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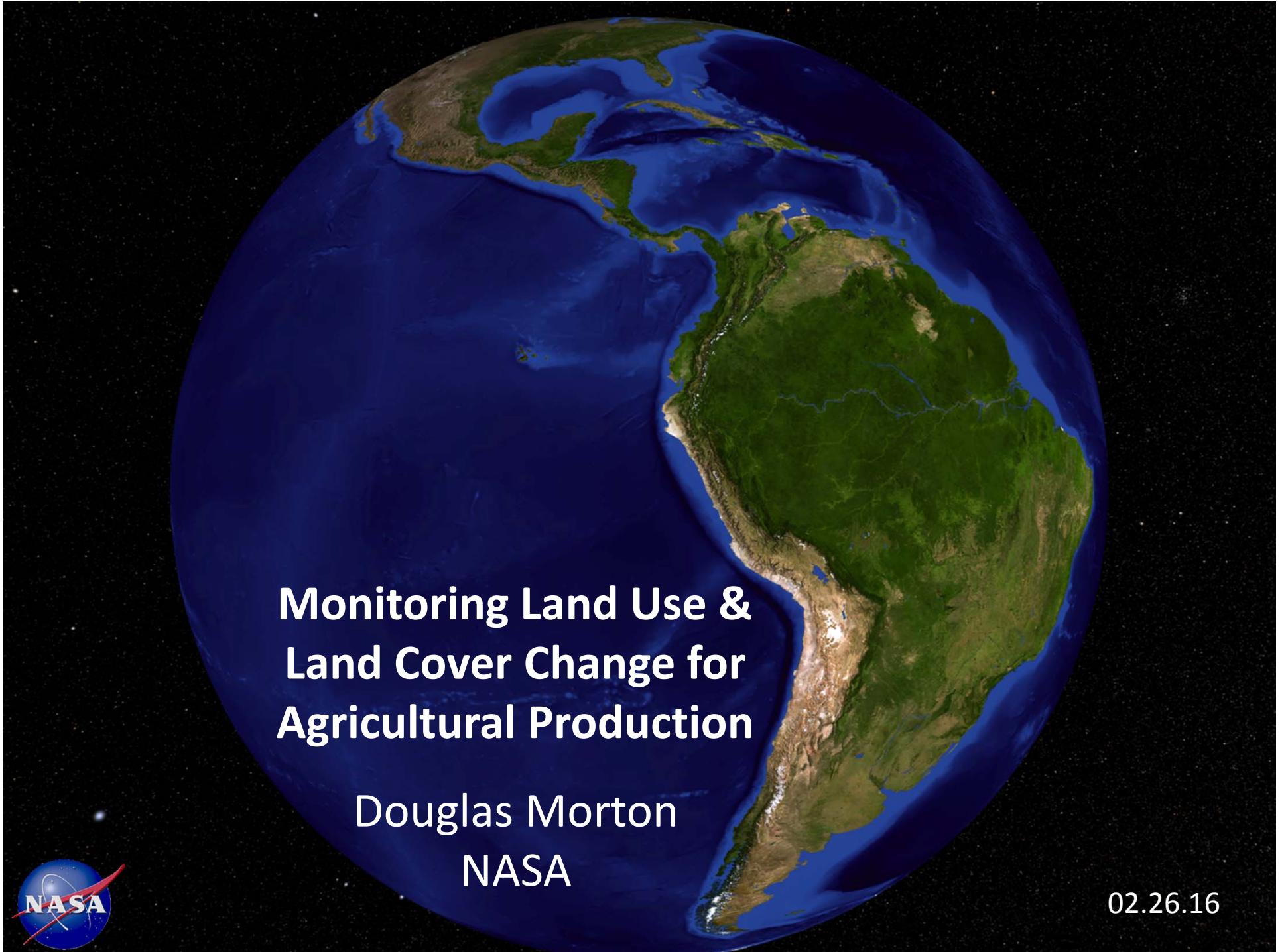
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Monitoring Land Use & Land Cover Change for Agricultural Production

