Hierarchical approach of incorporating legacy information into the DSM process to soil property and interpretation maps at field scale

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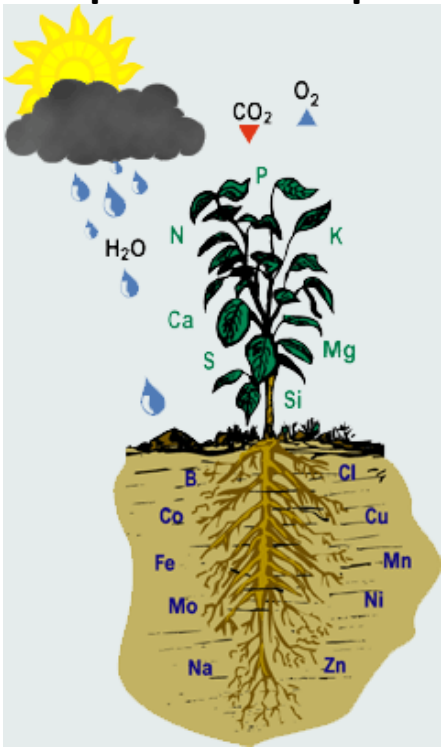
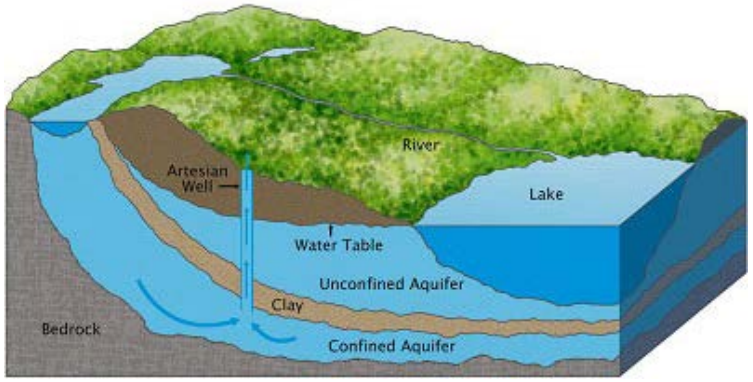
Soil maps are key for Infrastructure development and support

