

# 2018 CSU Water Center International Initiative

J.R. Nuckols, Reagan Waskom, Melinda Laituri  
Colorado Water Center  
Colorado State University  
Fort Collins, Colorado, USA

Meeting of US National Committee  
UNESCO IHP  
Washington DC May 24, 2018



## Land Grant Mission

- Teaching
- Research
- Outreach





# CSU THEN: History in Water Research, Education and Engagement

- 125 year history in water-focused work
- CSU-trained water experts in over 100 countries on every continent
- Pioneer in water engineering, hydrology, irrigation technologies, watershed protection, and water resources management
- First university in the world to host one of the U.N.'s “decade” announcements-U.N.'s Decade for Deserts and the Fight against Desertification
- Home to the CSU Water Center and the Colorado Water Institute



## **CSU NOW**

- \* 200 faculty- 20 Departments-8 Colleges**
- \* Unique disciplines to water and water-related topics**
- \* \$45M+/YR sponsored grants and contracts (2015).**

### **Areas of Emphasis/Expertise:**

- Monitoring, Modeling and Decision Support
- Irrigation and Ag Water
- Ecology, Climate and Hydrology
- Energy and Water
- Groundwater Management
- Water Quality and Health
- Water Technology and Business
- Geospatial Analysis
- Water Policy, Socioeconomics and History

# ISSUE: INTEGRATION OF EXPERTISE TOWARDS INTERDISCIPLINARY SOLUTIONS TO GLOBAL WATER RESOURCE PROBLEMS

**Potable water, sanitation and health**



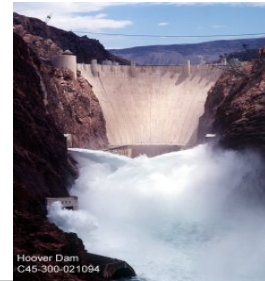
**Weather extremes**

**Food security**



**Ecosystem services**

**Water for development**



**Water for energy**



**Water quality**

# DRAFT STRATIGIC PLAN

- Goal: Establish an Integrated International Water Research, Education, Engagement, and Service Enterprise (II-WATER) within the CSU Water Center.
- **Mission:** CSU II-WATER will serve to integrate CSU expertise in addressing global challenges to water resources through cooperative regional networks.

# **II-WATER: Problem-shed Approach**

- **Identify conceptual basis for implementing water coordination across campus: common themes and approaches**
- **Holistic approach to water issues; thematic topics to emerge from faculty engagement**
- **Integration across disciplines and sectors to pool and coordinate resources more effectively and efficiently**
- **Understanding the hydro-social cycle**
  - **Interdisciplinary analysis of critical water issues in the Anthropocene**
- **Addressing the relationship between science and action**
  - **Solutions, tradeoffs, regulation, engineering, planning, ecology, health**
- **Research, Education, Service integration and synthesis**
  - **Integration across disciplines, scales, cultures**



# Start-up Timeline

- **Year 1 (2018-2019): Build CSU II-WATER**
  - Conduct listening sessions with targeted CSU faculty, centers, and institutes to **identify regions (geographic and topical) of collaboration and resource sharing for addressing global water issues**
  - Establish student / faculty water teams (partner with Water Youth Network)
  - **Actively engage in network infrastructure development: e.g. UNESCO water-related programs and WWF9 planning and implementation**
  - Identify key international organizations and meetings
- **Year 2 (2019-2020): Establish Regional II-WATER Networks:**
  - Apply Integrated Problem-shed analysis and solutions to facilitate establishment of cooperative networks for research, education, engagement and service with government, academic, and public service institutions within identified geographic regions
  - **Create regional II-WATER networks in regions with greatest potential** (e.g. capitalize on CSU expertise and partnerships in Africa to establish a regional II-WATER Network)
  - **Establish UNESCO Chair in Water, Environment, and Health within the Colorado Water Center**
  - Plan participation and presentations at key international meetings (e.g. WWF9, 2021, Dakar, Senegal)
- **Year 3 (2020-2021): Demonstrate viability of CSU II-WATER**
  - Progress reports CSU regional II-WATER networks
  - Participate and present at WWF9, 2021, Dakar, Senegal
  - Related Grants and Contracts
  - Related Publications
  - **CSU Administrative Proposal for formal establishment and funding of II-WATER Center**



