Lab 7 & 9: Calculating landscape indices in FRAGSTATS

REM 429

Spring ‘17

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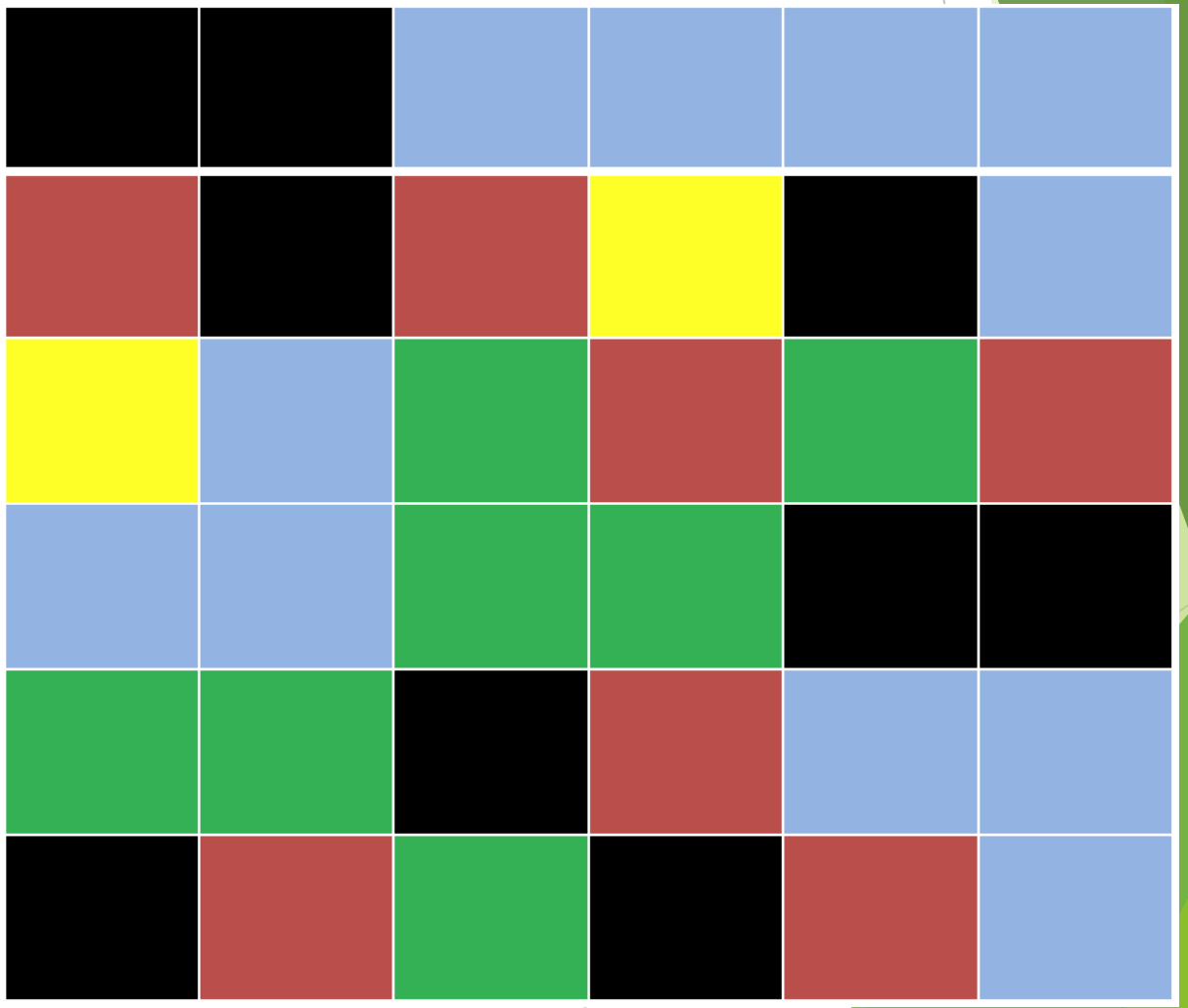
Quiz – Friday, February 23

Overview

- Labs 7 and 9 will be focused on the effects that minimum mapping scale and temporal changes have on landscape metrics
- Lab 8 will be the mid-term exam!
- Objectives
  - Gain familiarity with common indices of landscape diversity and pattern
  - Illustrate the effects of minimum mapping unit (Lab 7) and thematic resolution (Lab 9) on landscape indices
  - Better understand factors that influence the selection and interpretation of indices

