4th International IUSS Soil Classification Conference

John Galbraith, Virginia Tech
June 18, 2012
NE CSSC Meeting, Orono, ME

Joe Chiaretti, USDA-NRCS

4th IUSS Soil Classification Conference

International Union of Soil Sciences

Virginia Tech

University of Nebraska Lincoln

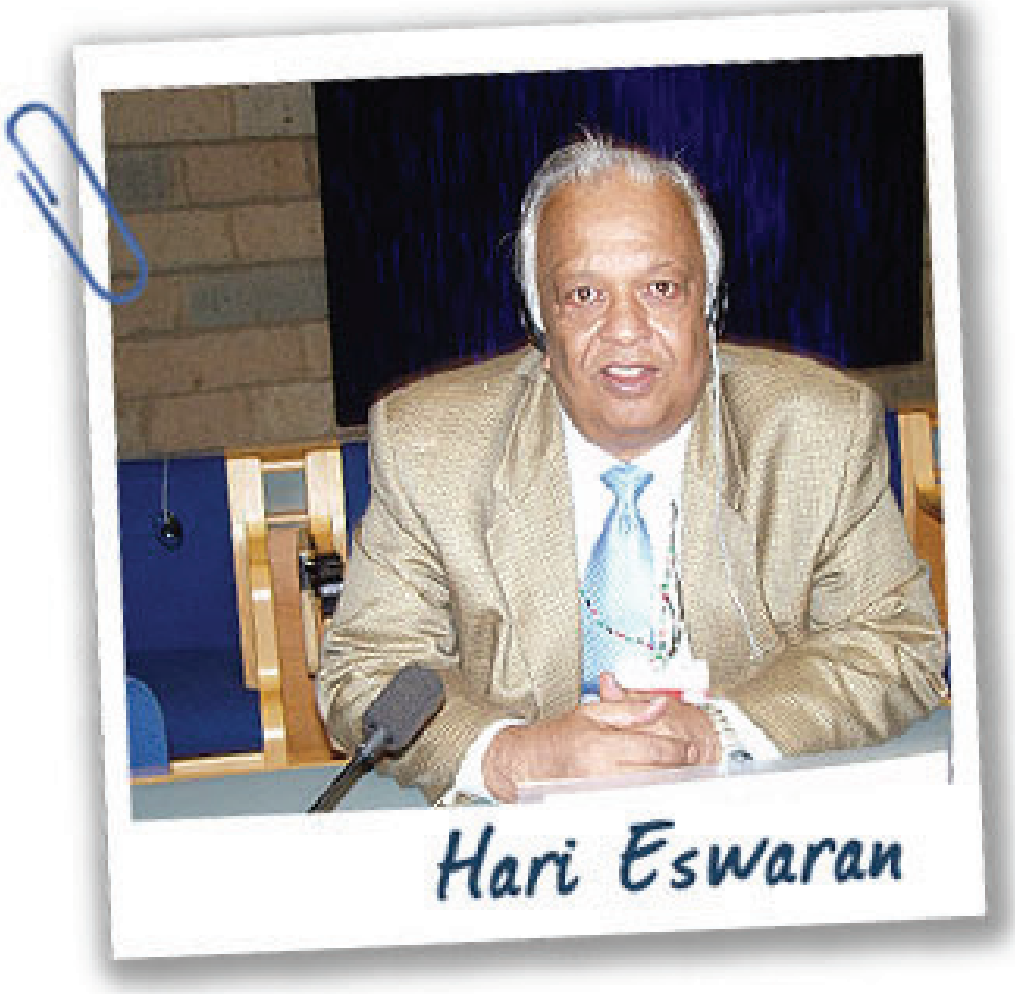
USDA NRCS

United States Department of Agriculture
Natural Resources Conservation Service

Lincoln, Nebraska USA
June 11-14, 2012

The Early Years

Thank you, Hari.
We wish you well.



