Realizing opportunities for interagency cooperation in ESD development and application

	NRCS-BLM-FS Ecological Site Description Handbook Ecological Mapping Systems	
Hierarchical Planning and Analysis Levels	National Hierarchical Framework of Ecological Units[1]	NRCS Soil Geography Hierarchy[3]
Continental and Region (Ecoregion)	Domain, Division, and Province (1:5,000,000-1:30,000,000)	Land Resource Region (LRR) (1:7,500,000), Climate zones
Subregion	Section (1:3,500,000) and Subsection (1:250,000)	Major Land Resource Area (MLRA) (1:3,500,000) Land Resource Unit (LRU)/Common Resource Area (CRA) (1:1,000,000) General Soil Map (1:250,000)
Landscape (watershed—5th unit of Hydrologic Unit Code)	Landtype Association (1:60,000)	Soil-geomorphic systems
Land Unit (subwatershed—6th unit of Hydrologic Unit Code), grazing allotment, farm/ranch)	Landtype (1:24,000)	Detailed Soil Map (1:24,000)
	Landtype Phase (1:12,000)	Soil Series (1:12,000)
Individual Sites	Sampling plot	Soil Pedon

From: **Draft Interagency Ecological Site Handbook**

Table 2. Principal map unit design criteria of ecological units.

Ecological unit	*Principal map unit design criteria*
Domain	Broad climatic zones or groups (e.g., dry, humid, tropical)
Division	Regional climatic types (Koppen 1931, Trewatha 1968) Vegetational affinities (e.g., prairie or forest) Soil order
Province	Dominant potential natural vegetation (Kuchler 1964) Highlands or mountains with complex vertical climate-vegetation-soil zonation
Section	Geomorphic province, geologic age, stratigaphy, lithology Regional climatic data Phases of soil orders, suborders, or great groups Potential natural vegetation Potential natural communities (PNC) (FSH 2090)
Subsection	Geomorphic process, surficial geology, lithology Phases of soil orders, suborders, or great groups Subregional climatic data PNC—formation or series
Landtype association	Geomorphic process, geologic formation, surficial geology, and elevation Phases of soil subgroups, families, or series Local climate PNC—series, subseries, plant associations
Landtype	Landform and topography (elevation, aspect, slope gradient, and position) Phases of soil subgroups, families, or series Rock type, geomorphic process PNC—plant associations
Landtype phase	Phases of soil subfamilies or series Landform and slope position PNC—plant associations or phases

ESD Development

Interagency cooperation in ESD development is occurring across parts of the US.

We have formal direction in levels and types of cooperation in the Rangeland Interagency ESD Manual.

Extending that direction into forestland (all lands) ESD efforts will assist the program's success.

It would better enable cooperation to leverage resources needed to most effectively implement an ESD program.

FS No. 05-MU-11132421-009
BLM No. BLM MOU WO-220-2005-0
NRCS No. A-3A75-5-39

MEMORANDUM OF UNDERSTANDING
Between
BUREAU OF LAND MANAGEMENT
FOREST SERVICE
NATURAL RESOURCES CONSERVATION SERVICE

This Memorandum of Understanding (MOU) is made and entered into by and between the United States Department of Interior's Bureau of Land Management (BLM) and the United States Department of Agriculture's Forest Service (FS), and Natural Resources Conservation Service (NRCS).

I. PURPOSE

The purpose of this MOU is to establish a Federal Interagency Team that will be responsible for developing a standardized method to be utilized by the BLM, FS, and NRCS to define, delineate, and describe terrestrial ecological sites. The team will cooperatively develop an ecological site manual to document this standardized method.

These agencies have a common objective of utilizing science-based technical processes to sustain and enhance natural resources and the environment.

ESD Development

Bringing together the expertise and data in ESD development – is there a plan to develop formal Regional and subregional teams?

How do we communicate with decision makers and line officers on the needs and benefits of ESD's?

How do we engage local expertise and existing information

Egs. LANDFIRE state and transition models based on BpS's, existing data (GLO across 85 million acres), research or field study results (MN DNR plots and classification)

ESD Applications

ESD interpretations – state and transition models.

It is important to model community phases within ESD states carefully.

It is even more important to model/estimate conditions leading to state changes carefully.

“Persistent changes in vegetation and related processes recognized via states and transitions can involve several, interacting causes.

The causes of state changes may be associated with processes at different spatial scales (e.g., land use interacting with directional changes in climate), and

involve episodic events (e.g., extreme rainfall events), and time lags (e.g., gradual plant recruitment following episodic events).”

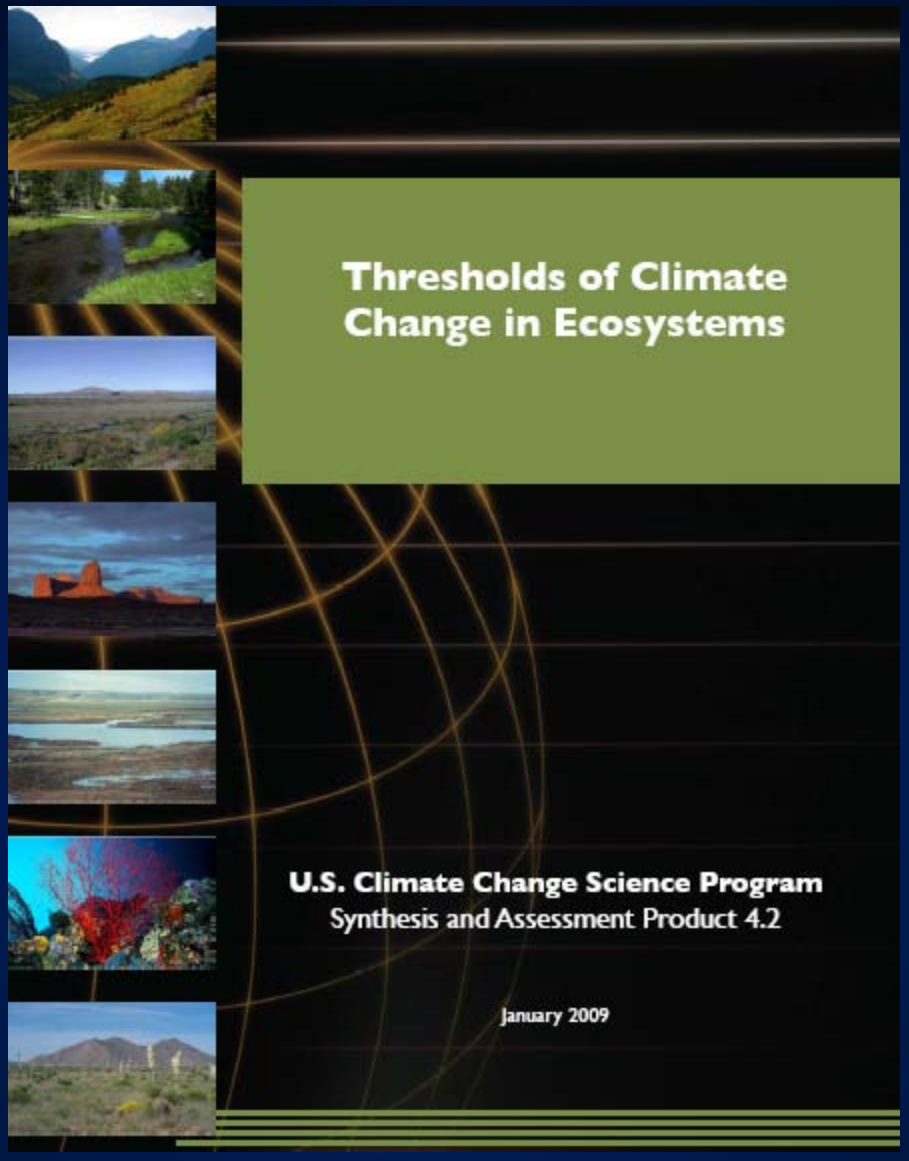
“Consequently, the assertion of an alternative state is often inherently uncertain and should be treated as an hypothesis that can be tested via long-term observations of ecosystem behavior.

