Landtype Associations

A View of the Pacific Northwest

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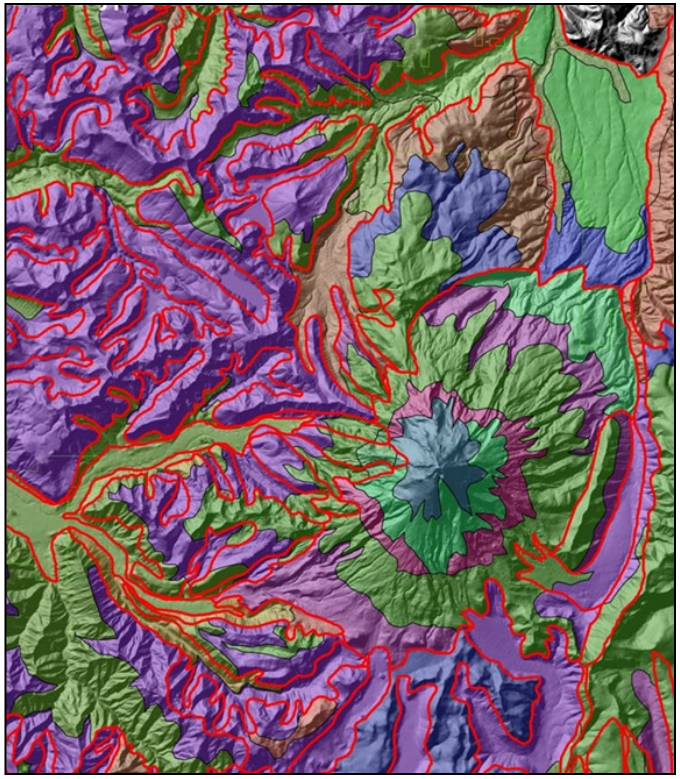
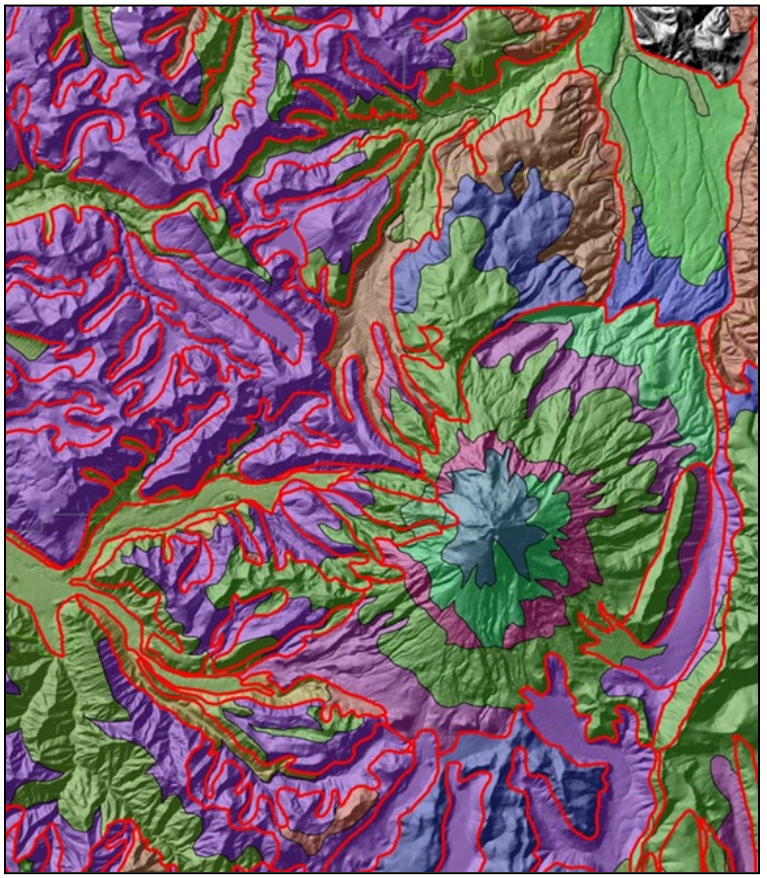
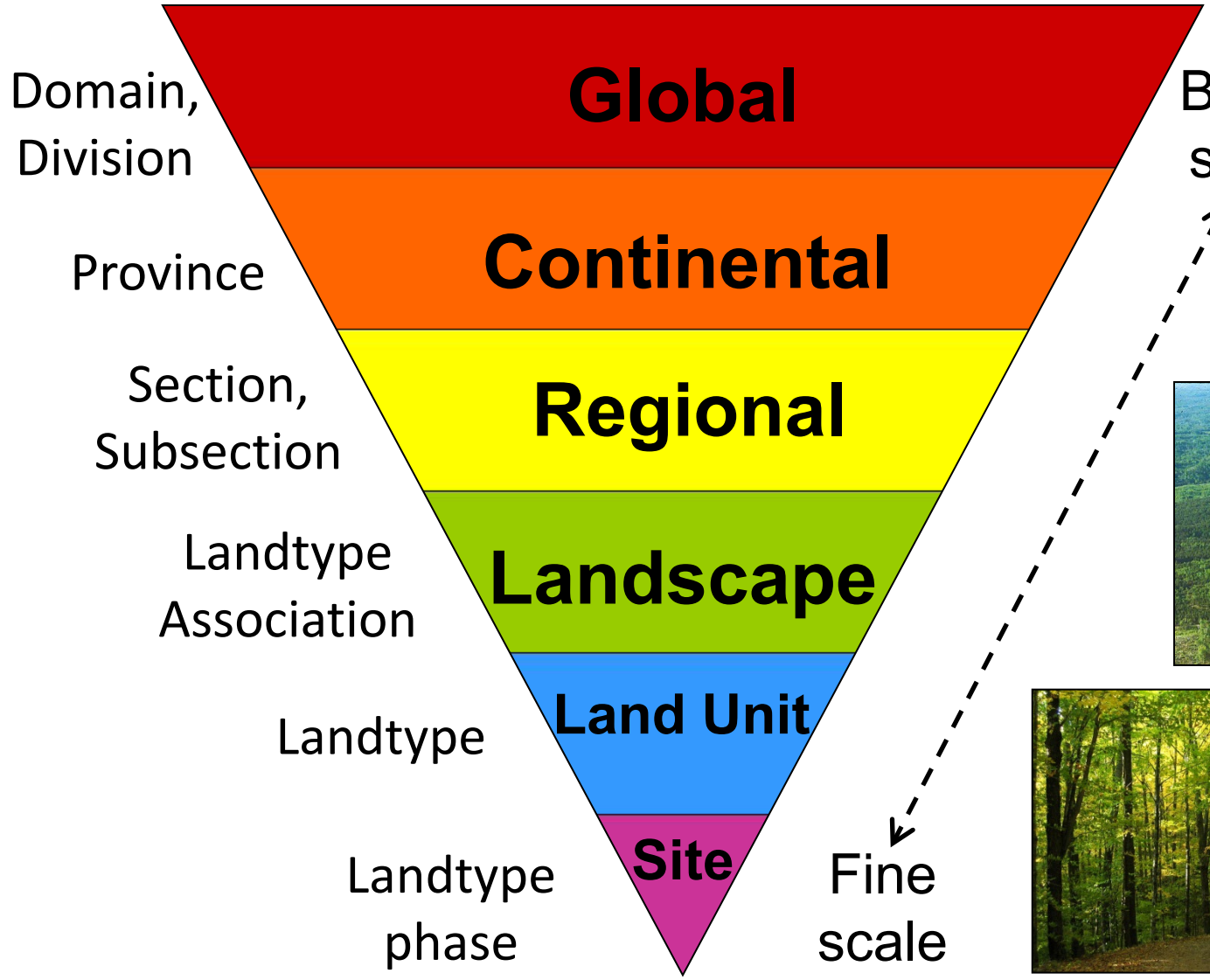


Objectives

- Describe landtype associations (LTAs)
- How they are determined
- How you can use them
- Next steps

