

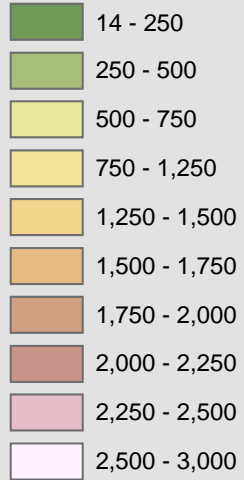
Modeling the Yuba Watershed

- Deterministic processes
 - Radiation load and potential evapotranspiration
 - Modeled at a 30-m scale, incorporating blocking ridges and correcting for cloudiness using a maximum and minimum air temperature relation



Upper Yuba River Watershed

Elevation, m



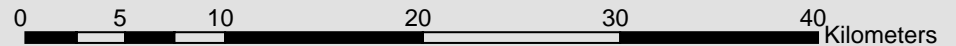
Englebright Lake

Middle Yuba R.

South Yuba R.

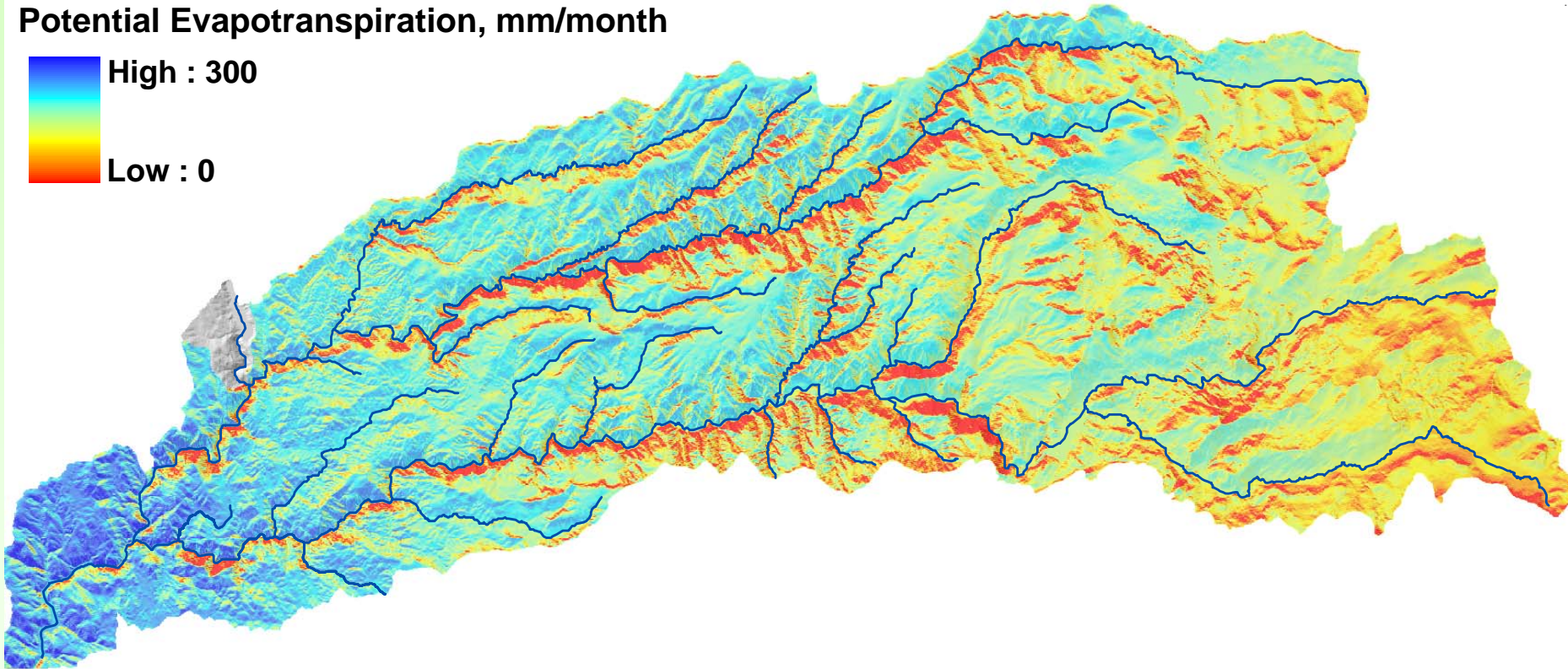
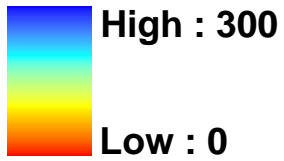
Modeled reaches shown in dark blue