Nutrient needs and response for crops



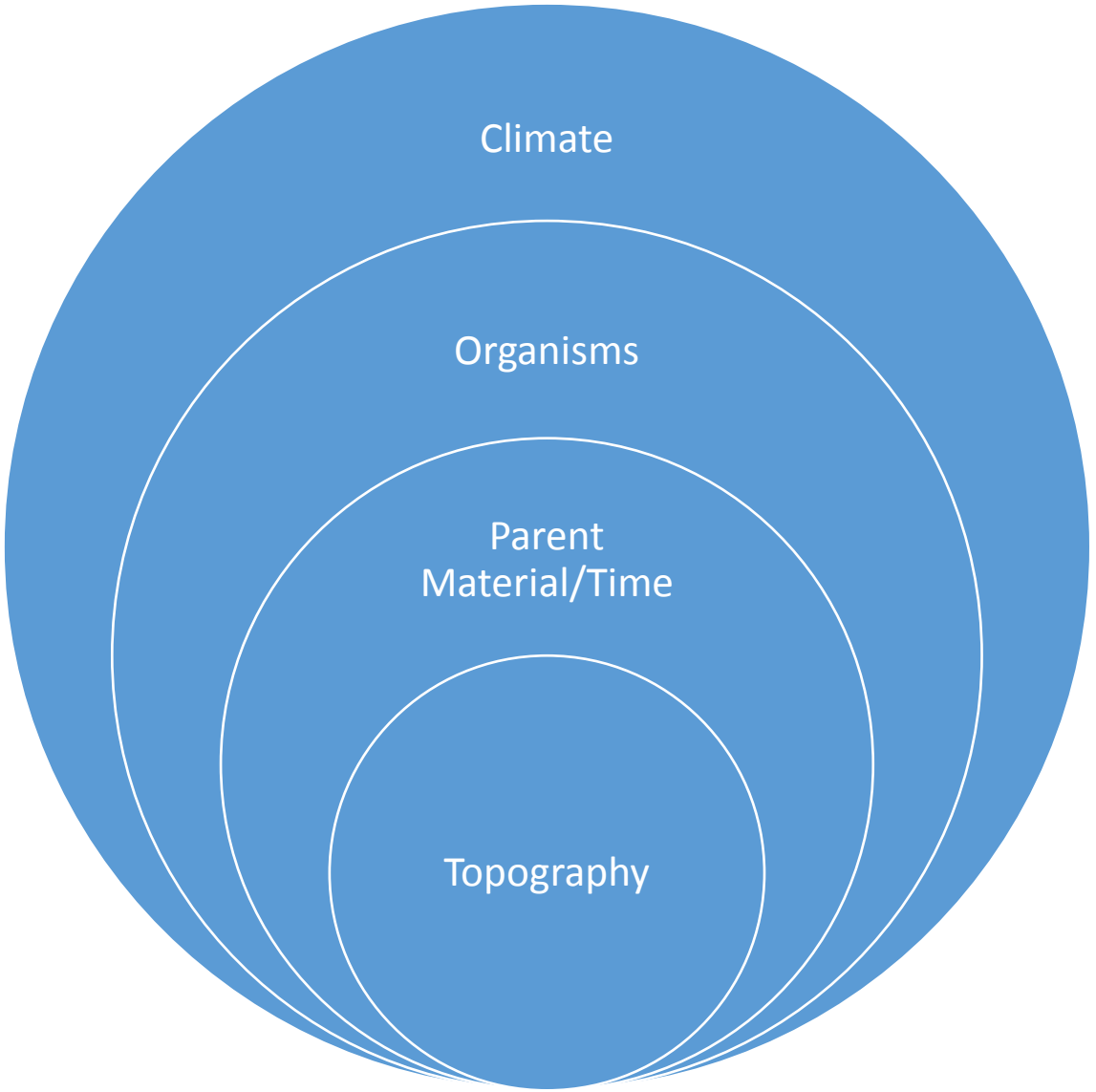
Recharge potential for aquifers



Goals for Purdue Soil Mapping Program

- Provide spatial data and information to end-users at the resolution where field level management decisions are made;
- Develop efficient and inexpensive methodologies for collecting soil information and data from diverse sources for generating soil maps/ interpretations/scenarios;
- Develop platforms that deliver the information directly or via extensions to the field level decision makers/end-users
- Build capacity within the countries to support soil mapping activities for improved soil information.

Soil State Factor Model – Jenny (1941)



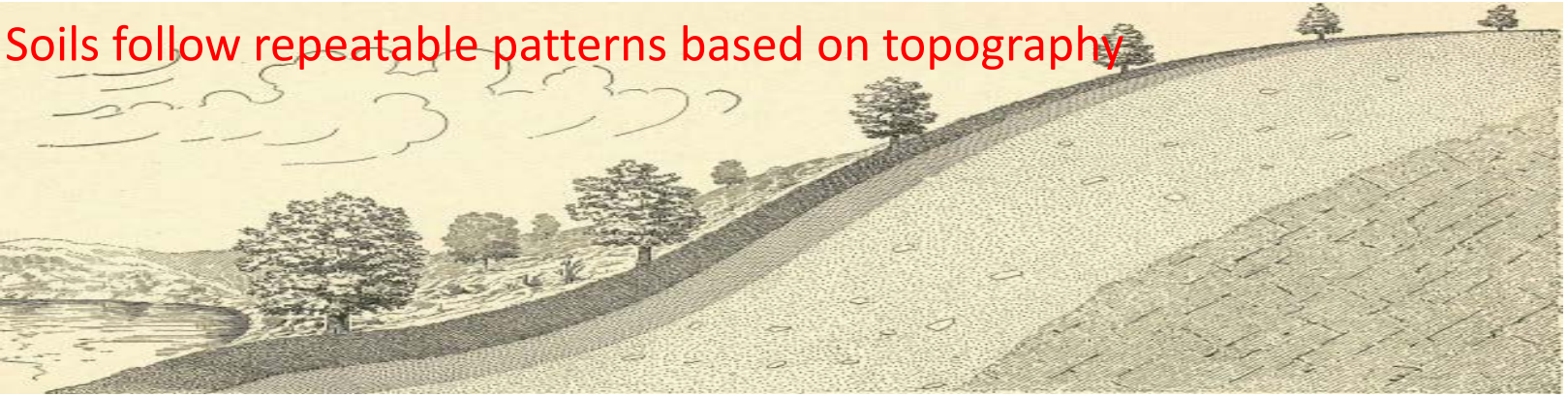
The Approach

Use DSM as a platform to facilitate the data/information collection/organization and conduct numerical analysis for quantitative predictions

