

Contact: Rachel Boon

**REQUEST FOR NEW CENTER AT THE UNIVERSITY OF IOWA:  
CENTER FOR HYDROLOGIC DEVELOPMENT**

**Action Requested:** Consider approval of the request by the University of Iowa to create the Center for Hydrologic Development in the College of Engineering.

The Council of Provosts and Board office support approval of this request.

**Background:** The University of Iowa proposes a new center, the Center for Hydrologic Development, as a key partner in the Cooperative Institute for Research to Operations in Hydrology (CIROH), established in spring 2022 by the National Oceanic and Atmospheric Administration (NOAA) at the University of Alabama for \$360M.

The formation of the Center for Hydrologic Development is the culmination of many years of effort to expand the work of the Iowa Flood Center (IFC) beyond Iowa. Over the past several years, the IFC has caught the attention of many other states (Texas, Missouri, North Carolina, South Carolina, Louisiana, South Dakota, etc.) hoping to emulate the IFC's outstanding state-wide resources and tools. Several have brought entourage to Iowa to meet us, learn about the tool, and tour facilities and field sites. The invitation to join CIROH demonstrates recognition of these achievements and expertise by colleagues at other academic institutions and NOAA.

**Need for proposed center.** The overarching vision of CIROH and the Center for Hydrologic Development is to translate world-class water science research to operations in the next generation National Water Model (NextGen NWM), and to advance NOAA's Unified Forecast System (UFS) in delivering water-related forecasts and supporting community resilience to water-related hazards.

The CIROH and Center for Hydrologic Development will bring demonstrated capabilities in hydrologic systems science research, with natural and social science expertise, to enable realization of four key programmatic research and education themes:

1. Expansion and improvement of water prediction capabilities;
2. Advancement and acceleration of community water resources modeling;
3. Advancement and augmentation of hydroinformatics; and
4. Application of social, economic, and behavioral sciences in water resources.

CIROH and Center for Hydrologic Development will advance research and thought leadership in support of the NOAA Office of Water Prediction's mission to "collaboratively research, develop and deliver state-of-the-science national hydrological analyses, forecast information, data, guidance, and equitable decision-support services to inform essential emergency management and water resources decisions across all time scales." It will also reinforce the National Water Center's mission to promote collaboration across the scientific community, serving as both a catalyst to accelerate the transition of research into operations and a center of excellence for water resources science, information, and prediction services. Finally, it will strengthen communities of practice to synthesize a new generation of interdisciplinary and innovative research products, education, and outreach supporting NOAA's vision of a water- and weather-ready nation.

CIROH represents a consortium of partners operating under a hub and spoke governance with the University of Alabama as the lead institution/hub. Although there are over two dozen member and partner institutions, the University of Iowa's Center for Hydrologic Development will be a key CIROH member institution receiving significant CIROH funding.

Activities and objectives of proposed center. The University of Iowa's Center for Hydrologic Development is a key member/center providing scientific research and programmatic leadership of all four CIROH research themes based on Iowa's vast experience in hydrology, river hydraulics, water resources, and communications and outreach under IIHR—Hydrosience and Engineering (IIHR) and the Iowa Flood Center (IFC). Thus, the Center for Hydrologic Development will play a key role in the future of water resources in the United States, especially in how hydrologic and water quality forecast models are developed and subsequent forecast information is visualized and communicated.

Relationship to mission and strategic plan. As part of its established mission, the University of Iowa engages in teaching, research and appropriate extension, health and other public services. The Center for Hydrologic Development will directly support all three of these through cutting-edge hydrologic research, unique educational opportunities for graduate and undergraduate students (CIROH is committed to developing a comprehensive array of undergraduate and graduate-level education programs to increase participation in NOAA-related sciences), and new forecast models and hydroinformatics platforms serving the entire United States.