Astracts, Slideshows, Papers

- We will send an announcement in the NCSS Newsletter and other means of the web site where these will be made available.
- Plans include publishing abstracts in the IUSS Comm. 1.4 (Soil Classification) Newsletter on the official web site http://clic.cses.vt.edu/IUSS1.4/Conf_Soil_Classification_2012/
- Special edition of Soil Horizons dedicated to the conference papers and posters.

Soil Classification 2012:
Towards a Universal Soil Classification System

Lincoln, Nebraska, USA June 11 – June 14, 2012

NRCS Natural Resources Conservation Service

Sponsors:

THE NEBRASKA SOCIETY OF PROFESSIONAL SOIL SCIENTISTS

VirginiaTech *Invent the Future*

Session 1– Soil Classification

- Keynote: Pavel Krasilnikov, Russia: Milestones of soils classification
- Jon Hempel: Universal Soil Classification System
- Cameron Loerch: Developing/submitting proposals to amend Soil Taxonomy
- Larry West: The place of the Laboratory in Soil Classification
- Thomas Reinsch: A Global Soil Series Warehouse

Session 2– Towards a Universal Soil Classification

- Sergey Goryachkin, Russia: Problems of classification of cold soils – Gelic STR needs subdivision, Key to Gelisols needs revision to include soils with permafrost below 2 m.

- Juan A.Comerma, Venezuela: Proposals of Soil Classification from Venezuela to alter STR limits for very warm soils to fit tropical agriculture.