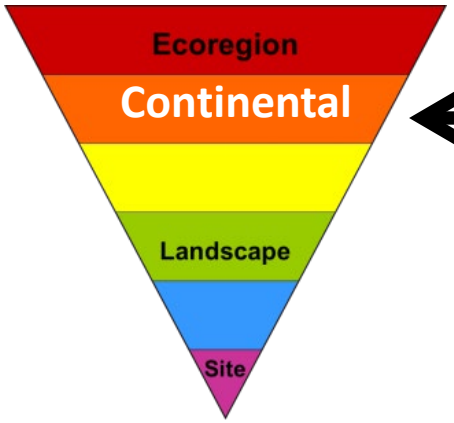


National Hierarchical Framework of Ecological Units



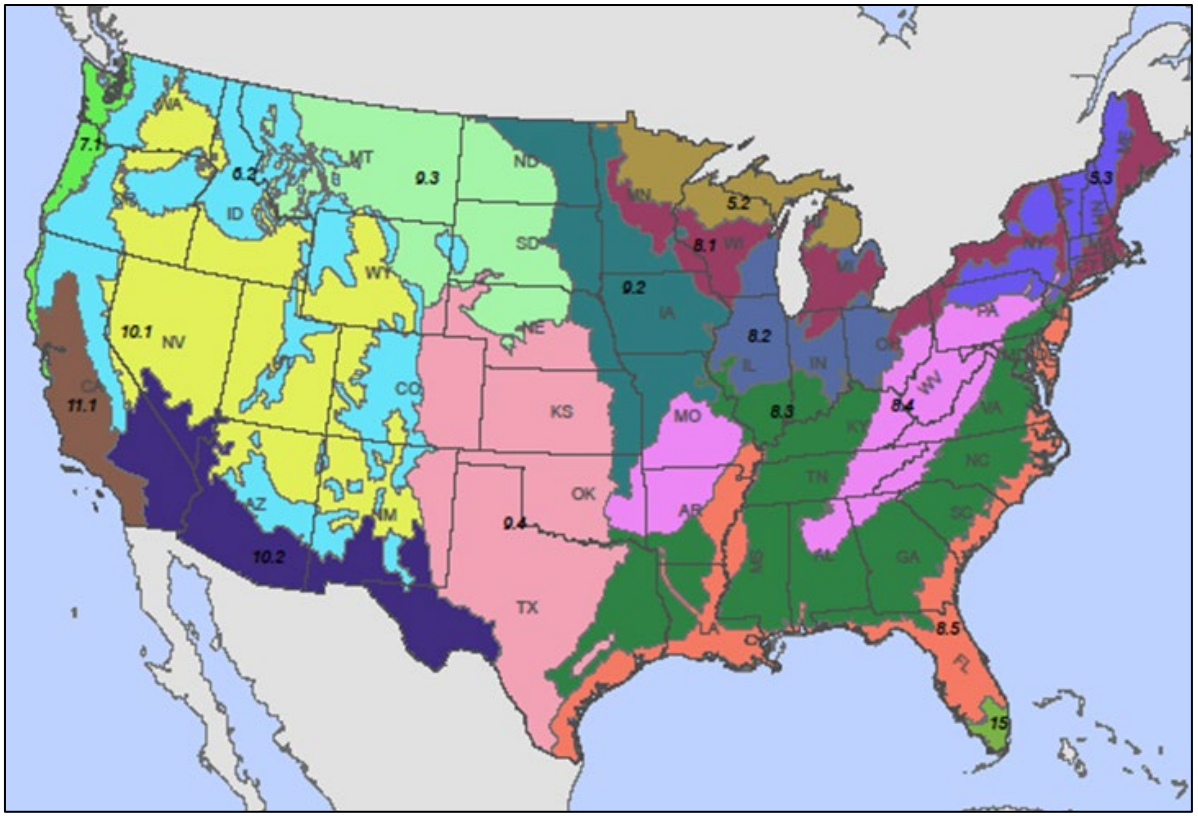
Broad scale

Fine scale

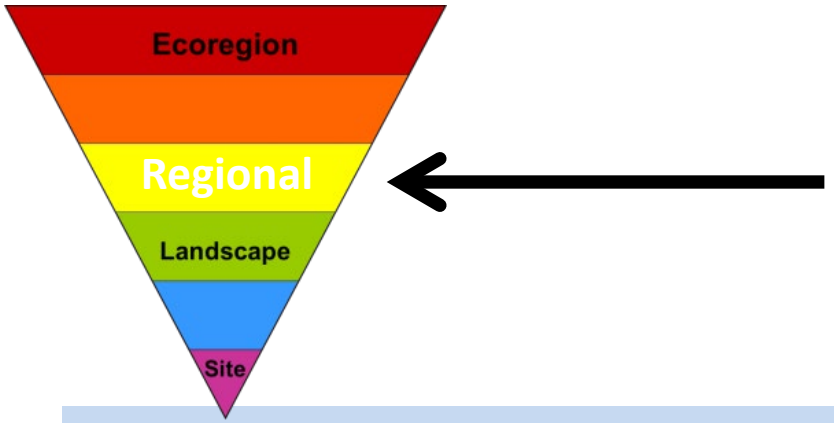


Omernick Ecoregions Level II

Scale: climatic, gross geography, dominant life form



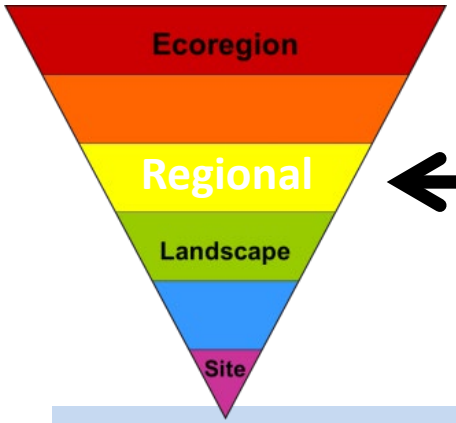
- Maritime West Coast Forests
- Western Cordillera
- Cold Deserts



Omernick Ecoregions Level III

Section Scale:
regional climate, geology, vegetation

- Coast Range
- Willamette Valley
- Klamath Mtns.
- Western Cascades
- Eastern Cascades
- Columbia River Plateau
- Northern Basin and Range…



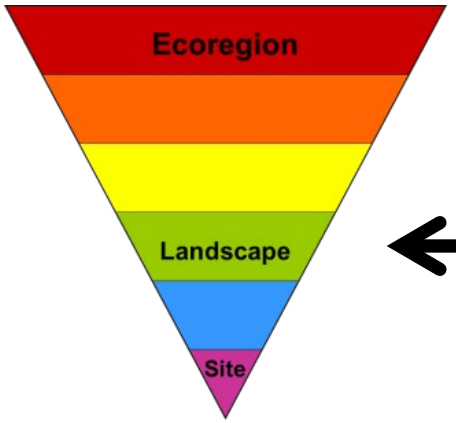
Omernick Ecoregions Level IV

Sub-section Scale: regional climate, geology, vegetation

Coast Range: Coastal Lowlands, Coastal Uplands, Volcanics…

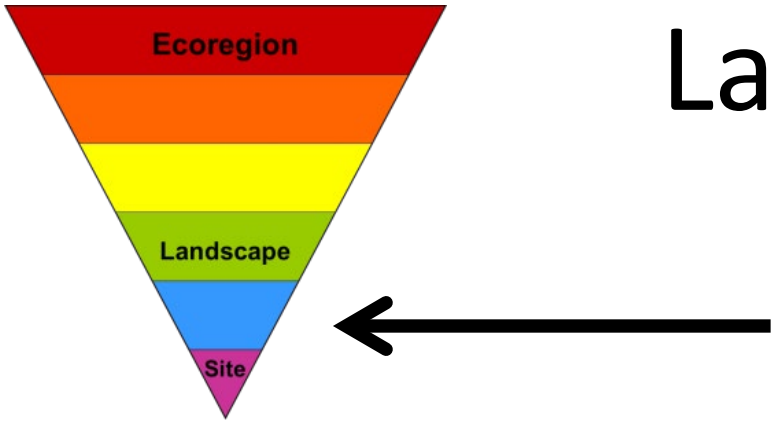
Klamath Mountains: Siskiyou Foothills, Serpentine, Siskiyou …

Cascades: Western Cascades Lowlands and Valleys…



Landtype Association

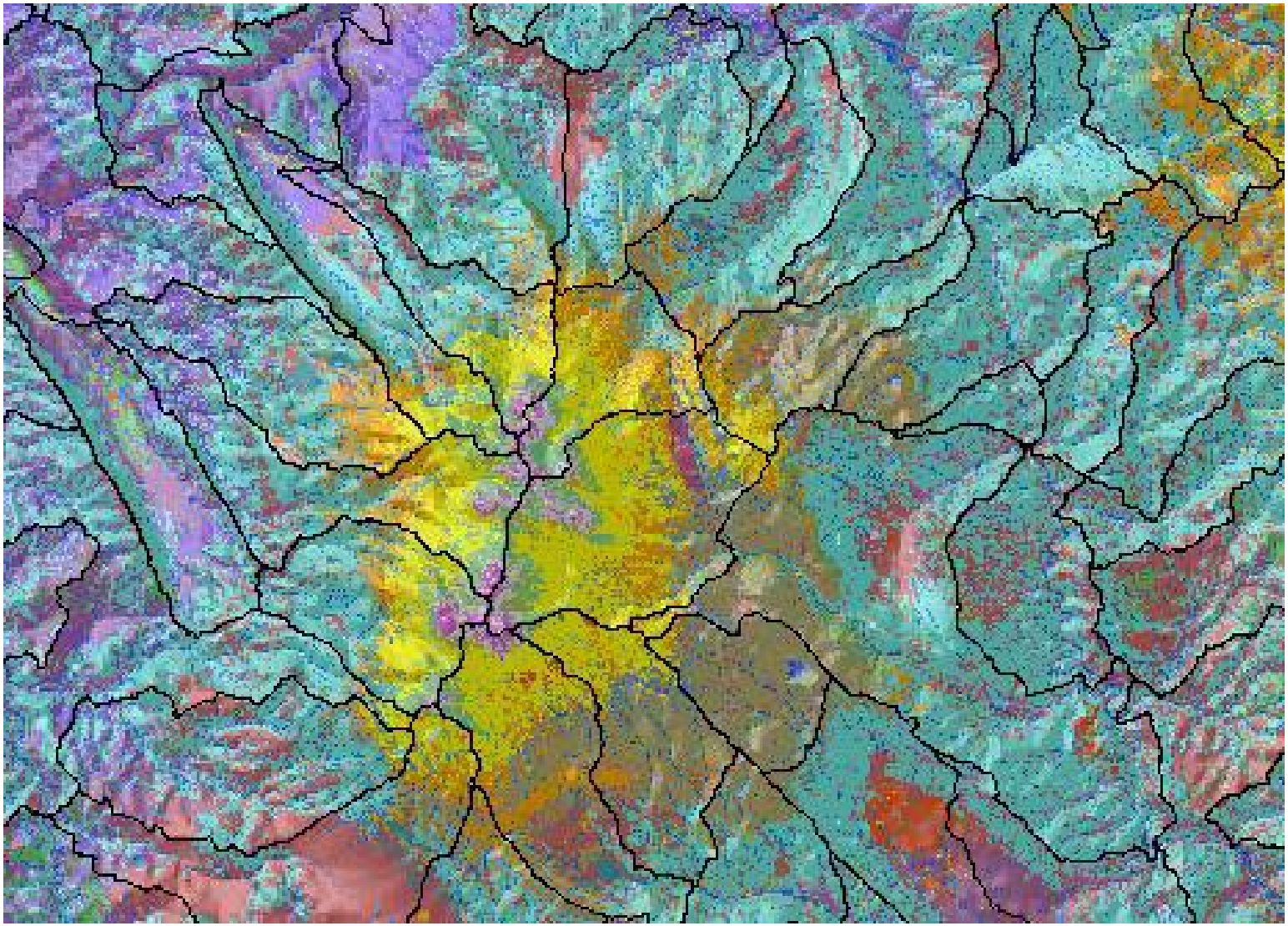
- A combination of:
  - geology, climate, geomorphology, morphometry, and vegetation on a landscape.
- Classification and mapping of ecosystems
- Based on biotic and abiotic factors
- Similar capabilities and potentials for management



