($100k).

*NSF – Tectonics*: Fluvial terraces of long-term Deformation for the Cascadia Forearc High, Washington State, Pazzaglia, F., (Lehigh U.) and McDonald, E., 1997 ($149k).

*DOE/LANL, Sitewide Environmental Investigation Program*: Application of beryllium leachability in soils for screening, risk analysis, and remediation, Longmire, P., and McDonald, E., 1996 ($80k).

*DOE/Battelle Pacific Northwest Laboratory, Subsurface Geology Program*: Characterization of buried soils in the Palouse Loess, Washington, for investigations of in-situ microbial populations, McDonald, E., 1996 ($11k).

*NASA-Earth Sciences and Applications Division*: Relative influence of climatic change, dust flux, and lithology on soil hydrology and soil-geomorphic processes in arid and semi-arid transitional environments, McFadden, L., and McDonald, E., 1991 ($74k).

*NSF – Earth Sciences*: Relative influence of climatic change, dust flux, and lithology on soil hydrology and soil-geomorphic processes in arid and semi-arid transitional environments, McFadden, L., and McDonald, E., 1991 ($155k).

*NSF – Earth Sciences*: Genesis of late Quaternary loess and paleosols on the Columbia Plateau, eastern Washington, Busacca, A., and McDonald, E., 1987 ($98k).