

Improving Outreach Strategies to Direct the Future of Soil Survey

Toby O'Geen

Dept. of Land, Air and Water Resources

University of California, Davis

<http://casoilresource.lawr.ucdavis.edu>



NCSS Mission Statement

- **Inventory the soil resource of the United States**
 - 1. Keep soil survey relevant to ever-changing needs**
 - 2. Interpret information and deliver it in a useful form**
 - 3. Promote soil survey and provide technical assistance in its use for a wide range of issues.**

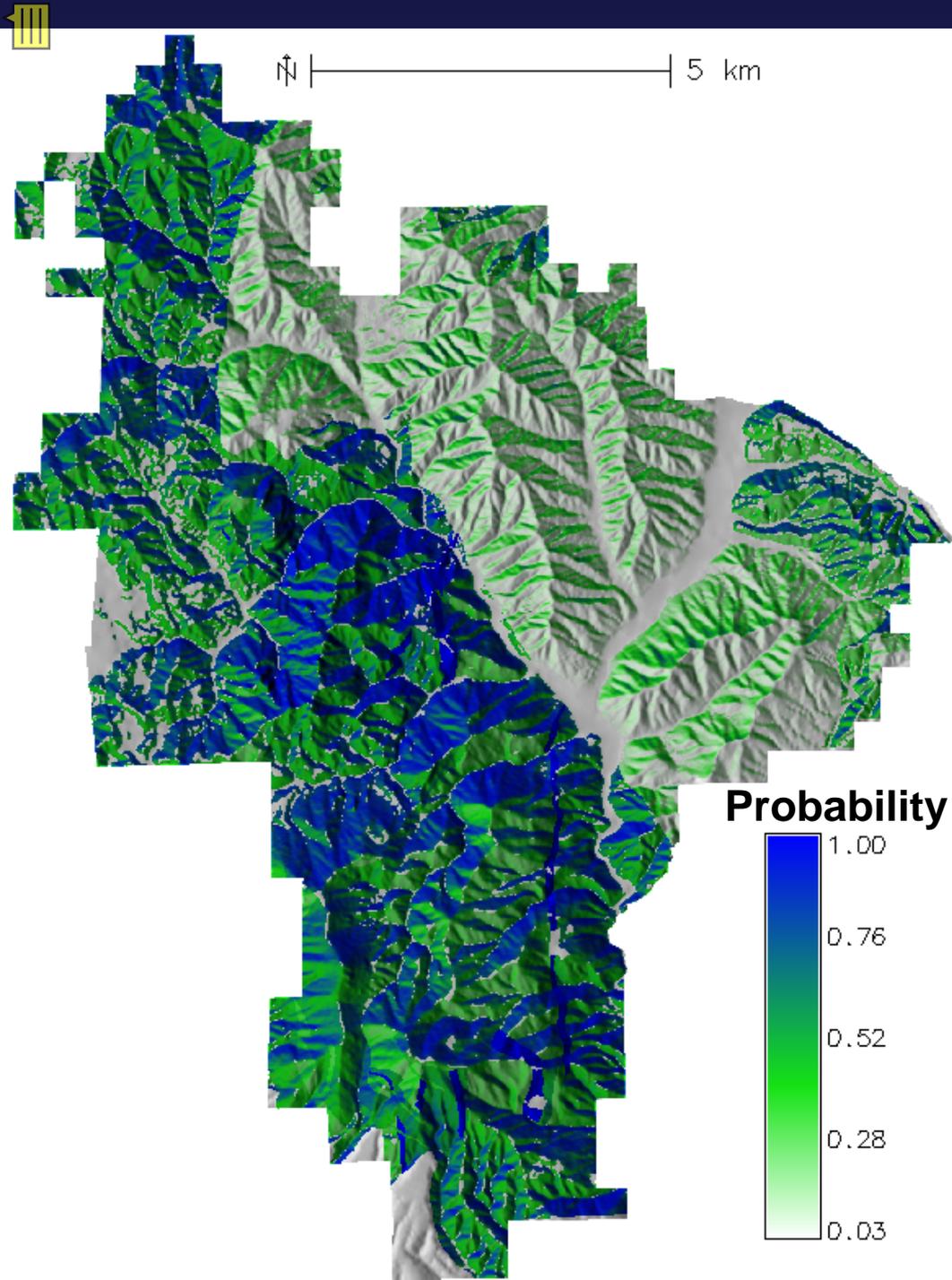


1. Staying Relevant to Ever Changing Needs

Why don't we dream big?