“Care should be taken not to conflate transient dynamics described by community pathways with transitions.”

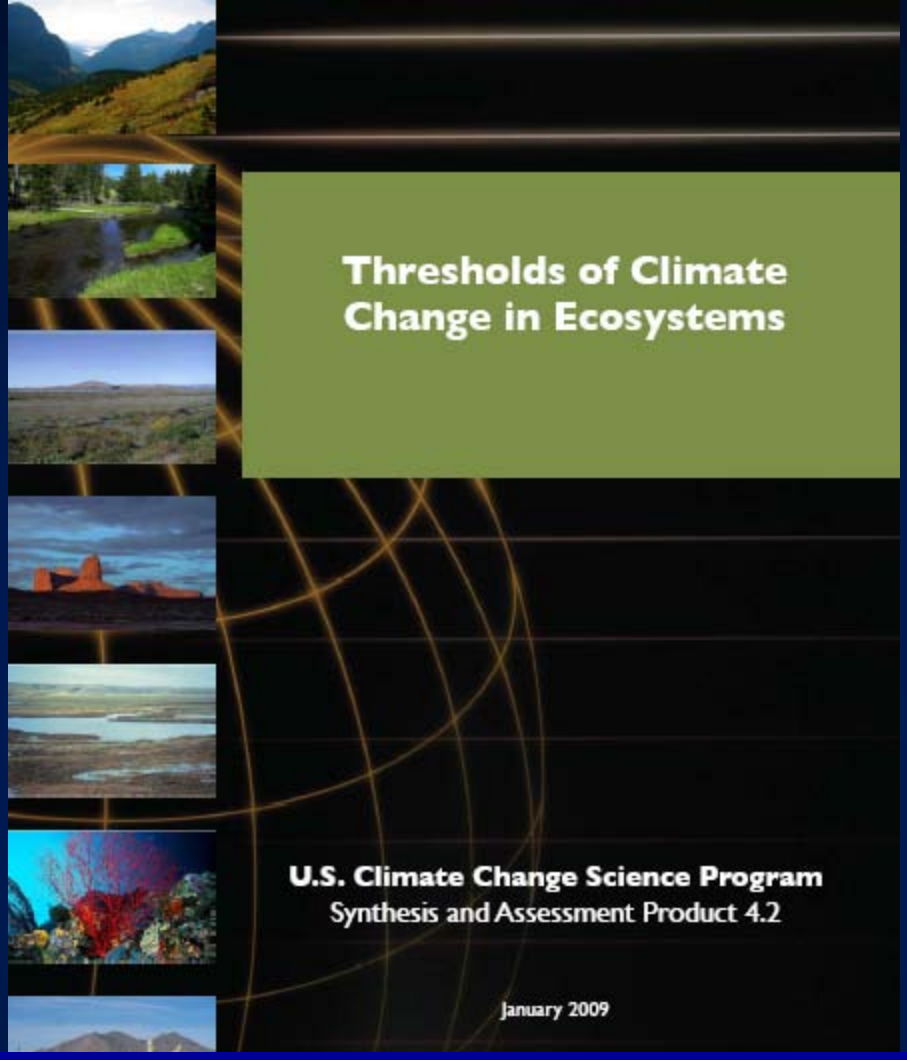
ESD Development

We have opportunities to formalize and map upper levels of the ESD hierarchy while revising and fully cross-walking systems.

We also have an opportunity to meet loftier goals of producing an interpreted interagency map that assists in meeting national strategic plans of the Secretary of Agriculture and Interior (if not us, who?)



5.2.1 Role of Monitoring: “Because climate change effects are likely to interact with patterns and processes across spatial and temporal scales, it is clear the monitoring strategies must be integrated across scales.”



“First and foremost, the earth’s surface must be hierarchically stratified (for example, using the MLRA’s and Ecological Site Description System of the U.S.D.A. National Resources Conservation Service and U.S. Forest Service ecoregions), and conceptual or simulation models of possible impacts and feedbacks must be specified for each stratum (Herrick et al., 2006).