3. The problem of soils with well-pronounced cryoturbations but without permafrost.

ICELAND

Soil Tax IGNORES CRYOTURBATIONS IN NON-GELISOLS

4. The problem of soils of highly continental climates – they may be very productive but with low MAST

Frigid (non-Cryic) soil, having O horizon with MAST<0^{0}C

J	F	M	A	M	J	J	A	S	O	N	D	year
-13	-12	-10	-5	1.4	8.8	14.6	14.2	8	1.7	-5	-9.6	-0.4

Cryic (non-Gelisols) with MAST < 0°C

J	F	M	A	M	J	J	A	S	O	N	D	year
-15	-17	-14	-4	1	8	13	15	10	3	1	6	-0.9

PROBLEM OF GELIC TEMPERATURE REGIME – NOT PERFECT FOR ULTRA-CONTINENTAL CLIMATES

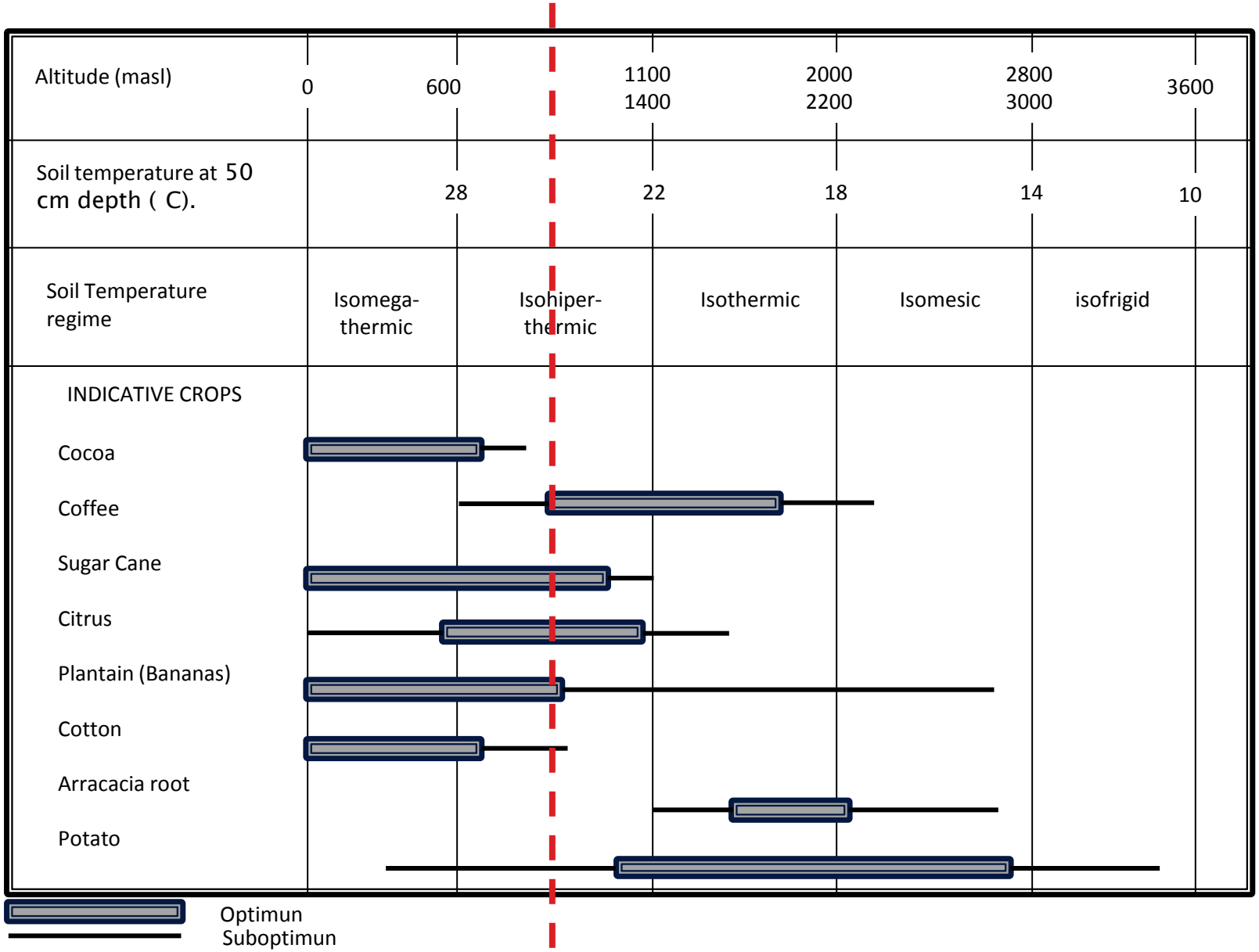


Figure 3- Proposed soil temperature regimes, altitudes and indicative crops in Venezuela