Become more inclusive of other disciplines

More measured soil properties (*infiltration, field and lab Ksat, labile carbon, microbial assays, geochemical suites, macro nutrients, water table dynamics, strength, aggregate stability, soil surface properties*)...start small with pilot projects and important landscapes



1. Staying Relevant to User Needs:

Probability of Mollic Epipedons Within Map Units Using Logistic Regression

Soil Survey in Pinnacles National Monument



1. Staying Relevant to Ever Changing Needs

- **High-resolution mapping in sensitive areas (along water ways, subaqueous soils, & urban land)**
- **Explore greater soil depths in important ground water basins and “deep rooted” ecosystems**
- **Address soil change in response to land use**
- **Focus on impacts of climate change on soils**

2. Interpret Information and Make it Available in Useful Forms

- **Repackaging soil survey information for specific uses.....This is where we have the opportunity to convey the utility of Soil Taxonomy as a language**

Repackaged Soil Survey Products

Region 1- Shrink Swell Clays



Region 2- Recent Alluvium

Loamy

Sandy

Silty

Clayey

Region 3- Low Terraces



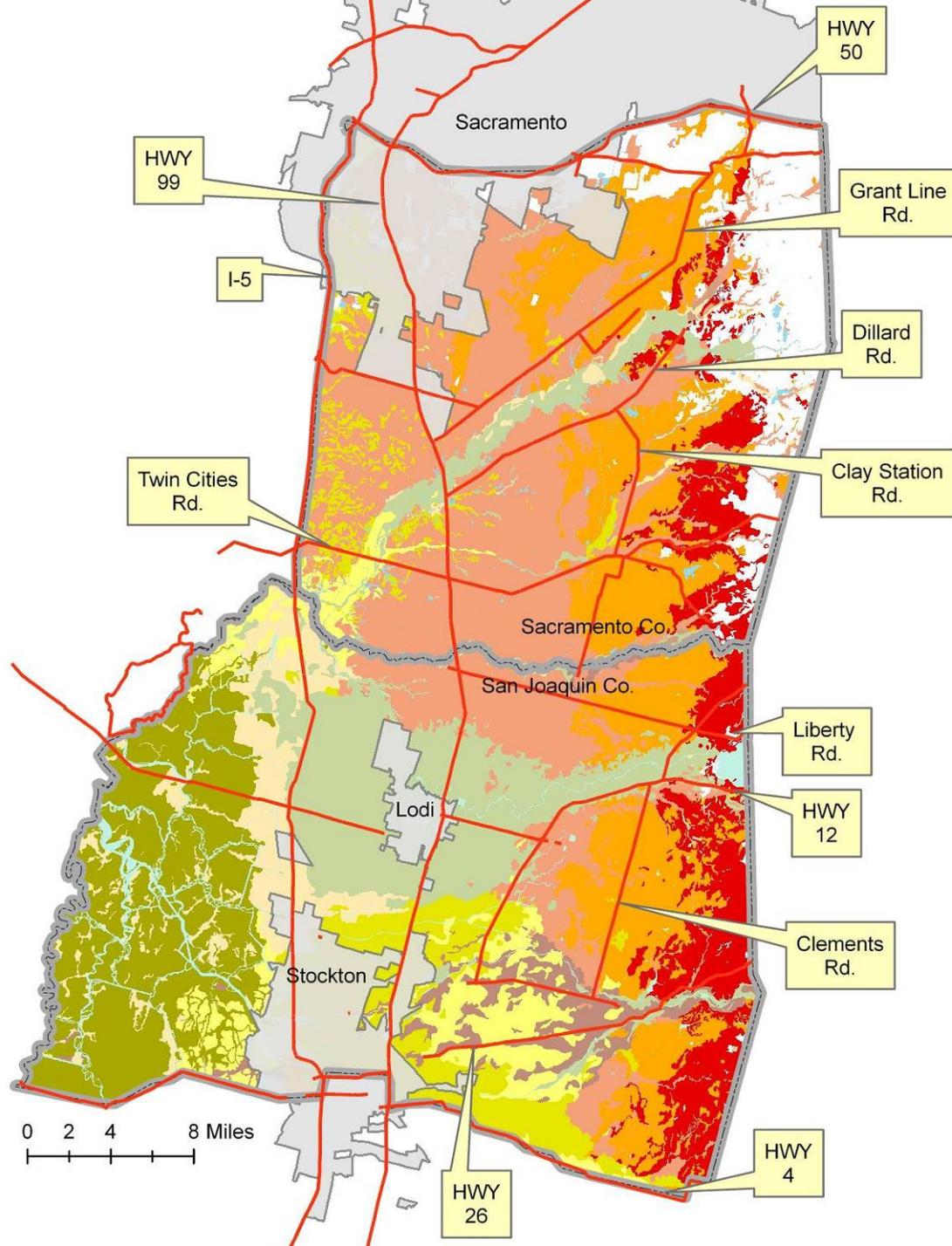
Region 4- High Terraces