Hierarchical Mapping Systems

USDA NRCS LRR's, MLRA's, Statsgo, Ssurgo

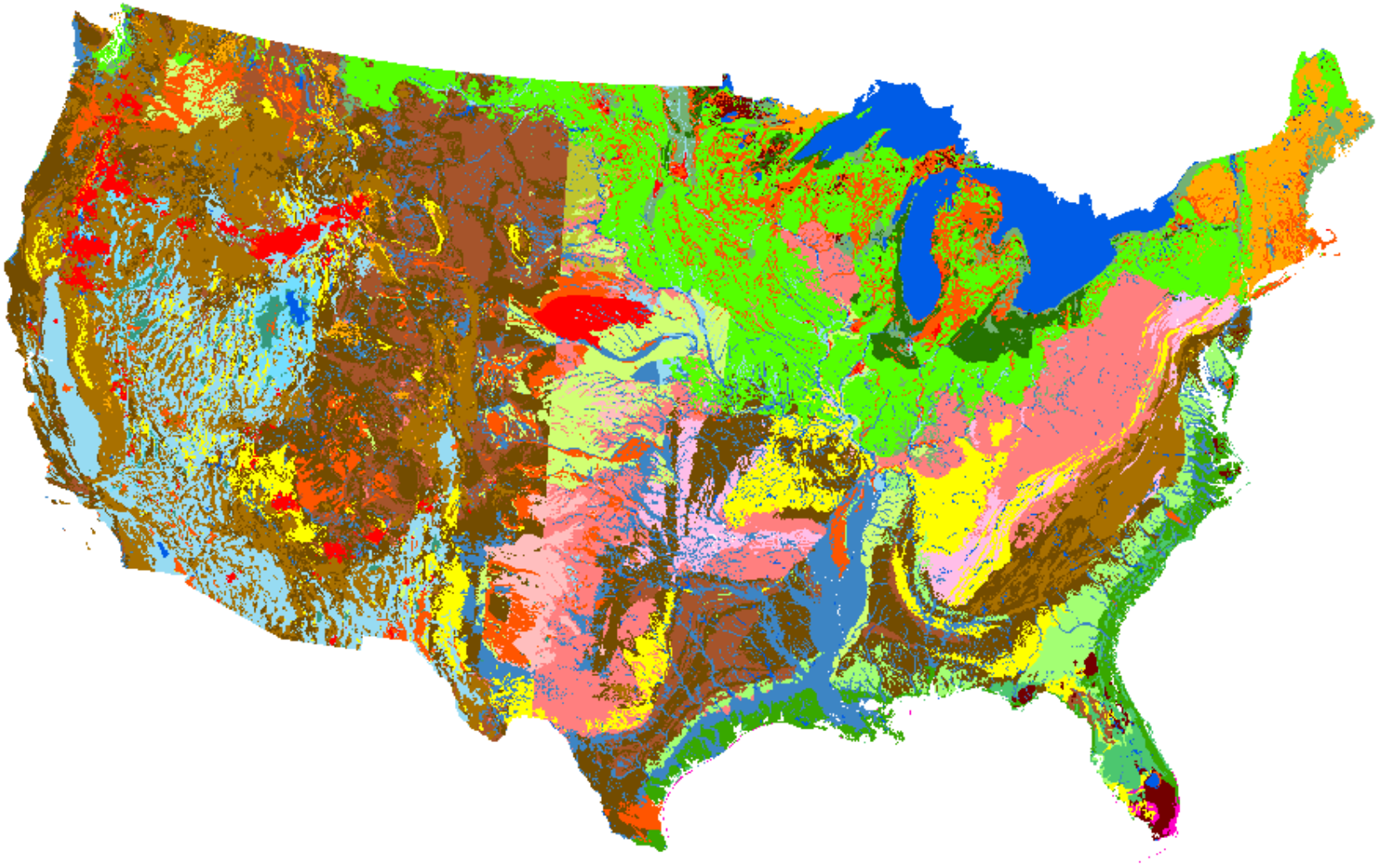
USDA FS National Hierarchy of Ecological Units

EPA Ecoregions

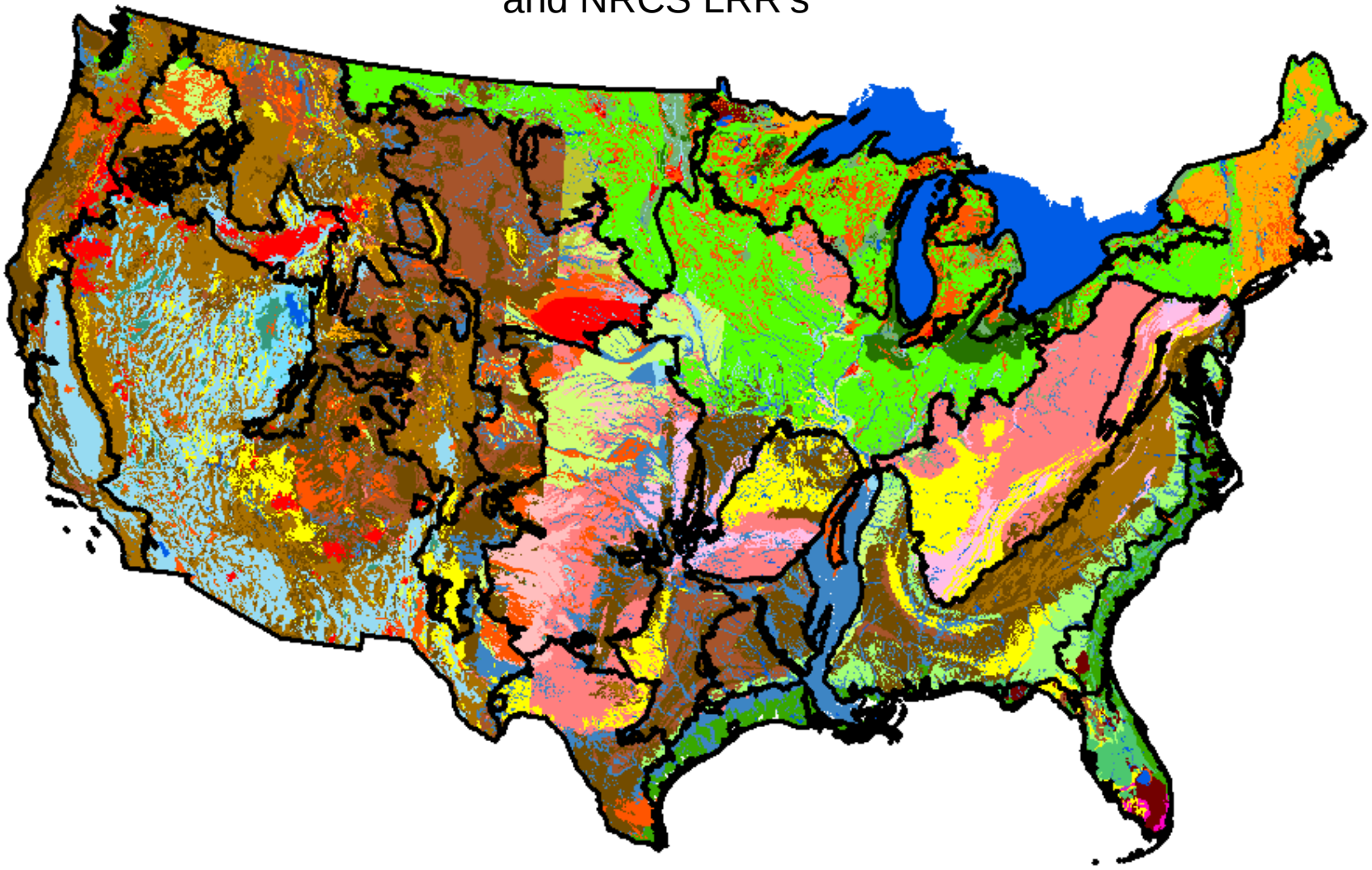
NatureServe

USGS

USGS Lithology 2010 (new data)



