

Proposal for 3 Faculty Positions in Climate Science and Hydroclimatology

The Climate System Research Center has developed into an internationally recognized center for research on climatic change and global warming. The Center's activities are driven by faculty members from the Department of Geosciences whose research provides a significant proportion of departmental funding for facilities and graduate student support. Research conducted by members of the Climate Center provides the University with significant visibility, and advances our commitment to public education and outreach.

Several recent developments have added momentum to the need for additional faculty expertise in climate science and hydrology. First, we have received funding from the President's S & T fund (\$164,000) for a 2 year project on the "*Effects of climate change on the New England environment*". This is intended to support the development of a larger initiative on the same topic, to federal agencies (NOAA, NSF). To that end, we recently submitted a letter of intent to NOAA for a RISA Center at UMass (*Regional Integrated Sciences and Assessments*):

www.climate.noaa.gov/cpo_pa/risa/. If successful, this will establish a regional center for studies of climate change on the northeastern US, including surface & groundwater, ecosystems, energy & transportation. We plan to team up with Woods Hole on this proposal (due in the early Fall); they will focus on coastal erosion and sea-level rise. Funding is expected to be around \$700-800,000/year for 5 years.

For these efforts to succeed, it is essential that we appoint three new faculty members with expertise in climate and hydrologic sciences. Specifically, we need appointments in **(1) regional (high spatial resolution) climate modeling, (2) climate variability (climate dynamics), and (2) hydroclimatology (impacts of climate on hydrologic processes)**. These are critical needs within the field, and present glaring gaps in our current capabilities. These positions would complement our current faculty expertise in geosciences and Civil and Environmental Engineering. It is unlikely that we will prevail in our quest for significant federal support, either via the RISA Program or in any further efforts (e.g. an NSF S & T Center proposal) unless we strengthen our faculty by appointments in these areas.

It is noteworthy that several other departments and centers on campus have developed interests in climate science in recent years, and some have also proposed to build up their expertise in related fields. For example, Civil and Environmental Engineering has made faculty appointments in the area of water resources, making the case that future climate changes will require better strategies for water management. Polymer Science is promoting new sensor technologies to monitor water quality, arguing that such sensors will be essential as climate changes and water stresses increase. Electrical and Computer Engineering has proposed to hire a faculty member with expertise in remote sensing and climate, as part of a planned "cluster hire", and other units on campus (e.g. the Center for Public Policy & Administration) have suggested that there be additional hires on the general theme of "the human dimensions of global climate change". We support these ideas, but note that without additional core competency in basic climate science and hydroclimatology, such efforts will ring hollow and leave UMass without the skill set to

address basic scientific issues and evaluate the core impacts of climate change on the Northeast.

In summary, we request three faculty positions in climate science: high spatial resolution climate modeling, climate variability and dynamics, and hydroclimatology. These are critical needs within the university, and present glaring gaps in our current capabilities. These positions would complement the university's current faculty expertise in geosciences and civil engineering, and provide strong links to the other activities across campus that have already been noted. As we continue to seek recognition and formal links to federal agencies, it is clear that our lack of faculty expertise in these areas presents a significant disadvantage to our case. These proposed hires could be linked to other initiatives being prepared across campus to strengthen our case, and theirs.

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