Developing a model for historic vegetation

- Create fine-resolution landforms
  - % slope
  - Landscape position (1 km^2 circle neighborhood, inverse distance weighted)
- Define historic vegetation parameters
  - Hammond's landforms
  - Geology
  - Fine-resolution landforms
  - Precipitation
  - Solar insolation

Fine-resolution landforms

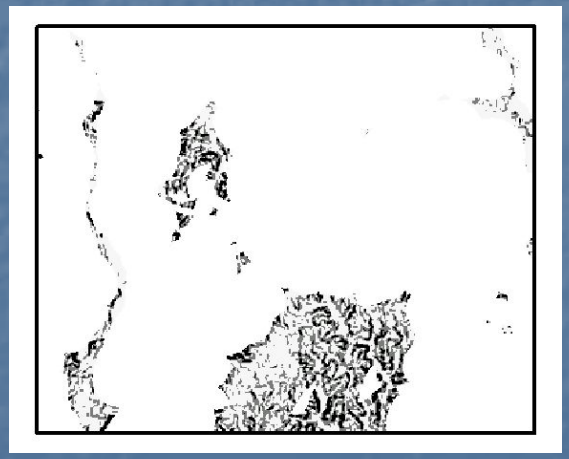
- % slope
  - Flat
  - Sideslope
  - Steepslope
- Landscape position
  - Highest
  - High
  - Mid
  - Low

- 16 possible combinations of slope and landscape position
- Condensed to 6 classes
- Floodplains layer added resulting in 7 fine-resolution landform types

Percent slope and landscape position classes

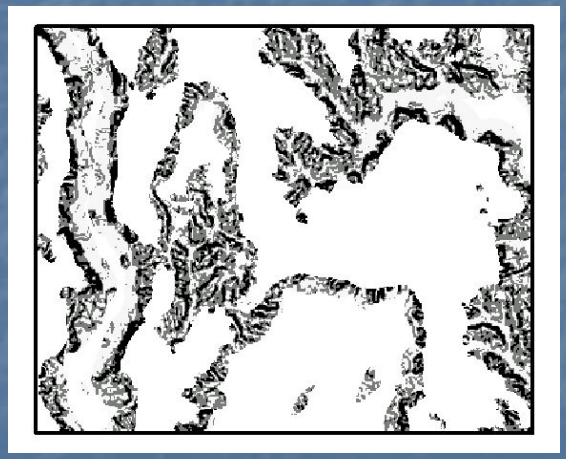
- % slope and landscape position are modified within broad landscapes (ie., Hammond's plains, hills, and breaks) to account for variation *among* **and** *within* landscapes

Flats



Flat 0 - 4%
Sideslope 5 - 7%
Steep slope >=8%

Hills

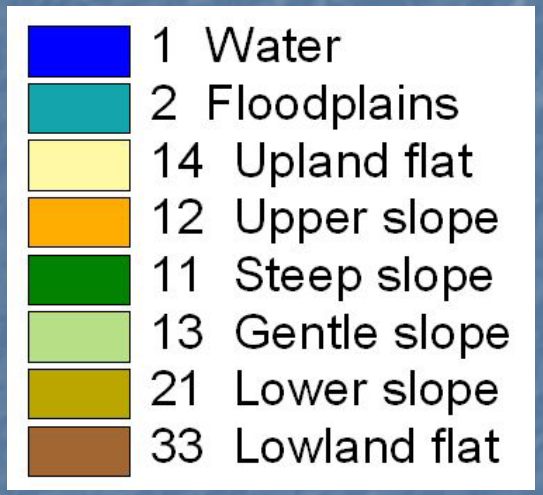


Flat 0 - 4%
Sideslope 5 - 9%
Steep slope >=10%

Breaks

Flat 0 - 4%
Sideslope 5 - 11%
Steep slope >=12%

Final landforms



- Issues:
  - “Water”
  - Floodplain layer
  - Ground verification

Historic vegetation

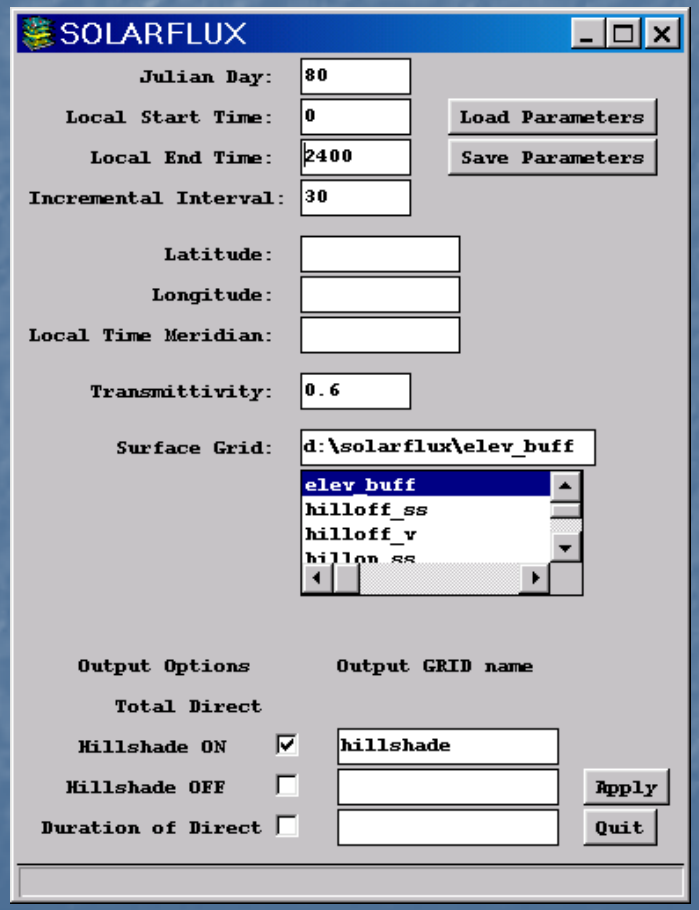
- Input variables:
  - Hammond's landforms
  - Geology
  - Fine-resolution landforms
  - Precipitation
  - Solar insolation
- Final classes:
  - Tallgrass prairie
  - Woodland / savanna
  - Forest
  - Mesic forest
  - Bottomland forest
  - Glade / woodland
  - Water