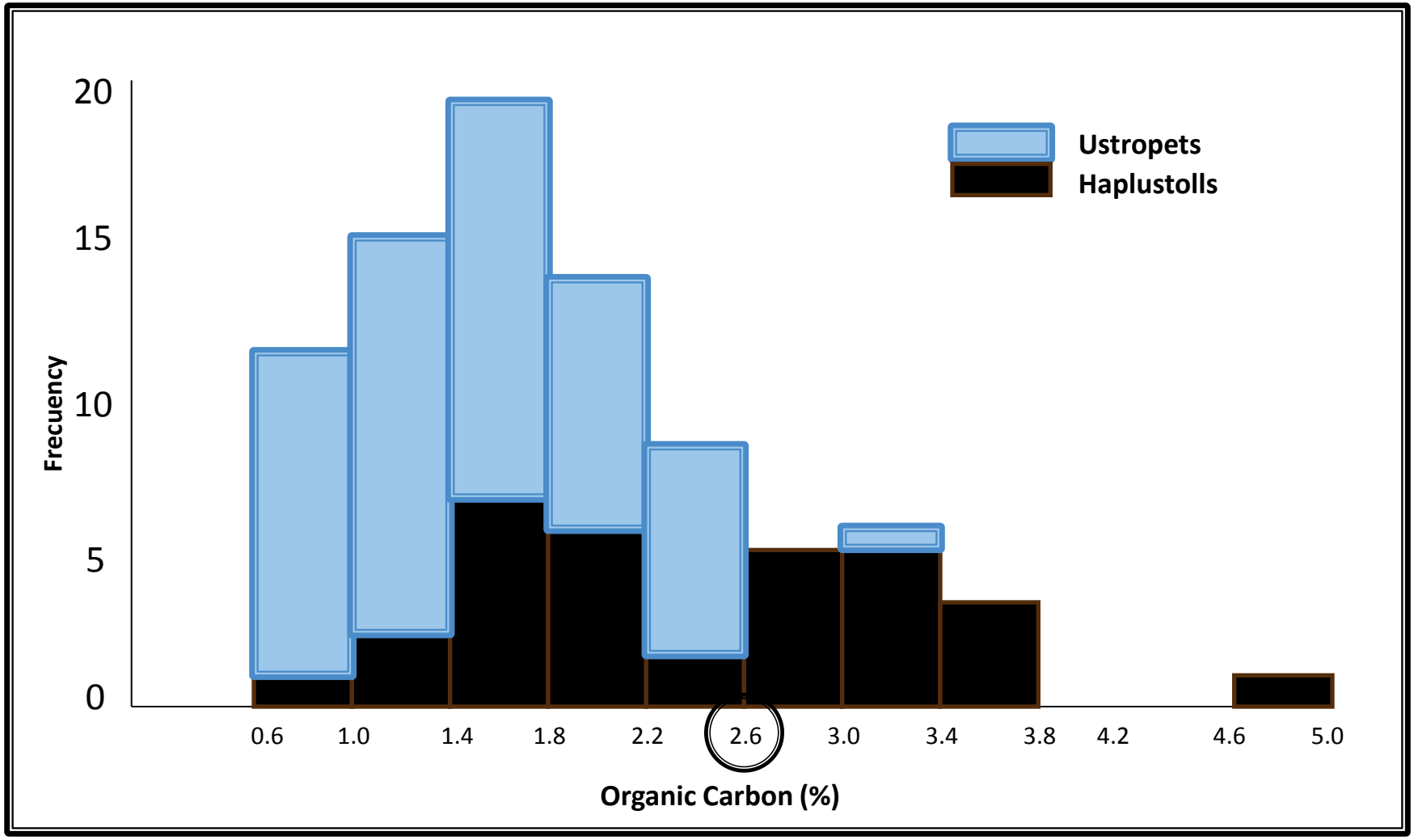


Figure 1. Frecuency of Organic Carbon (0 – 25 cm) in Ustropepts and Haplustolls in tropical plains of Venezuela.

Universal Concerns

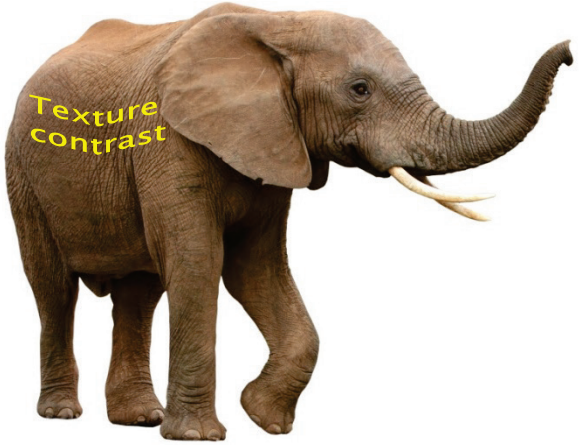
- Ben Harms, Australia: Issues pertaining to the classification of Australian soils – clay increases and presence of clay films
- Lúcia Anjos, Brazil: Evolution of the Brazilian Soil Classification System to address extremely high Fe oxide content soils
- Ganlin Zhang, China: Chinese Soil Taxonomy: soil series identification and inventory