Douglas Morton
NASA



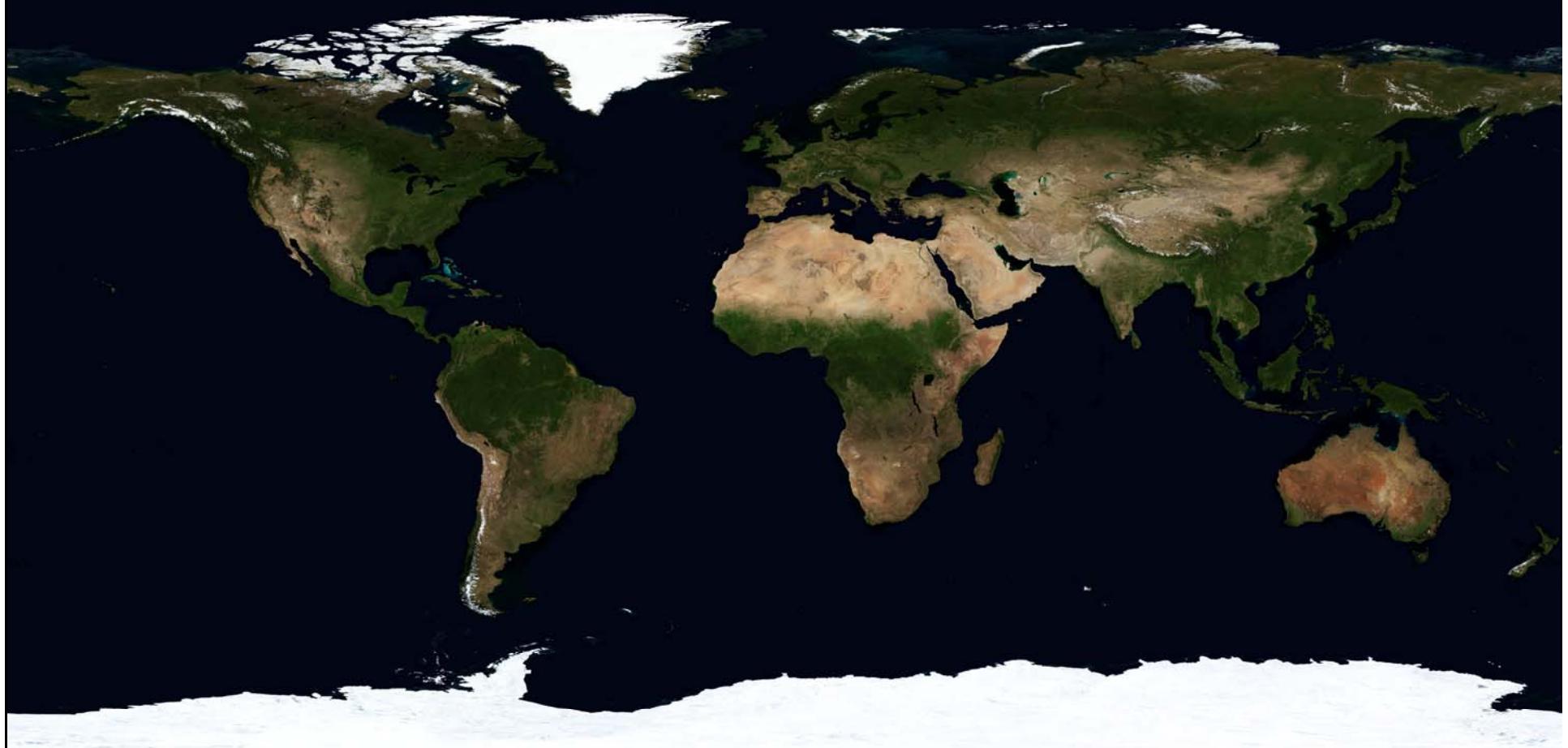
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Outline

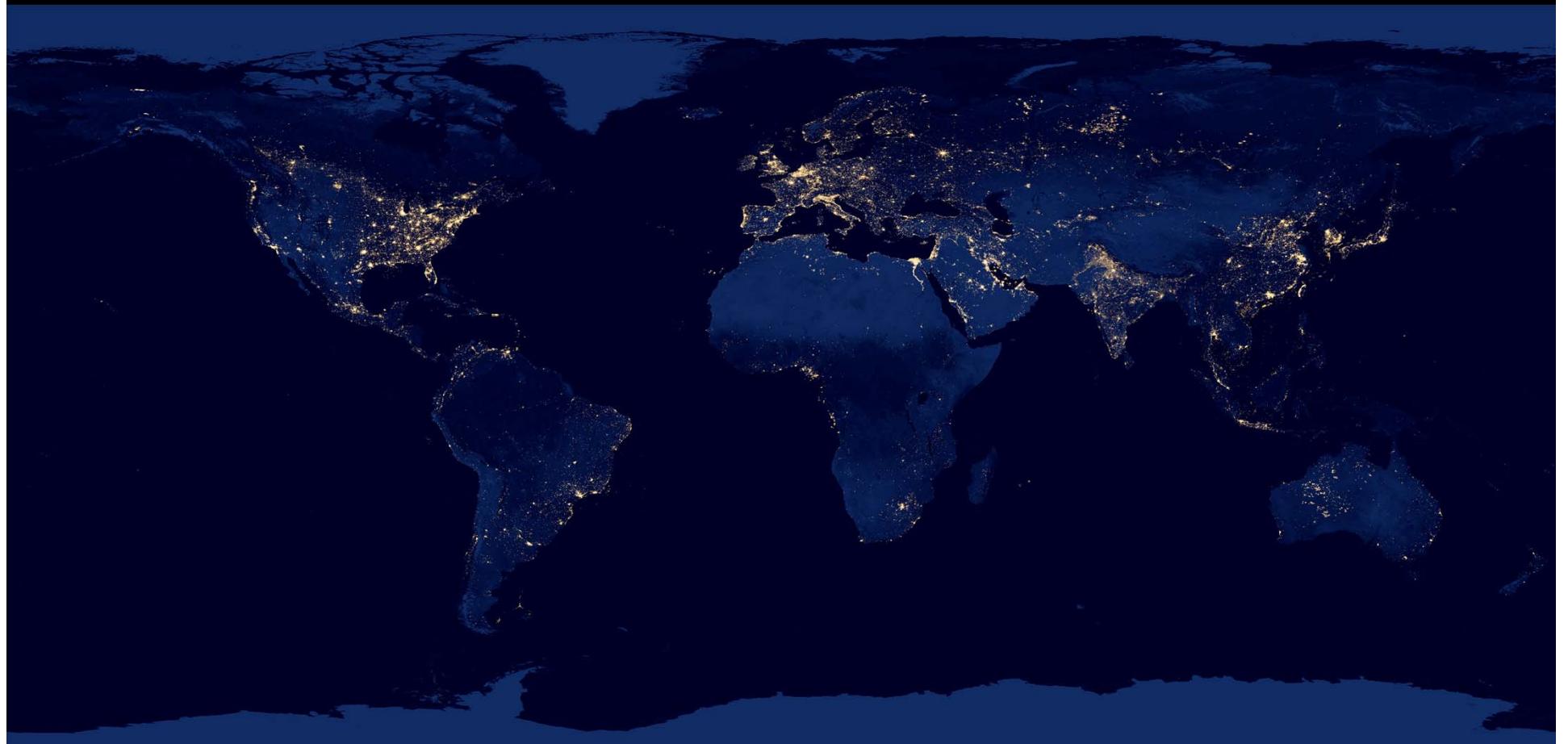
- NASA Satellite Monitoring
 - Expansion
 - Utilization
 - Zoning
- Questions



global perspective:



global insight:

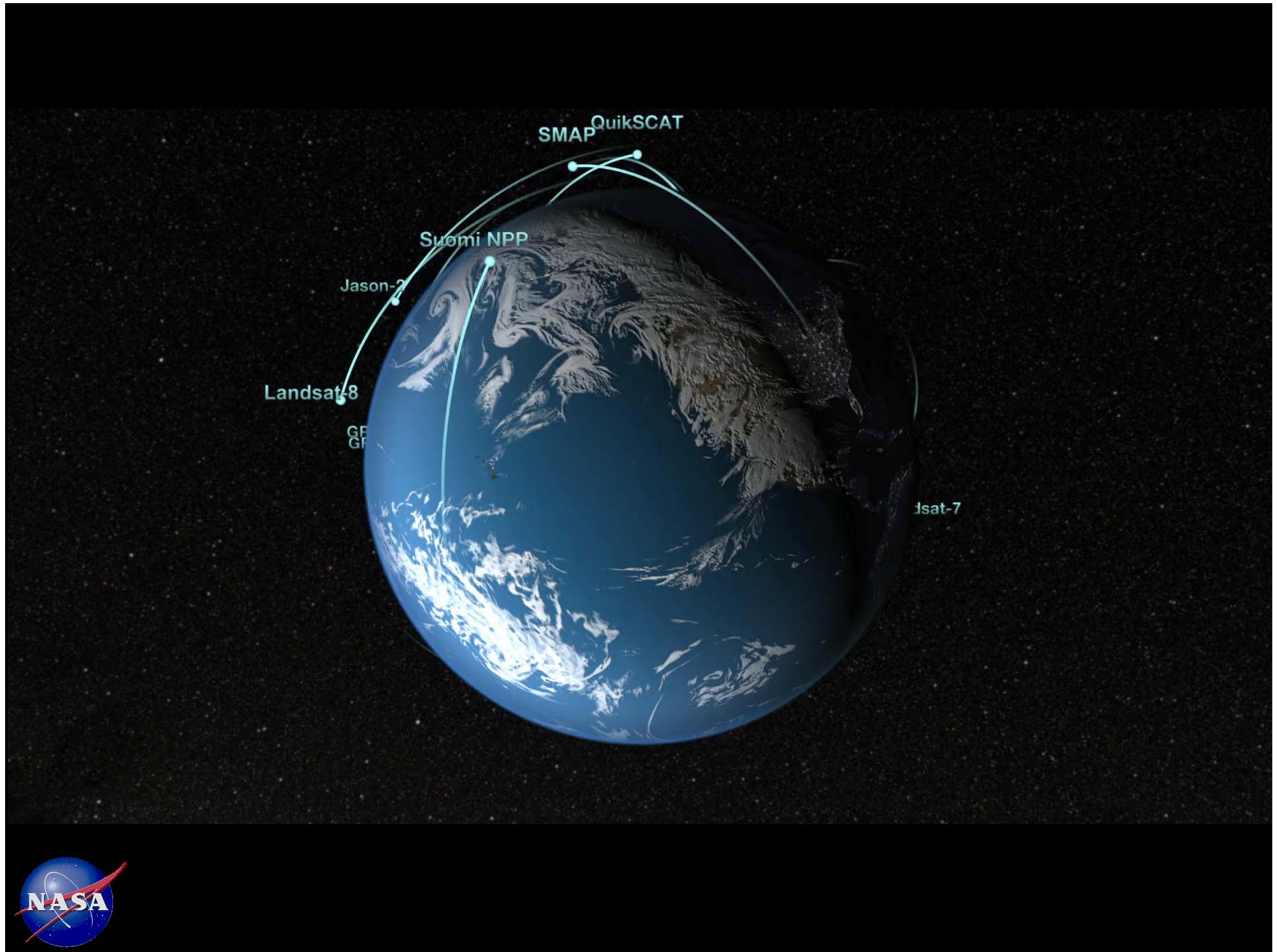


global interconnectivity:



FLIGHT TIME
FLY SMARTER
TECHNORAMA
zhaw
ZHAW
TECHNORAMA
SCIENCE CENTER



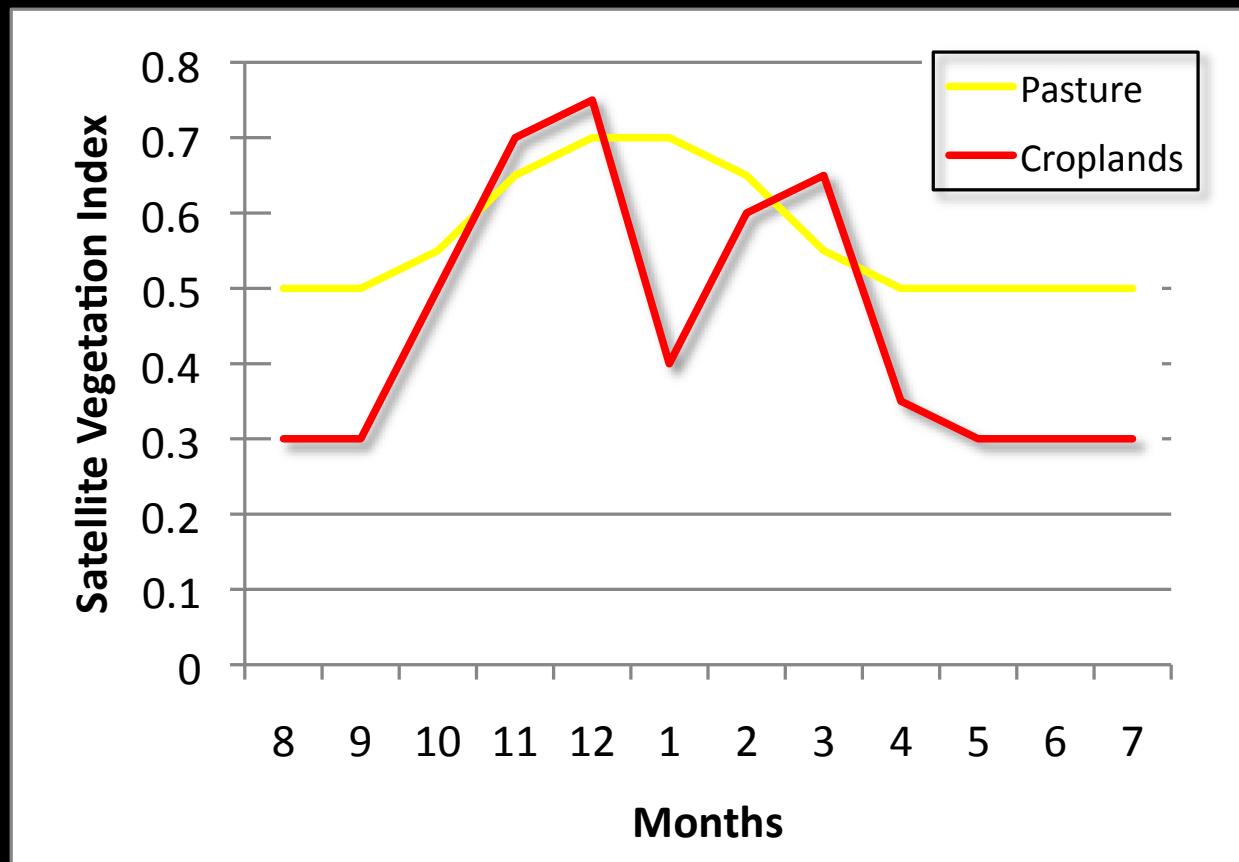


Satellite Remote Sensing of Land Use & Land Cover Change

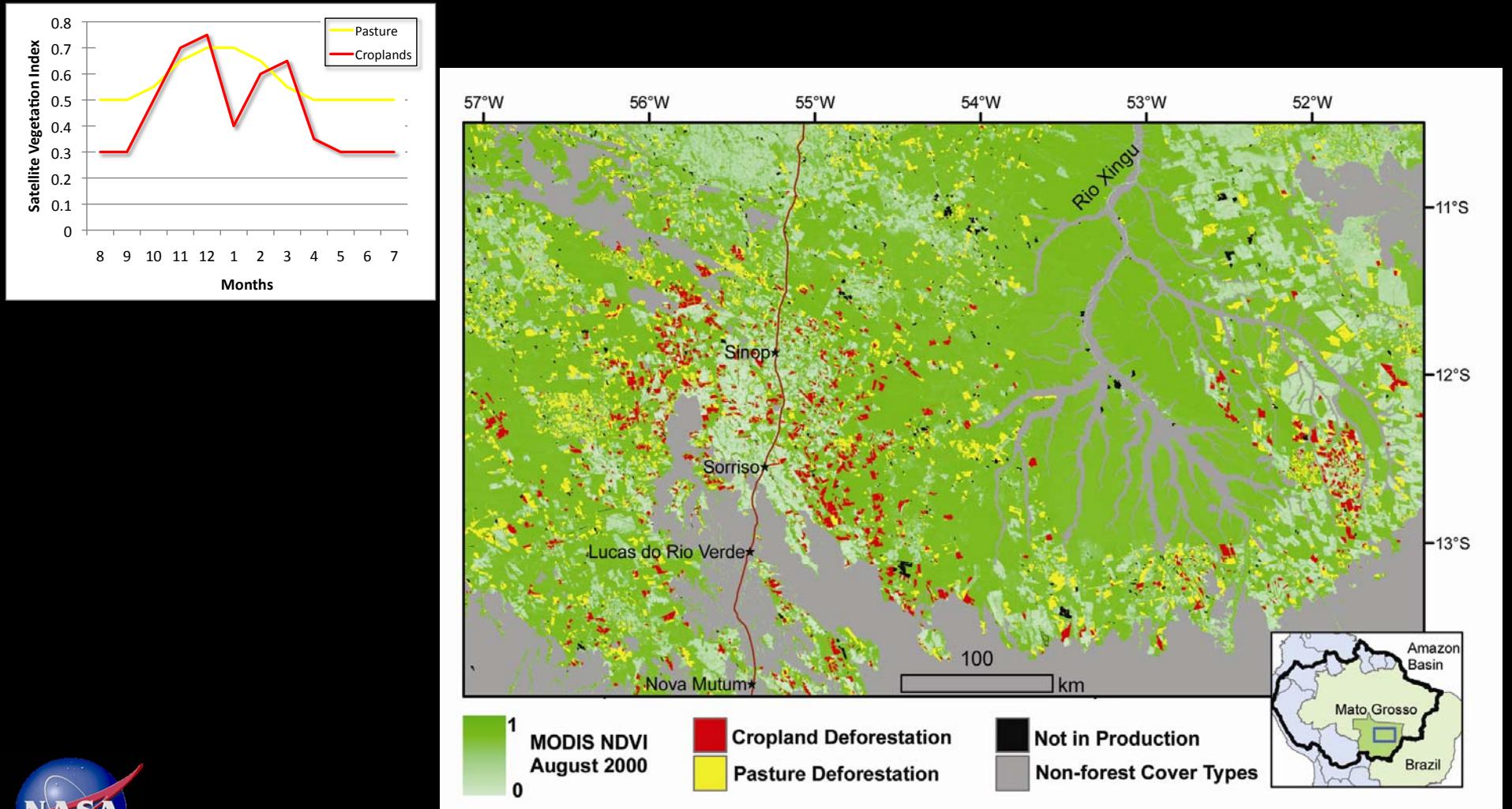
Where?	Mapping	Higher Resolution (infrequent coverage)
When?	Monitoring	Frequent Coverage (lower resolution)
Why?	Analysis	Multi-sensor studies