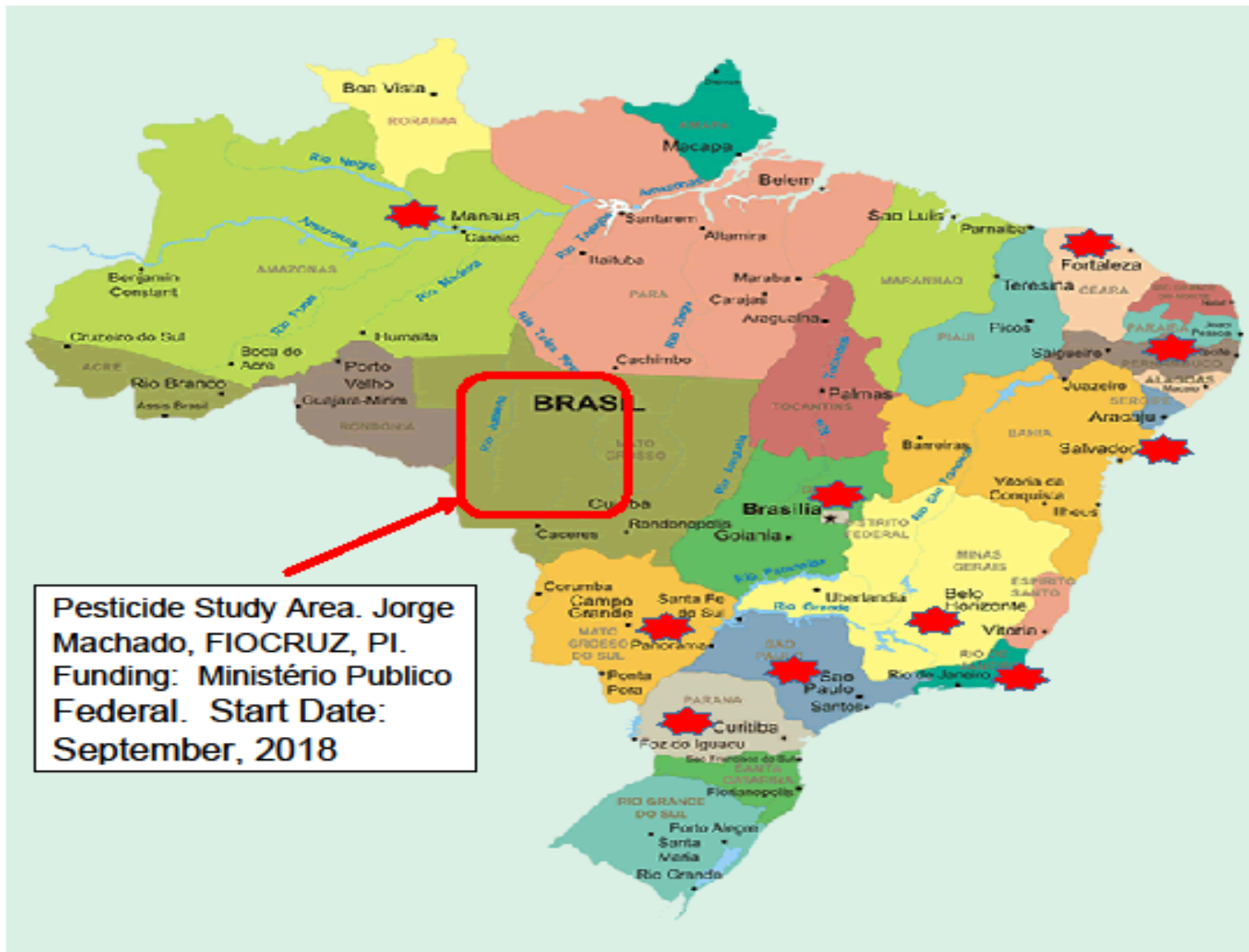
# **Example: Geographic based Regional Network**

**Pending MOU CSU Water Center and Oswaldo Cruz Foundation, Ministry of Health, Brazil**

---

- Cooperation for institutional development;
- The joint elaboration and implementation of environmental health research projects of relevance to the parties;
- Academic exchanges of researchers and students;
- Exchange of information and technical documentation in the environmental and health fields.
- Joint organization of seminars and scientific conferences;
- Joint publications of articles and scientific papers;
- Other activities that are of common interest.

# FIOCRUZ OFFICE AND UNIT LOCATIONS



16 scientific and technical units, focused on teaching, research, innovation, assistance, technological development and extension in the health field.

