Opportunity Title: National and Regional Applications of Hydrologic Landscape
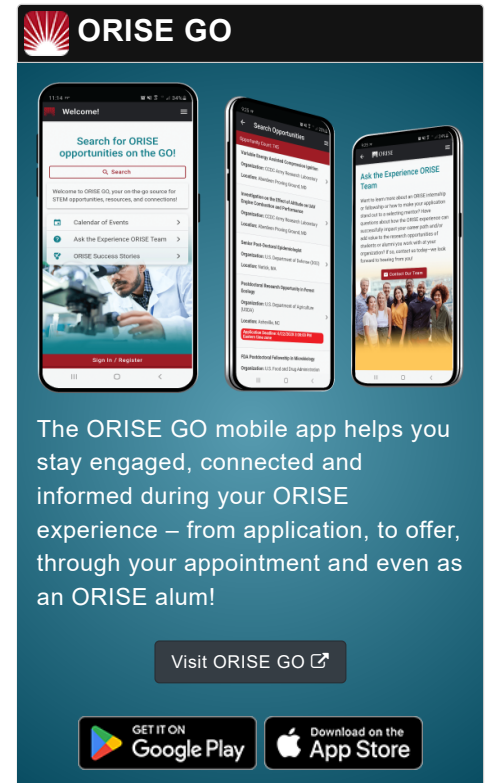Maps and Climate Vulnerability Analyses
Opportunity Reference Code: EPA-ORD-NHEERL-WED-2017-03

Organization	U.S. Environmental Protection Agency (EPA)
Reference Code	EPA-ORD-NHEERL-WED-2017-03
How to Apply	A complete application consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

All documents must be in English or include an official English translation.

If you have questions, send an email to *EPArpp@orau.org*. Please include the reference code for this opportunity in your email.

Description

A research opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD)/National Health and Environmental Effects Research Laboratory (NHEERL). This appointment will be served with the Western Ecology Division (WED) in Corvallis, OR.

Western Ecology Division scientists have developed hydrologic landscapes (HLs) for Oregon (Wigington et al. 2013) and the three state Pacific Northwest region (Leibowitz et al. 2016). HLs classify the landscape into units of similar hydrologic function. The HL approach is now being applied to the six western states (Jones et al. in preparation), and to the conterminous US. HLs are useful for predicting how well lumped and distributed rainfall-runoff models fit discharge data (Patil et al. 2014), and for predicting presence of cold water fish habitat (Ebersole et al. 2015). The Oregon HL data have been combined with climate simulations to examine streamflow vulnerability associated with climate change (Leibowitz et al., 2014). A climate change vulnerability analysis has been conducted (Jones et al. in preparation) using historical data and future climate scenarios. This post-doctoral opportunity will focus on further development of the HL vulnerability analysis methodology and development of national and regional applications. Examples of applications are applying the HLs to understand water quality effects of wildfire in the Pacific Northwest and using the vulnerability analysis to develop expected changes in biological condition gradients in the Puget Sound region. The participant may also:

- Finalize the development of HL maps for the conterminous US;
- Use HL change and vulnerability maps to assess the effects

of climate change on hydrology and water quality;
- Combine HL and other geospatial data to address environmental issues.

The participant will learn to develop, pilot and implement approaches for applying hydrologic classification and climate change data at national and regional scales to address vulnerabilities to water resources. The participant will further develop expertise in spatial analysis using large regional datasets. The participant will have access to a team of experts collaborating in and across disciplines on problems of crucial importance to EPA's mission. He/she will conduct scientific synthesis, data analysis, manuscript preparation, and literature searches, and may be involved in developing research summaries and other communications for technical and nontechnical audiences.

Ebersole J.L., P.J. Wigington, Jr., S.G. Leibowitz, R.L. Comeleo, and J. Van Sickle. 2015. Predicting the occurrence of cold-water patches at intermittent and ephemeral tributary confluences with warm rivers. Freshwater Science 34(1):111-124.

Jones, C., Jr., S.G. Leibowitz, R.L. Comeleo, L. E. Stratton, K.A. Sawicz, P.J. Wigington, Jr, P.E. Morefield, and C.P. Weaver. In preparation. Using hydrologic landscape classification to assess hydrologic vulnerability of the Western U.S. Hydrology and Earth System Sciences.

Leibowitz, S.G., R.L. Comeleo, PJ. Wigington, Jr., C.P. Weaver, P.E. Morefield, E.A. Sproles, and J.L. Ebersole. 2014. Hydrologic landscape classification evaluates streamflow vulnerability to climate change in Oregon, USA. Hydrology and Earth System Sciences 18:3367-3392.

Leibowitz, S.G., R.L. Comeleo, P.J. Wigington, Jr, M.H. Weber, E.A. Sproles, and K.A. Sawicz. 2016. Hydrologic landscape characterization for the Pacific Northwest, USA. Journal of the American Water Resources Association 52: 473-493.

Patil, S.D., P.J. Wigington, Jr., S.G. Leibowitz, and R.L. Comeleo. 2014. Use of hydrologic landscape classification to diagnose streamflow predictability in Oregon. Journal of the American Water Resources Association 50(3):762-776.

Wigington, P.J., Jr, S.G. Leibowitz, R.L. Comeleo, and J.L. Ebersole. 2013. Oregon hydrologic landscapes: a classification framework. Journal of the American Water Resources Association 49:163-182.

This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between DOE and EPA. The appointment is full time for one year and may be renewed upon

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recommendation of EPA and contingent on the availability of funds. The participant will receive a monthly stipend. Funding may be made available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences and stakeholder venues. No funding will be made available to cover travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee**.

The mentor for this project is Scott G. Leibowitz (leibowitz.scott@epa.gov). The desired start date for this appointment is September 15,2017.

Qualifications

Applicants must have received a doctoral degree in watershed hydrology, ecohydrology, water resources, or related field with a strong background in spatial analysis and statistics, or a closely related field within five years of the desired starting date, or completion of all requirements for the degree should be expected prior to the start date. Experience in spatial analyses at broad spatial scales and use of climate change data is desired.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Earth and Geosciences** (4 👁)
  - **Engineering** (2 👁)
  - **Environmental and Marine Sciences** (4 👁)
  - **Social and Behavioral Sciences** (1 👁)