● Flow gaging and sediment collection stations



Potential Evapotranspiration Month of April

Potential Evapotranspiration, mm/month



Modeled from radiation load
From Flint and Childs, 1994

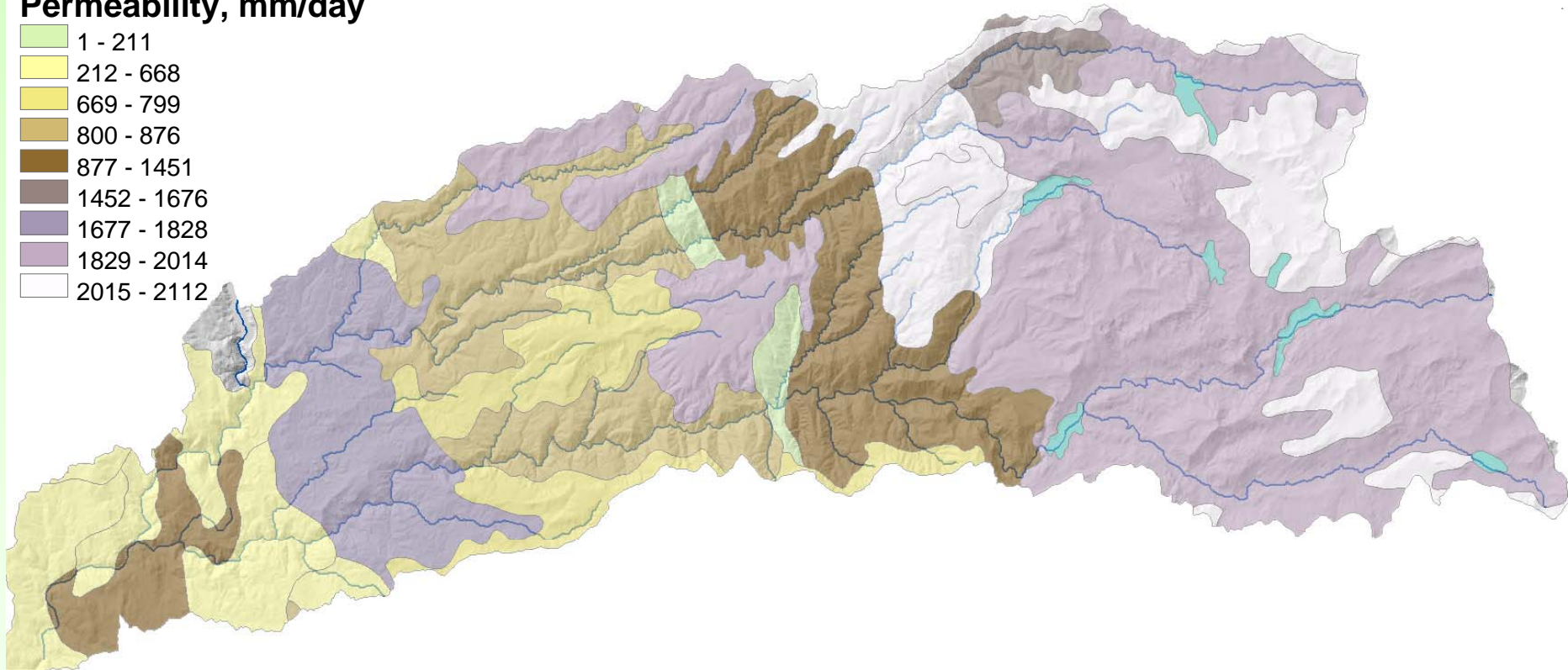
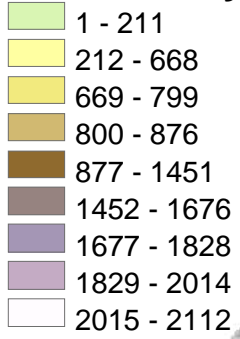
Modeling the Yuba Watershed

- Spatial properties from spatial GIS coverages
 - Soils dataset provides
 - Erodability parameter (Kfactor)
 - Depth
 - Grain size distribution used to calculate soil water properties such as water holding capacity and permeability
 - Vegetation dataset provides
 - Vegetation type
 - Vegetation density was estimated from type and geology and field verified