Existing information is organized and utilized to establish various hierarchal levels based on their spatial variability (Climate, Organisms, Parent Material/Time)

Numerical soil-landscape relationships development based on Terrain Attribute Analysis

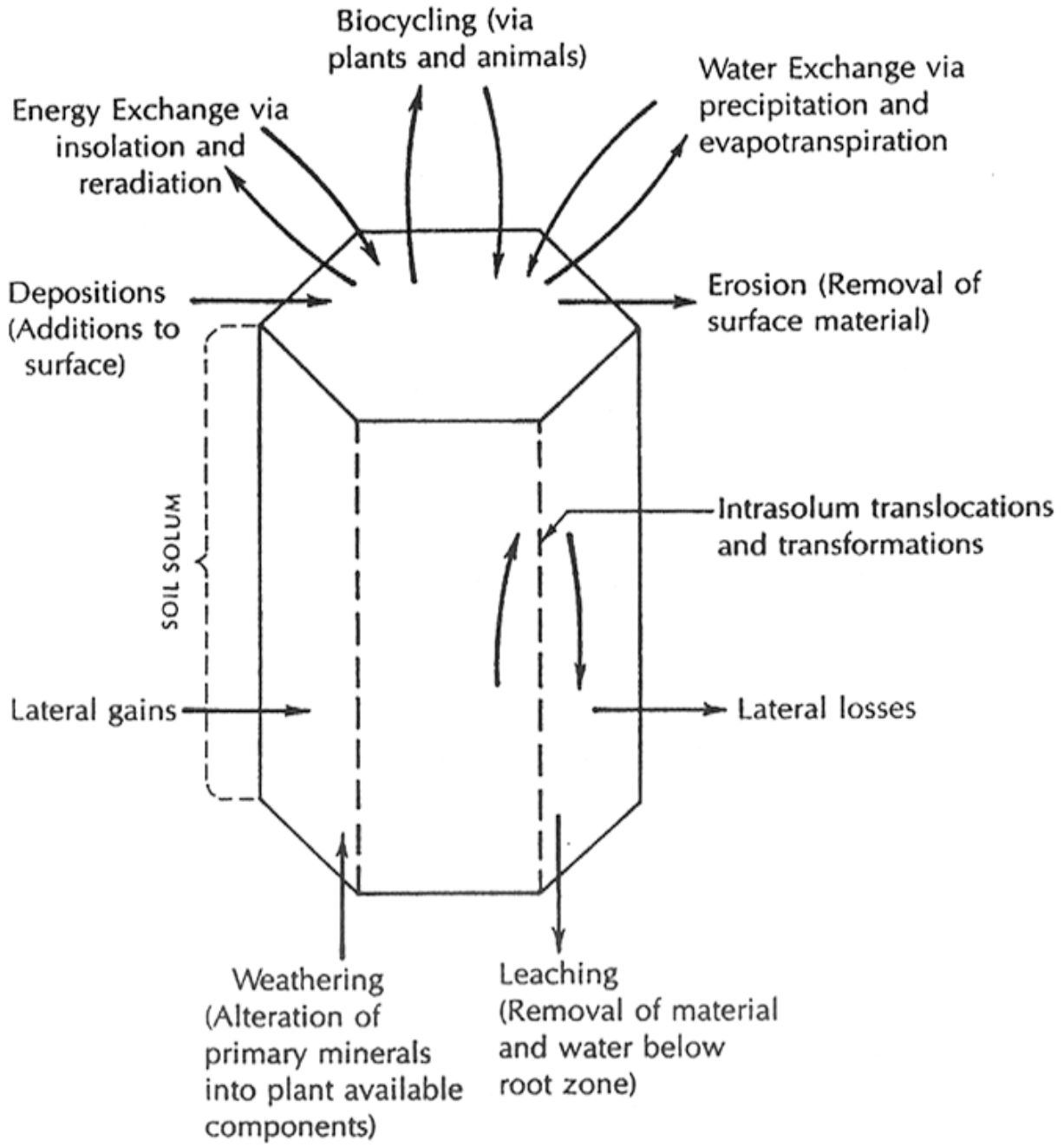
Catena Concept – G.A. Milne, 1935



Even the slightest difference in elevation leads to the development of different soils over time