USGS Lithology and NRCS LRR's



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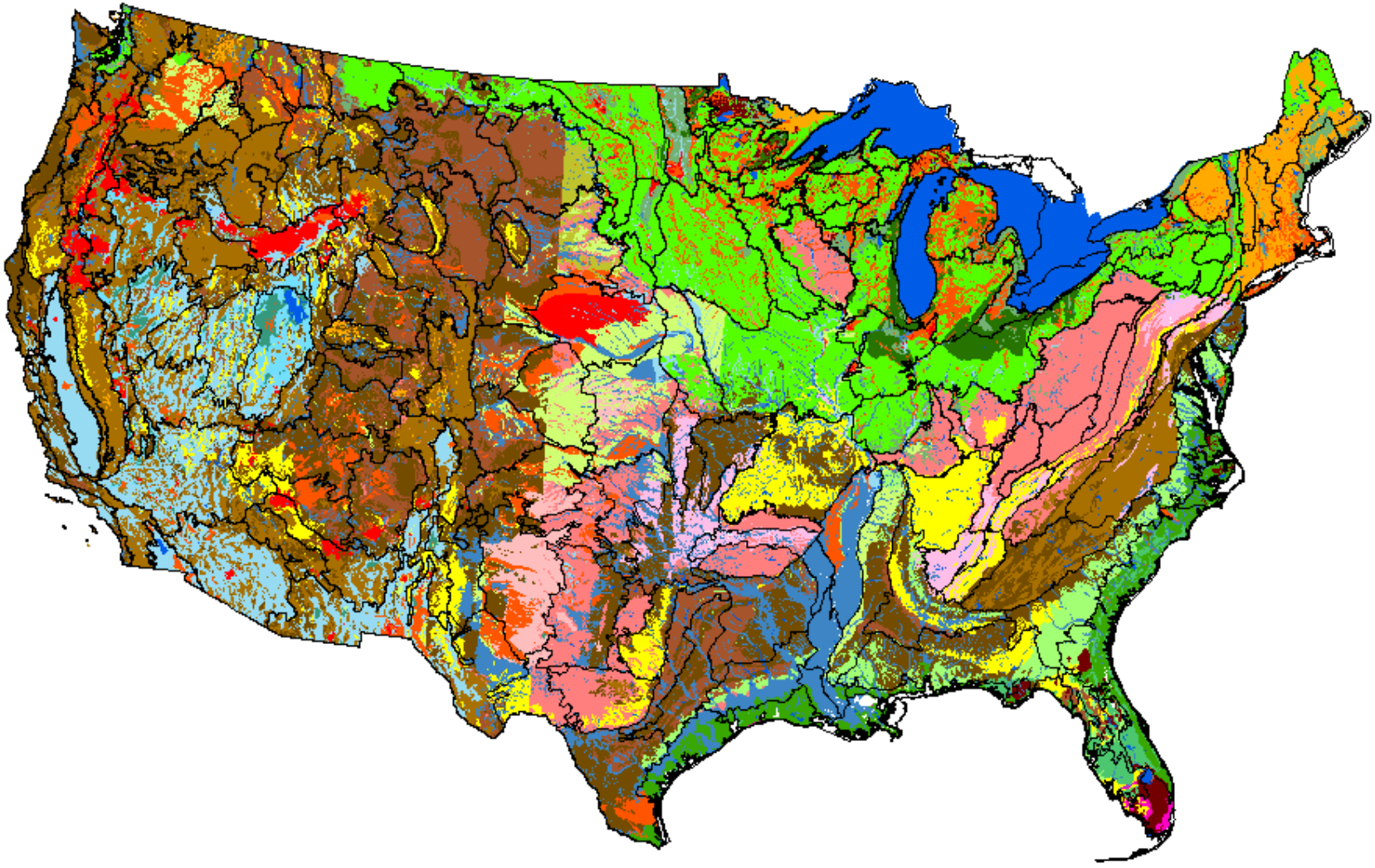
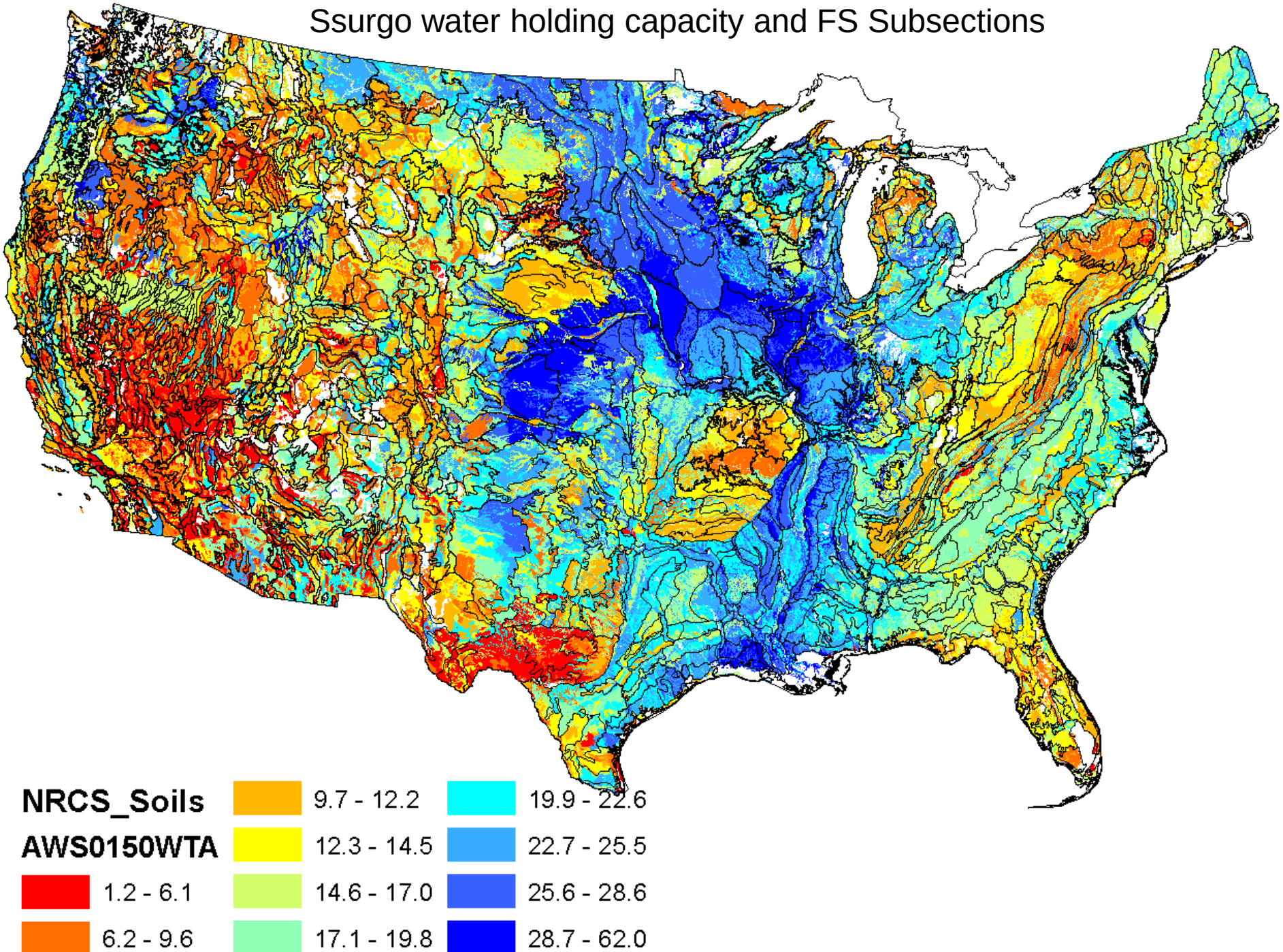
USGS Lithology and FS Sections



