Burn Severity and Land Cover Transition in the McNally Fire

Grant Glouser
Introduction to Remote Sensing
Geog 58 - Winter 2011

Burn Severity and Short-Term Regrowth in the McNally Fire

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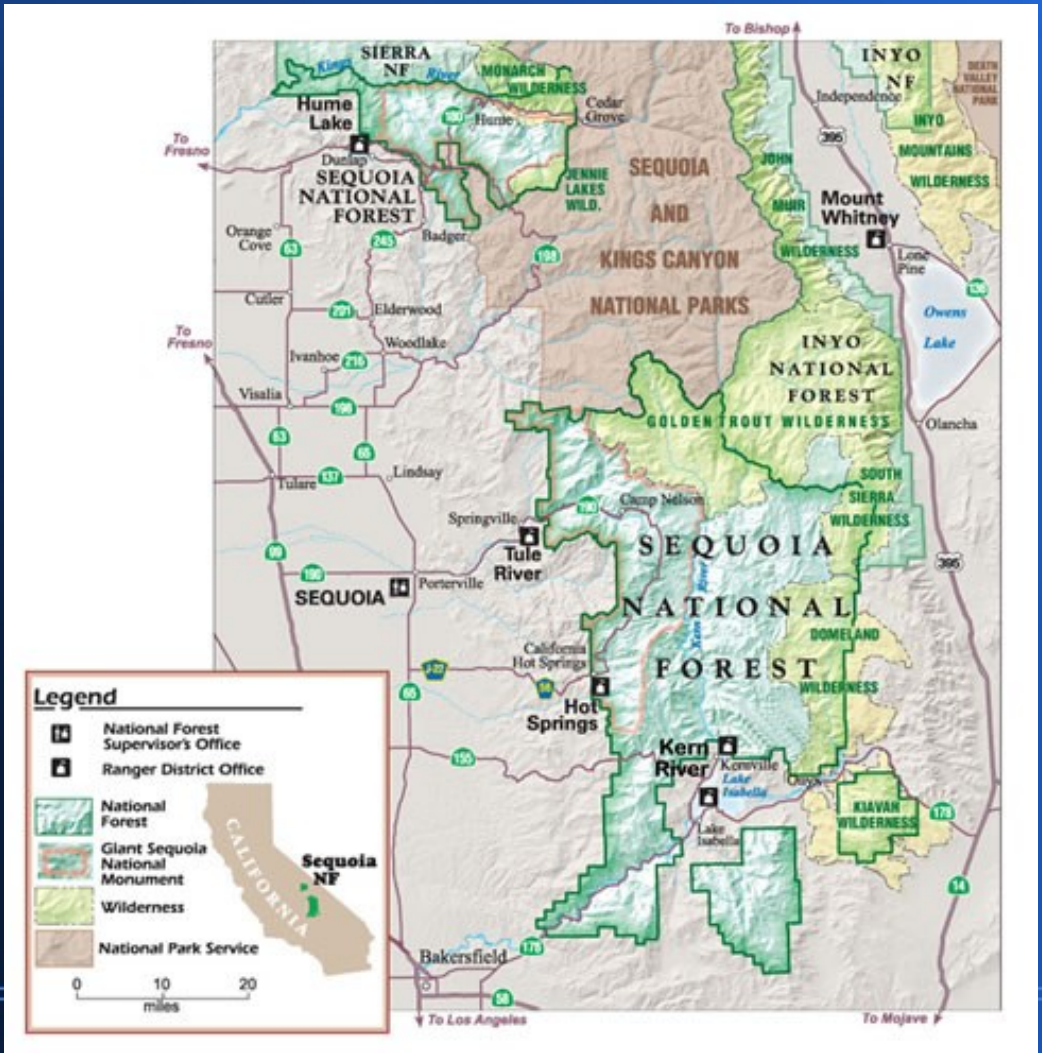
Overview

- McNally Fire
- Change Visualizations for Wildfires
- Classifications for broad land cover effects
- Burn severity remote measurement
- Combining burn severity and classification-based land cover effects