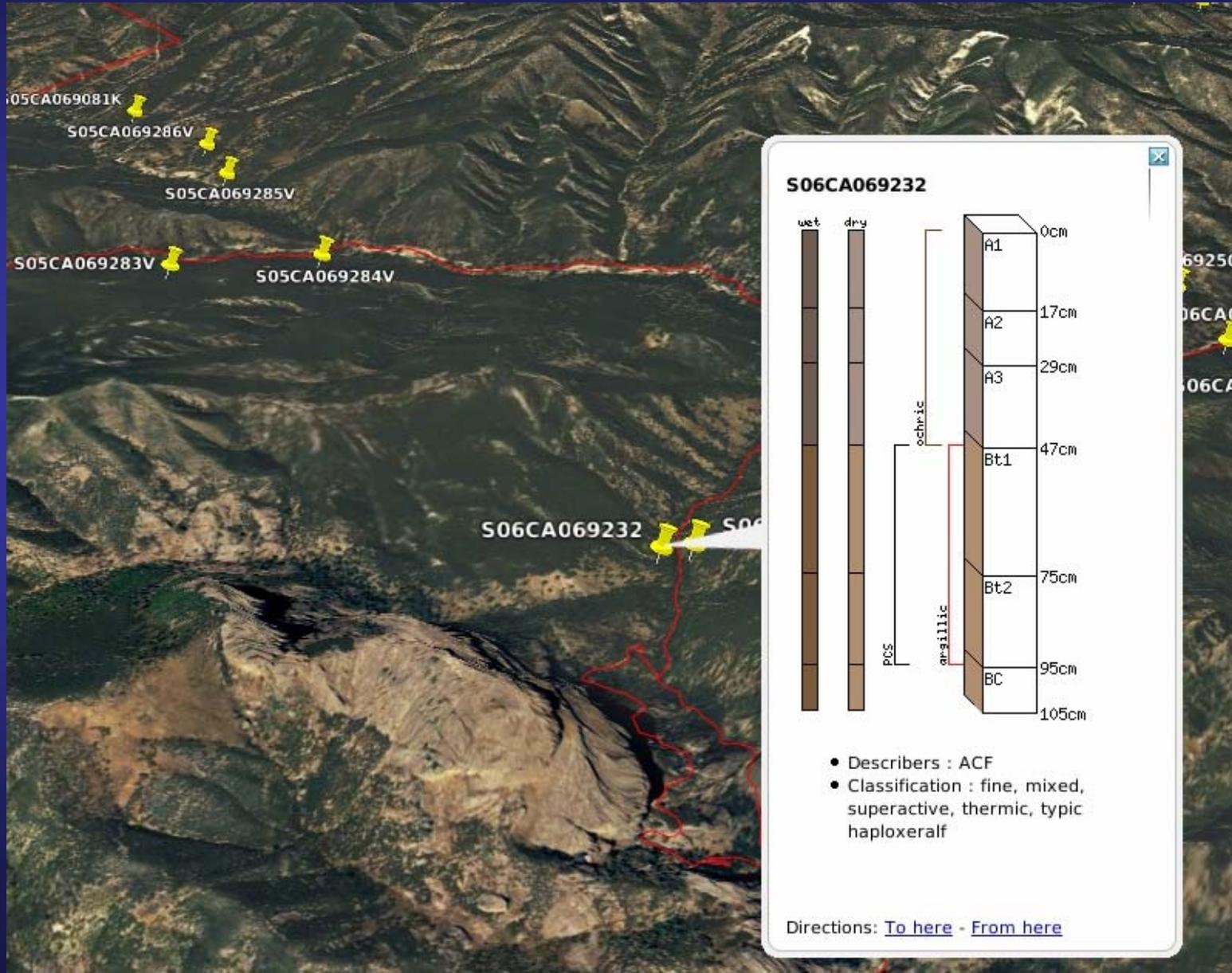
Region 5- Volcanic Terrain

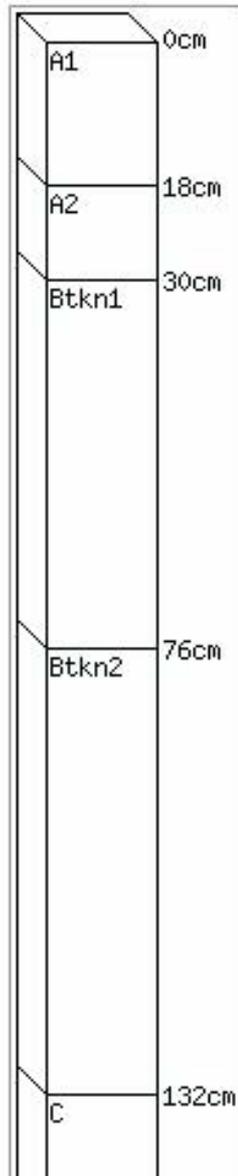


Other-Peat Soils



2. Information Delivery: Pinnacles National Monument





Soil Taxonomy

Order:	<i>Aridisols</i>
Suborder:	<i>Argids</i> [Map of Suborders]
Greatgroup:	<i>Natrargids</i>
Subgroup:	<i>Typic Natrargids</i>
Family:	<i>Fine-loamy, mixed, superactive, thermic Typic Natrargids</i>
Phase:	<i>POLVADERO-GUIJARRAL COMPLEX, 5 TO 15 PERCENT SLOPES</i>
Soil Series:	<i>POLVADERO</i> (Link to Official Series Description)
Data:	[Lab Data] [Nitrate Groundwater Pollution Hazard Index]
Raw Data	Component All Horizons

