

**Opportunity Title:** Assessing Impacts of Climate and Land Use Changes on Water Quality in the US

**Opportunity Reference Code:** EPA-ORD-NERL-SED-2019-06

**Organization** U.S. Environmental Protection Agency (EPA)

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**How to Apply** A complete application consists of:

- An application
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

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

If you have questions, send an email to [EPArpp@oraui.org](mailto:EPArpp@oraui.org). Please include the reference code for this opportunity in your email.

**Application Deadline** 6/3/2019 3:00:00 PM Eastern Time Zone

**Description** \*Applications will be reviewed on a rolling-basis.

A faculty research opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD)/National Exposure Research Laboratory (NERL). This appointment will be served with the System Exposure Division (SED) located in Research Triangle Park, North Carolina.

New federal policies, changes to commodity markets, and increased population and demand for biofuels have created a new era of agriculture in the United States. Corn and soybeans now dominate the landscape as the two largest crops by area, with corn reaching its highest level since 1932 and soybeans at an all-time high.

With increased corn/soybean production comes increased environmental concern, particularly on the nation's water quality such as the hypoxia of the northern Gulf of Mexico (GOM) and freshwater eutrophication because nutrient losses from Midwest corn/soybean cropland have been identified as one of the major sources of nutrients in streams and to the Gulf of Mexico. Research has shown that increased nutrient fluxes from the Mississippi River Basin (MRB) positively related to agricultural activity have been linked to the increased occurrences of seasonal hypoxia in the northern Gulf of Mexico (GOM). Therefore, there is an urgent need to quantify the potential water quality impact, particularly increased nutrient losses, due to the increased corn/soybean production.

The research participant will have the opportunity to interact with various EPA programs involved in an environmental impact assessment research effort addressing environmental concerns raised from biofuel production. The research participant will have the opportunity to gain experience using data and tools developed by multiple federal agencies and academic institutions. The research participant will be encouraged to develop manuscripts and presentations from this research effort.

The research project focuses on the following questions: 1) what is the water quality (sediment and nutrient losses from major river basins) impact due to the crop land conversion from 2008 to 2012 driven by biofuel demand? 2) what are the water quality impacts resulting from land use scenarios produced by the Global Change Assessment Model (GCAM)?

The mentor for this opportunity is Dr. Yongping Yuan ([yuan.yongping@epa.gov](mailto:yuan.yongping@epa.gov)).

This program, administered by ORAU through its contract with the U.S. Department of Energy



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(DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and EPA. The initial appointment is up to three months, but may be renewed upon recommendation of EPA and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. No funding will be made available to cover travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. Proof of health insurance is required for participation in this program. The appointment is full-time at EPA in the Research Triangle Park, North Carolina, area. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits.

**Qualifications** The qualified candidate must have received a doctoral degree and currently be a full-time faculty member at an accredited U.S. institution.

Knowledge about, or previous experience with use of environmental quality data (e.g., water quality, climate and weather data), and climate and watershed modeling is preferred.

- Eligibility Requirements**
- **Degree:** Doctoral Degree.
  - **Academic Level(s):** Faculty.
  - **Discipline(s):**
    - **Earth and Geosciences** ([21](#))
    - **Environmental and Marine Sciences** ([2](#))
    - **Social and Behavioral Sciences** ([1](#))

**Affirmation** I have received a doctoral degree and am currently a full-time faculty member at an accredited U.S. institution.