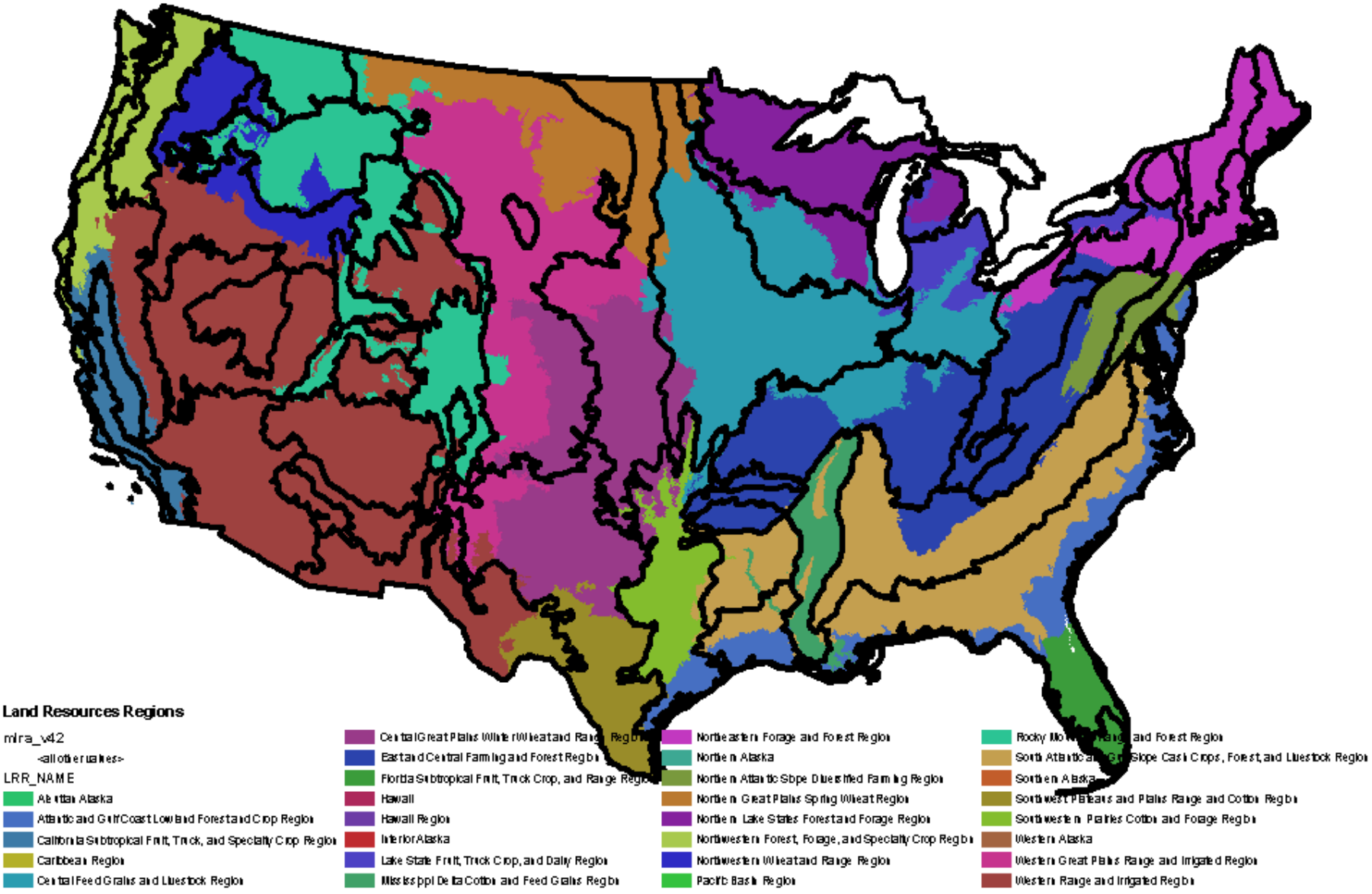
USGS Lithology and FS Subsections

Ssurgo water holding capacity and FS Subsections

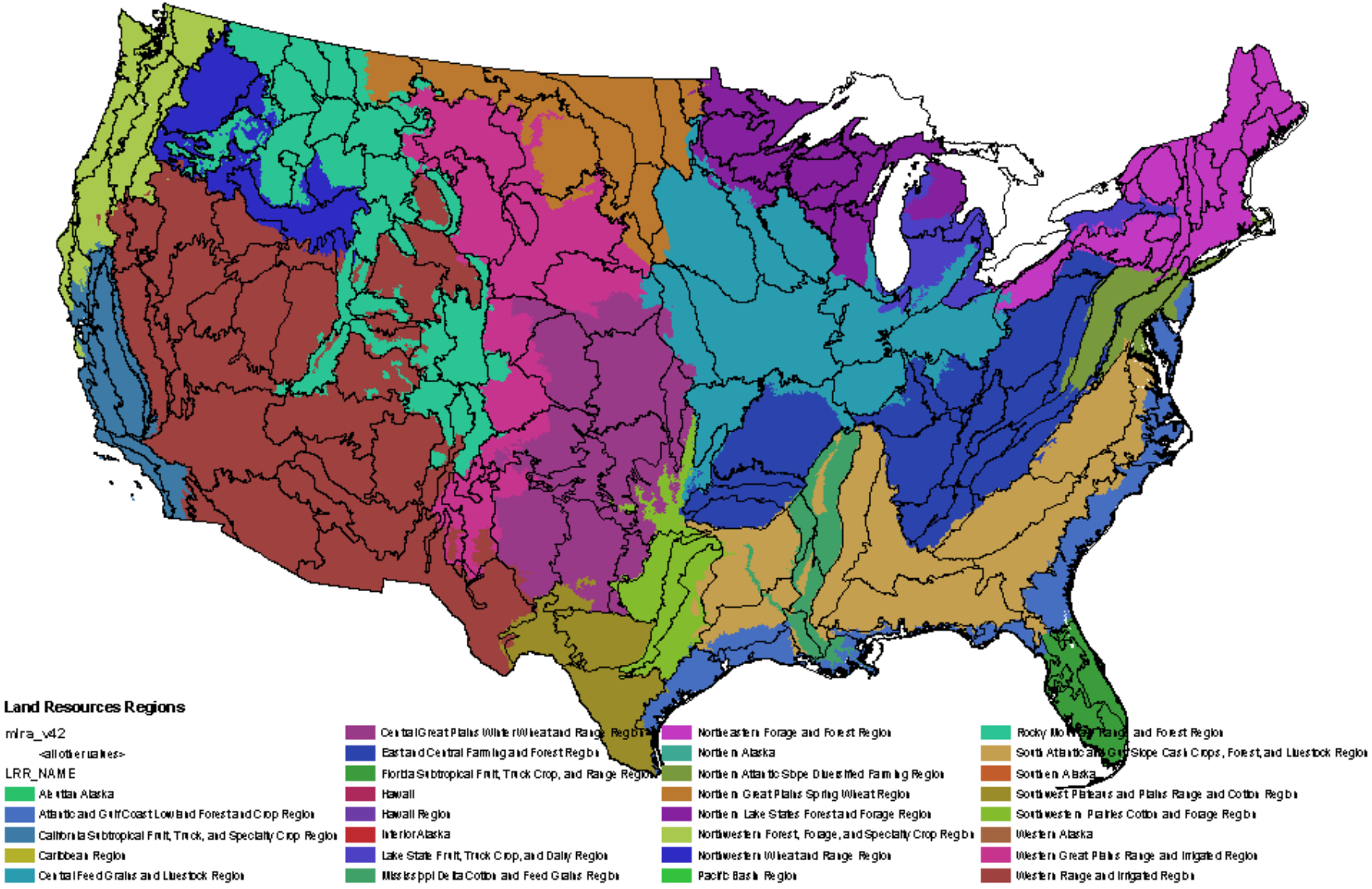


NRCS Land Resource Regions

