Using the New Natural Soil Drainage Index to Highlight and Explain Soil Wetness Patterns in Michigan
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Abstract
We apply an ordinally based, natural soil drainage index (DI), intended to reflect the amount of usable water that a soil can supply to growing plants under natural conditions. The index ranges from 0 for the very driest soils, e.g., those shallow to bedrock in a desert, to 99, for areas of open water. The index reflects the assumption that soils in drier climates and with deeper water tables have less plant-useable water; therefore, the soil's natural drainage class and soil moisture regime figure prominently in the calculation of the “base DI.” The DI of each taxonomic suborder is available from pull-down menus, and for download, at www.drainageindex.msu.edu. In this poster, we present examples of how the DI, when linked to a soil map and our color ramp (see below), can provide insight into landscape wetness patterns and geomorphology.

Applications
The index has many applications in forestry, ecology, and geography, as well as in global change and environmental modeling, especially when examined spatially in a GIS. The DI can be accessed at: www.drainageindex.msu.edu

Menominee County Drumlin

The Menominee drumlin field is comprised of soils formed in well-drained, loamy glacial till. Well-drained soils on the drumlin uplands are green, white poorly and very poorly drained soils show in blues and purples.

Well-drained soils formed in sandy till, i.e. the Riddle Series, appear green with DI values ranging from 36 to 45. Somewhat poorly drained, low areas of the landscape appear blue, with values between 64 at 70. Poorly and very poorly drained muck soils appear purple with DI values 88.

This color ramp illustrates the colors that we have assigned to the various DI values. As the DI value decreases, the colors morph to purples to blues to grays to yellows and finally to orange, designed to mimic soil wetness.

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