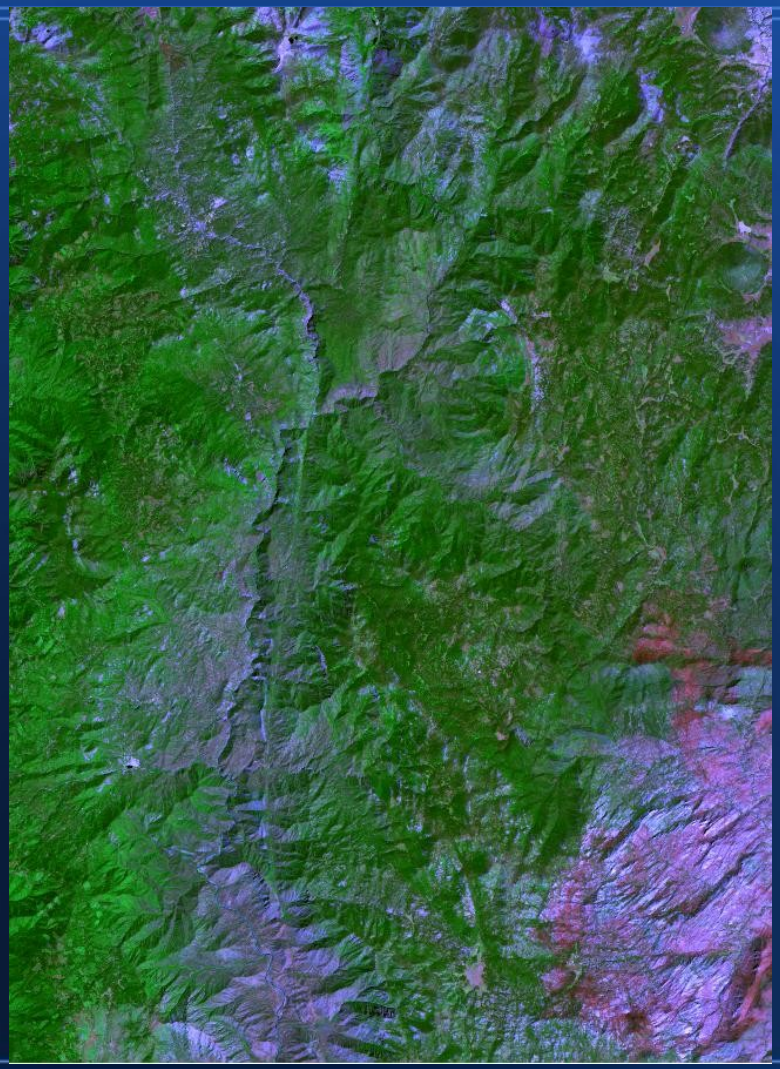
McNally Fire

- Sequoia National Forest
- July 21 to August 28, 2002
- 150,700 acres
- $59+ million for fire suppression and rehabilitation