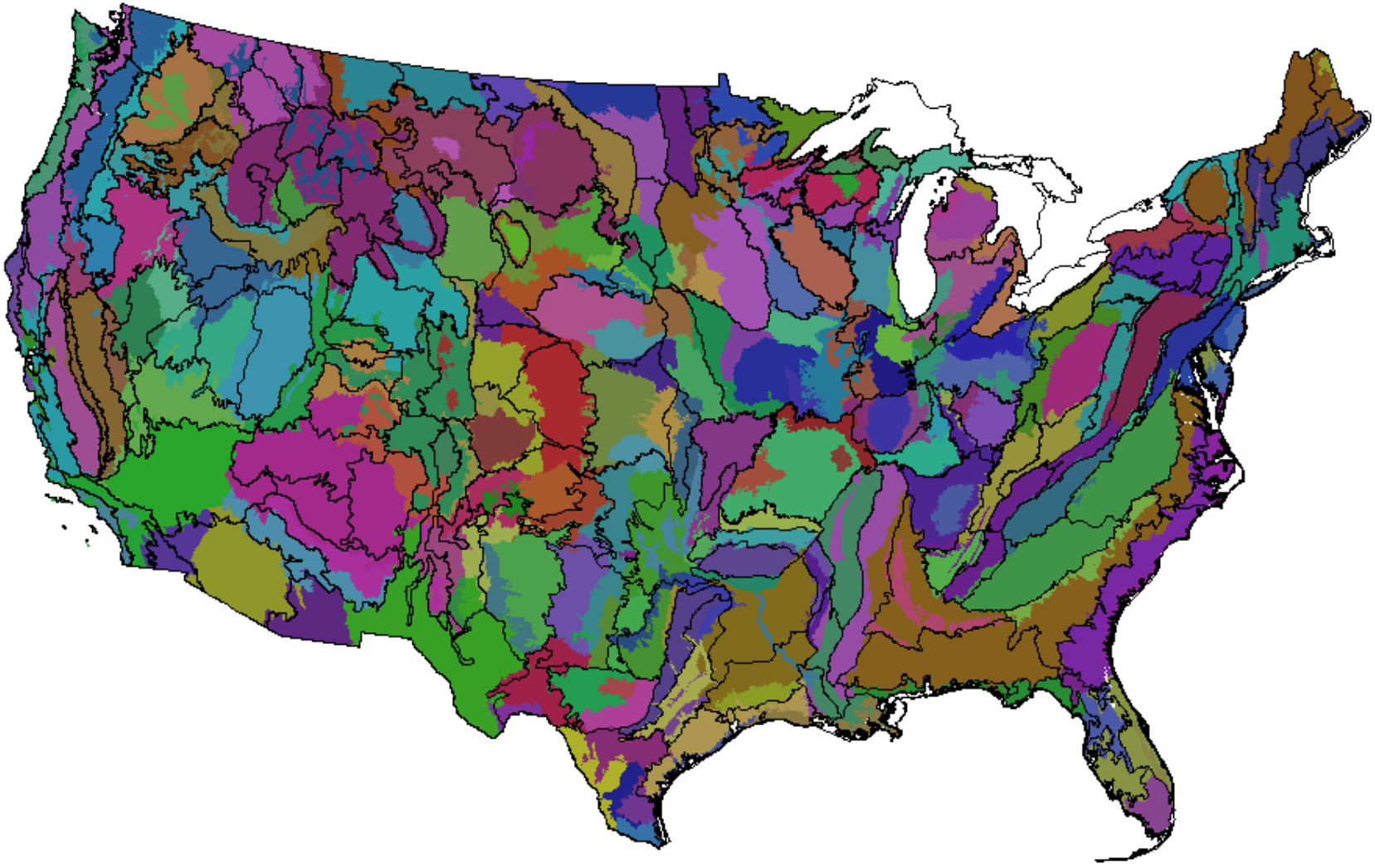
NRCS LRR's and FS Provinces



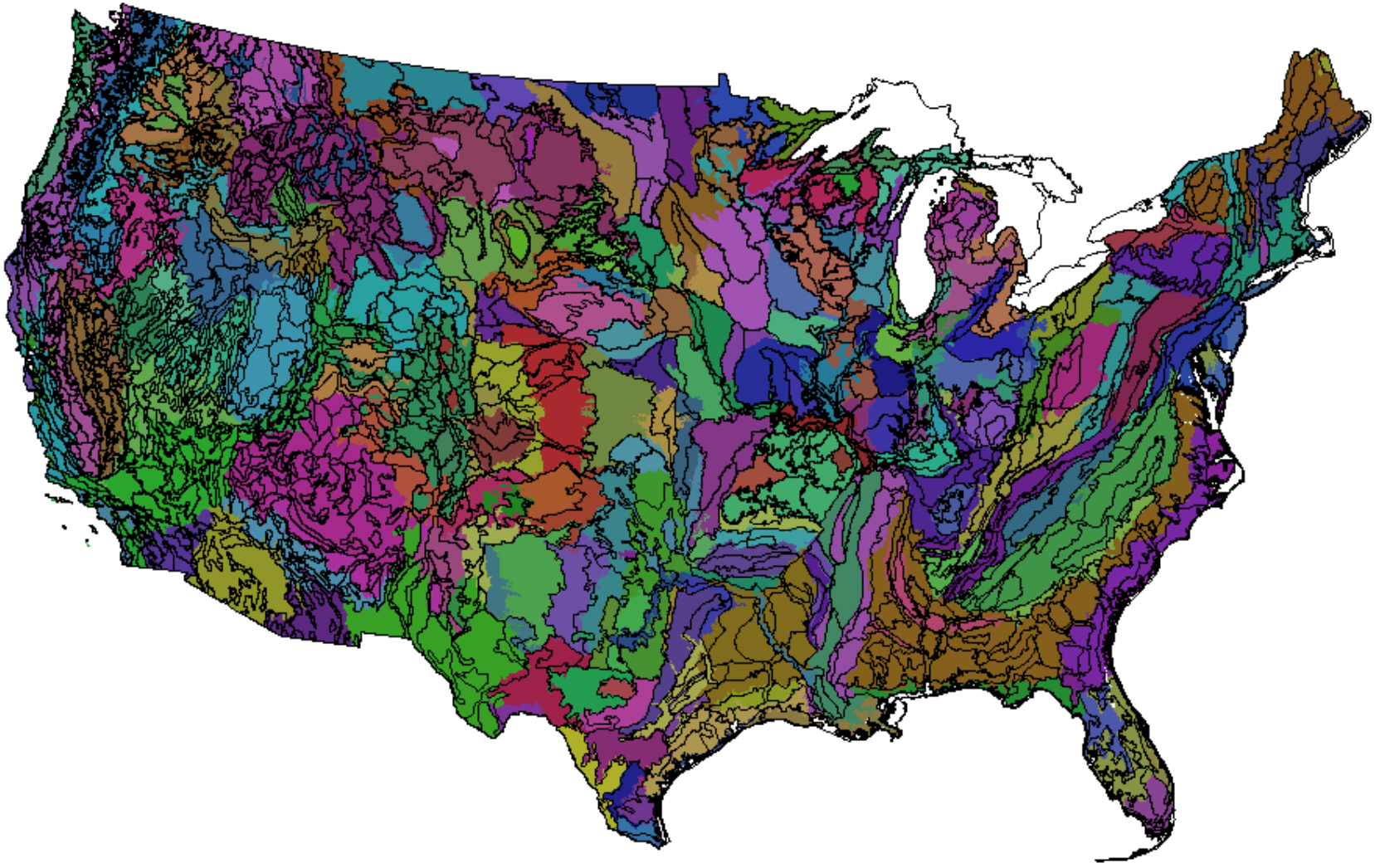
NRCS LRR's and FS Sections



NRCS MLRA's and FS Sections



NRCS MLRA's and FS Subsections



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science for a changing world

A New Map of Standardized Terrestrial Ecosystems of the Conterminous United States