Drastically Altered Soils

- Keynote: Development of Anthropogenic (HAHT) Soil Classification. Highlights:
  - New terms for describing properties and naming horizons (^, M, u, artifacts)
  - Revise buried soils to 50 cm mantle
  - Major revision in Anthropic epipedons, others
  - New diagnostic materials in Ch. 3 – HA Materials, HTM
  - Exclusion statement for irregular decrease in C
  - All HAHT soils introduced **at suborder level** from a choice list of taxa in any order except Mollisols
  - New family for soils with > 50cm HA or HT M to give specificity to "Udorthents"

- Stephen Cattle, Australia – Texture-contrast and sodicity in the Australian system, needs for different limits. Older limits in Soil taxonomy have never been fully tested with data, although they were intended as a starting value to be evaluated. The limit for **natric** **should be lowered from 15% Exch. Sodium Percentage to about 6-8%.**
- Monger Curtis: Soil Classification of Desert Soils – the future

Texture-contrast and sodicity: a soil taxonomic elephant and wombat in the Australian room



Stephen Cattle
The University of Sydney

Conclusions

1. The taxonomic dislocation caused by varying thresholds for a clay-enriched B/texture-contrast soil is (presumably) a reflection of different landscape histories
2. The variation in threshold values for a sodic horizon looks to be an historical artefact, but the importance of EC is widely ignored
3. These two important diagnostic criteria need to more consistent in any universal soil classification scheme

Anthroscapes

Philip Schoeneberger: Anthroscapes and other anthropogenic features in soil descriptions

Mountaintop Removal

Urban Soils

ICOMANTH Home Page

INTERNATIONAL COMMITTEE For ANTHROPOGENIC SOILS

Soil Types	**Applications and References**	**Activities and Reports**
Mission	Pictures	Circular Letters 1 to 7
Mine and Dredge Soils	On-line references	Circular Letter 7 Recommendations 2011 Slideshow
Urban Soils	CD-ROM Publications	Rationale For Letter 7 Proposed Changes
Farmed/Altered Soils	Descriptions and Data	
Wet Soils	Classification	References
Polluted Soils	Soil Survey	Glossary
Other Anthropogenic Soils	Interpretations	Contact us

CURRENT ACTIVITIES: Open this link to see the plans and activities. Revised 6/13/11.