Sequoia National Forest



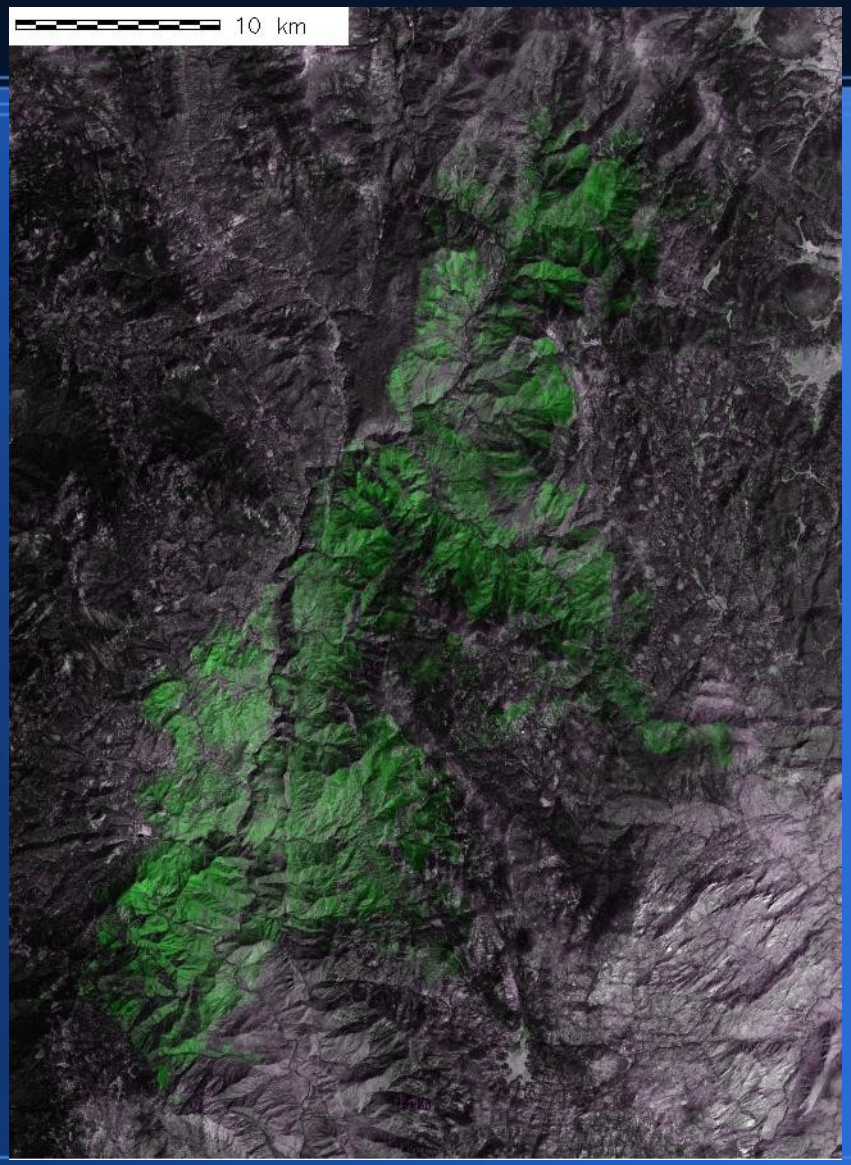
Sept. 2001 – Sept. 2002



Blue	2
Green	4
Red	7

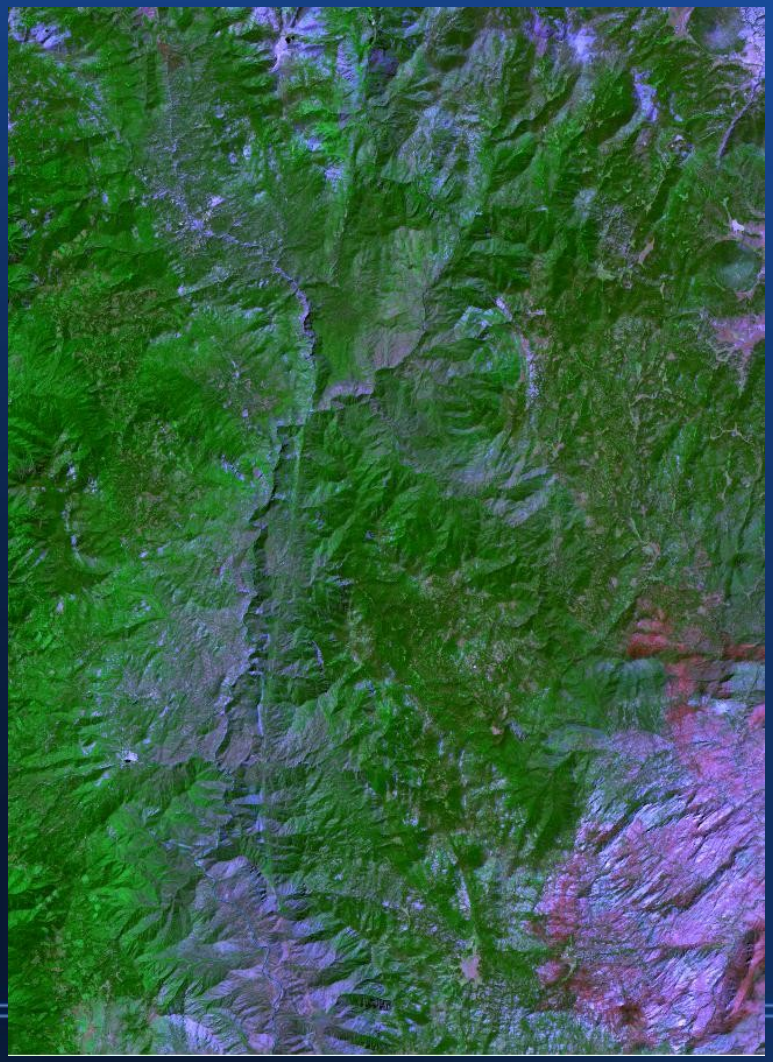