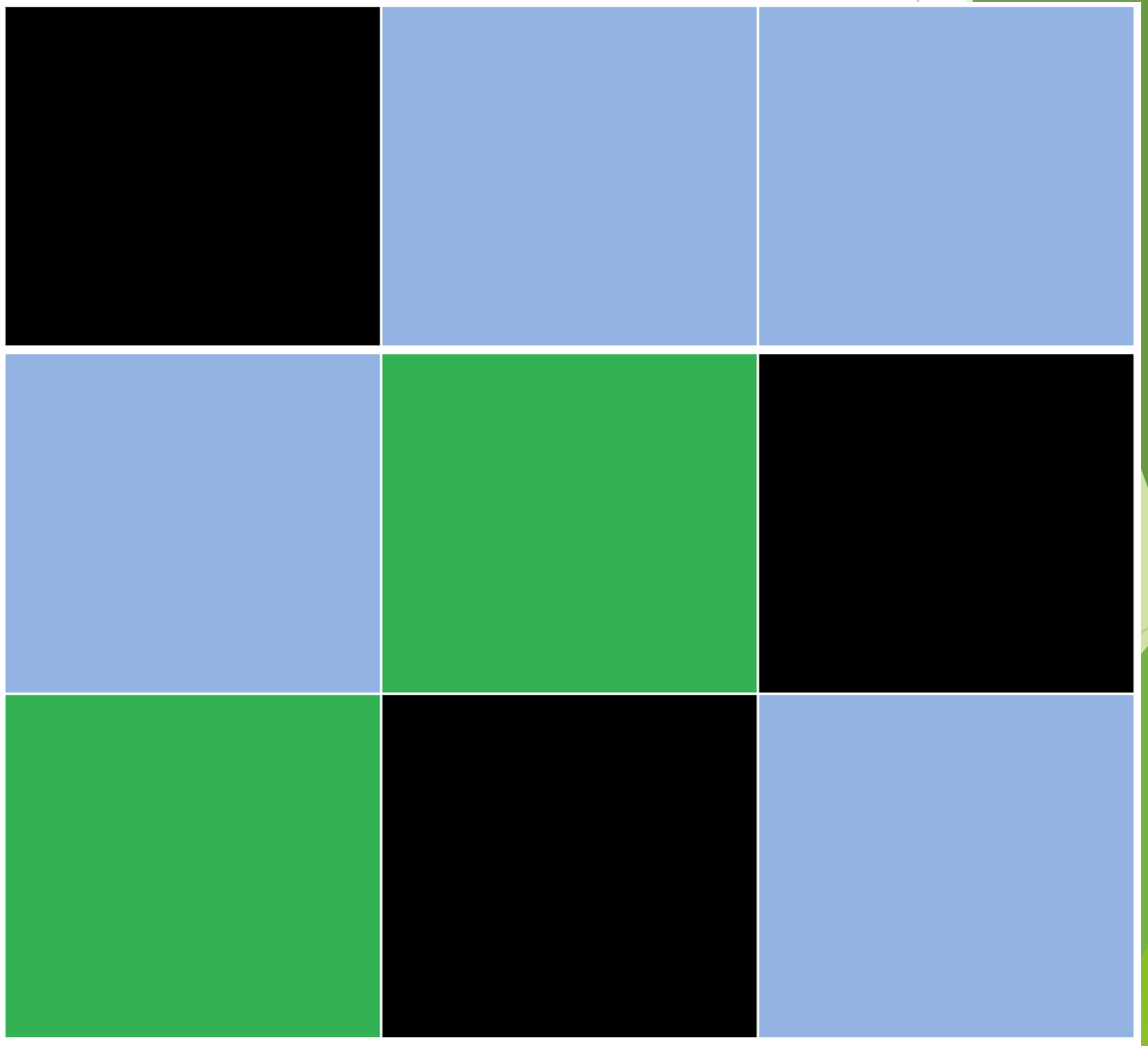
Minimum mapping unit

- Area = 36 ha, MMU = 1 ha
- Richness?
  - 5 (red, blue, black, green, yellow)
- Proportion of yellow?
  - 2/36 = 0.06
- Proportion of red?
  - 7/36 = 0.19
- Proportion of blue?
  - 11/36 = 0.31



Minimum mapping unit

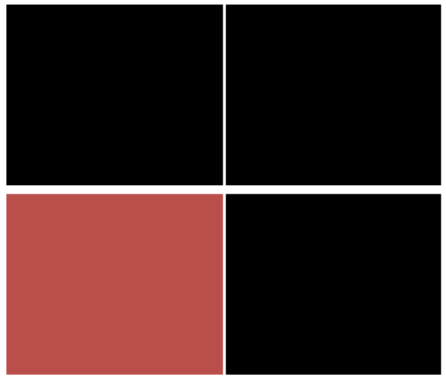
- Area = 36 ha, MMU = 4 ha
- Reclassification ≥ 50%
- Richness?
  - 3
- Proportion of yellow?
  - 0
- Proportion of red?
  - 0
- Proportion of blue?
  - 16/36 = 0.44