# PROPOSED CSU UNESCO CHAIR: WATER, ENVIRONMENT, AND HEALTH

## “Geospatial-based Exposure Assessment for Risk Analysis of Environment and Health”

- Environment and health often are not considered in engineer-based proposed
- Important endpoints for assessment of impact and success of the water-related projects
- Web-based teaching, research, and consultation
- Institutions to cooperate as part of the "intellectual alliance of end users"
  - Beta-testers for the standard method,
  - Provide data source for cross-sectional and meta-analysis studies
  - Trained as teachers for use and advocacy of the method by future generations of public health scientists, policy makers, and agencies across the globe



## Approach & Goals

*Leverage synergies Avoid duplication*

*Build collaborative networks*

### Engagement - Outreach

Expanded/new regional networks of producers, researchers & other key water management stakeholders

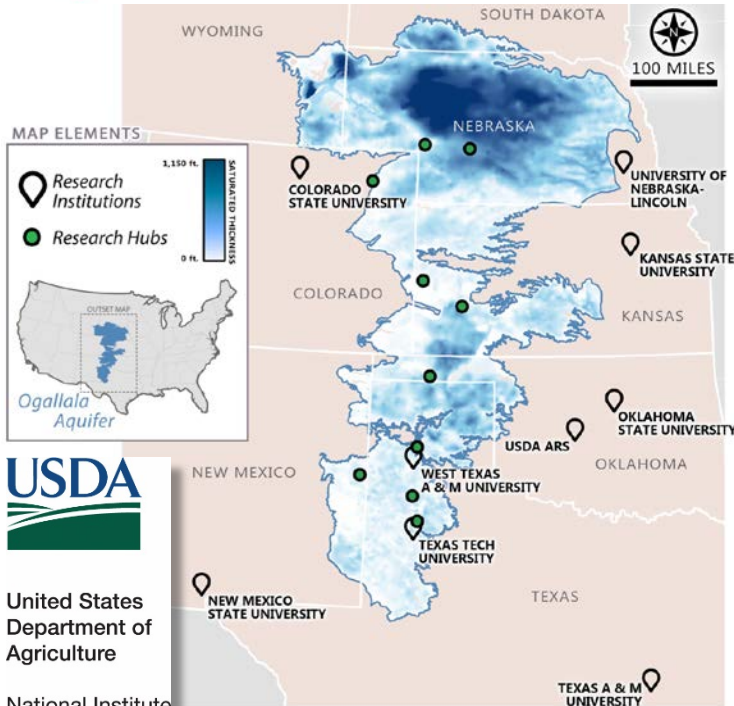
Increased producer engagement in water conservation

### Research

Improved strategies, tools & tech for water management in dryland and irrigated systems

Increased understanding of economic and social factors that underpin water use decision making

Informed regional planning efforts that extend the life of the aquifer



## Ogallala Water

### Coordinated Agriculture Project (CAP)

**USDA-NIFA funded: 2016-2020**

- > 70 scientists, post-docs & grad students
- 9 institutions, 6 Ogallala region states
- Informed by an Advisory Board



# EXAMPLE CSU II-WATER TOPICAL REGION Irrigation Innovation Consortium (IIC)

## The Vision

*A consortium of universities partnering with industry to create water productivity innovation in agriculture and the irrigated landscape*



- Other university participants are anticipated in Phase 2

# Irrigation Innovation Across Scales and Sectors

## Field Scale Technologies



## Open Channel and Pressurized Conveyance Systems



## Landscape Systems



## Technology Testing, Evaluation and Validation



# Center of Excellence in Water

## Project Objectives

- 1. Strengthen the capacity of EG universities** to deliver relevant, innovative, and commercialized research to meet the needs of the public and private sectors.
- 2. Improve the relevance and quality of curricula** and strengthened use of effective teaching methods.
- 3. Increase access** for talented yet economically disadvantaged students to Egyptian public universities in the water disciplines.
- 4. Create collaboration between the university and stakeholders** in public and private sectors supporting linkages between supply and demand for research, policy engagement and skilled graduates.

# For More Information...

## CSU Water Center and Colorado Water Institute

[www.watercenter.colostate.edu](http://www.watercenter.colostate.edu)

[www.cwi.colostate.edu](http://www.cwi.colostate.edu)

- Sign up for our e-news, *The Current*
- Subscribe to *Colorado Water newsletter*
- Follow us on Facebook at <https://www.facebook.com/CSUWaterCenter>



Colorado State University





# CONTACT INFORMATION

- **REQUEST COPIES OF CITED PUBLICATIONS**
- **CONSULTATION: EXPOSURE ASSESSMENT FOR EPIDEMIOLOGICAL STUDIES OF ENVIRONMENTAL CONTAMINANTS**

**J.R. NUCKOLS, PhD**  
**[jnuckols@colostate.edu](mailto:jnuckols@colostate.edu)**  
**+1 97 02 18 47 57**