Change Visualization 2001 - 2002

Band 4



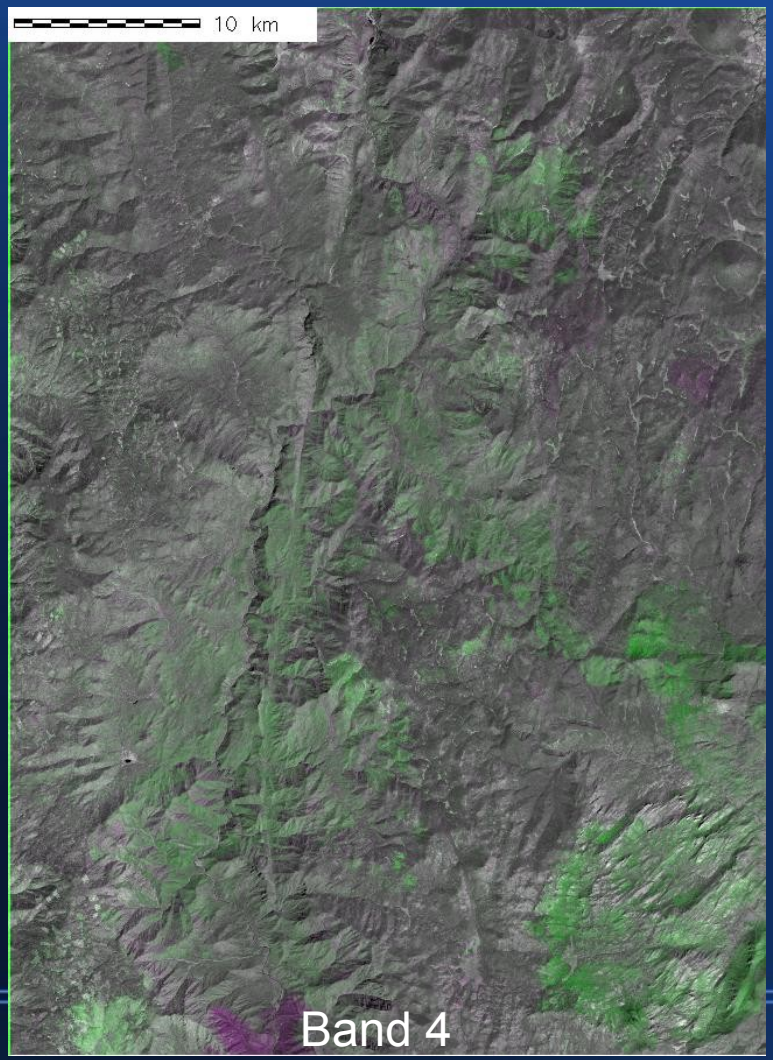
Band 7

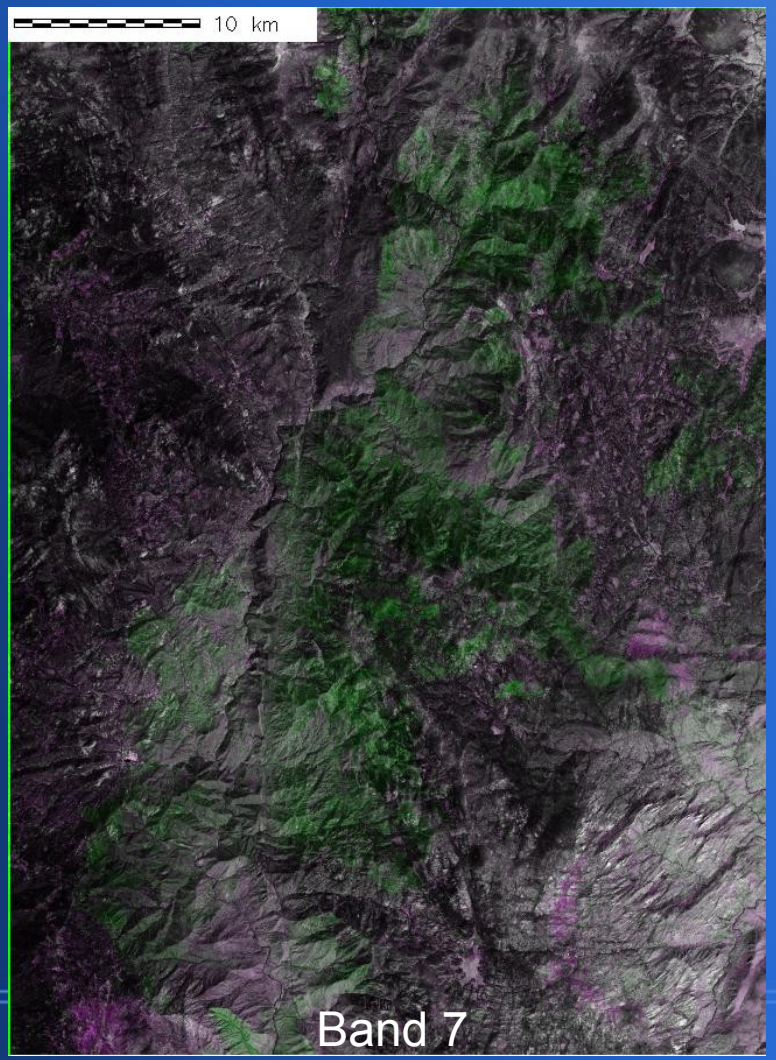
Sept. 2001 – Sept. 2010