Minimum mapping unit

Categorical / Integer values

Four pixels

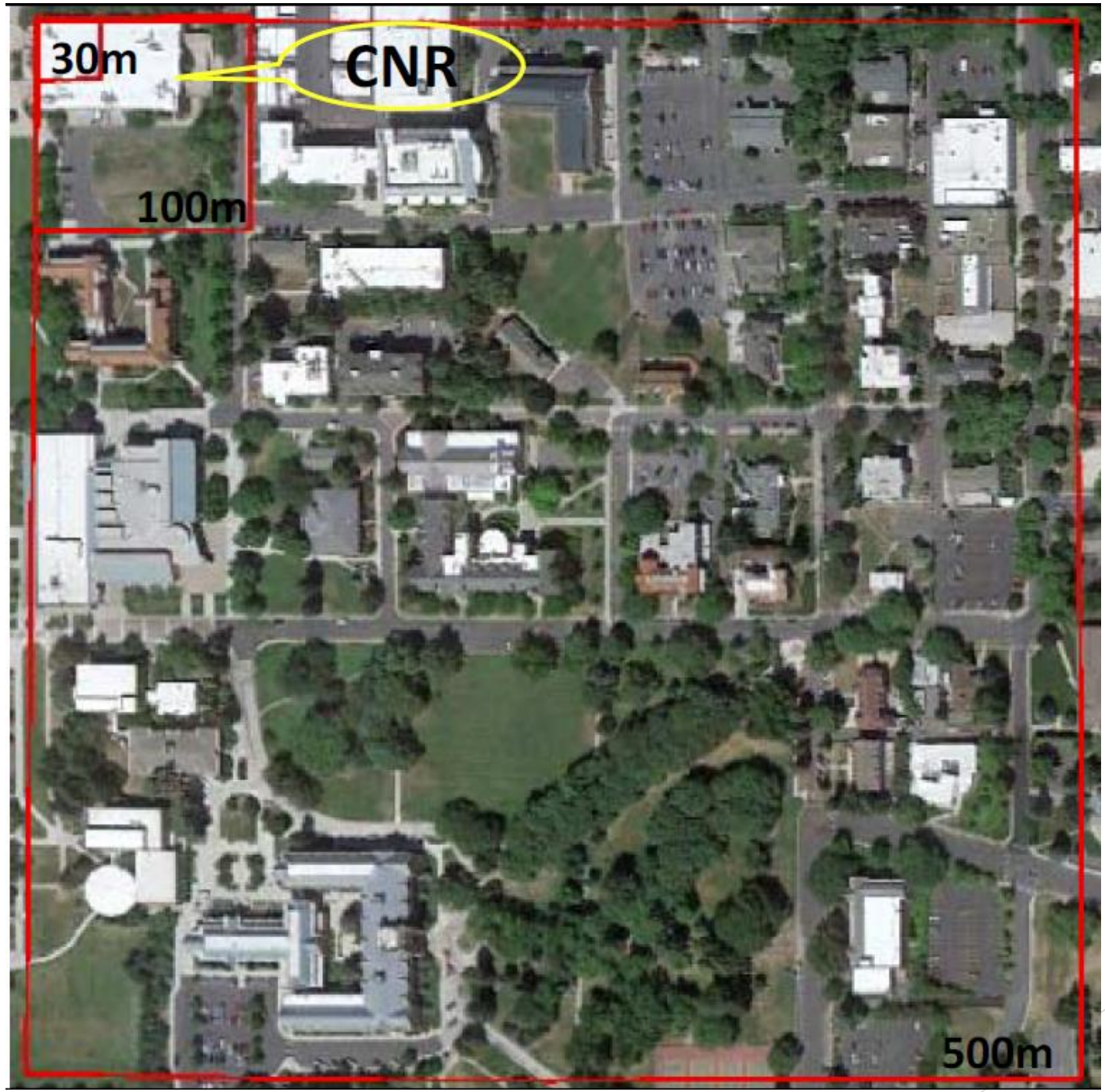


Majority rule

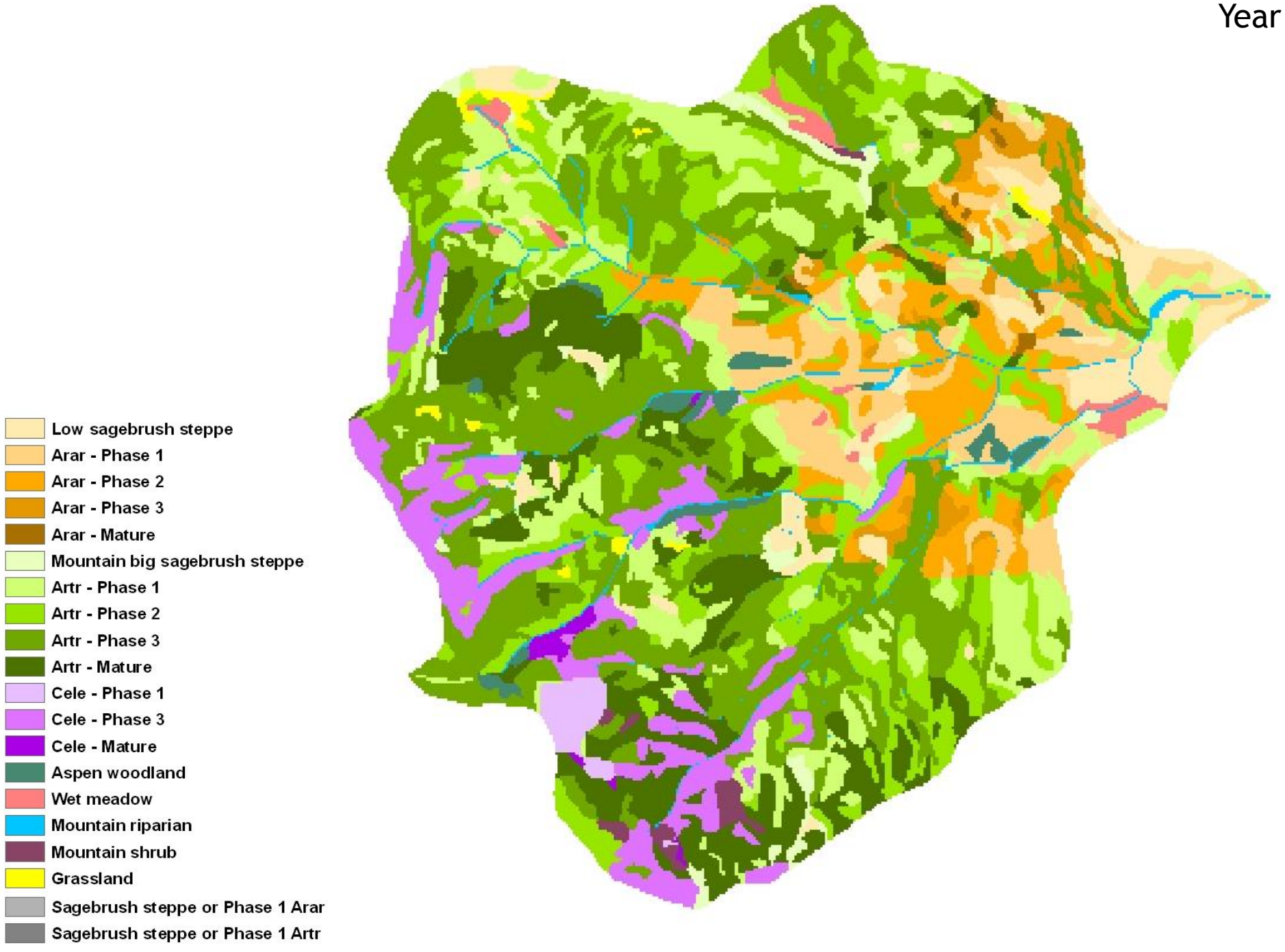
One pixel

Resolution

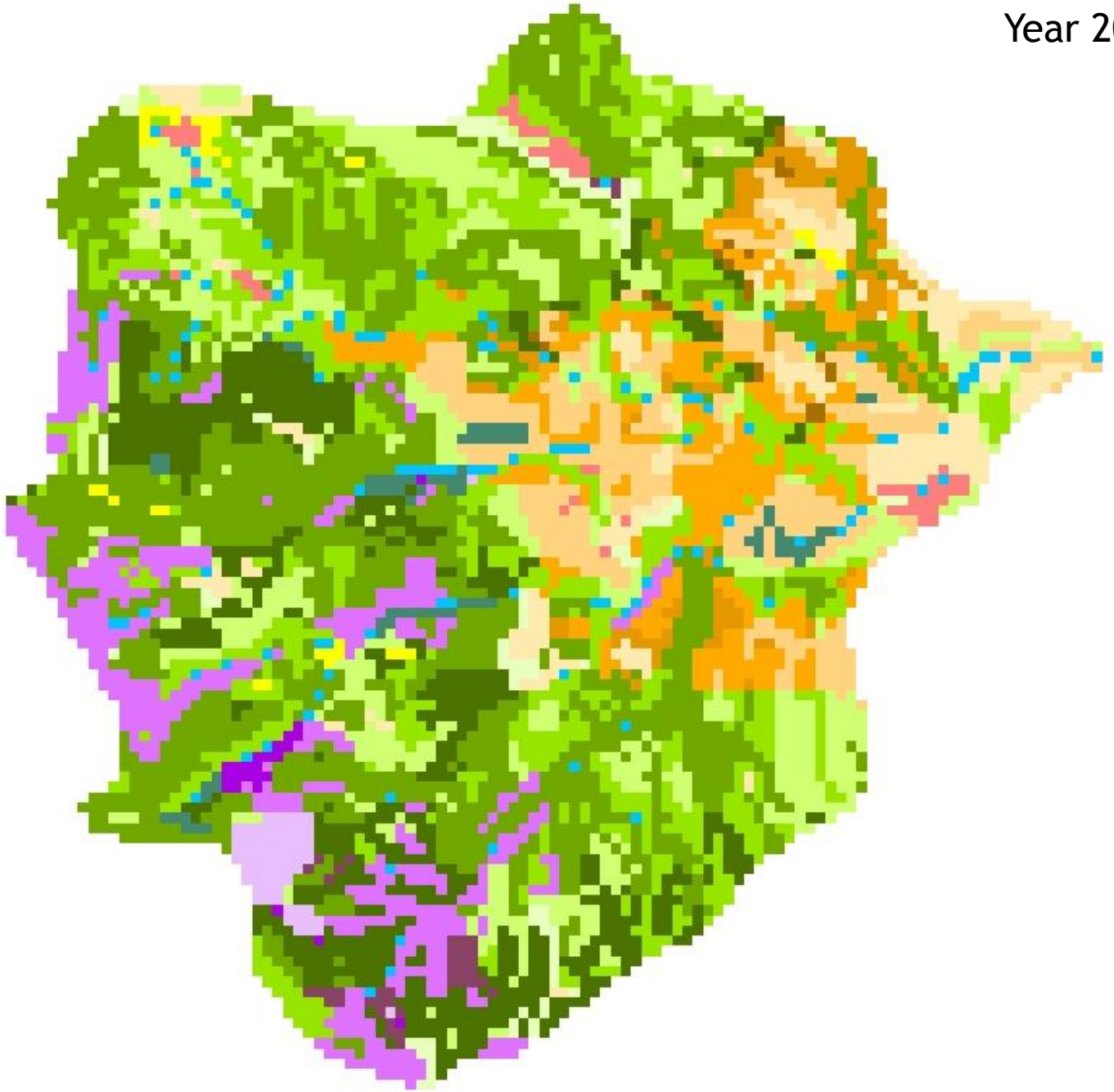
Rare or small classes disappear


30m
CNR
100m