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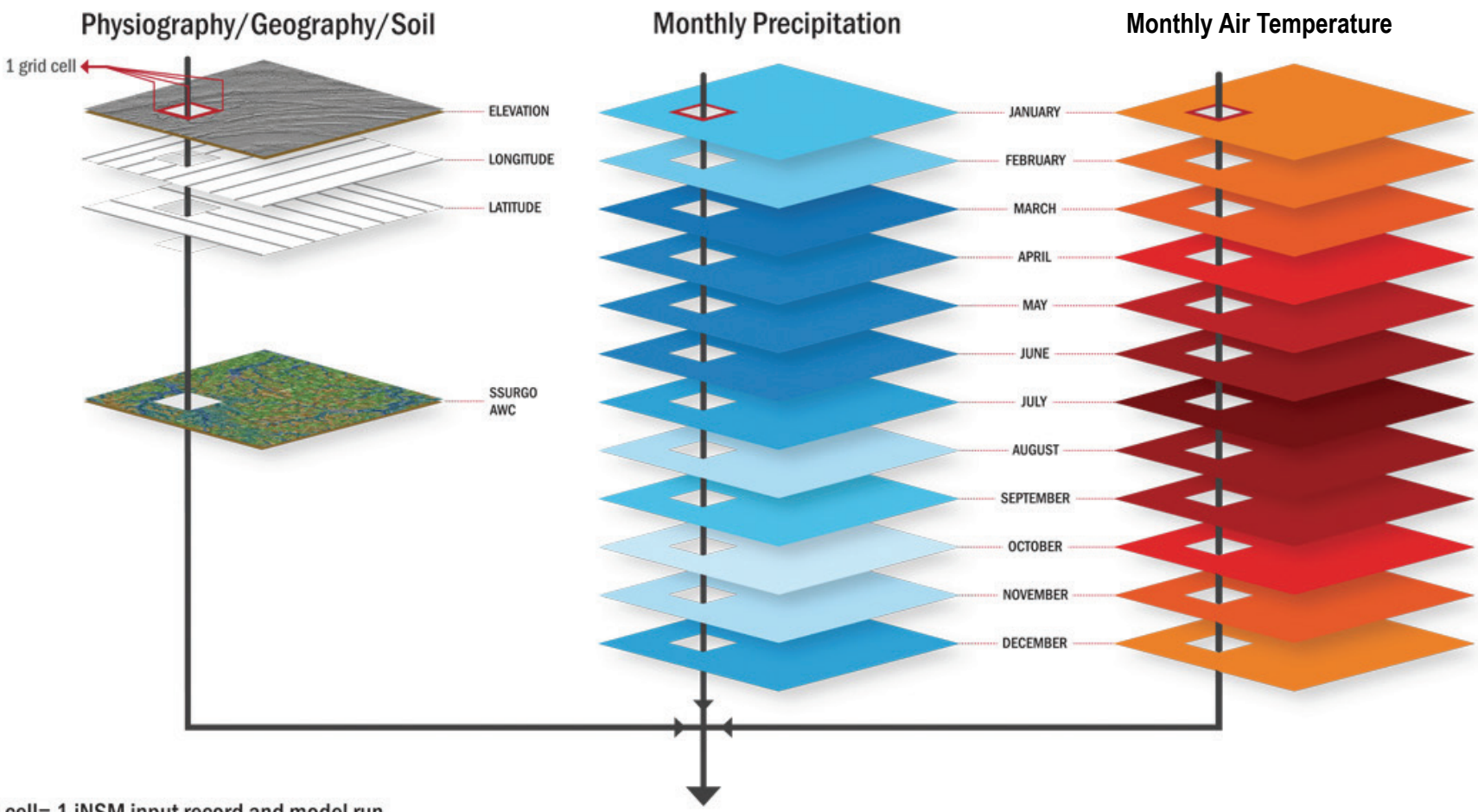
Last updated 4/11/12

New Methods

- Erika Michéli, Hungary: Numerical Classification for Defining Diagnostic Horizons.
- Dylan Beaudette: Numerical Classification
- Phillip Owens: Evaluating the US Soil Taxonomy Soil Moisture Regimes Across Scales and Continents – Newhall model