Professional Paper 1768

U.S. Department of the Interior
U.S. Geological Survey

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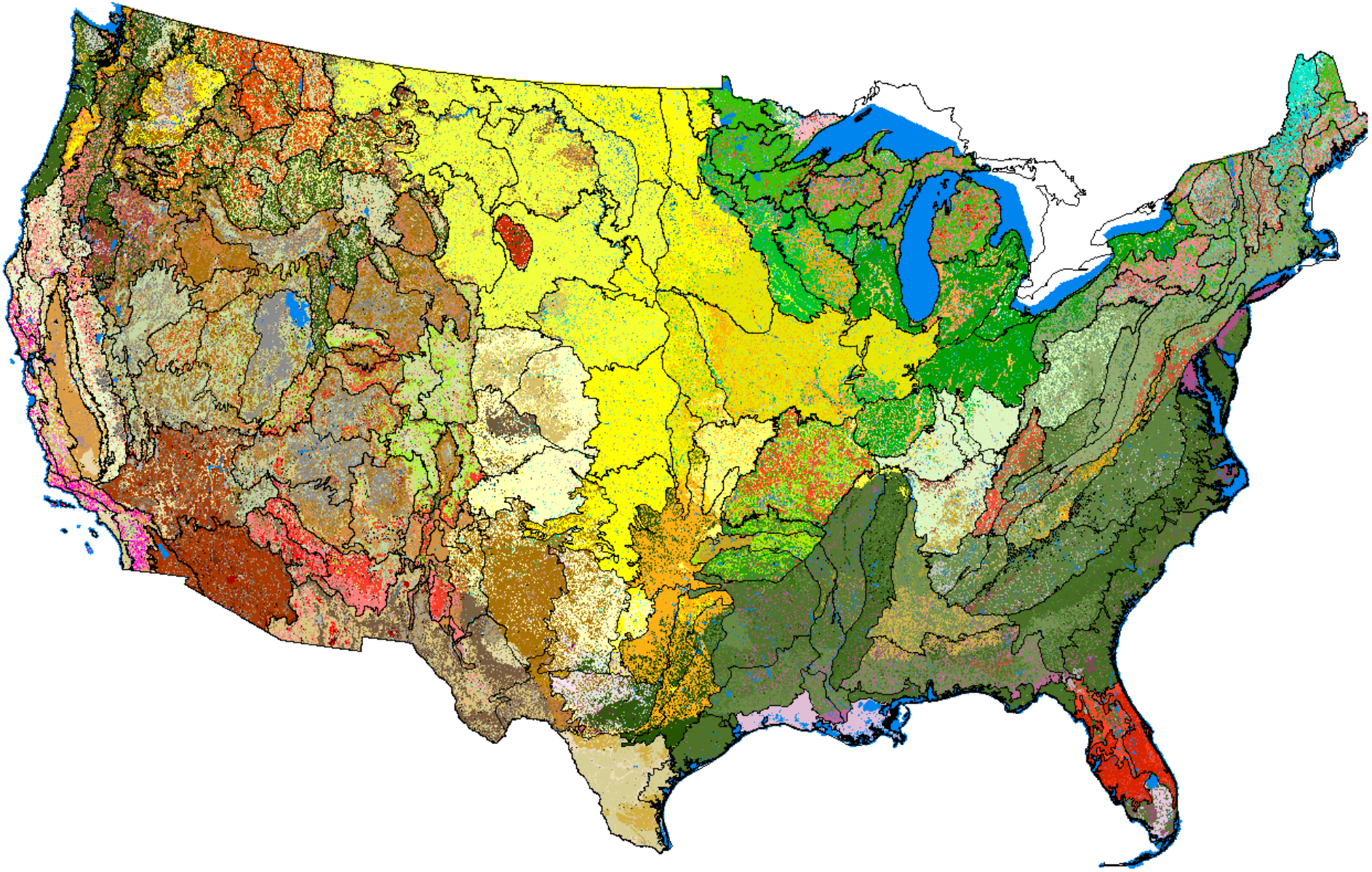
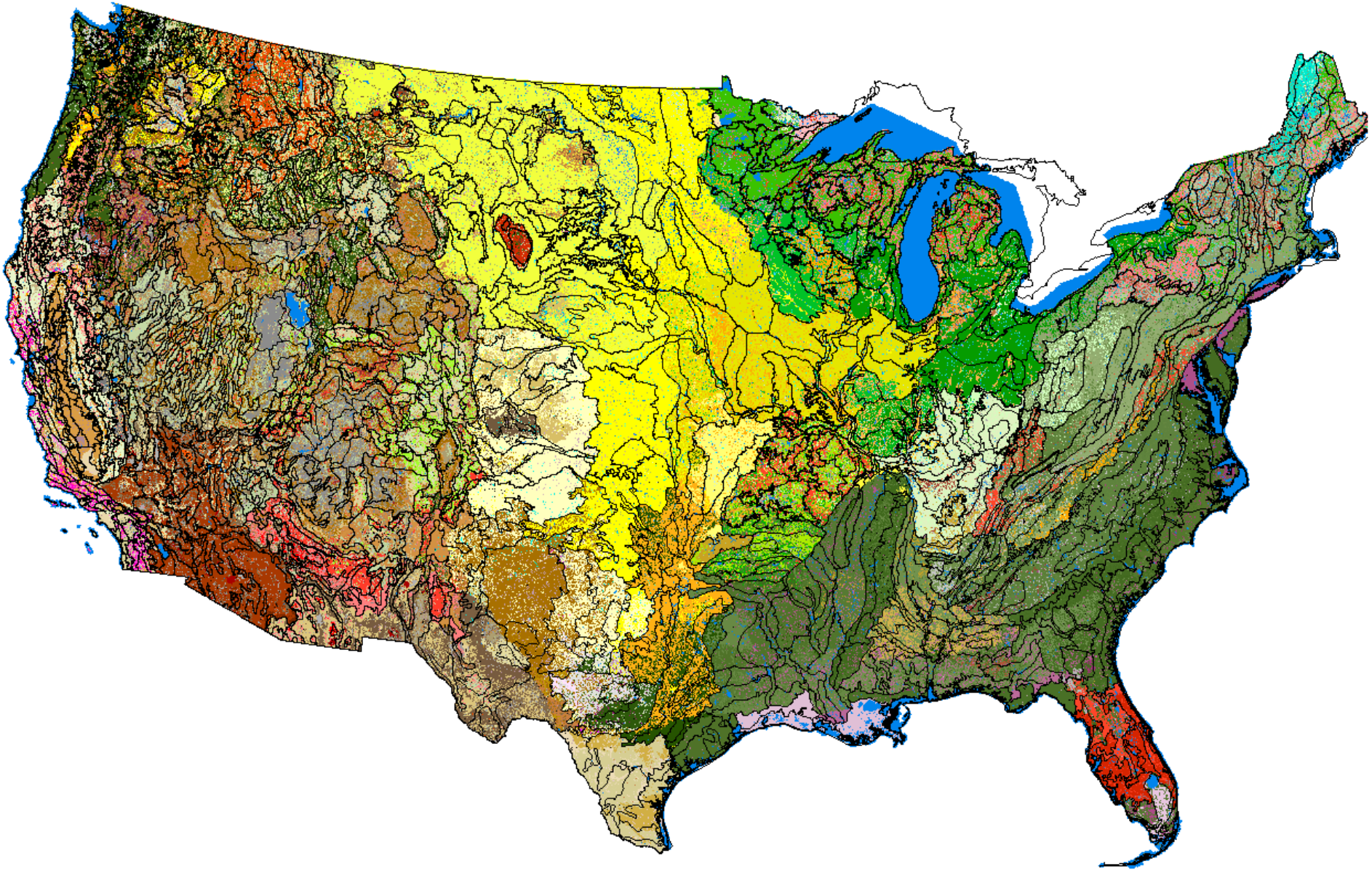


“A New Map of Standardized Terrestrial Ecosystems of the Conterminous United States”
(USGS -NatureServe 2009) and Section Boundaries



“A New Map of Standardized Terrestrial Ecosystems of the Conterminous United States”
(USGS -NatureServe 2009) and Subsection Boundaries

The boundaries of different mapping systems delineating broader-scale ecological regions are converging, most likely due to improved technology.

The principal differences are interpretations of scale relationships.

The opportunity to develop an interagency hierarchy for use in ESD applications, while revising respective agency complementary systems, has never been more possible.

In closing, ESD’s are a great idea and we look forward to working with our sister agency and others in the endeavor.