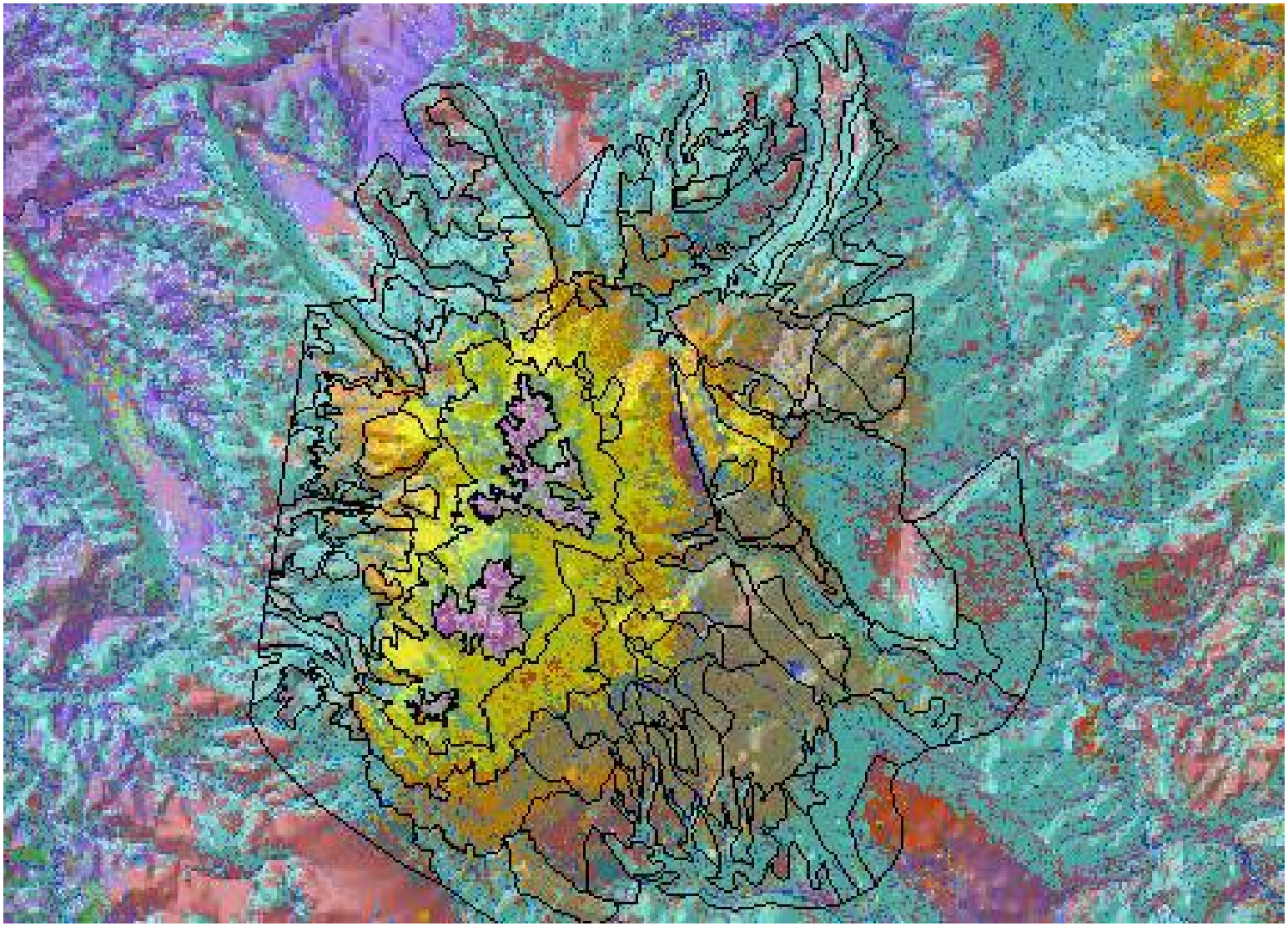
Landtype Association vs. Landtype

Planning and analysis scale	Ecological unit levels	Geology	Geomorphology	Soil	Potential natural vegetation
Landscape	Landtype association (LTA)	Primary lithology or groups of secondary lithology	Geomorphic process and subprocess types	Great group and subgroup	Series and subseries
Land unit	Landtype (LT)	Secondary lithology	Landforms, element landforms, and morphometry	Subgroups, families, and series	Subseries and plant associations
	Landtype phase (LTP)	Secondary lithology	Landforms, element landforms, and morphometry	Series and phases of series	Plant associations and plant association phases

Vegetation vs. Watersheds



Landtype Associations



3 levels of landform geomorphic mapping

Landforms

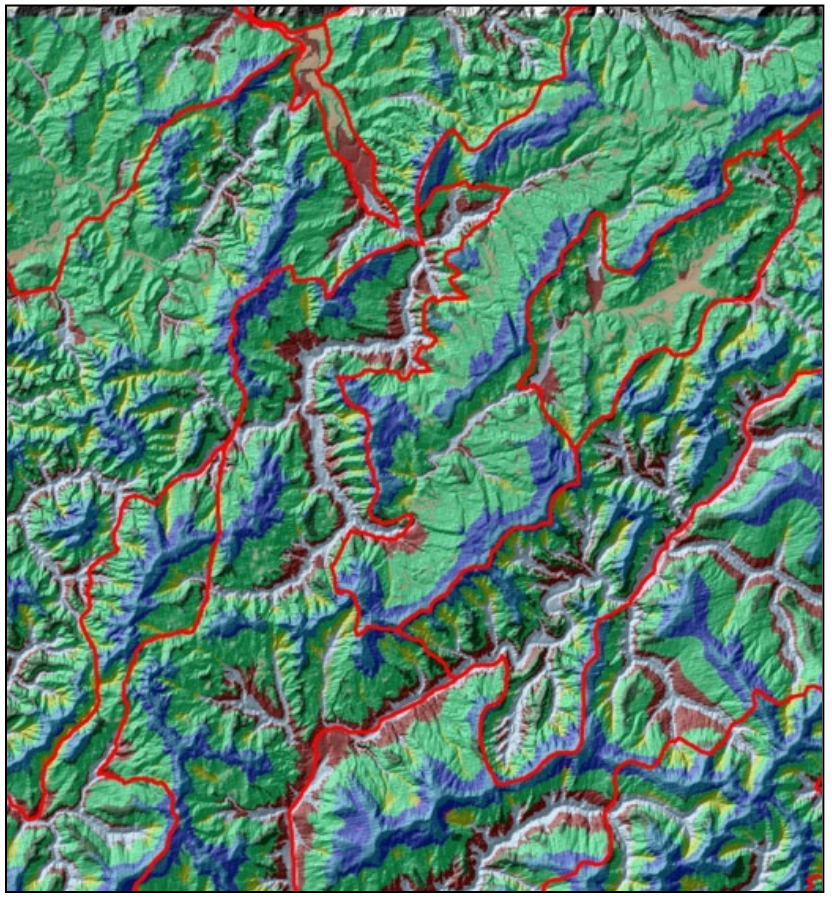
- Terrain model (30 m raster)
- 1:24 –1:250k: tuned to R6