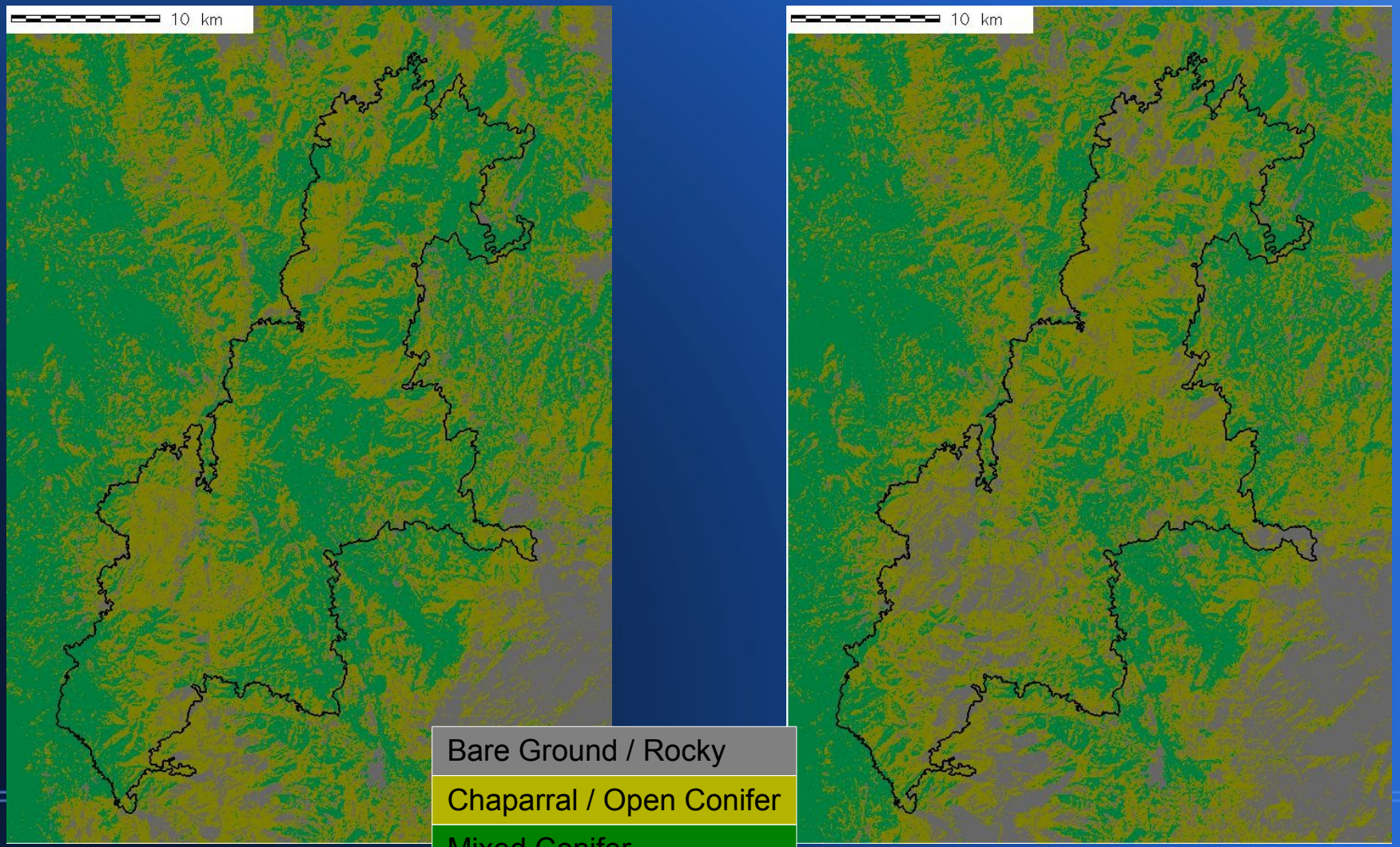
Blue	2
Green	4
Red	7

Change Visualization 2001 – 2010

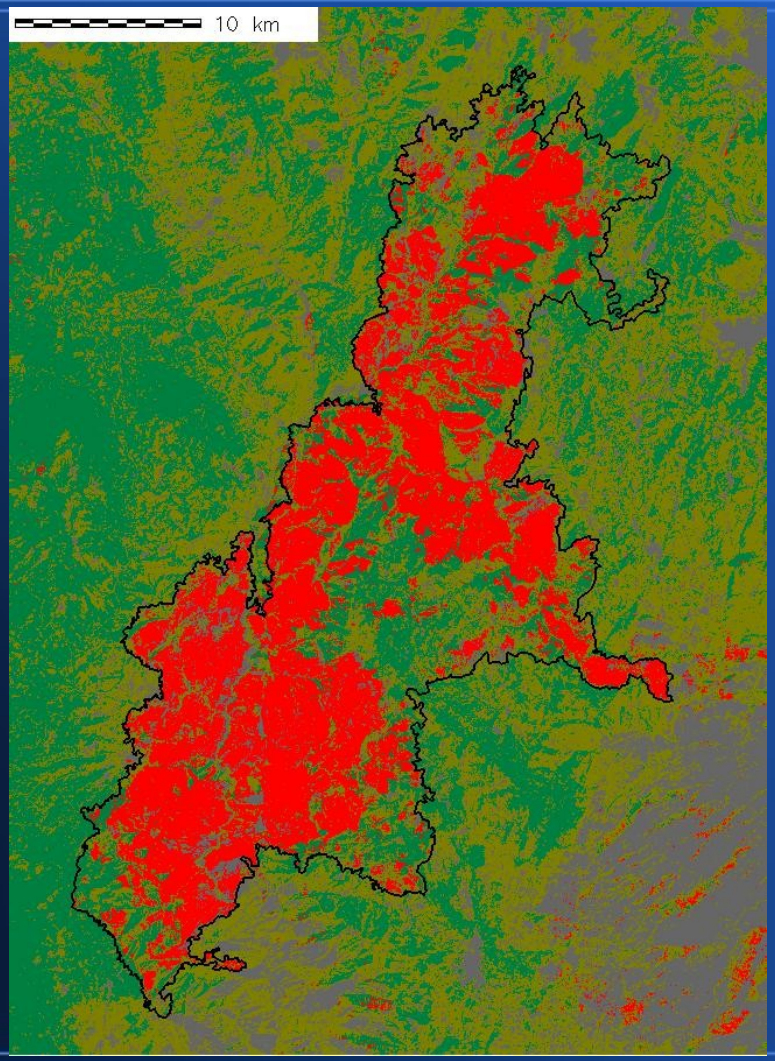




Classification 2001 & 2010