Why: Drivers of Recent Deforestation

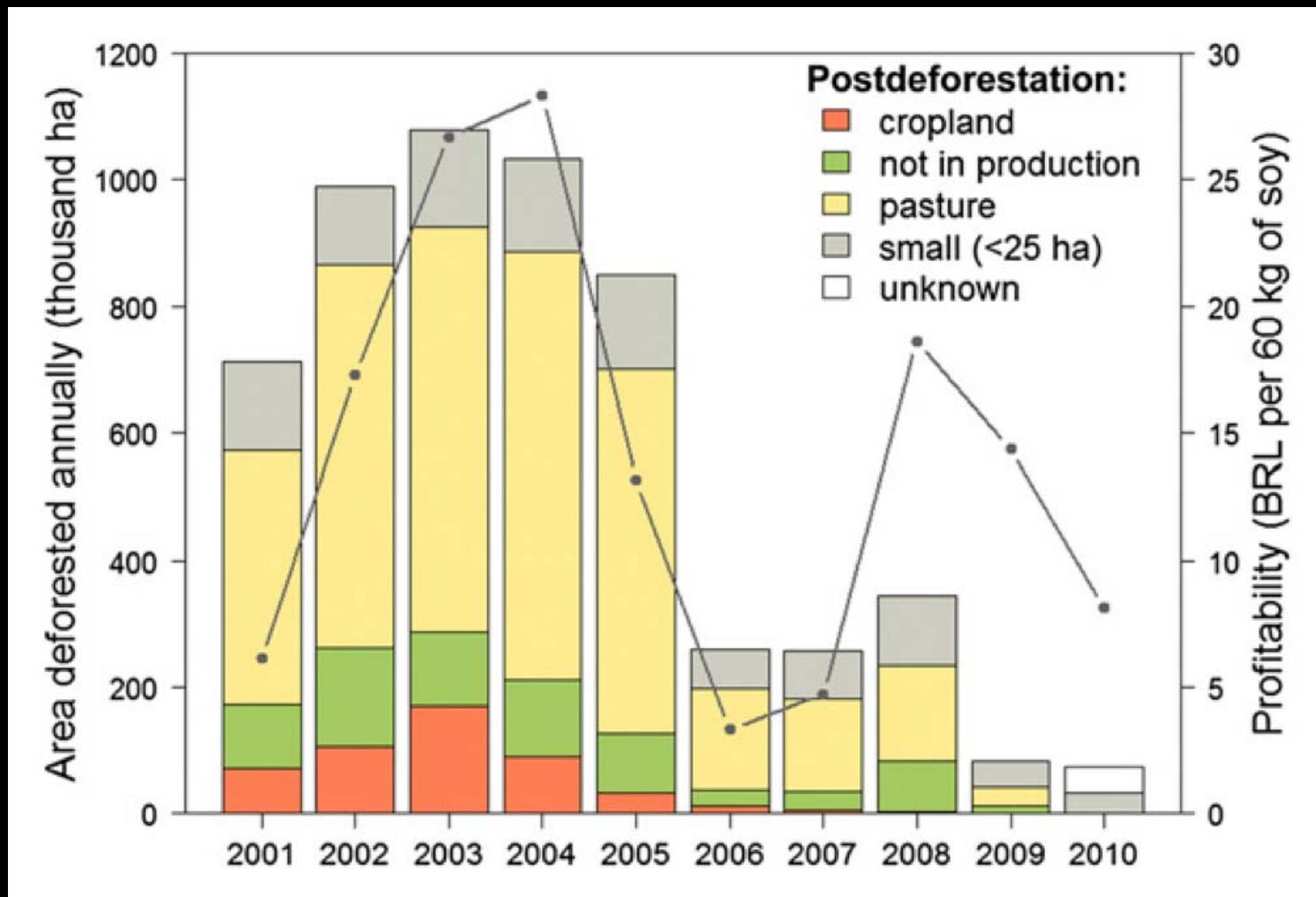


Why: Drivers of Recent Deforestation



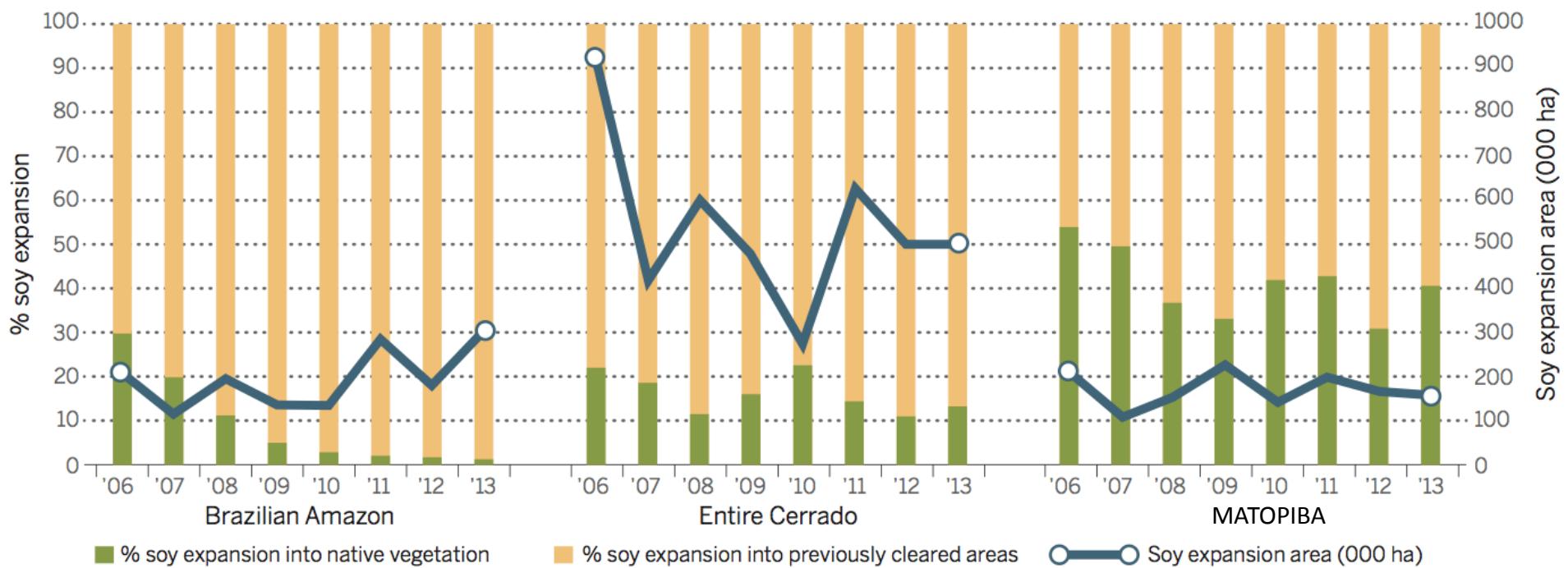