Landform Groups

- Geomorphic interpretation
  - Cartography - Noller
- Grouping of landforms

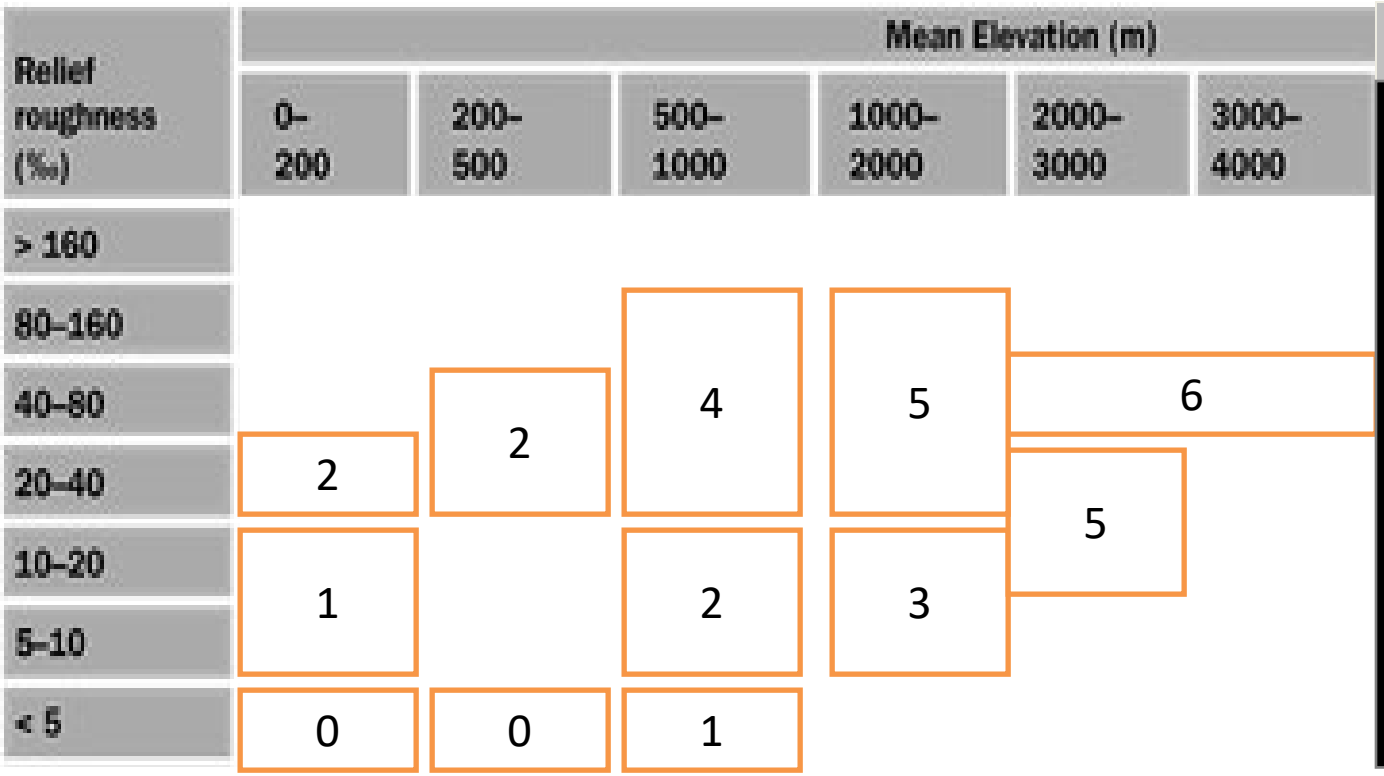
Landform Associations

- Groupings of landform groups



All levels are nested, but not purely

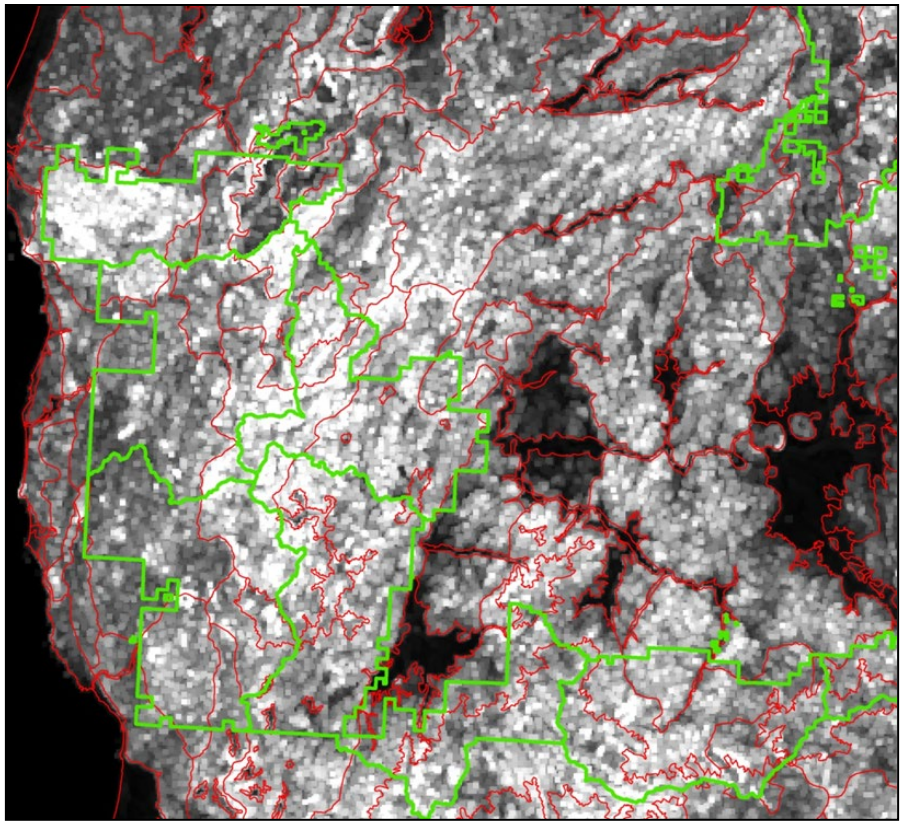
Meybeck Mountain Chart



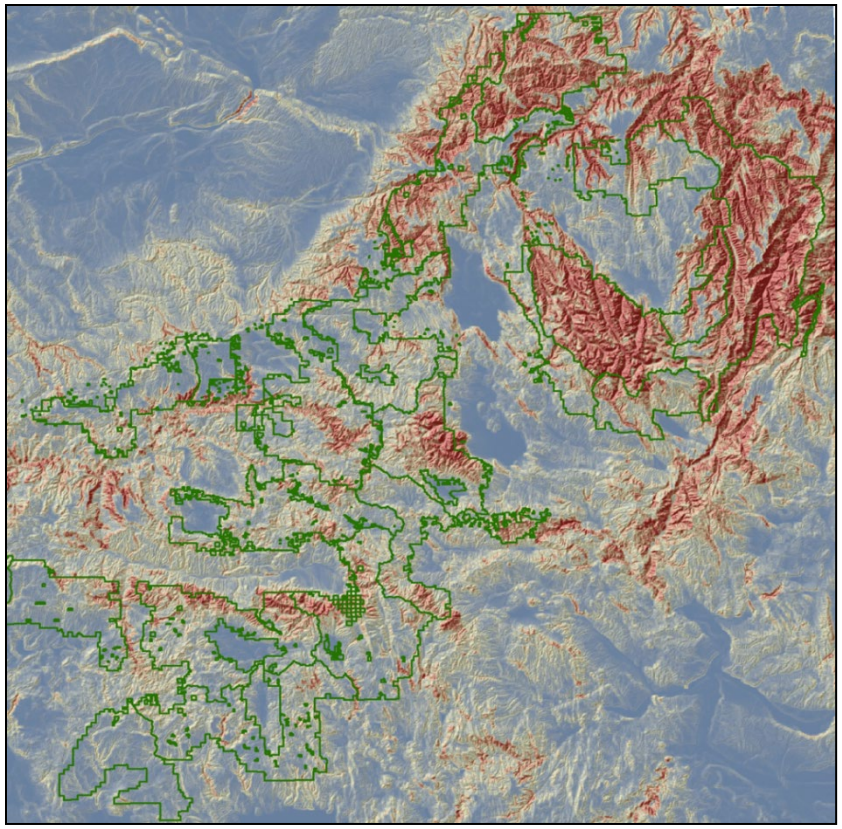
Region Six Classes
Plains (0)
Lowlands (1)
Rugged Lowlands (2)
Plateaus (3, 4, 5)
Hills (2, 3)
Low Mountains (4)
Mountains (5)
High Mountains (6)

Region Six landform group names correspond to international (UN-FAO) mountain scale

Morphometric Tools



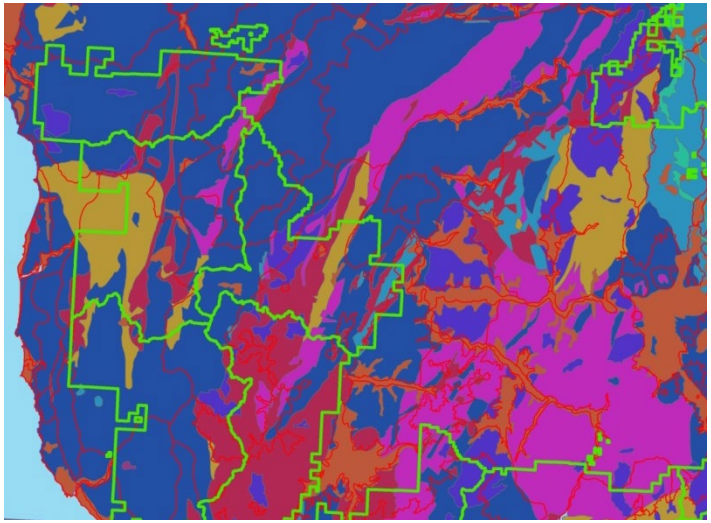
Relief Grid SW Oregon
Whiteness shows higher elevations – used with a roughness index to get at naming structures



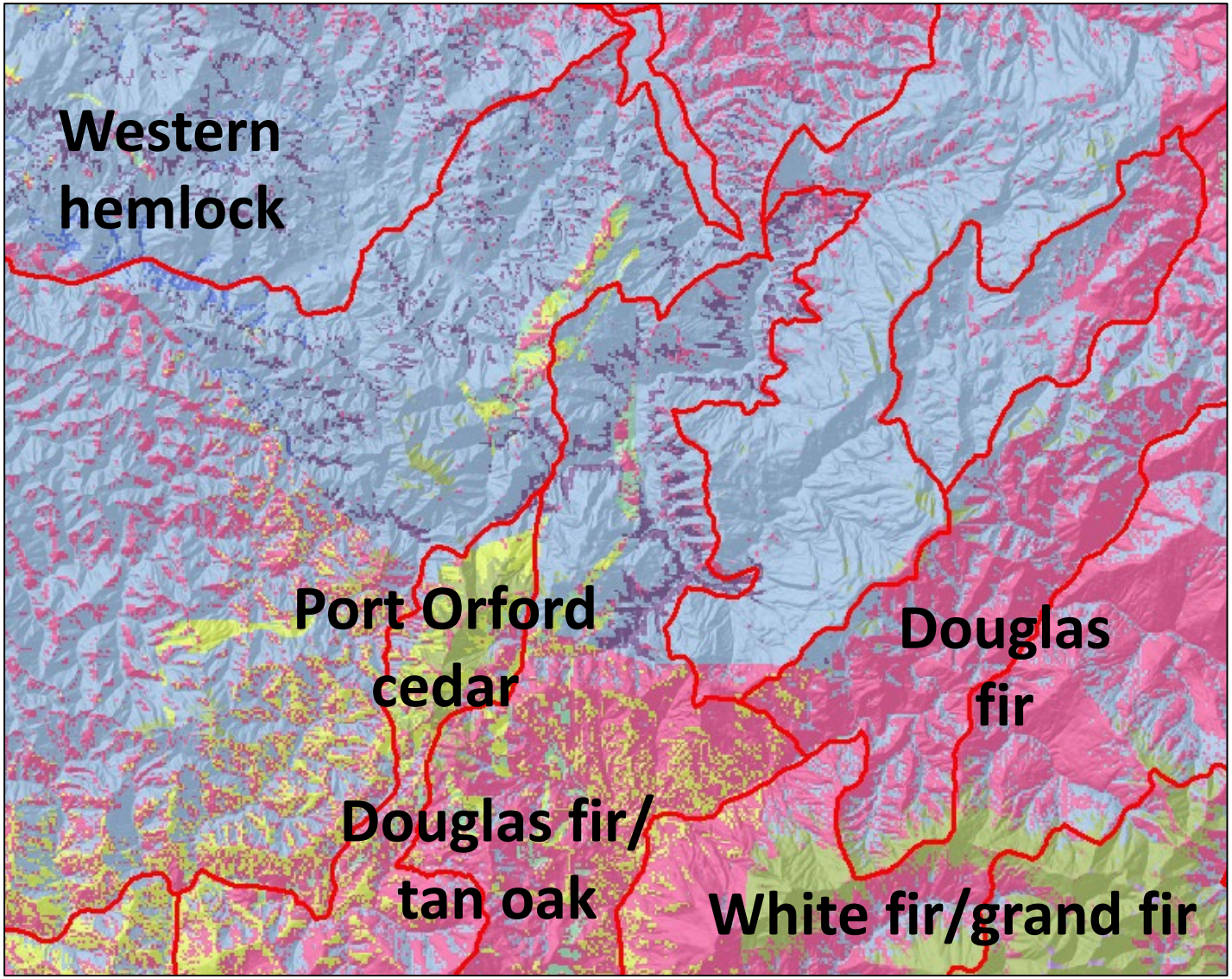
Proximal Max Relief Classes
Wallowa Mtn area shows mountains and canyons/gorges