500m

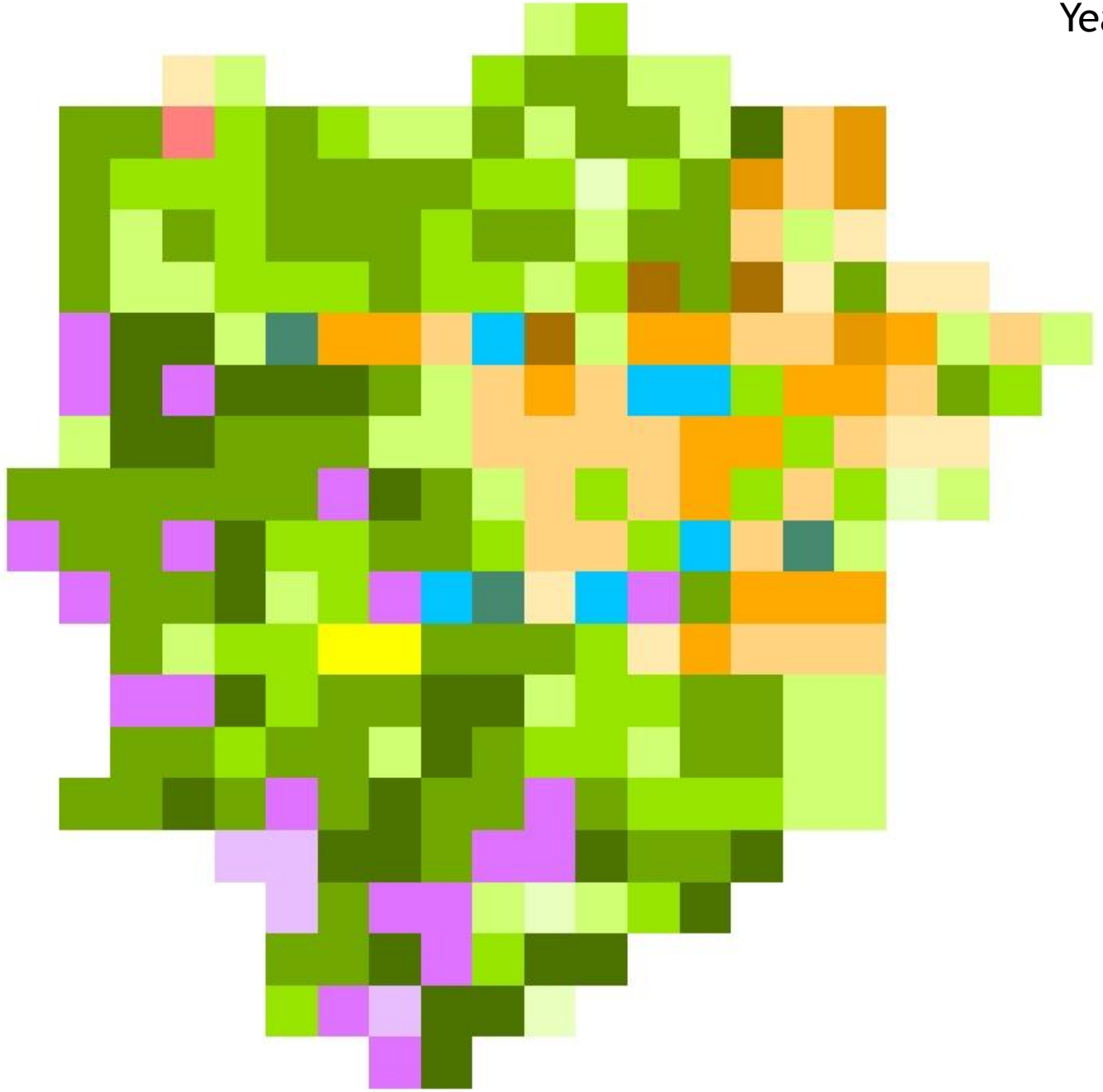
Year 2000, 30m



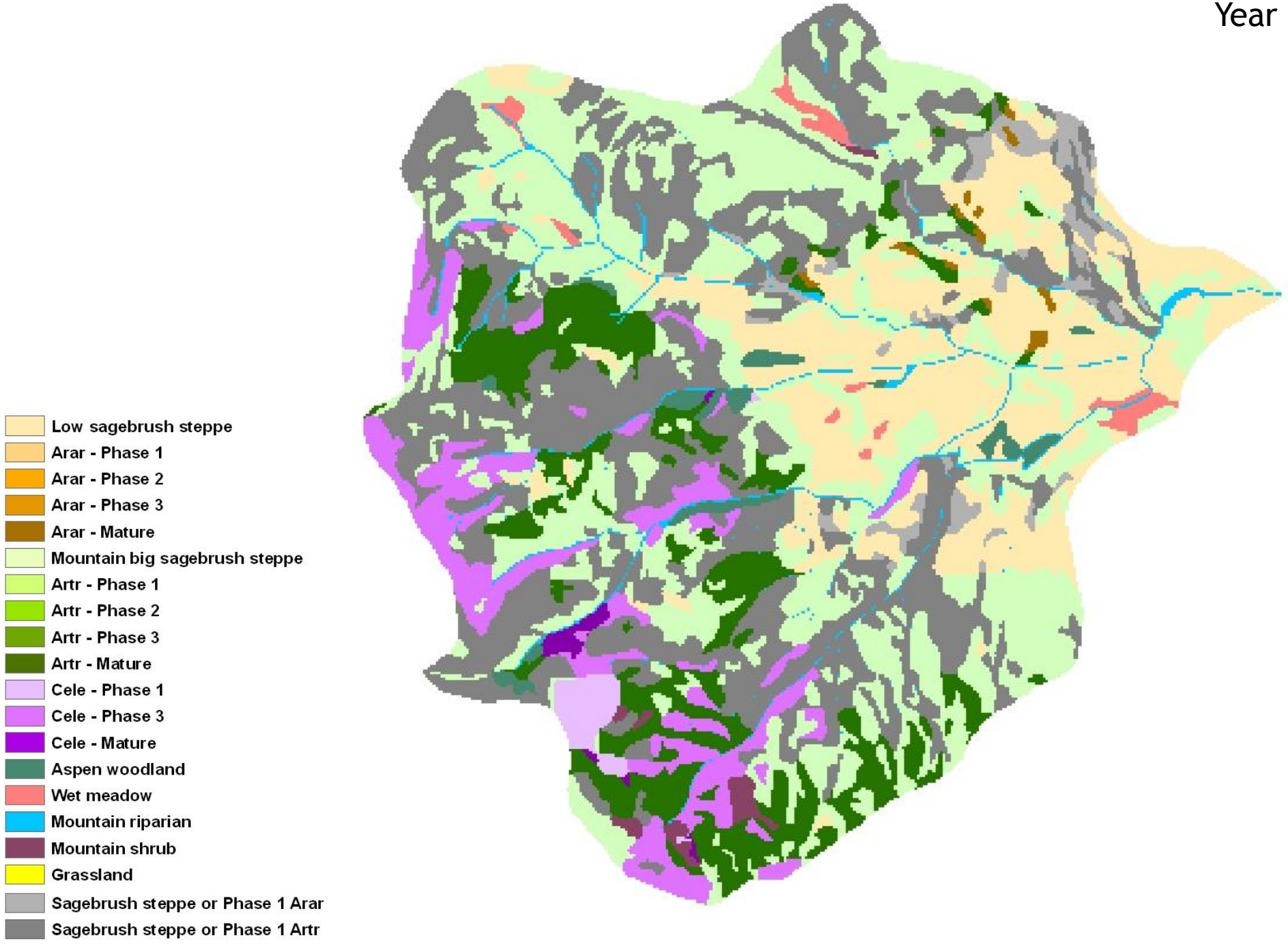
Year 2000, 100m



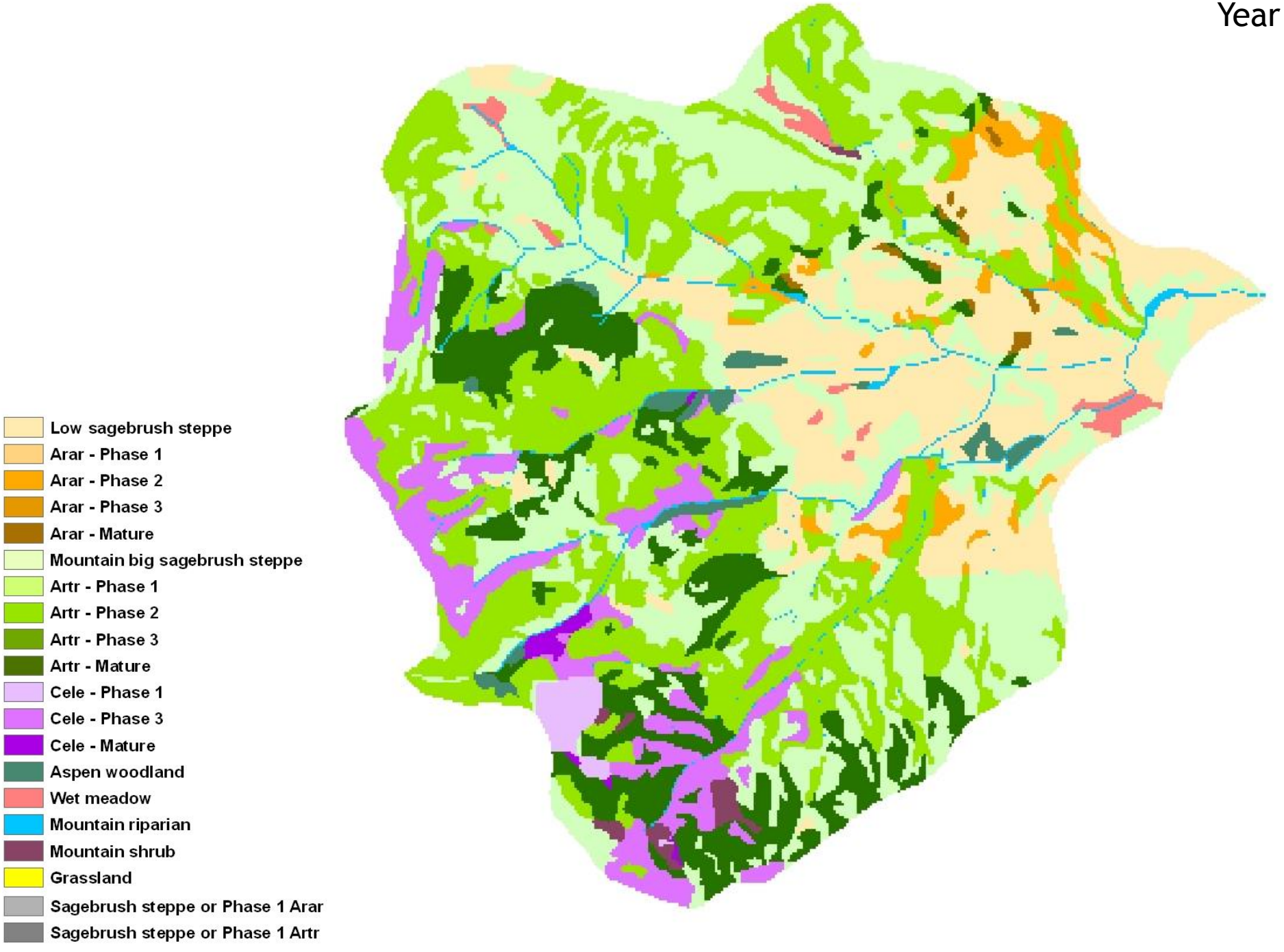
Year 2000, 500m



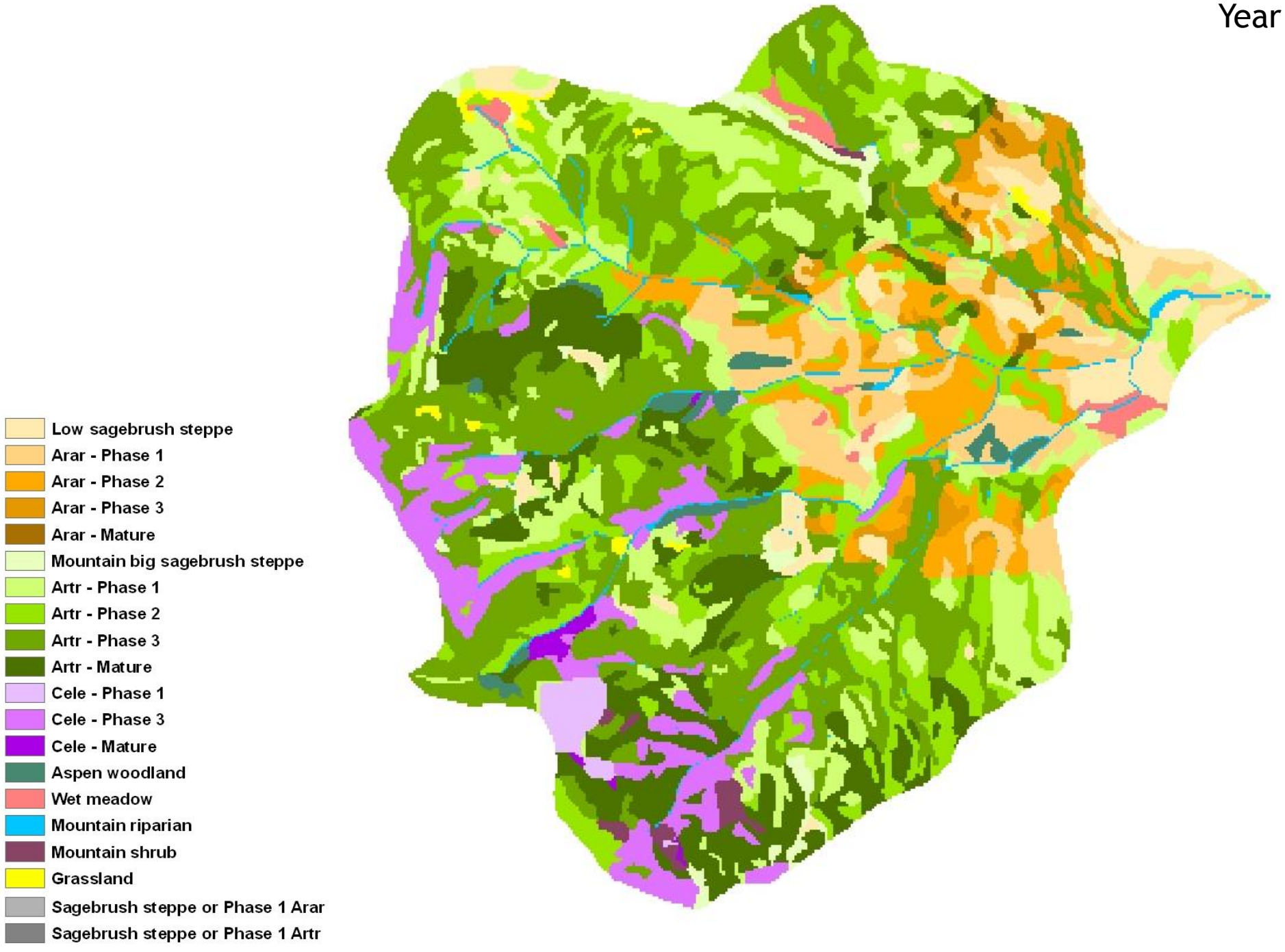
Year 1800, 30m



Year 1900, 30m



Year 2000, 30m



FRAGSTATS

- Spatial pattern analysis program developed to quantify landscape structure
- Developed by Dr. Kevin McGarigal and Barbara Marks at Oregon State University in 1995
  - Currently maintained by University of Massachusetts
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Lab today -

- Download “Lab7Data.zip“
  - You can also start on Lab9Data.zip if you want
- Follow instructions in “Lab 7_Running FRAGSTATS.pdf” to open and run the program
  - You can look at the landscapes in ArcGIS but you don’t need to
  - Note: the instructions say download the data from the U:/ drive, just get it from BbLearn!
- Read the rubric “Lab 7&9_FRAGSTATS rubric.pdf”
- Start computing!
  - Hint: you can import and run multiple layers at a time!

Lab today -

- Landscape metrics
  - Shannon's Diversity Index
  - Shannon's Evenness Index
  - Mean Shape Index
- Class metrics
  - Percentage of the landscape by patch type
  - Number of patches by patch type
  - Mean patch area by patch type
- Your choice
  - Choose **two** additional metrics to compliment those already calculated