Morton et al. 2006

Why: Land use following deforestation

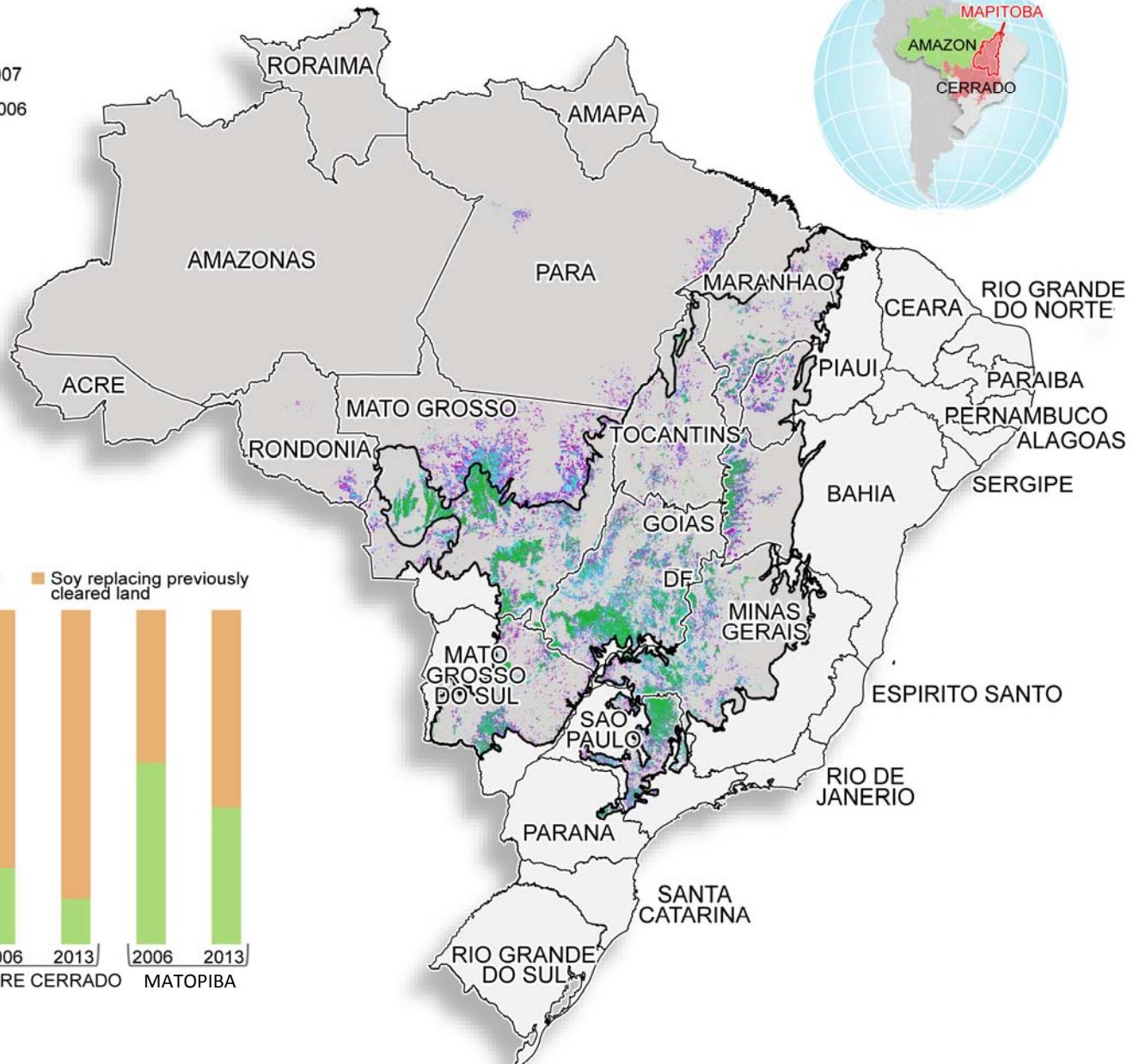
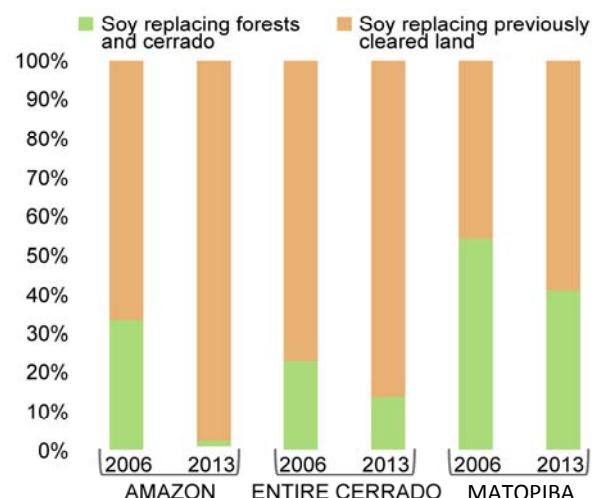