OR and WA Geological Data Compilation

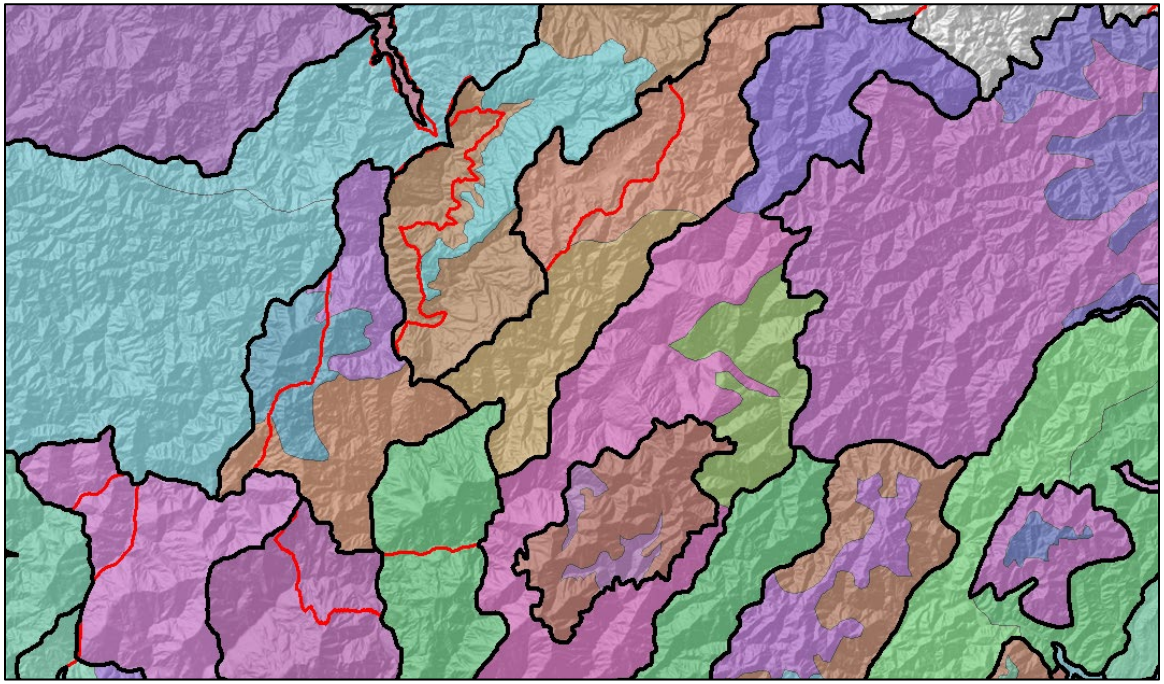
- Derived and classified
- General rock type
  - Sediments, rocks (volcanic, plutonic, metamorphic, etc.)
  - Distinguished on chemical composition (mafic, serpentine, etc.)
- Weatherability
  - Parent material class for generating soil



Potential Natural Vegetation
Modeled vegetation series and subseries



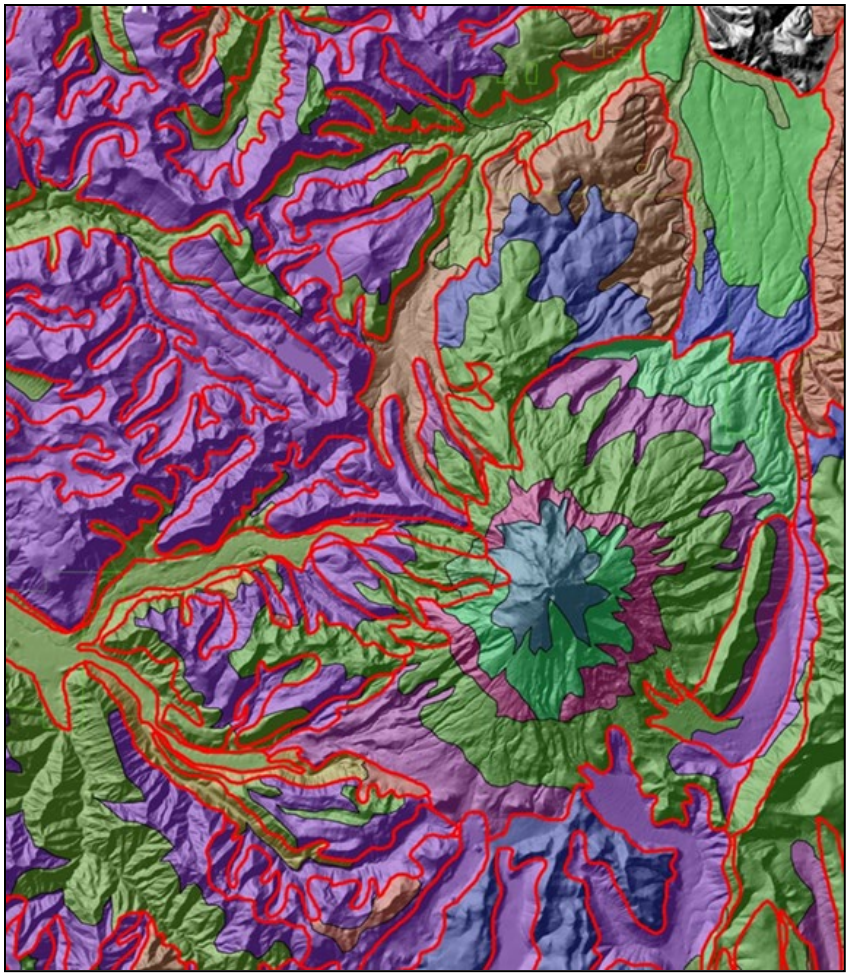
Landtype Association Development



- Geo-ecological
- Surficial process interactions apparent
- Scale for soil-forming factors
  - Soil is a function of climate, organisms, relief, parent material and time

How can LTAs be used?

- Organize landscapes
  - Provides higher altitude view of Forest/Region
- Display the interaction of geomorphic processes and soil forming factors
  - Used in organizing management allocations
- Identify management limitations and opportunities
  - Scoured glaciated slopes vs. fluvial)



Mt Hood NF landtype associations

How can LTAs be used?

Climate Change

- Poised to shift species distributions, reshuffle communities, and alter ecosystem functioning

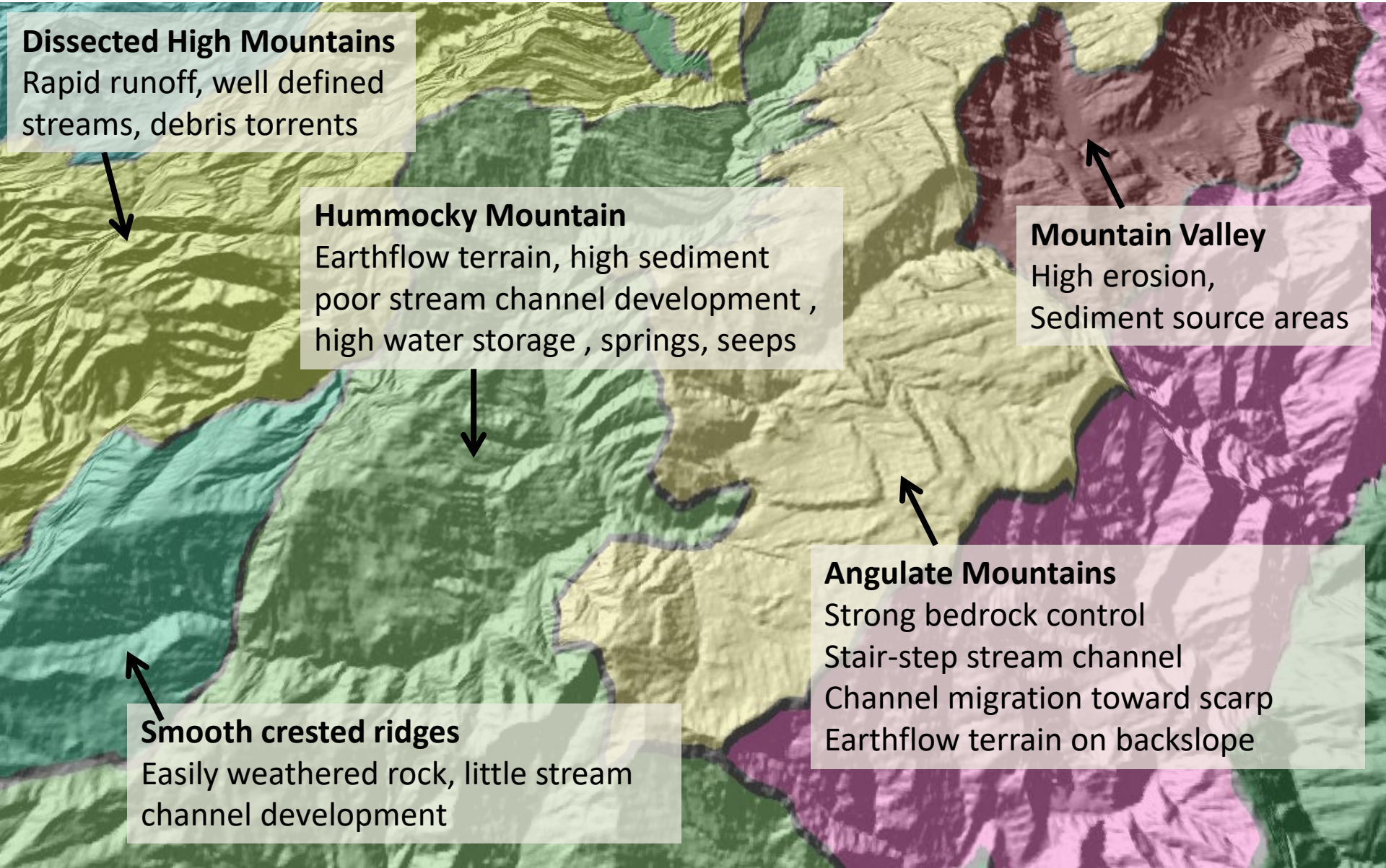
Conserve the arenas not the temporary actors