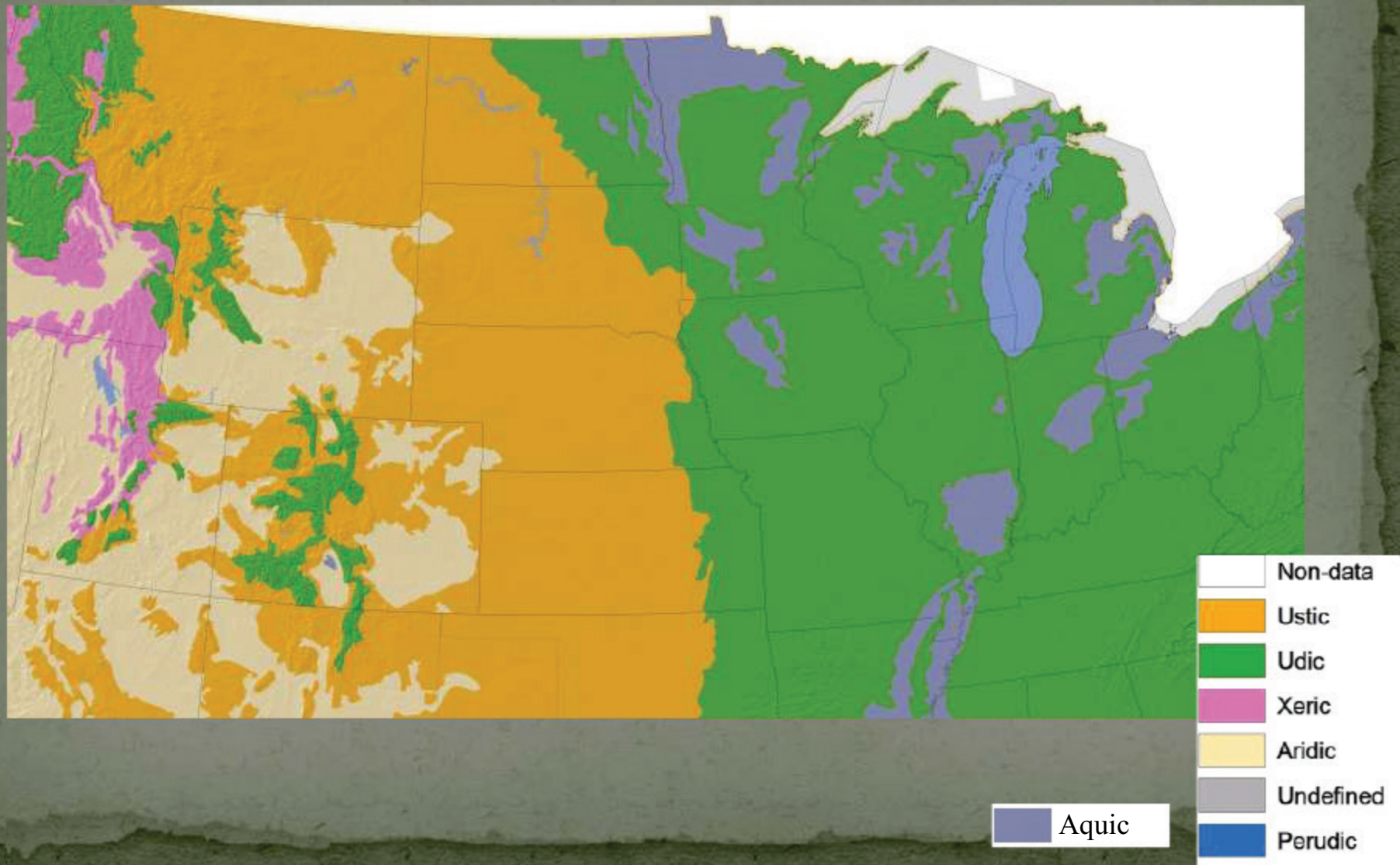
jNSM inputs gathered through geospatial overlay of (28) map layers