Classification 2002



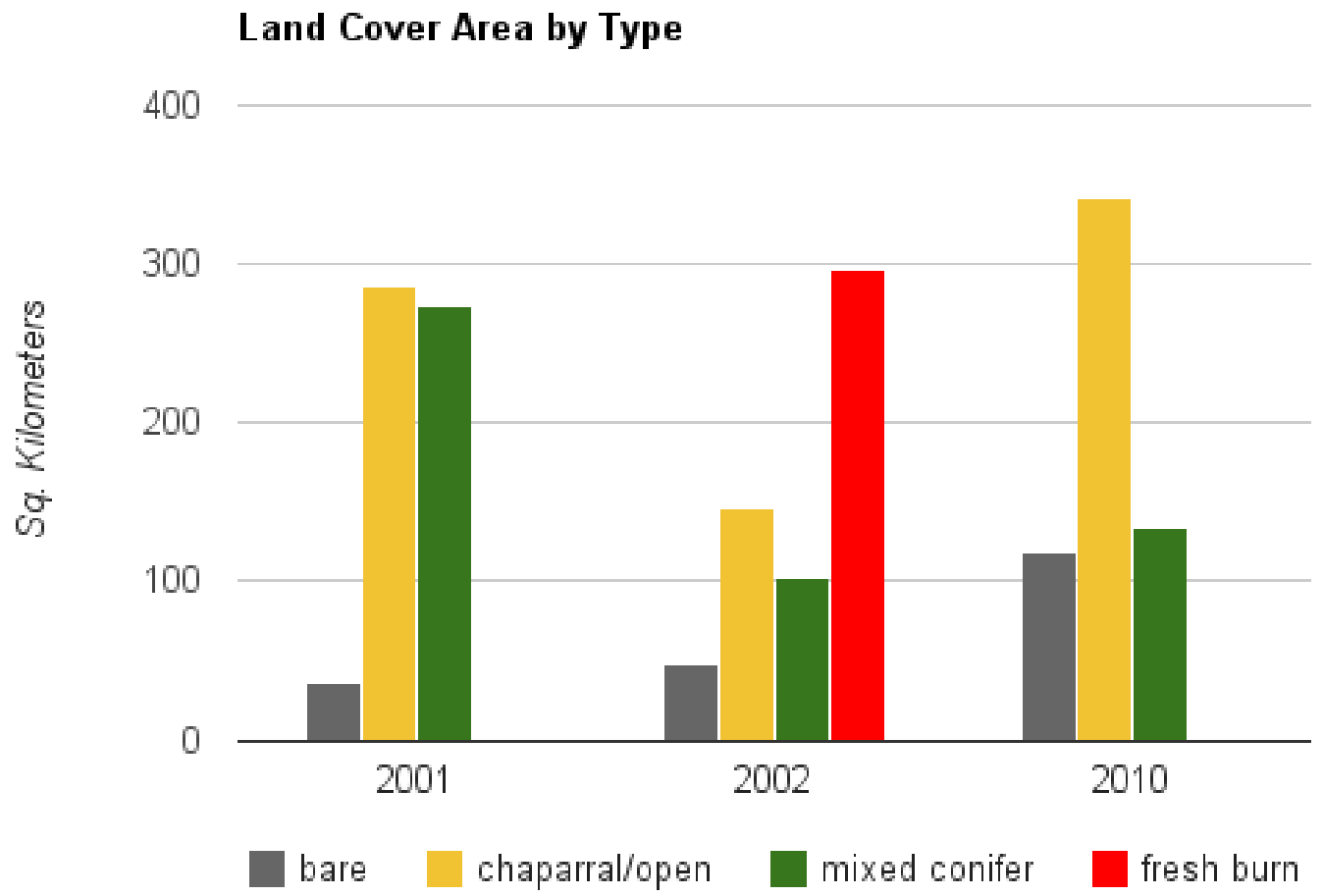
Bare Ground / Rocky

Chaparral / Open Conifer

Mixed Conifer

Recent Burn (Bare Ground)