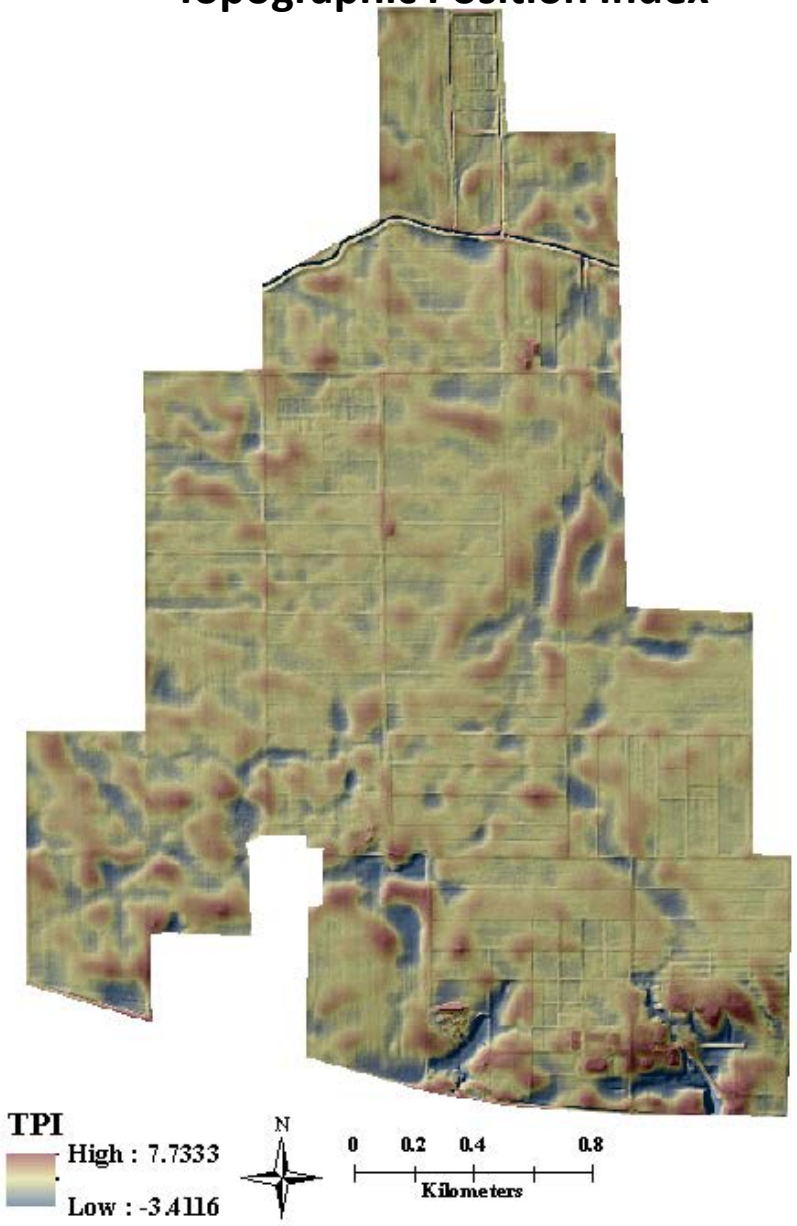
- Soil as an Open System
  - additions
  - losses
  - transfers
  - transformations
- Soil as an Open Water Story
  - Some of the major soil process at hillslope scale are water driven,
  - Topography (DEM) is the major driver at hillslope scale

(Simonson, 1959)