Land Classification

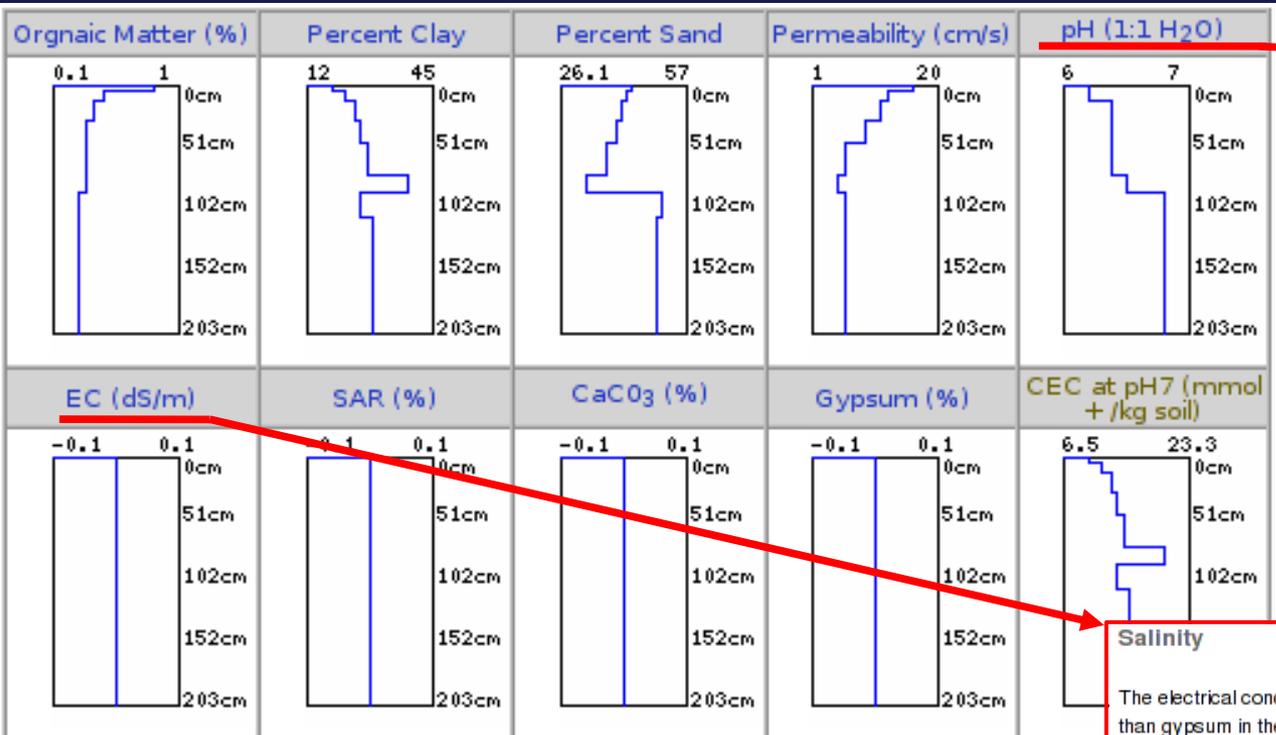
Storie Index	64
Land Capability Class [non-irrigated]	7-e
Land Capability Class [irrigated]	3-e1

Soil Suitability Ratings

<i>Waste Related</i>	<i>Engineering</i>
<i>Urban/Recreational</i>	<i>Irrigation</i>
<i>Wildlife</i>	<i>Runoff</i>

Erosion

Wind Erodibility Group	3
Wind Erodibility Index	86
T Erosion Factor	5
Runoff	<i>High</i>
Drainage	<i>Well drained</i>
Parent Material:	<i>alluvium derived from calcareous sedimentary rock</i>



Reaction, Soil (pH) (618.47)

(a) Definition
Soil reaction is a numerical expression of the relative acidity or alkalinity of a soil.

(b) Classes
The descriptive terms for reaction and their respective ranges in pH are:

Descriptive Term	pH Range
Ultra acid	1.8 - 3.4
Extremely acid	3.5 - 4.4
Very strong acid	4.5 - 5.0

Salinity

The electrical conductivity of a saturation extract method is the standard measure of salinity in soil, but it may include a small contribution (up to 2 dS/m) from dissolved gypsum in the soil.