- *Design reserves and linkages for diversity* Beierbrost 2010

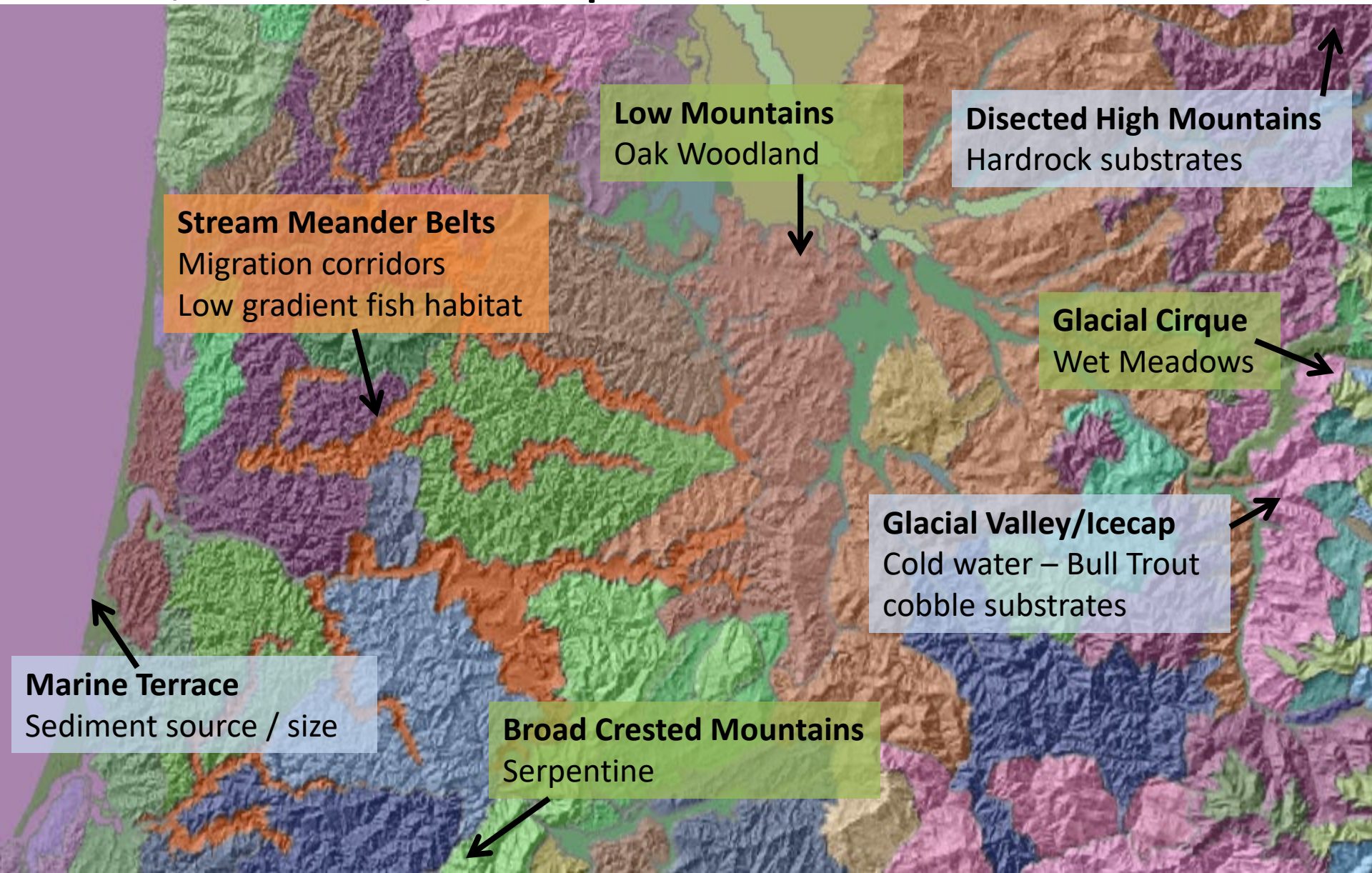
Protect a set of abiotically diverse areas

- *Support a diversity of ecological systems (species distributions and ecological processes) both today and into the future* Schloss Lawler 2012

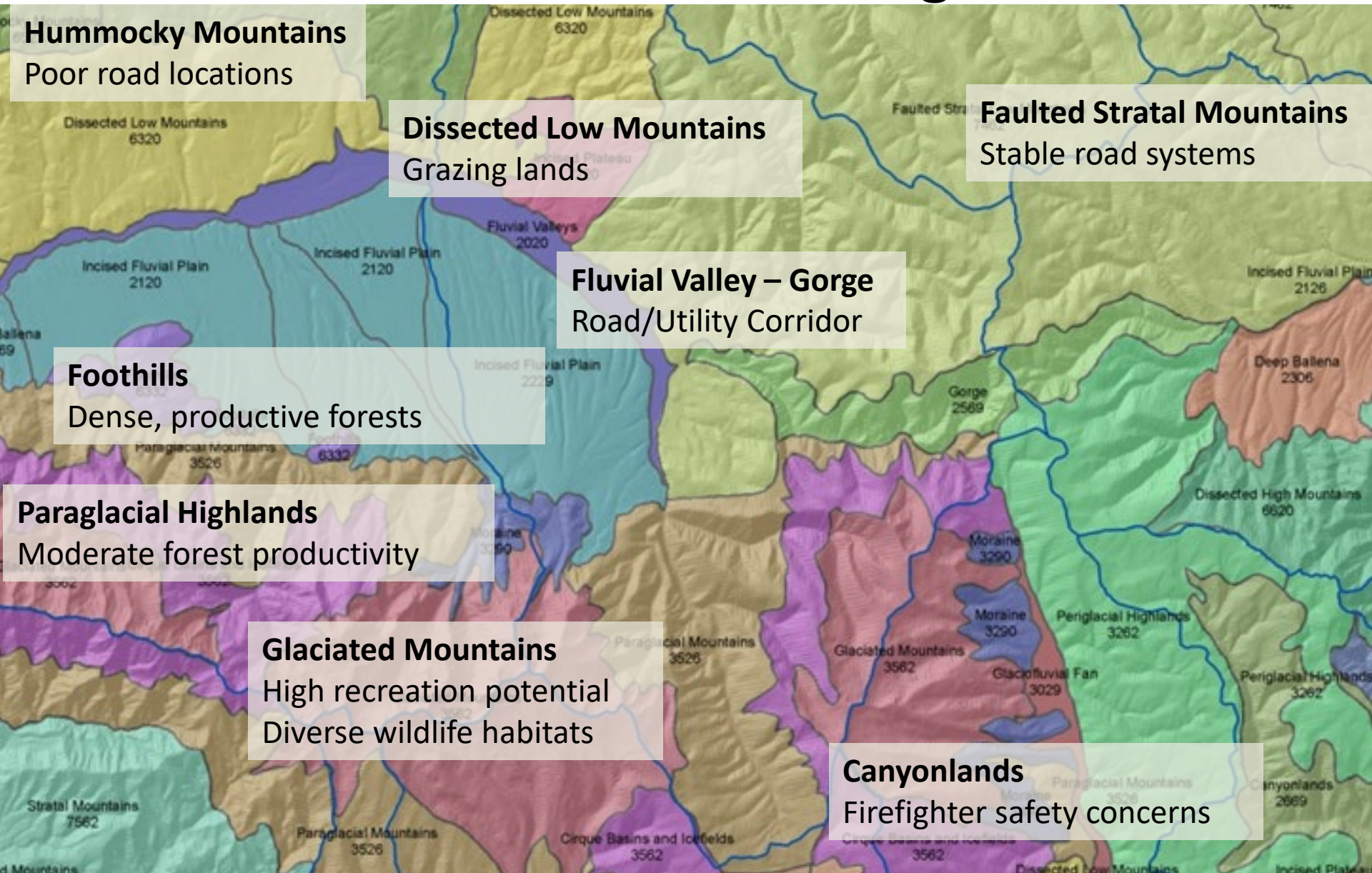
How can LTAs be used?
Watershed Processes



