A Harmonized Legend for a Multi-State Dominant Soil Parent Material Map

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Introduction

The Integrating Spatial Educational Experiences (Isee) project has the goal of *helping students understand how and why soils and landscapes vary at different scales and why it matters*. As part of the project, we are creating Dominant Soil Parent Material maps on a state-by-state basis using the SSURGO database. Our initial concepts were not fully solidified and legends currently vary from state to state (see maps below). A common legend is needed.

Concept of a Dominant Soil Parent Material

For soils with more than one parent material, depicting all of them makes an overly complex map. We pick only the Dominant Soil Parent Material, defined as: (1) the material that has the greatest impact on other soil properties, or (2) the material that is an indicator of other important soil properties.

Parent material information is extracted from the Official Series Description (OSD) for each soil series in each soil map unit.

Excerpt from an OSD

MIAMI SERIES

The Miami series consists of very deep, moderately well drained soils that are moderately deep to dense till. Miami soils formed in as much as 46 cm (18 inches) of loess or silty material and in the underlying loamy till. They are on till plains. Slope ranges from 0 to 60 percent. Mean annual precipitation is 1016 mm (40 inches), and mean annual temperature is 11.1 degrees C (52 degrees F).

Dominant Soil Parent Material: **Loamy Wisconsin Till**

Most Dominant Soil Parent Material class names consist of

- a mode of deposition or formation (alluvium, residuum, till, etc.)
- a chemistry or mineralogy descriptor (acid clastic rocks, carbonate rocks, basic/mafic igneous or metamorphic rocks, etc.) or
- a particle size descriptor (clayey, loamy, sandy, etc.).

Proposed Dominant Soil Parent Material Legend

- **Organic**
  - Organic Materials
- **Eolian and Lacustrine**
  - Deep Loess
  - Eolian Sands / Sandy Sediments
  - Clayey and Silty Lacustrine Sediments
- **Alluvium**
  - Alluvium on Active Floodplains
  - Alluvium from Mixed Sources
  - Alluvium from Carbonate Rocks
  - Alluvium from Calcareous Clastic Rocks
  - Alluvium from Acid Clastic Rocks
  - Alluvium from Basic/Mafic Igneous or Metamorphic Rocks
  - Alluvium from Acid/Silicic Igneous or Metamorphic Rocks
  - Alluvium from Volcanic Materials
- **Glacial**
  - Loamy Wisconsin Till
  - Clayey Wisconsin Till
  - Low Carbonate Loamy Wisconsin Till
  - Wisconsin Outwash
  - Illinoian Till
  - Illinoian Outwash
- **Coastal**
  - Clayey Fluvio-Deltaic Coastal Sediments
  - Loamy Fluvio-Deltaic Coastal Sediments
  - Sandy Fluvio-Deltaic Coastal Sediments
  - Marine Coastal Sediments
  - Ashy Coastal Sediments
- **Residuum**
  - Residuum from Carbonate Rocks
  - Residuum from Calcareous Clastic Rocks
  - Residuum from Acid Clastic Rocks
  - Residuum from Basic/Mafic Igneous or Metamorphic Rocks
  - Residuum from Acid/Silicic Igneous or Metamorphic Rocks
  - Residuum from Tuff
  - Residuum from Undifferentiated Rocks
- **Colluvium**
  - Colluvium from Carbonate Rocks
  - Colluvium from Calcareous Clastic Rocks
  - Colluvium from Acid Clastic Rocks
  - Colluvium from Basic/Mafic Igneous or Metamorphic Rocks
  - Colluvium from Acid/Silicic Igneous or Metamorphic Rocks
  - Colluvium from Tuff
  - Colluvium from Undifferentiated Rocks
- **Volcanic**
  - Volcanic Materials
- **Miscellaneous**
  - Disturbed Areas / Urban Land / Mining Regolith / Pits
  - Mining Regolith
  - Water
  - Not Surveyed or No Digital Data Available

Descriptive Text for Each Class

Descriptive text for display in a popup box within the Isee app will further define each class. The *General Description* is intended for a lay audience, while the *Technical Description* is intended for a more scientifically literate audience. Definitions follow Jackson et al. (2005). A section with details for soil scientists could be added as well.

Example Descriptive Text

Residuum from Acid Clastic Rocks

General Description
Material weathered from acid sandstone, siltstone, and shale that has remained in place.

Technical Description
Residuum is the debris that remains in place when rocks weather physically and chemically. Residuum can be so thin that unweathered rock occurs at the base of a thin soil profile, or it can be many meters deep. Residuum is distinguished on this map by the type of rocks from which it formed. *Clastic Rocks,* as used here, is a group term for sandstone, siltstone, and shale, all of which are sedimentary rocks composed of fragments or clasts derived from preexisting rocks. *Acid Clastic Rocks* do not contain carbonates.

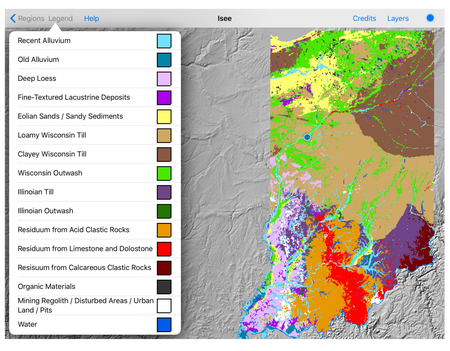
Underlined text will be defined in a glossary.

Comments & Issues to Resolve

- *Alluvium* and *Volcanic* classes have not yet been extensively tested.
- Word choice: *Sediments*, *Deposits,* or *Materials?*
- Is *Fluvio-Deltaic* needed in the class names for coastal sediments?
- Is a separate *Mining Regolith* only class needed?
- Can *Residuum* and *Colluvium* be combined into *Residuum and Colluvium from …* classes that are described more fully in the descriptive text?
- *Volcanic Materials*, *Volcanic Deposits*, or other terminology?

References

Jackson, J. A., J. P. Mehl, K. K. E. Neuendorf. 2005. Glossary of Geology, 5th ed. American Geological Institute, Alexandria, VA. 779 p.



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Acknowledgements

This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Award No 2013-70003- 20924. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.