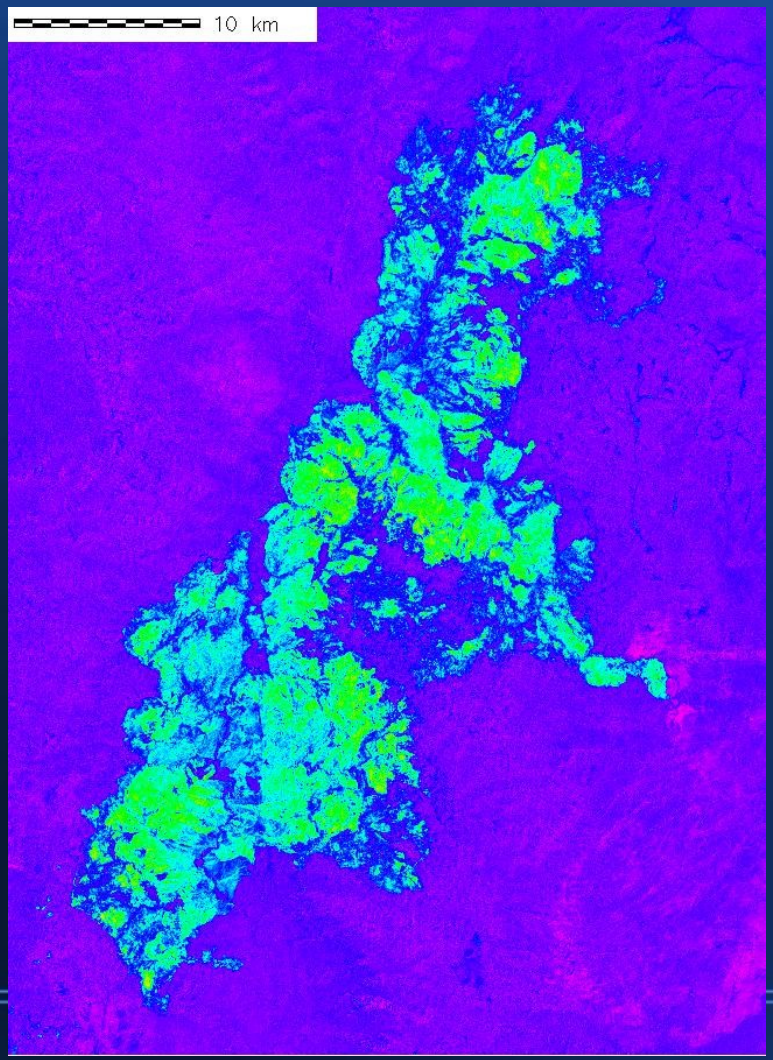
Land Cover Summary

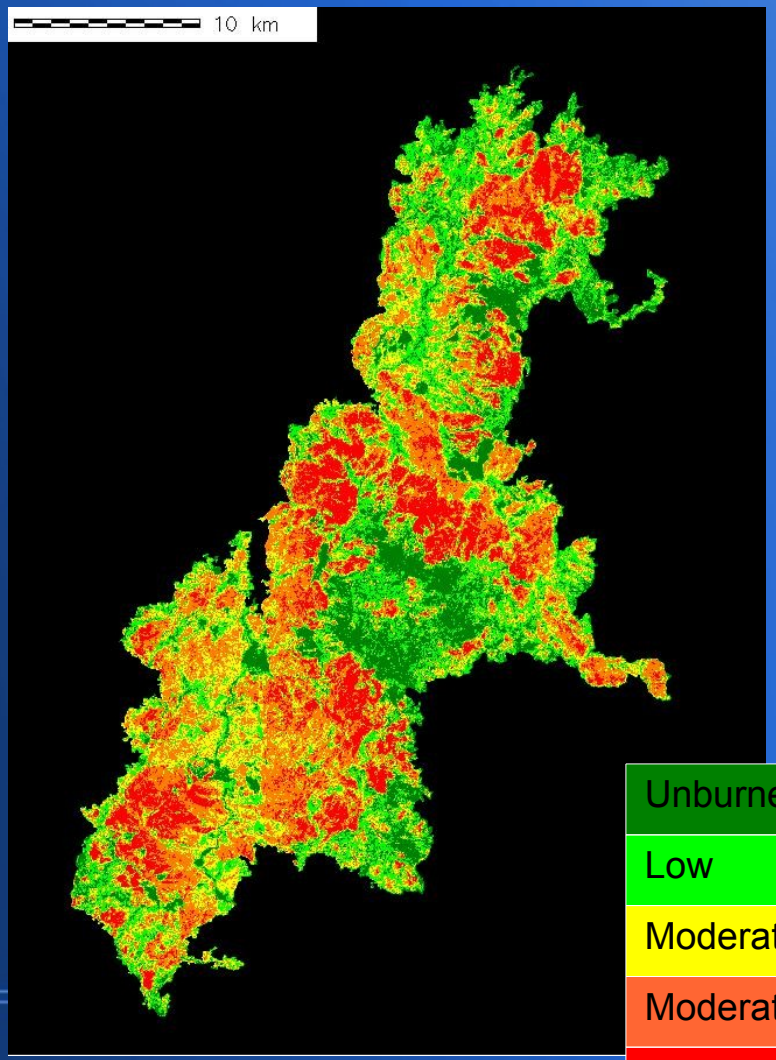


Burn Severity

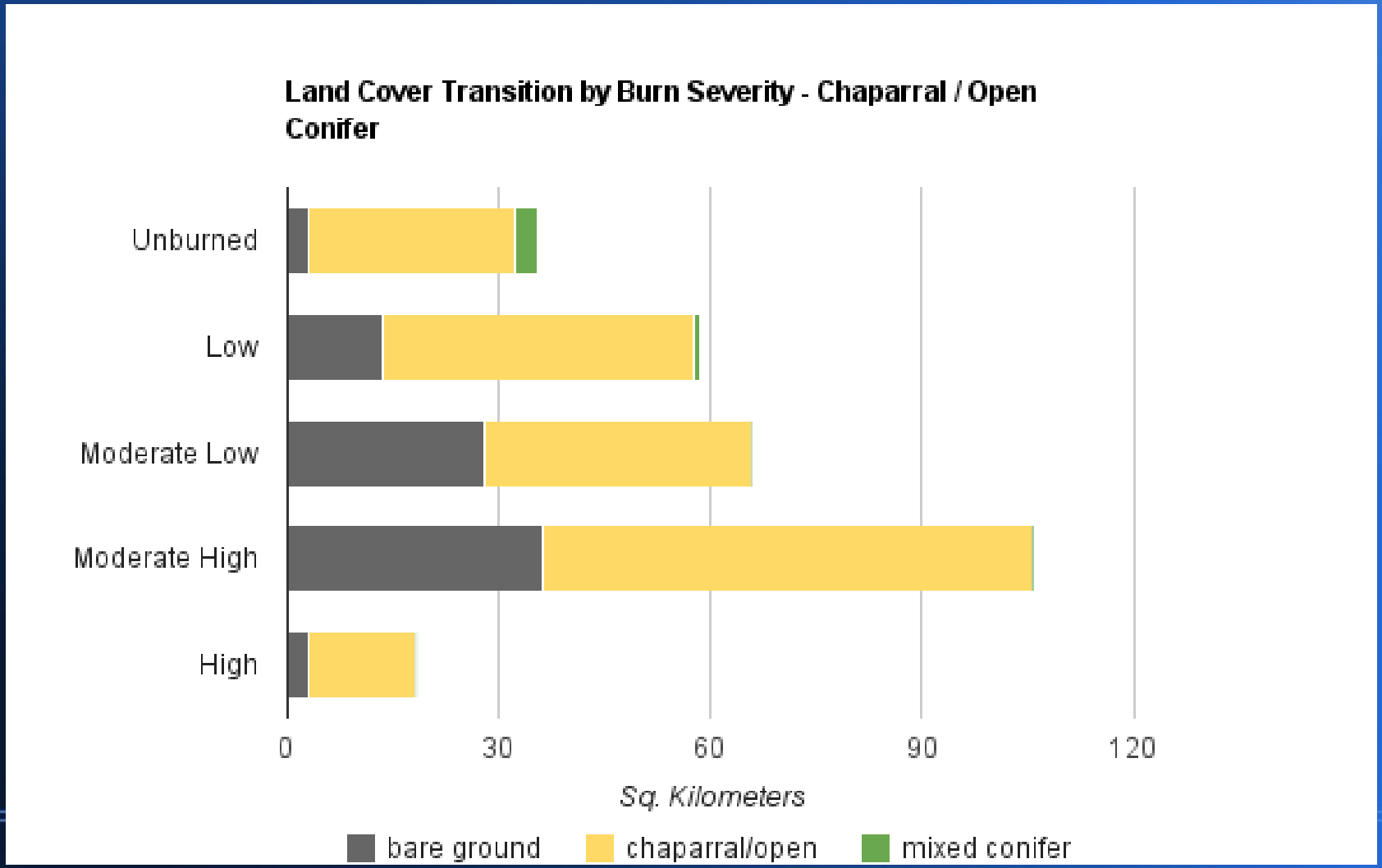
- Normalized Burn Ratio (Key and Benson, 1999)
  - Band 4 goes down, Band 7 goes up
  - NBR = (R4 – R7) / (R4 + R7)
  - Similar to NDVI
- Differenced NBR
  - DNBR = ((pre-NBR) – (post-NBR)) * 1000
- Severity classes by thresholds