How can LTAs be used?
Plant, Wildlife, & Aquatic Habitat Assessments



How can LTAs be used?
Land Use Planning



Hummocky Mountains
Poor road locations

Dissected Low Mountains
Grazing lands

Faulted Stratal Mountains
Stable road systems

Fluvial Valley – Gorge
Road/Utility Corridor

Foothills
Dense, productive forests

Paraglacial Highlands
Moderate forest productivity

Glaciated Mountains
High recreation potential
Diverse wildlife habitats

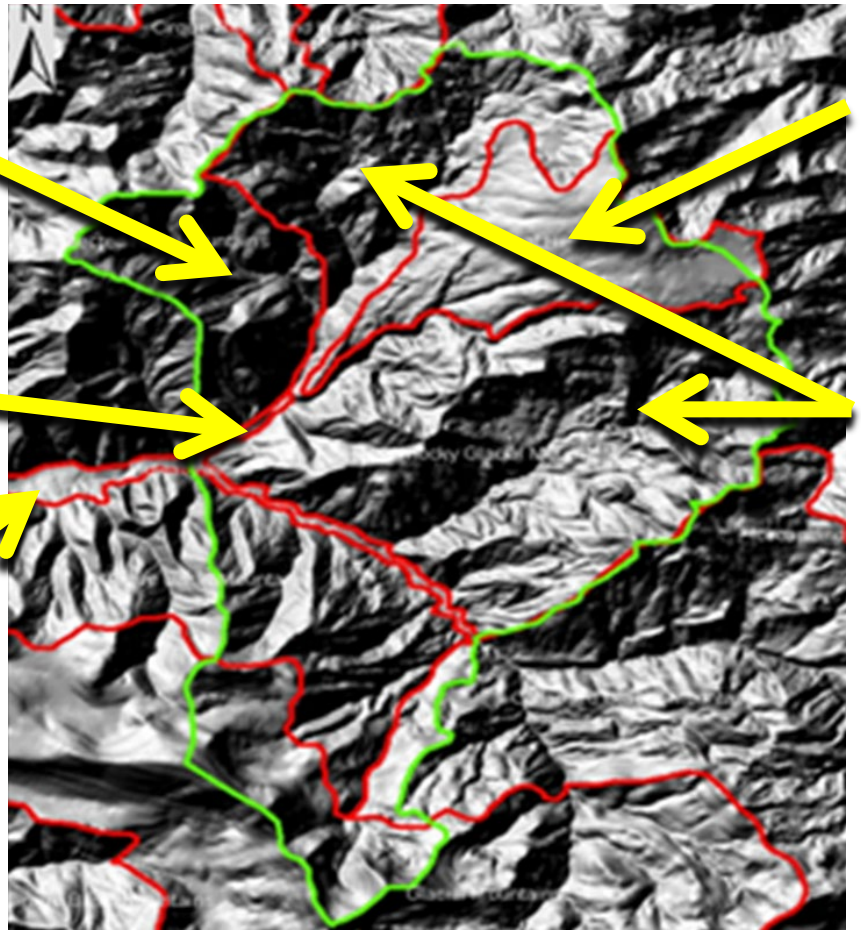
Canyonlands
Firefighter safety concerns

Project Scale Analysis

Dissected High Mountains
Durable gravel
Rapid Runoff
Lower forest productivity

Fluvial Valley
Active Floodplain
Core salmon habitat

Stream Terrace
Meadow system
Not an active floodplain

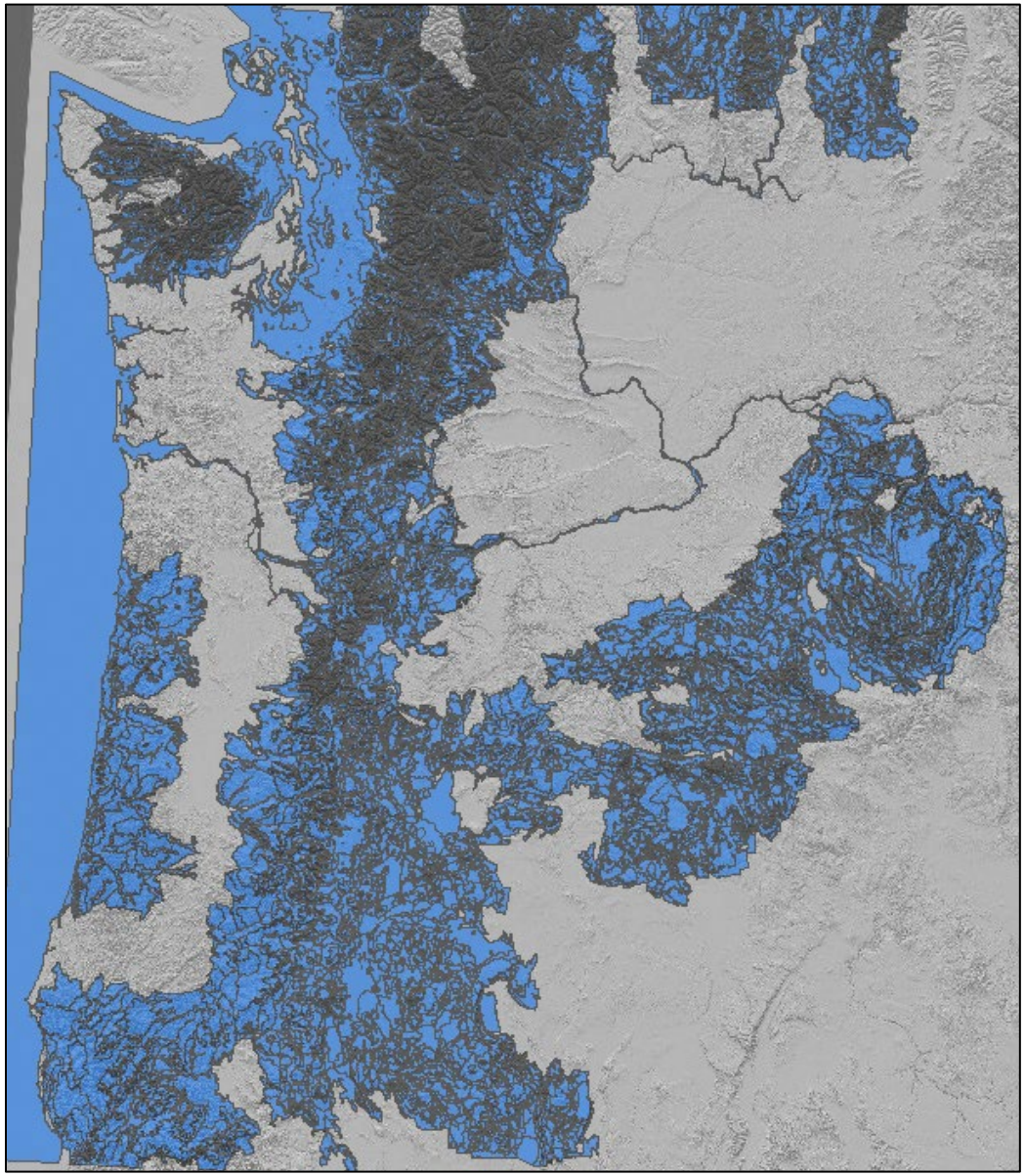


Glacial Plateau
Fractured basalt
Cold water transmission
Elk Habitat
Poor Douglas fir site

Collapsed Mountains
Instability
Poor gravels
High sediment
Water storage
High forest productivity

Area mapped to date

- 25,000,000 acres of NFS lands
  - Landforms
  - Landform Groups
  - Landform Associations
  - Landtype Associations

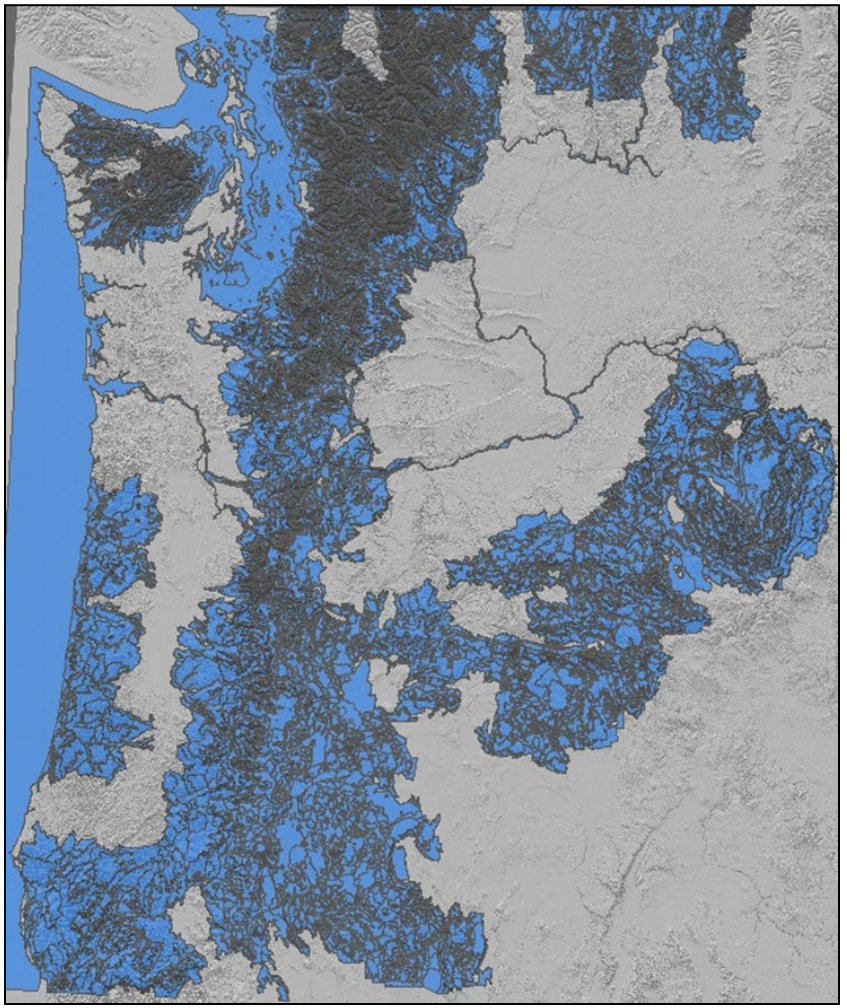


On Course to Complete

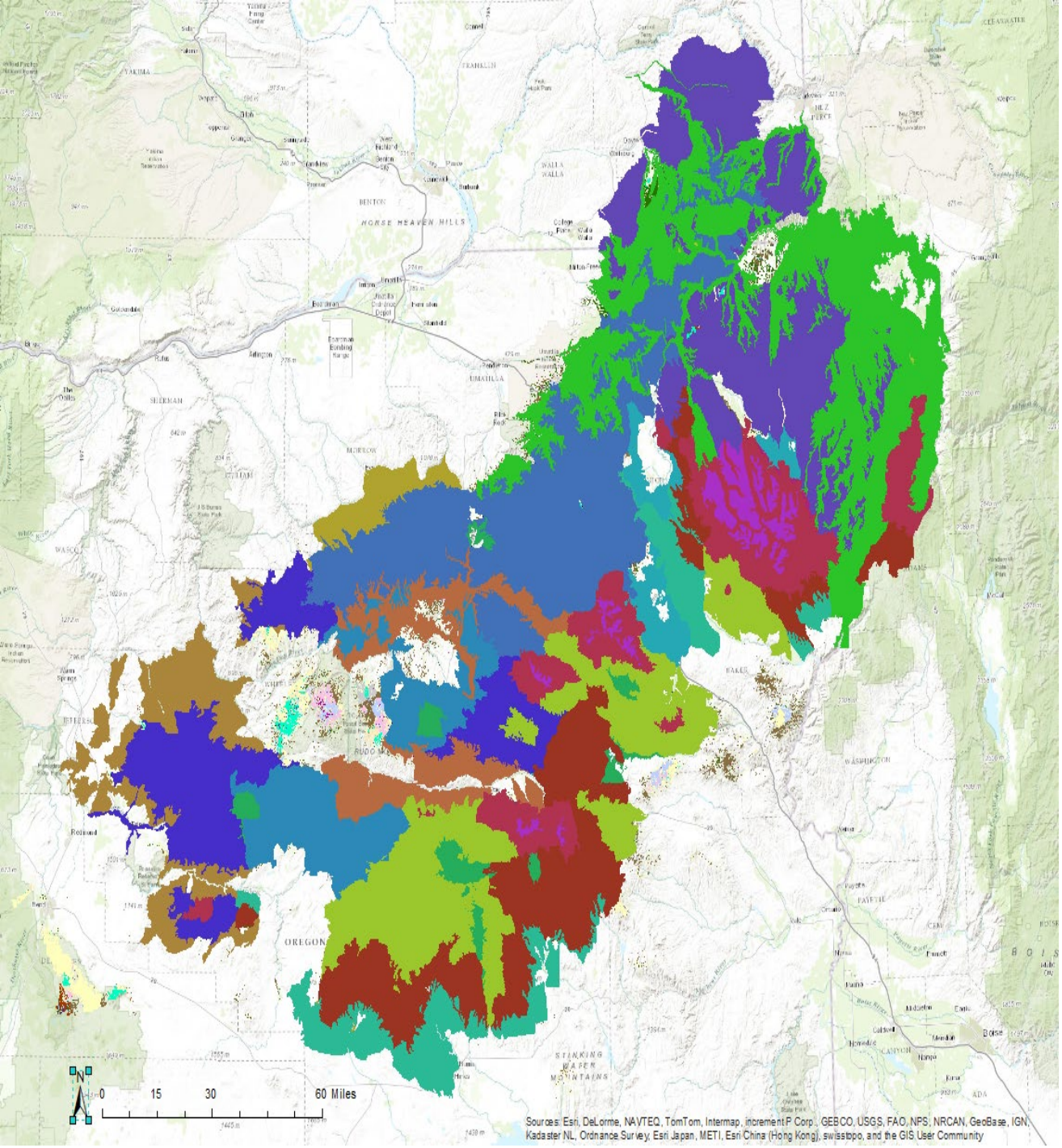
- Publish a Guidebook (December 2013)
  - Descriptions of each map unit
  - Data dictionary
  - Interpretations for various resources
    - Important functional characteristics

