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Chase P. Ashby* (cashby@nmu.edu), 214 W. Jasper St., Gwinn, MI 49841, and **Josh Thompson** (joshthom@nmu.edu). *Loxodromes and Orthodromes: Two Methods for Computing Perimeters of Geographic Regions and their Applications*. Preliminary report.

Inspired by the sense of humility one feels standing on the shores of Lake Superior, two questions come to mind: a) How does one measure the distance between two points on Earth? b) How can we measure the shorelines of the Great Lakes? In our attempt to answer these questions we develop two methods of computing distances on Earth, one based on loxodromes and the other orthodromes. These methods are analyzed, implemented in MATLAB and are applied to geographical data provided by the National Geophysical Data Center. A list of latitude/longitude pairs representing the boundary of the Great Lakes is used to calculate the total shoreline lengths. These methods can be used to compute the perimeter of an arbitrary geographic region on Earth. (Received September 15, 2014)