**Presentations and Publications**

**Journal Articles**


**Conference Abstracts/Papers**


New Projects

**Developing and Enhancing Landsat Derived Evapotranspiration and Surface Energy Products: 2012-2017 Landsat Science Team**

**PI:** Justin Huntington  
**Agency:** Regents of the University of Idaho  
**Amount:** $309,900  
**Summary:** As part of the Landsat Science Team, we intend to develop, support development of, and utilize new applications of Landsat archive and LDCM (Landsat Data Continuity Mission) data sets, including surface reflectance, land surface temperature and cloud identification products, in routine, operational retrievals of ET.

**Storm Water Runoff within the Truckee Meadows**

**PI:** Alan McKay  
**Agency:** City of Reno  
**Amount:** $49,627  
**Summary:** Recently, Stantec Inc. developed a Sample Analysis Plan (SAP) that defines current practices in storm water management in the Truckee Meadows and proposes new sampling efforts to better quantify inputs to the Truckee River. Their SAP document details the activities and goals necessary toward a successful storm water management program (SWMP). At the request of City staff, the Desert Research Institute (DRI) has developed a scope of work that follows the outline of that SAP, and incorporates value-added techniques, equipment, and facilities of the DRI. Specifically, we propose a Pilot Program that will: 1) Implement three different Truckee River Inlet grab sampling regimes to better quantify input of constituents; 2) Each of the three sampling efforts will occur twice (2 tributary dry events; 2 tributary wet events; and two storm outfall wet events) and; 3) Interpret the results of nutrient and solids analyses. Data collected and operating methods developed in this Pilot Program will help in the design of a long-term Truckee River tributary and storm water outfall sampling scheme and provide needed information to managers and scientists.
Implementation of the EEFLux/METRIC Algorithms into the Google Earth Engine for Computation of Water Consumption

PI: Justin Huntington
Agency: Google, Inc.
Amount: $48,417
Summary: We propose to implement an algorithm to be named EEFLux on the Google Earth Engine to estimate water consumption from vegetation at 30 m scale around the globe. "EEFLux" is an acronym representing 'Earth Engine Evapotranspiration Flux.' EEFLux is derived from the widely used surface energy balance model "METRIC" (Mapping Evapotranspiration at high Resolution with Internalized Calibration), where METRIC is a Landsat-image-based process currently employed in a number of US states to determine 'maps' of water consumption from vegetation, a process referred to as evapotranspiration (ET). The use of Landsat imagery enables production of ET maps having resolutions of 30 m, which is the scale of many human-impacted and human-interest activities, such as agricultural fields, forest clearcuts and vegetation systems along streams. This proposal 'gangs' support for three Ph.D. students from three institutions (University of Idaho, University of Nebraska-Lincoln and Desert Research Institute/University of Nevada-Reno). The University of Idaho is a nation-leading developer of satellite image processing algorithms that produce high resolution, high accuracy spatial maps of water consumption by vegetation. The DRI group has been developing and testing innovative Python code for batching and automating a number of components of the METRIC process. The UNL group has developed new techniques for web delivery of evapotranspiration (ET) products and to manage spatially gridded weather data and soils data required for time-integration of ET between satellite image dates. The three institutions will work closely together to collaborate with distinct, complementary work tasks to produce a robust, final product.

Improved Estimation of Reservoir Evaporation

PI: Justin Huntington
Agency: DOI - U.S. Bureau of Reclamation, Science and Technology Program
Amount: $221,497
Summary: This project will develop a reservoir meteorological network that consists of weather station buoys, measuring all required weather variables and reservoir thermal properties to accurately estimate evaporation and heat storage, while transferring these data in real time to U.S. Bureau of Reclamation offices.

International Water, Development and Global Sustainability

PI: Braimah Apambire
Agency: DRI Foundation
Amount: $500,000
Summary: Establish an International Water, Development and Global Sustainability position within the Desert Research Institute (DRI) to address gaps in knowledge, research, and human resource capacity that persist in developing countries and assist in reducing health related issues and design of sustainable water, sanitation, and hygiene (WASH) programs. The ultimate goal of this grant is to build the capacity of DRI to create a Center focused on International Water, Development and Global Sustainability issues.

Analysis of the Evapotranspiration along the Muddy River, Including the Warm Springs Natural Area

PI: Justin Huntington
Agency: SNWA
Amount: $69,878
Summary: Calculate the actual Evapotranspiration (ET) occurring along the specified area along the Muddy River corridor in Tasks 1 and 2, utilizing the METRIC Model and methodology. METRIC utilizes locally collected meteorological data to calibrate remotely sensed thermal satellite data to accurately calculate ET for vegetation and crops. Under this scope of work DRI will calculate monthly ET between CY 2007 and 2012.

New Hires

- Philip Capurro - Hourly Technical (Alan Heyvaert NNSC)
- Jane Chapman - Hourly Clerical (Amy Russell SNSC)
- Casey Schmidt - Assistant Research Professor (Jim Thomas NNSC)
- Mary Devita - Hourly Technical (Kumud Acharya SNSC)
- Vonnie Gray - Hourly Community Monitor (Ted Hartwell SNSC)

DHS Announcements

- Markus Berli is teaching GEOL 719 “Vadose Zone Hydrology” at UNLV this spring together with Navin Twarakavi and Rose Shillito
- Mahesh Bhattarai successfully defended his dissertation titled “Impact of climate change on surface and subsurface water interaction and riparian vegetation: linkage between hydrology and invasive tamarisk in a semi-arid basin” under Kumud Acharya for Doctor of Philosophy in Hydrologic Sciences at University of Nevada, Reno on February 28, 2013.
# Proposals (submitted this quarter – January thru March)

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<tr>
<th>Date Submitted</th>
<th>PI(s)</th>
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<tr>
<td>12-Feb-13</td>
<td>Thomas, Jim</td>
<td>University of Nevada, Reno/National Fish and Wildlife Foundation</td>
<td>Walker Basin Research Project - Phase III</td>
<td>1,466,648</td>
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<td>26-Feb-13</td>
<td>Dana, Gayle</td>
<td>Nevada System of Higher Education / NSF</td>
<td>Collaborative Research: The Western Consortium for Watershed Analysis, Visualization, and Exploration (WC-WAVE)</td>
<td>375,391</td>
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<td>1-Mar-13</td>
<td>Lutz, Alex</td>
<td>World Vision Inc.</td>
<td>Project 3: Intelligent Water Management System (IWMS)</td>
<td>142,625</td>
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