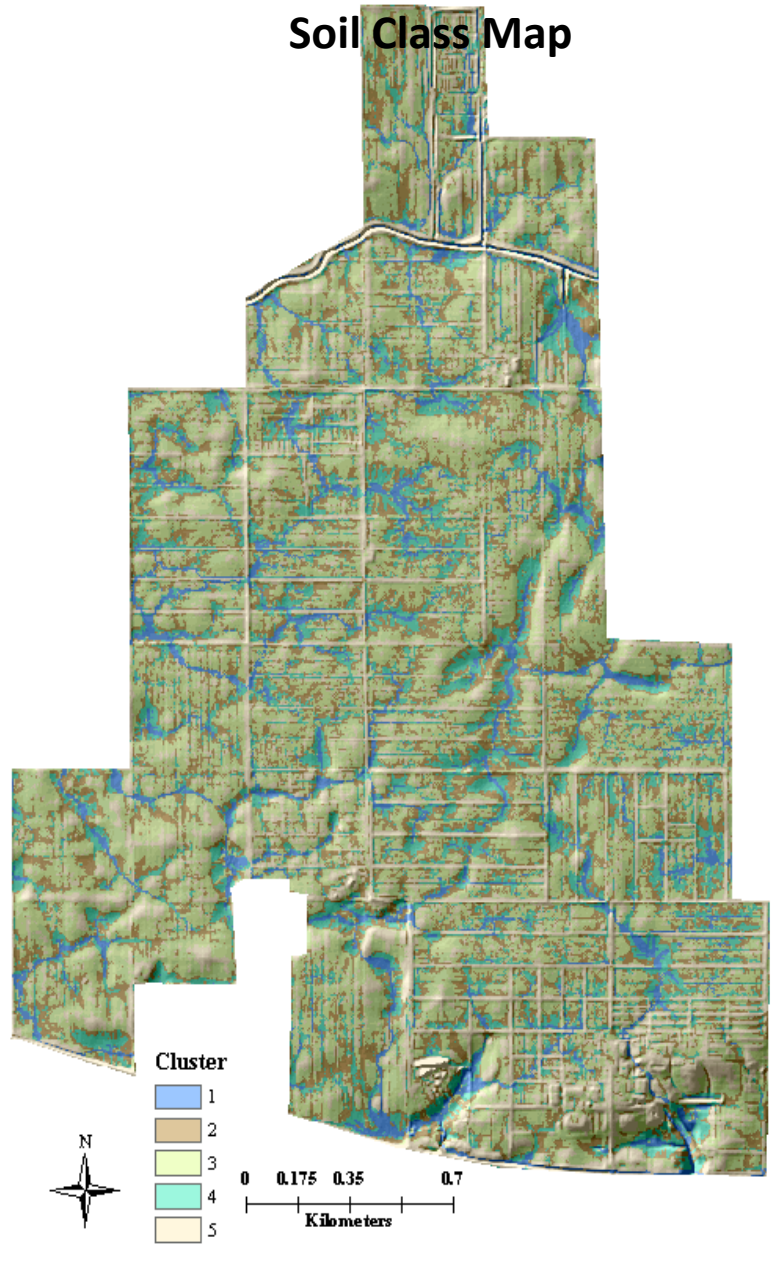


Topographic Wetness Index

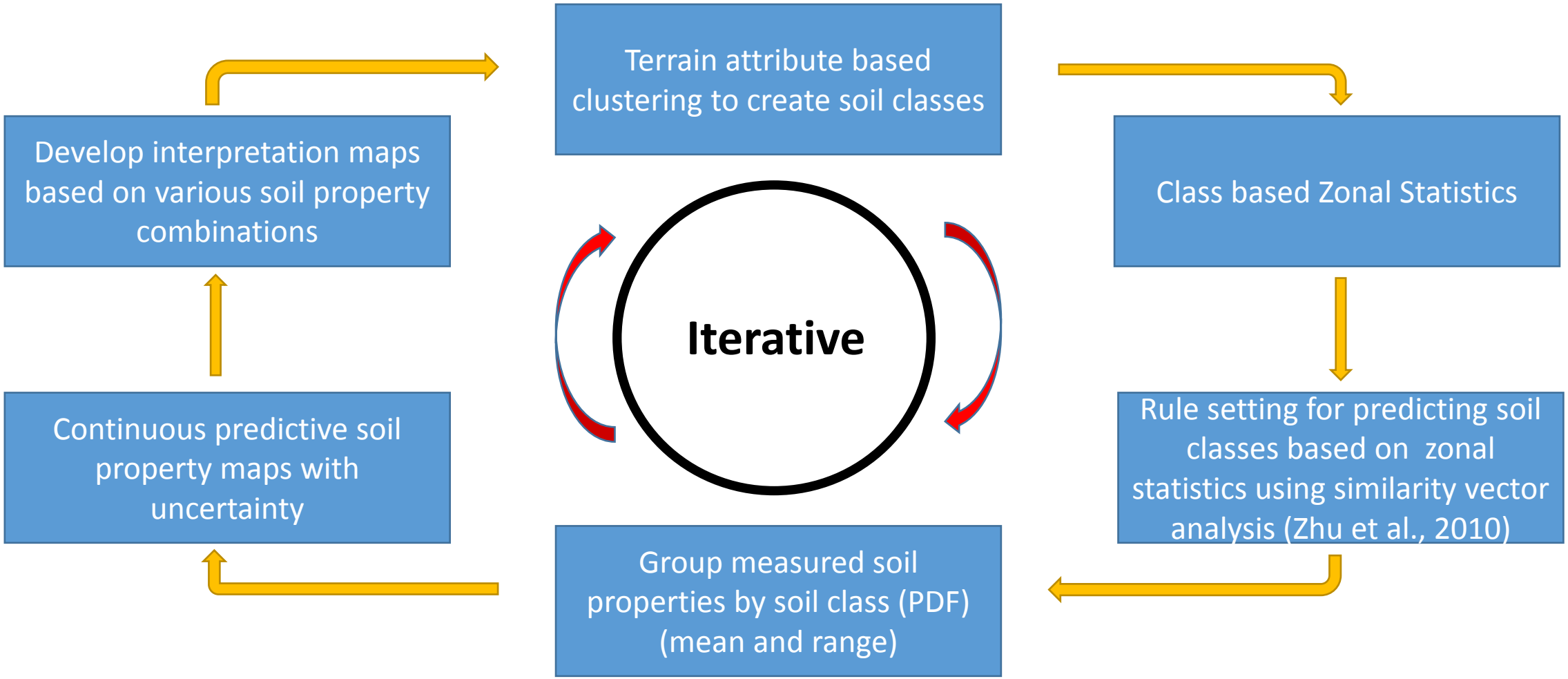
Topographic Position Index



Soil Class Map



Mapping Process



ProSuelos: Soil Fertility Management in Central America

Foto por: Albert Llama/ 2015