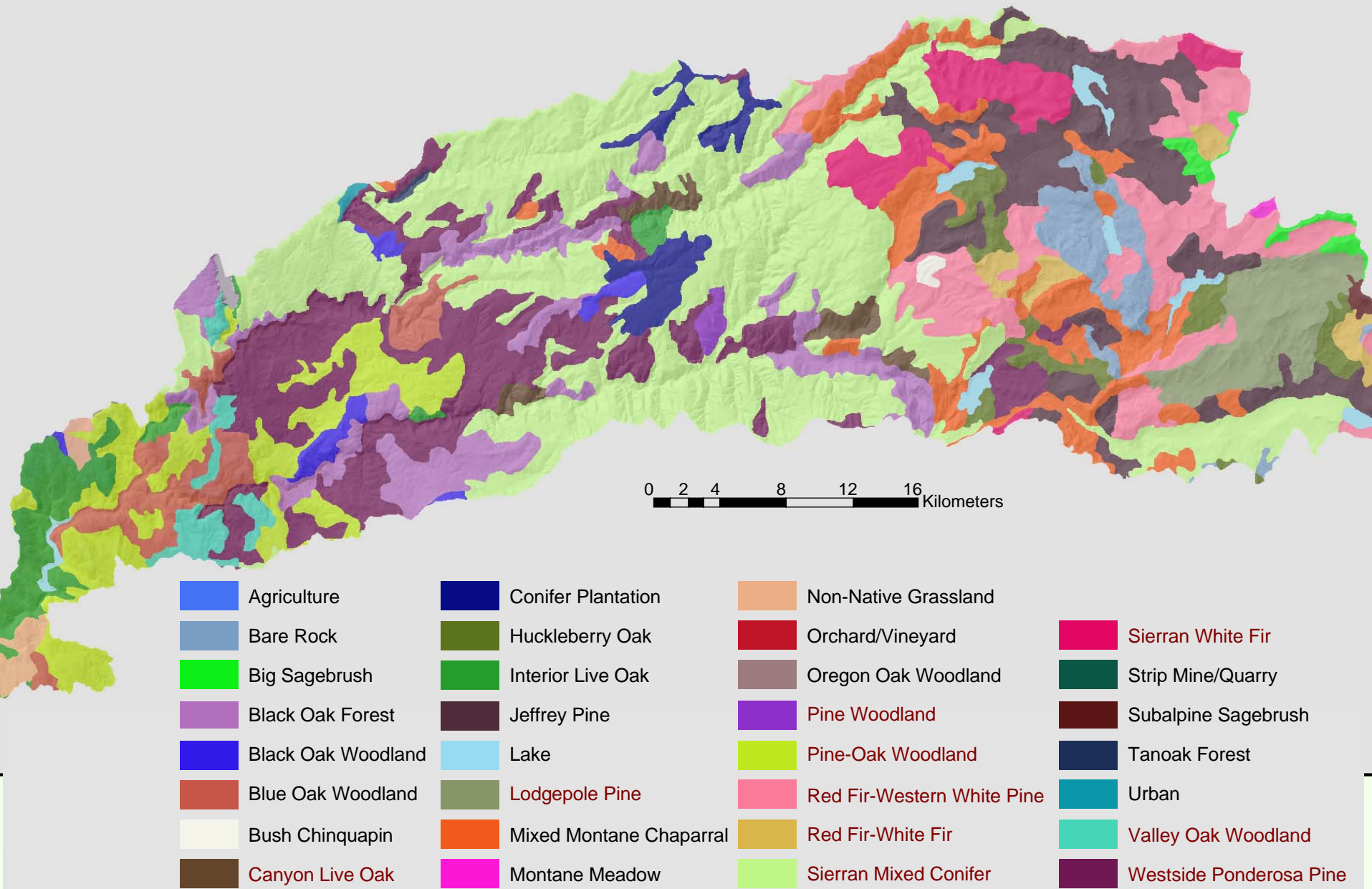
Soil Permeability

Permeability, mm/day



Calculated from particle size in STATSGO dataset

Vegetation Type



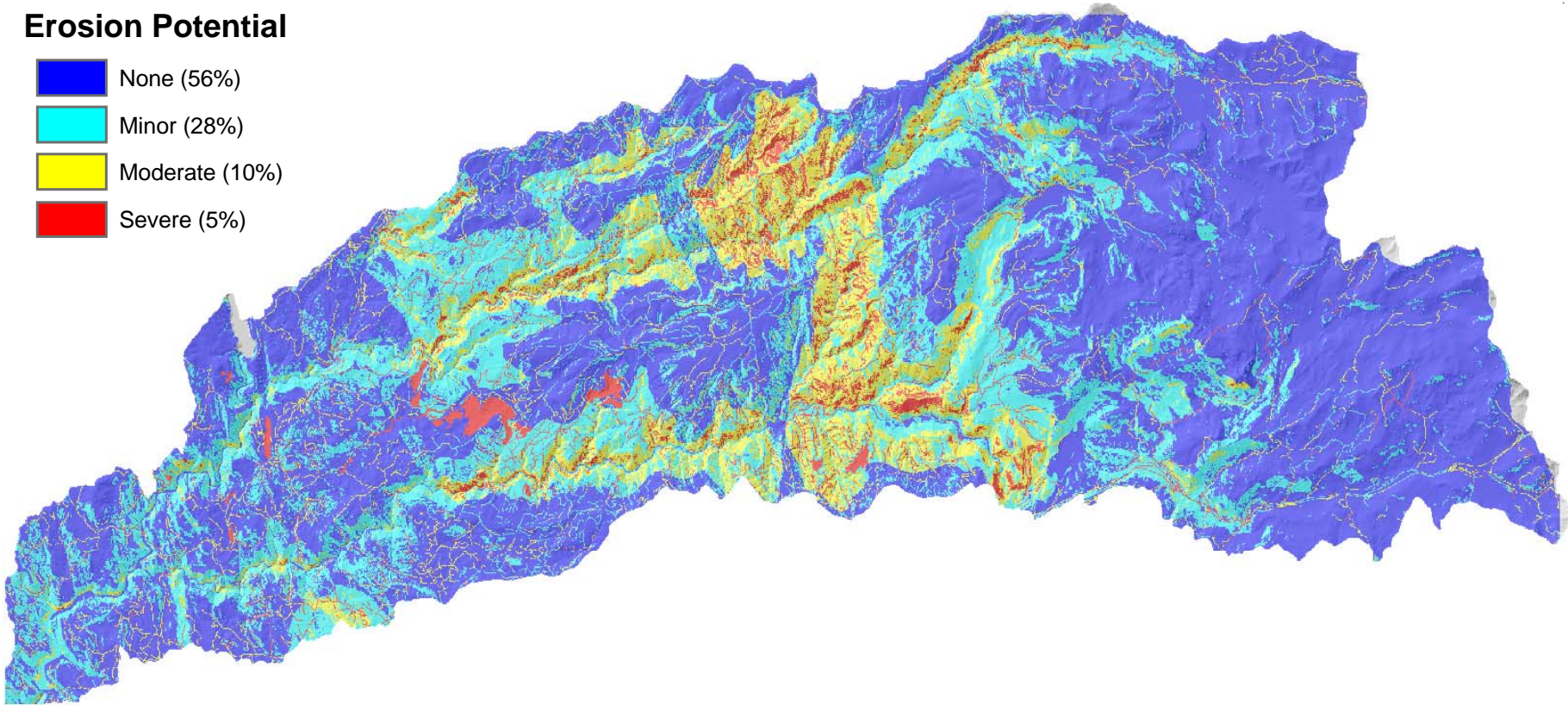
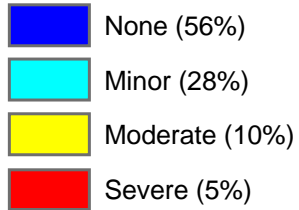
Modeling the Yuba Watershed

- Erosion potential
 - GIS calculation of surface erosion potential was developed that accounts for all contributing factors
 - Slope, soil type, vegetation density, bedrock geology, mining history, roads and stream crossings, potential evapotranspiration, land use, mass wasting
 - Field measurements and observations were made to assess accuracy of GIS datasets and estimate relative influence of factors



Erosion Potential in the Yuba River Basin

Erosion Potential



$[\text{April potential evapotranspiration} * 4] + [\% \text{vegcover} * 6] + [(\text{geologic hazard} + \text{kfactor}) * 9] + [(\text{roads} + \text{mines} + \text{mass erosion sites} + \text{stream crossings}) * 10]$

All factors scaled to 1. Multipliers developed on the basis of field observations.