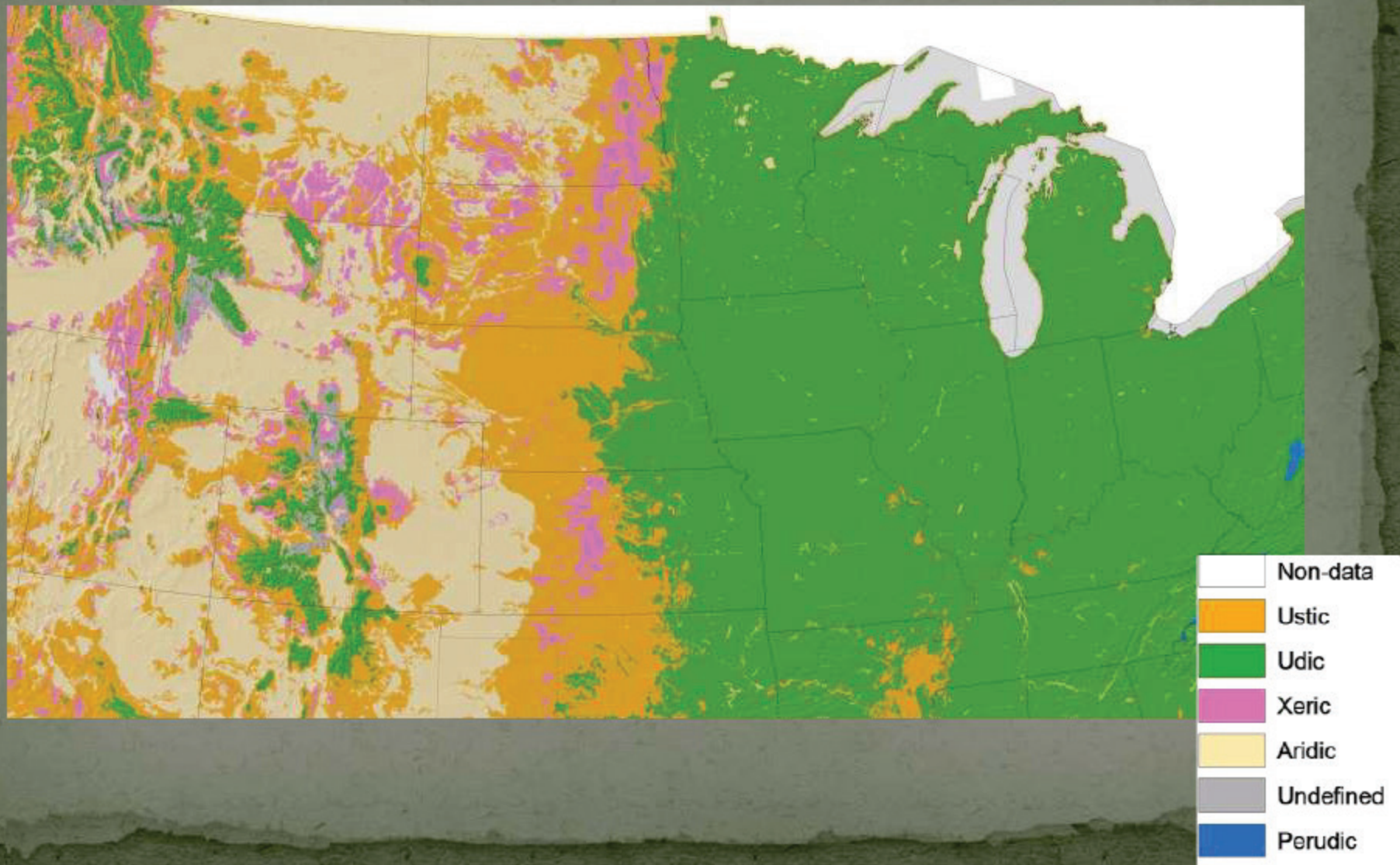
1 grid cell= 1 jNSM input record and model run

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1	StationName	netType	LatDD	LonDD	elev	tJan	tFeb	tMar	tApr	tMay	tJun	tJul	tAug	tSep	tOct	tNov	tDec	pJan	pFeb	pMar	pApr	pMay	pJun	pJul	pAug	pSep	pOct	pNov	pDec	pdType	pdStartY	pdEndY	awc	maatmast	cntryCode stP
2	CELL 10	PRISM CELL	-76.89	41.37	461	-5.26	-4.05	1.07	7.30	13.36	17.87	20.44	19.48	15.17	9.02	3.53	-2.35	72.44	63.84	82.35	88.52	98.08	117.26	102.18	87.12	103.98	83.06	89.79	73.92	Normal	1971	2000	200.00	1.20	USA

Ustic/Udic Boundary, 1994 SCS



Ustic/Udic Boundary, NSM 2011



Udic
Ustic
Aridic
Perudic

Field Trip and USCS

- Tours of Paleosols, soils of Nebraska
- Meeting of Universal Soil Classification System
  - Harmonization of terms, limits, diagnostics
  - Basis level of the system (global soil groups)
  - US Great Groups and database – starting point, added to from other systems
  - Deadline – 2018