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Project Overview

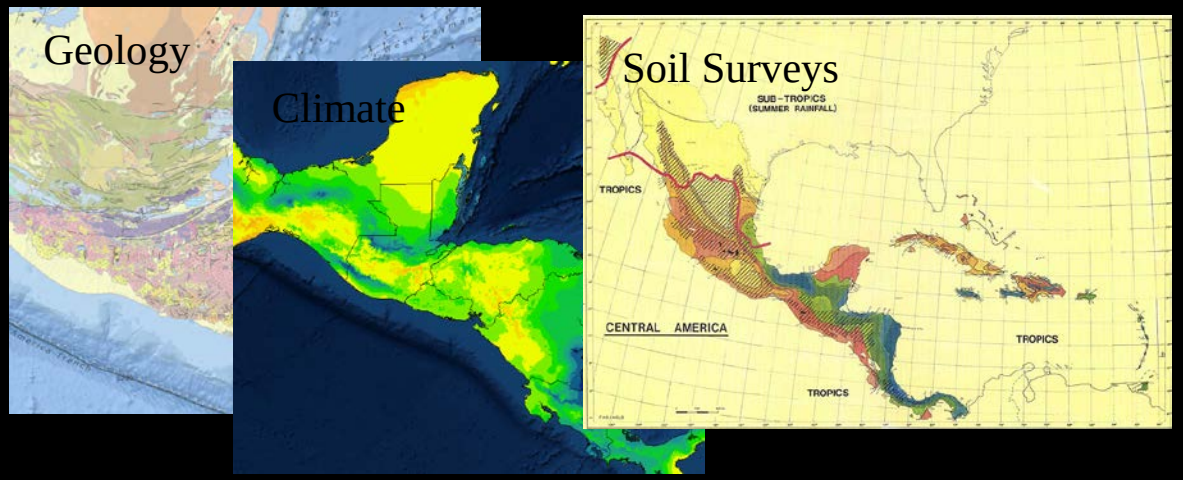


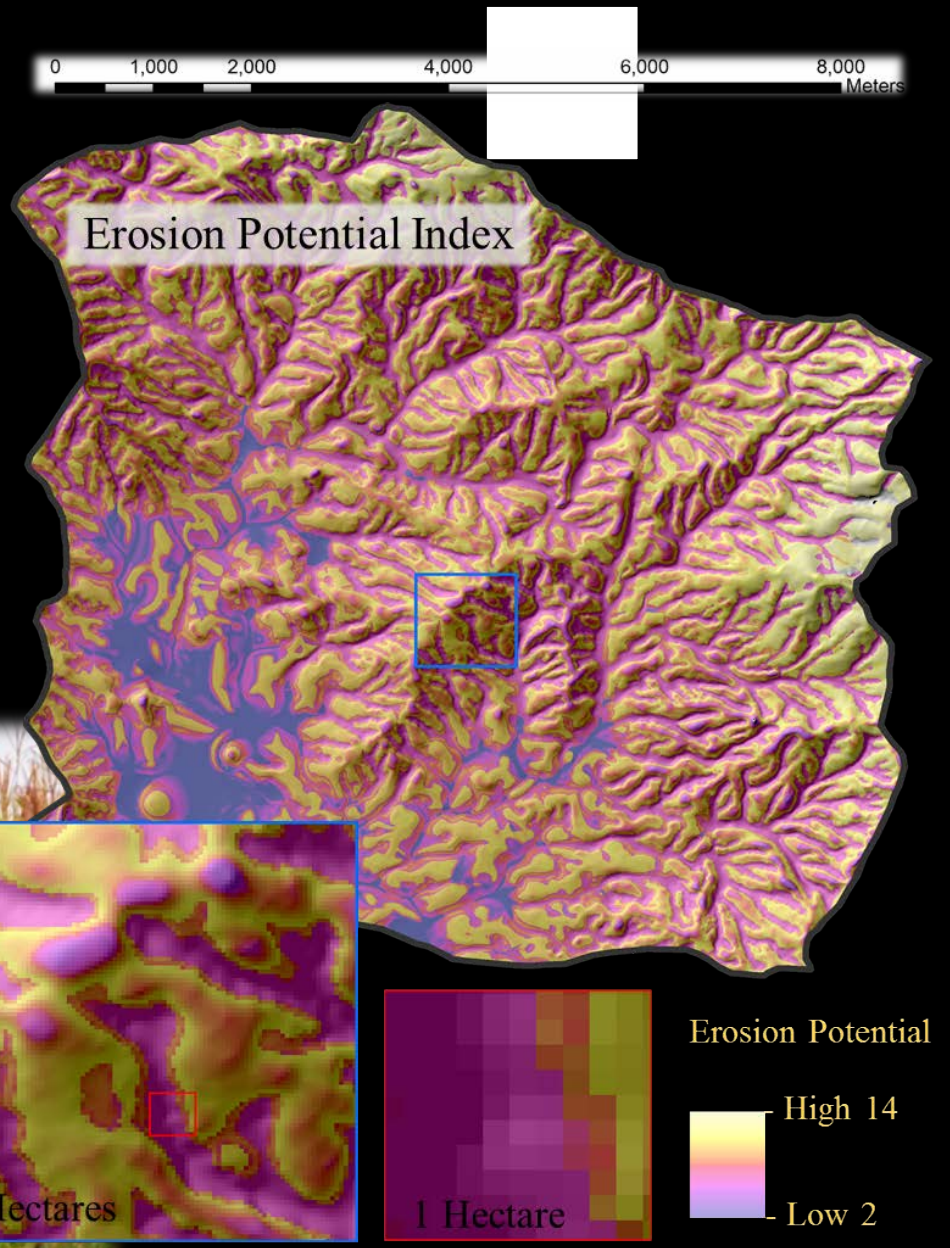
Photo: Neil Palmer, CIAT 2010, http://tcktcktck.org/wp-content/uploads/2013/01/4345531573_548d2d7b26_b.jpg

Goals:

- Development of dynamic and continuous maps at a low cost
- Precise soil information with a wide application
- Maps maintained by local scientists

Project Overview

- Access to information on the web and in the field
- App and website development for research and extension



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