The standard international unit of measure is decisiemens per meter (dS/m) corrected to the same as dS/m and may still be used. If it has been measured, the electrical conductivity is used if the electrical conductivity has not been determined, but salinity is inferred:

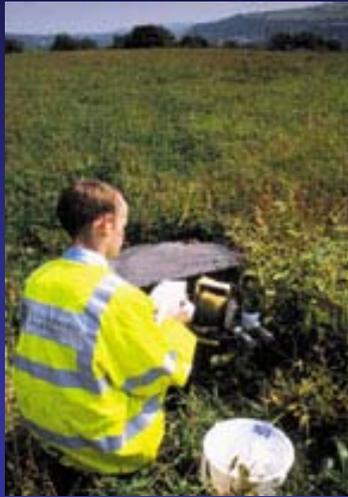
Class	Electrical conductivity dS/m (mmhos/cm)
0 Non saline	0 - 2
1 Very slightly saline	2 - 4
2 Slightly saline	4 - 8
3 Moderately saline	8 - 16
4 Strongly saline	≥ 16

Depth Range (cm)	Horizon Designation	Percent Clay	Percent Sand	Percent Organic Matter	pH by water Extraction	Sat. Hydraulic Conductivity (cm/s)
0 - 5	A	12	45	1	6	20
5 - 13	Bt1	18	43.2	0.4	6	14
13 - 30	Bt2	22	41.1	0.3	6.3	12
30 - 48	Bt3	25	38.5	0.2	6.3	8
48 - 74	Bt4	28	34.4	0.2	6.3	3.5
74 - 89	2Bt5	45	26.1	0.2	6.5	1
89 - 109	3Bq1	25	57	0.1	7	3
109 - 203	3Bq2	30	55.5	0.1	7	3

0	0	0	0	12.9
0	0	0	0	15.5



3. Promoting Soil Survey: Emphasis on the Youth



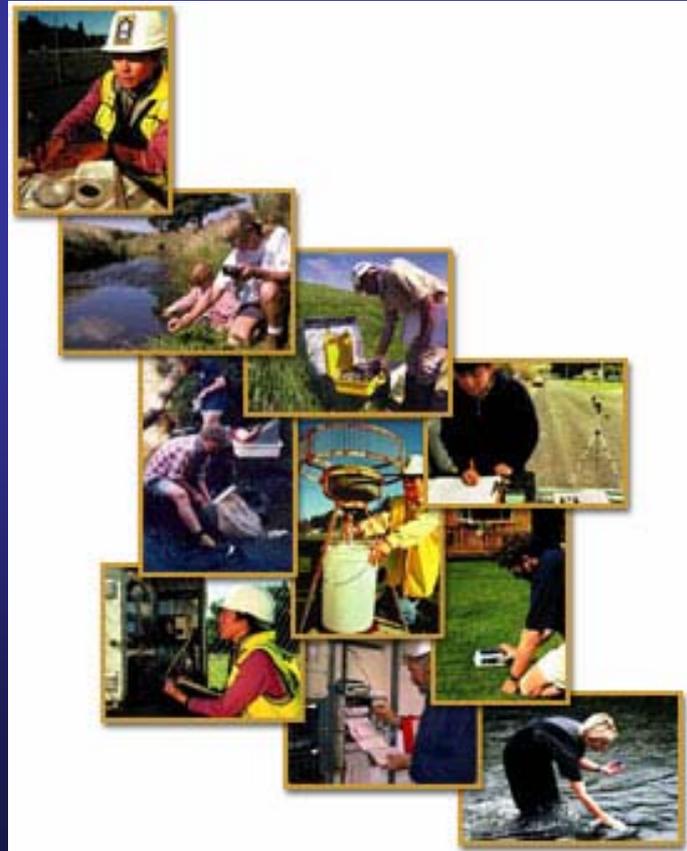
http://www.oznet.ksu.edu/fieldday/kids/soil_pit/soil.htm

3. Provide Technical Assistance

Future jobs must encompass each part of the mission.