Expansion of the Product

- Full OR/WA coverage
  - All lands approach helps build partnerships
  - $60,000
    - $30,000 BLM
    - $30,000 Other
- NWFP Area of CA ($30,000)
- Provide training
- Get external review / revise
- Aggregate to refine ecological subsection mapping

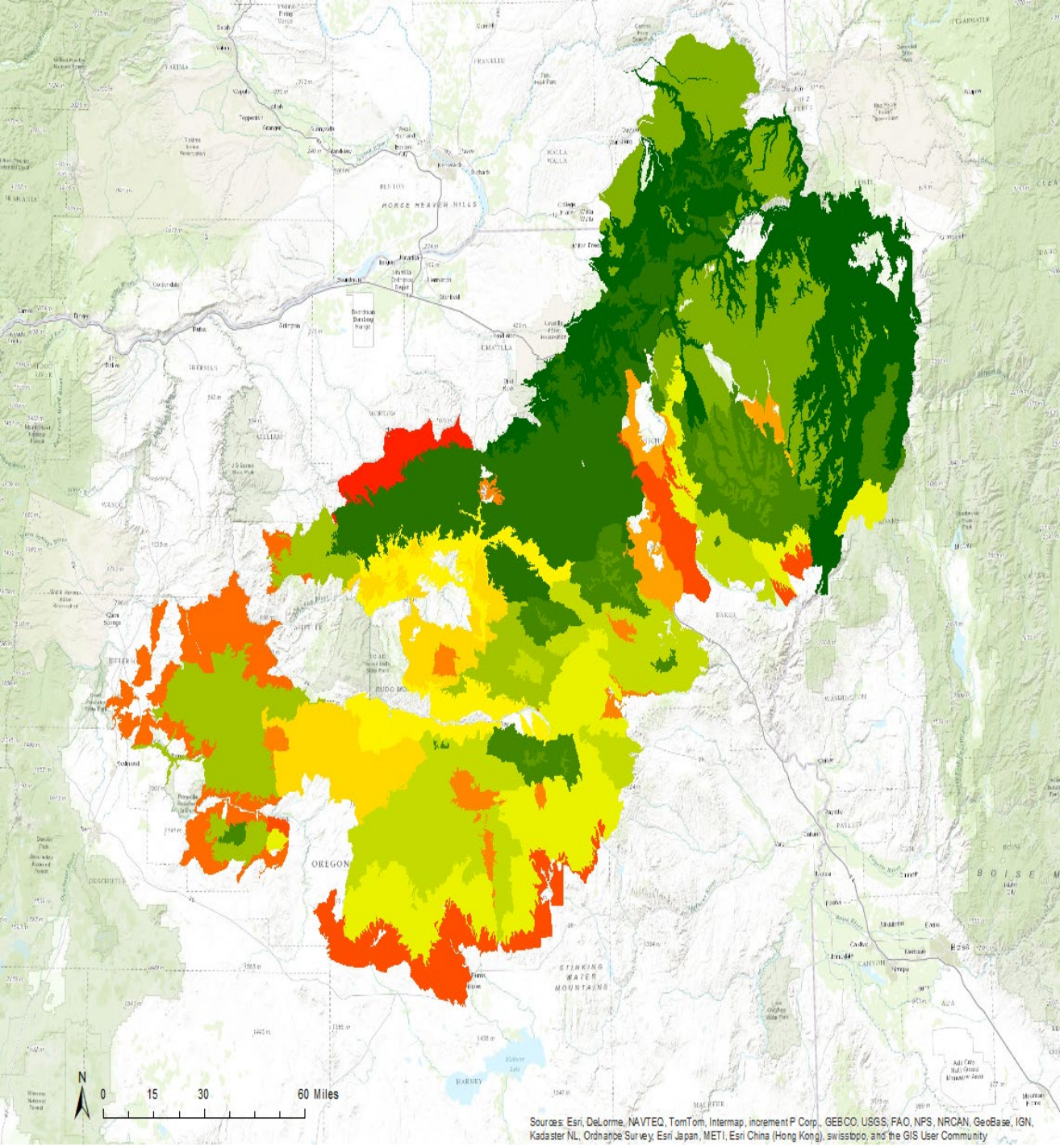


Blue Mountains Landtype Subsections



Region

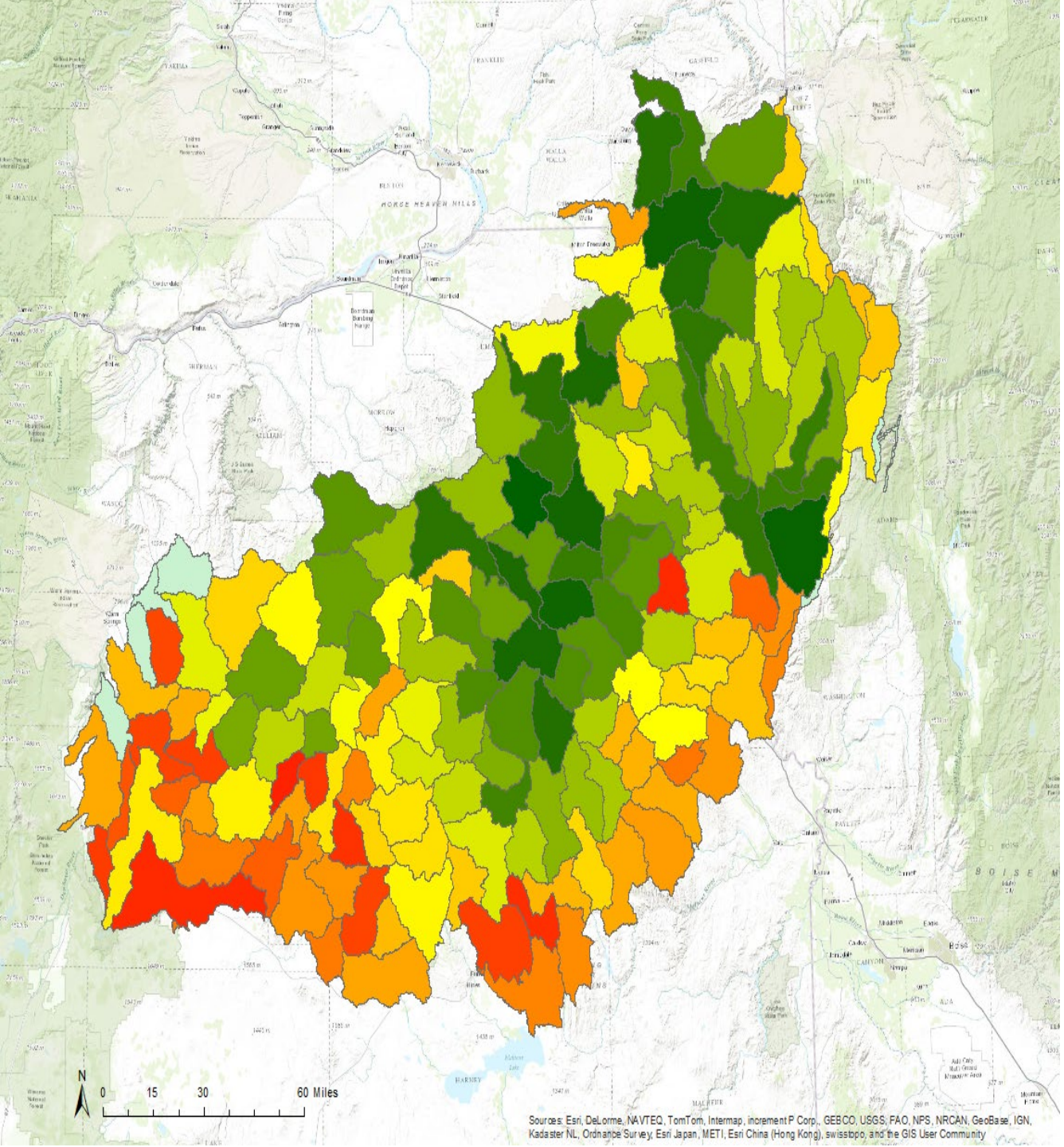
- Blue Mountain Basins
- Canyonlands
- Cold Basins
- Columbia River Basin
- Faulted Volcanic Highlands
- Faulted Volcanic Lowlands
- Glaciated Blue Mountains
- Glaciated Wallowas / Seven Devils Mountains
- Incised Plateaus
- John Day / Clarno Highlands
- John Day / Clarno Uplands
- John Day Basalts
- John Day River Valleys
- Maritime Influenced Zone
- Melange
- Subalpine-Alpine Zone



Historic Range of Vegetation Structural Variability Departure by Landtype Subsection

Low

High



Historic Range of Vegetation Structural Variability Departure by watershed

Low

High