Historic vegetation model

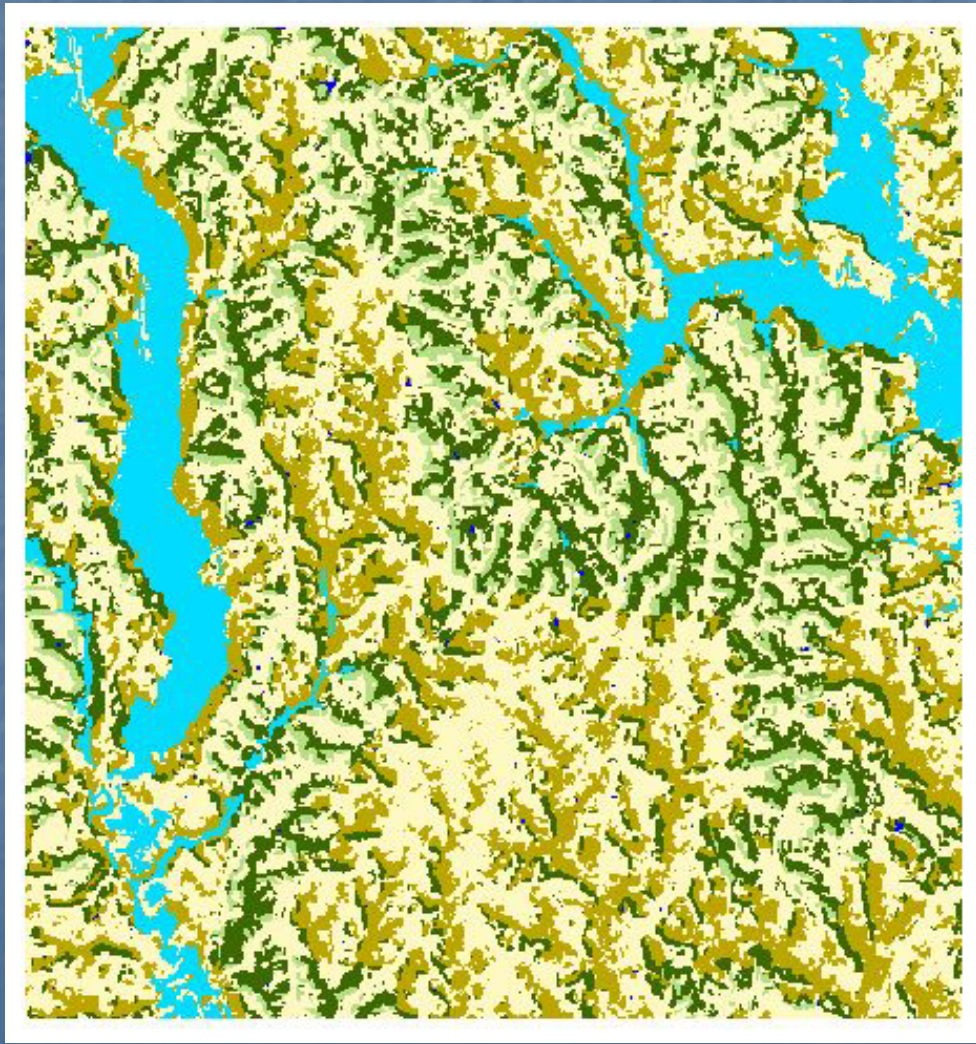
OZARK HIGHLANDS SECTION				
Landscape Type	**Geology & Fine-resolution landform**	**Climate**	**Solar Insolation**	**Historic Vegetation**
flat plains, smooth plains,	**dolomite/limestone/shale**			
irregular plains	upland flat, upper slope	wet	neutral	woodland or savanna
			wet	mesic forest
			dry	glade or woodland
		dry	neutral	tallgrass prairie
			wet	mesic forest
			dry	tallgrass prairie
	lower slope, lowland flat	wet	neutral	forest
			wet	mesic forest
			dry	glade or woodland
		dry	neutral	woodland or savanna
			wet	mesic forest
			dry	glade or woodland
	gentle slope, steep slope	wet	neutral	forest
			wet	mesic forest
			dry	glade or woodland
		dry	neutral	woodland or savanna
			wet	mesic forest
			dry	glade or woodland
	igneous			
	upland flat, upper slope	all	neutral	glade or woodland
			wet	mesic forest

Solar insolation

- SOLARFLUX
- Measures duration and intensity of solar radiation based on:
  - Surface orientation
  - Solar angle
  - Shadows from topographic features
  - Atmospheric conditions



Modeled historic vegetation



- 1 Tallgrass prairie
- 2 Woodland/savanna
- 3 Forest
- 4 Mesic forest
- 5 Bottomland forest
- 6 Water