

## **EPA statement regarding Vermont EPSCoR team's paper<sup>1</sup> on Climate and Land Use Impacts on Lake Champlain's Missisquoi Basin**

Nov. 22, 2016

EPA welcomes the important contribution the EPSCoR team's paper makes to our scientific understanding of the future effects of climate and land use on water quality in Missisquoi Bay. EPA particularly appreciates the complexity inherent in the systems approach taken by the team and the efforts to connect the research to real world environmental challenges. Efforts like this can only improve the quality of policy discussions regarding Missisquoi Bay over time.

EPA looks forward to further discussion with the authors and other lake scientists about how the work of the EPSCoR team might be further used in considering specific policy proposals. For example, while the team concluded that changes in temperature and precipitation would likely over-ride changes in land management, the magnitude of phosphorus reduction targets in the TMDL for Missisquoi Bay was not among the scenarios evaluated by the team.

EPA is disappointed that the paper mischaracterizes the considerations of climate change in the Lake Champlain TMDLs. EPA considered four different global circulation models – the same number considered by the EPSCoR team – rather than just one, as stated in the Conclusion section of the paper. EPA did only consider one emissions scenario, but it was the most pessimistic (*i.e.*, highest emission) scenario available at the time of EPA's analysis.

EPA is also concerned that the communication accompanying the formal paper<sup>2</sup> speaks broadly about Lake Champlain, when the study is focused on Missisquoi Bay, which is physically unique among the twelve Vermont segments of Lake Champlain (e.g., mostly enclosed, shallow, has significant phosphorus load in bay sediments). EPA would be the first to acknowledge that the greatest challenge in achieving water quality standards is in Missisquoi Bay. However, EPA has not seen a basis for extrapolating these findings about Missisquoi Bay to the whole of Lake Champlain.

EPA agrees with the EPSCoR team that an adaptive management approach is warranted and has constructed the TMDLs such that each stage of implementation informs the next. That makes it crucially important to move forward to implement the extensive efforts being made now by the State of Vermont and many other stakeholders to improve water quality in Missisquoi Bay.

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<sup>1</sup> Zia, Asim, et al., Coupled impacts of climate and land use change across a river-lake continuum: insights from an integrated assessment model of Lake Champlain's Missisquoi Basin, 2000-2040, *Environmental Research Letters*, 11 (2016) 114026.

<sup>2</sup> Joshua E Brown, Study: Climate Change Could Outpace EPA Lake Champlain Protections, Nov. 17, 2016, University of Vermont, University Communications, <http://www.uvm.edu/~uvmpr/?Page=news&storyID=23737&category=uvmhome>