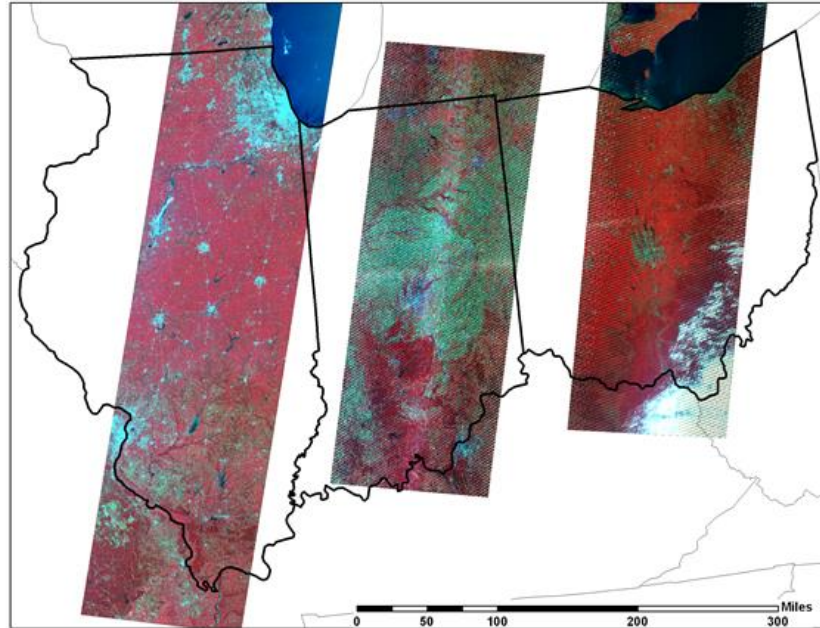


Water clarity of lakes in Illinois, Indiana, and Ohio

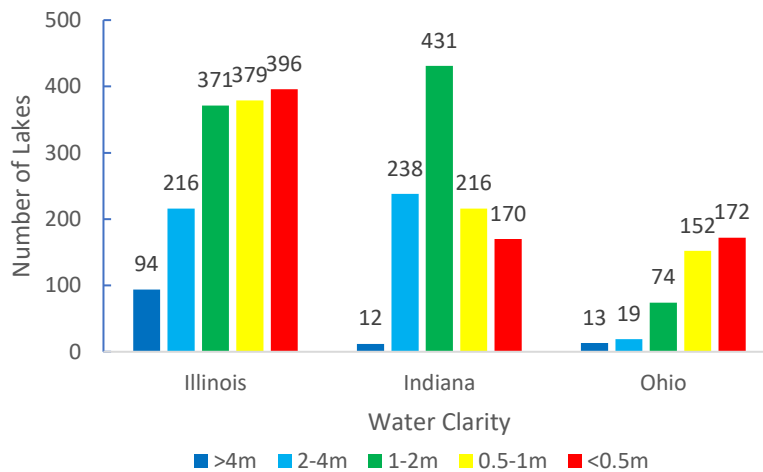
As part of a NALMS EPA remote sensing project, described in Chipman et al. (2009), the water clarity (Secchi depth) of over 3,000 lakes was classified using methods and models similar to those from our Minnesota research. In-situ data used for calibration of the Landsat data were provided by the state cooperators. One path of Landsat imagery covering a large proportion of the lakes in each state was classified for each state.



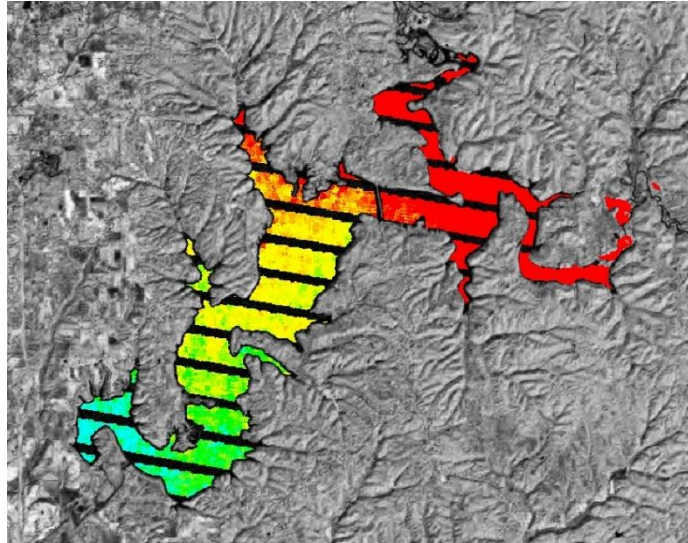
Lake clarity classification statistics for Illinois, Indiana and Ohio.

State	N	SD Range (m)	R ²	SEE	Number of Lakes Assessed
Illinois N	23	0.3-4.1	0.87	0.30	~526
Illinois S	36	0.2-4.6	0.81	0.33	~931
Indiana	31	0.2-7.6	0.78	0.28	~1,067
Ohio	9	0.4-4.7	0.80	0.40	~430

The distribution of water clarity of lakes over 6 hectares in size within each state is shown at the right. Indiana had the highest clarity of the three states with a median of 1.32 m. Illinois had a median clarity of 0.87 m and a distribution skewed toward lower water clarity classes. Ohio had the lowest clarity, with a median of 0.62 m and distribution highly skewed toward the lowest water clarity classes.



Reservoirs, which are common in central and southern Illinois, Indiana and Ohio, typically have spatially variable water clarity as a result of sediment settling as water moves through the reservoir. An example of variable water clarity in the Lake Monroe reservoir near Bloomington, Indiana is shown at the right. The black lines across the lake are missing data due to the scan line corrector problem with Landsat-7 ETM+ data.



The results from the three states demonstrate that Landsat data can be used to accurately map and monitor lake water clarity, a key indicator of water quality, in a variety of states with varying landscapes.

Reference

Chipman, J. W., L. G. Olmanson and A. A. Gitelson. 2009. Remote Sensing Methods for Lake Management: A guide for resource managers and decision-makers. Developed by the North American Lake Management Society.