The Center for Hydrologic Development will tie directly to the College of Engineering's strategic plan, which includes a research-related goal, "To lead signature areas of research and economic development to drive breakthroughs that have societal impact." Fluids-related research, including hydrology, has been a signature strength in the University of Iowa College of Engineering for over a century. Hydrologic processes (precipitation, flood, drought, water quality, etc.) have significant societal impacts.

The Center for Hydrologic Development also ties directly to IIHR's strategic plan, which includes a goal of being a (global) leader in fluids-related science and engineering, research, and discovery. The new center ties directly with one of IIHR's lead indicators of success for this goal, which is to establish a new externally funded regional or national center.

Relationship to other centers/institutes at the university. The Center for Hydrologic Development will operate within IIHR and in partnership with the Iowa Flood Center (IFC). This will facilitate close collaboration between faculty and staff in IIHR and IFC with the new center, and allow the center to 'hit the ground running' under IIHR's administrative and computing support. The Center for Hydrologic Development will also have close collaborations with the Iowa Geological Survey (IGS), especially as related to groundwater, along with other University of Iowa researchers studying the impact of hydrologic processes on water quantity and quality. The Iowa Flood Center will remain focused and devoted to flood issues in the state of Iowa.

Relationship to centers/institutes at other universities in Iowa and potential for collaboration. There are no other NOAA cooperative institutes in Iowa. Further, the Center for Hydrologic Development does not duplicate any other centers or institutes in Iowa. The closest similar center is the IFC, which has a strictly Iowa-based mission and funding source. The Center for Hydrologic Development will have close collaboration with IIHR, IFC, and the IGS. However, we anticipate engaging faculty and research staff from Iowa State University, especially those in Geological and Atmospheric Sciences, Civil and Environmental Engineering, and the Iowa Nutrient Research Center.

Resources, facilities and equipment required. The Center for Hydrologic Development will be integrated within IIHR. As such, it will use IIHR administrative and computer support and will be housed within IIHR facilities.

The Center for Hydrologic Development funding will be awarded to the University of Iowa under a subaward agreement from the University of Alabama. The program will support faculty-led research and the addition of dedicated research professionals, post-doctoral associates, and graduate and undergraduate students. There will also be funds in the initial few months for necessary new computing and visualization hardware and software. Once it is fully operational, the Center for Hydrologic Development operations will be almost entirely supported by the subaward funds. However, modest additional support for activities not covered by these funds will likely be necessary from a portion of the significant indirect recovery from the center.

Expected funding sources. The University of Alabama will receive a five-year initial award from NOAA for CIROH and anticipates a five-year renewal of funding beyond the initial award. It is anticipated that CIROH (and by association, the Center for Hydrologic Development) will become an essential and permanent NOAA cooperative institute.

Currently, the only funds allocated for the Center for Hydrologic Development are from the subaward under the University of Alabama. The numbers below are estimates based on initial conversations in fall 2021. Since then, the University of Iowa's role has increased in several areas, including likely new themes related to water quality and floodplain mapping and hydrologic model performance evaluation.

IIHR and the IFC have been very successful in leveraging IIHR expertise and especially the IFC's capabilities and tools to attract far more funding than the annual IFC state base funding (about \$37.5M additional funds to UI / \$129.5M to Iowa to date). Thus, we have every confidence that the Center for Hydrologic Development will secure significant additional (federal, regional, and private) funding that leverages our growing expertise and resources.

	SOURCE(S) OF FUNDS	TOTAL ANNUAL COSTS
Year 1 / start up	NOAA/University of Alabama	\$500,000
Year 1	NOAA/University of Alabama	\$3,275,000
Year 2	NOAA/University of Alabama	\$4,200,000
Year 3	NOAA/University of Alabama	\$4,350,000
Year 4	NOAA/University of Alabama	\$4,150,000
Year 5	NOAA/University of Alabama	\$4,275,000
<b>Minimum 5-Year Total</b>		<b>\$20,750,000</b>

Evaluation plan. The center will be reviewed according to requirements of the funder as well as the university standard review processes for centers and institutes.

Date of implementation. Upon approval by the Board of Regents.