High tech jobs

Immersed in societal issues

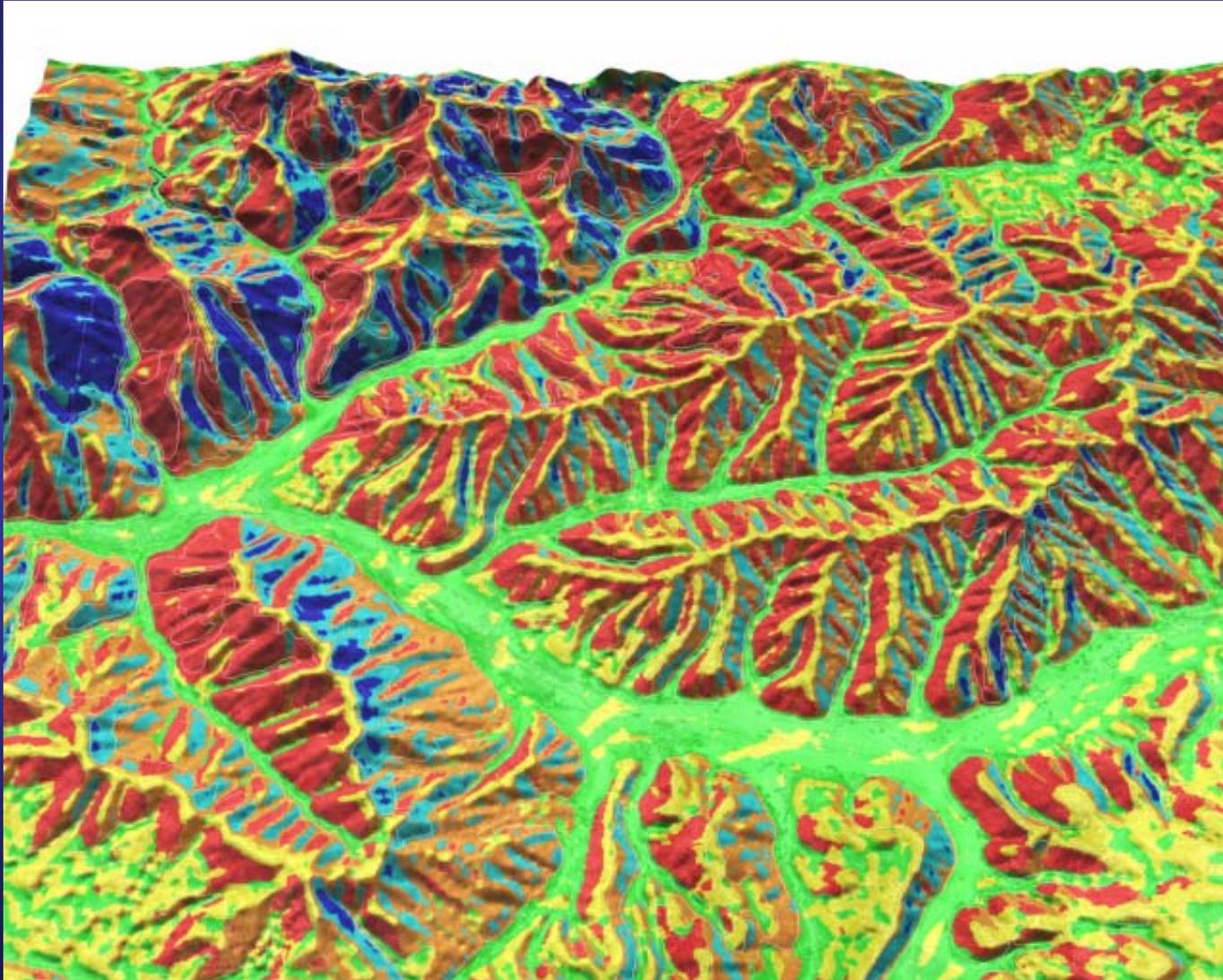




Engage Stakeholders When Planning the Future of Soil Survey

- **Who are the future stakeholders?**
- **Appoint an NCSS envoy from each region to work with state soil scientists, and stakeholders to identify needs.**
- **Employ education and outreach coordinators.**
- **Give Area Soil Scientists the primary responsibility of infusing soil survey into regional issues.**

1. Staying Relevant to User Needs: Illustrating the Distribution of Components



Soil Survey at Pinnacles National Monument