McNally Fire dNBR

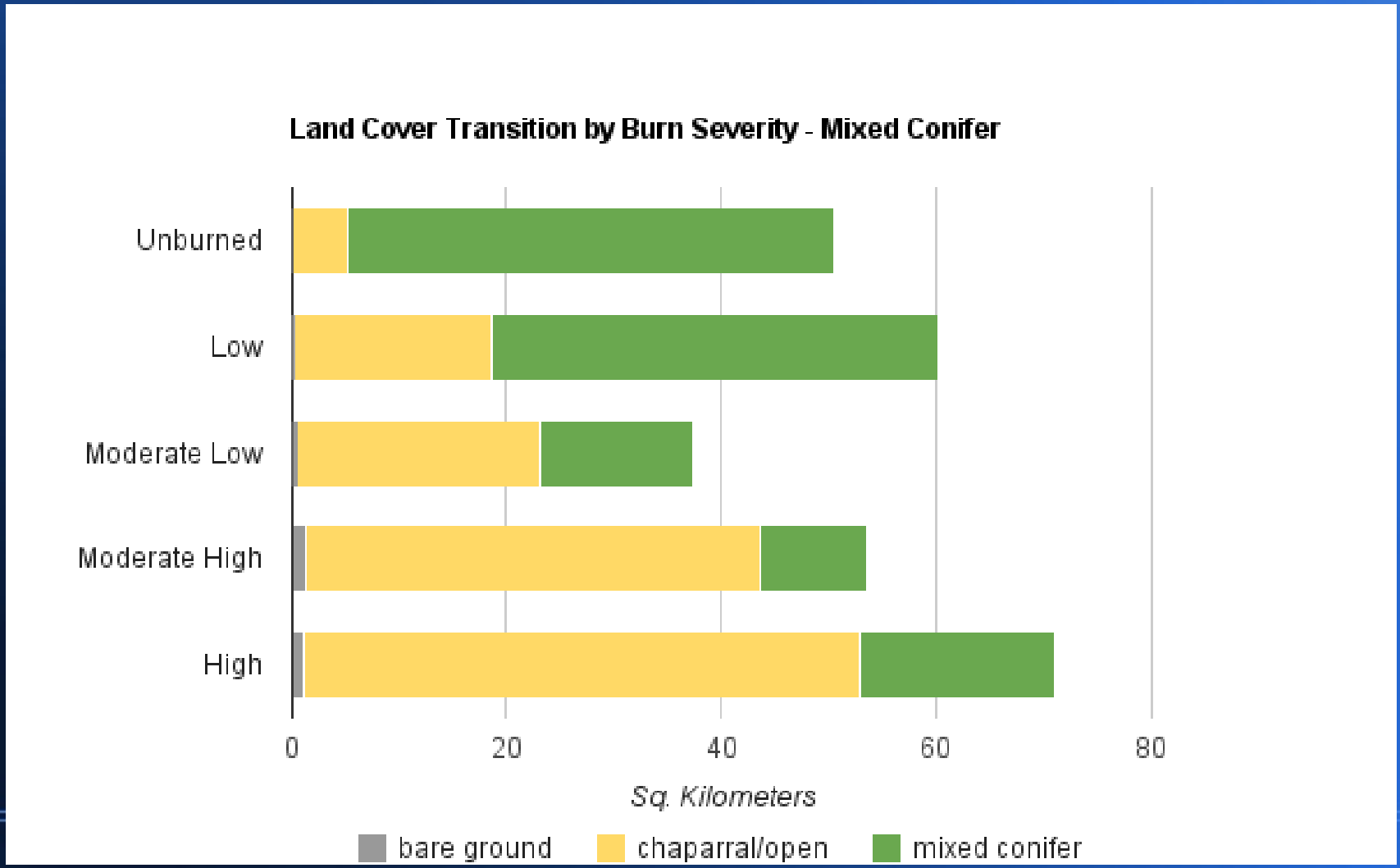




Transition
Chaparral / Open Conifer



Transition
Mixed Conifer



Conclusions

- NBR as estimate of burn severity matches expectations reasonably well
- MTBS burn severity maps use
  - More sophisticated NBR
  - Better thresholds

Thanks

Questions