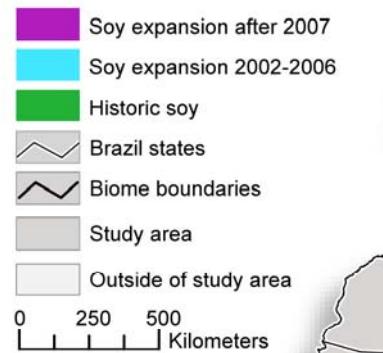


Macedo et al., 2012

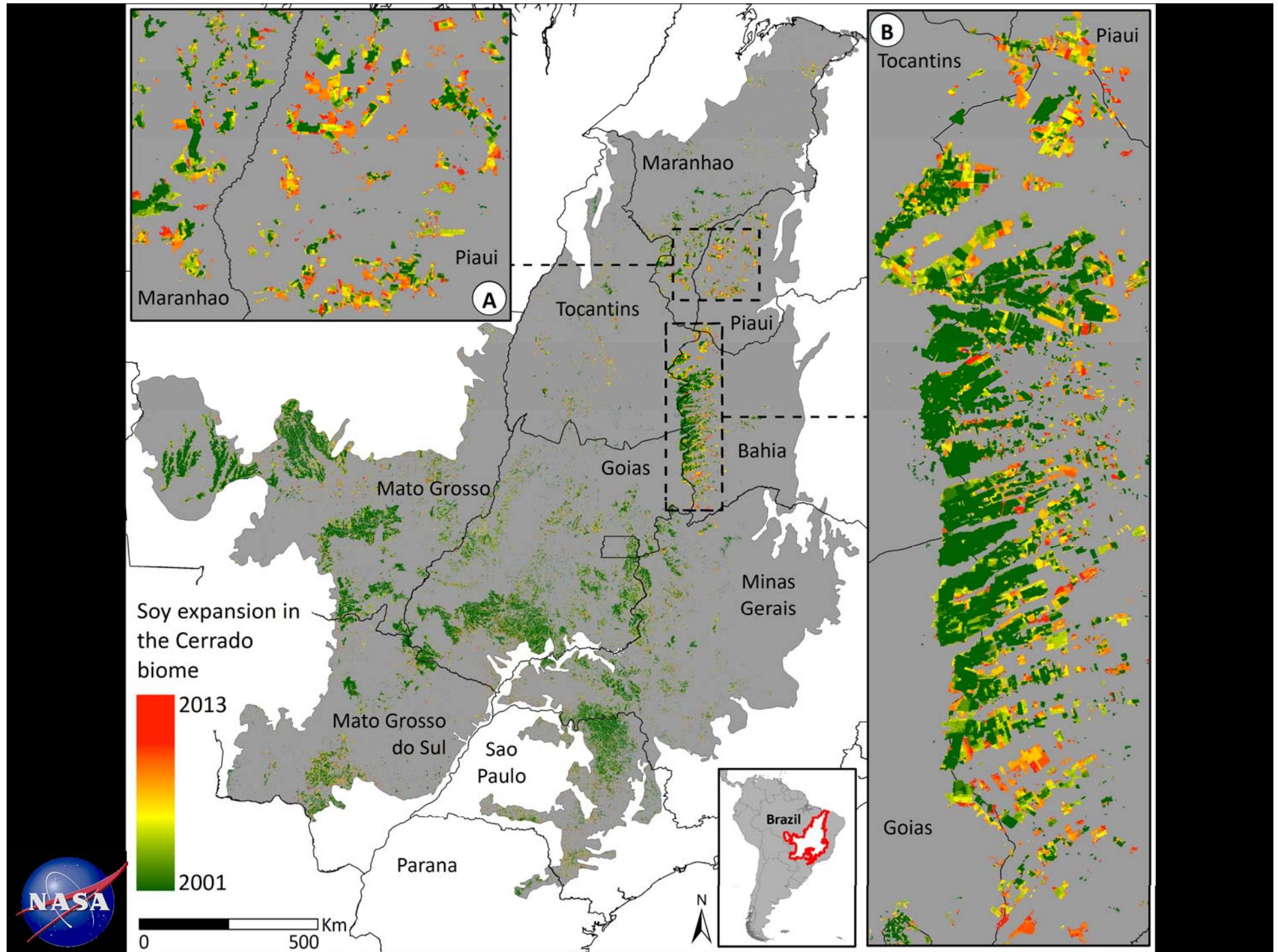
Soy Moratorium:

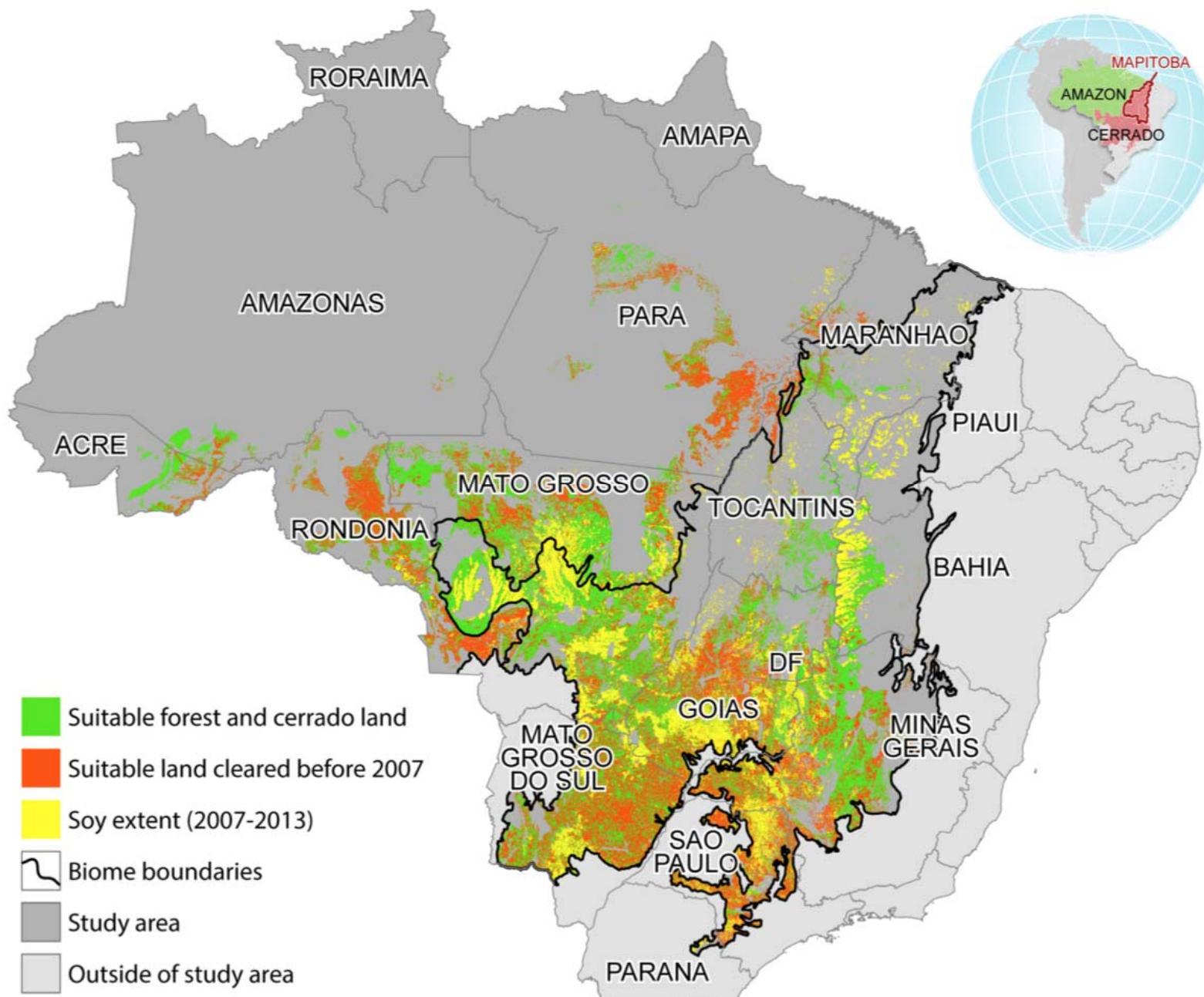


Gibbs et al., 2015

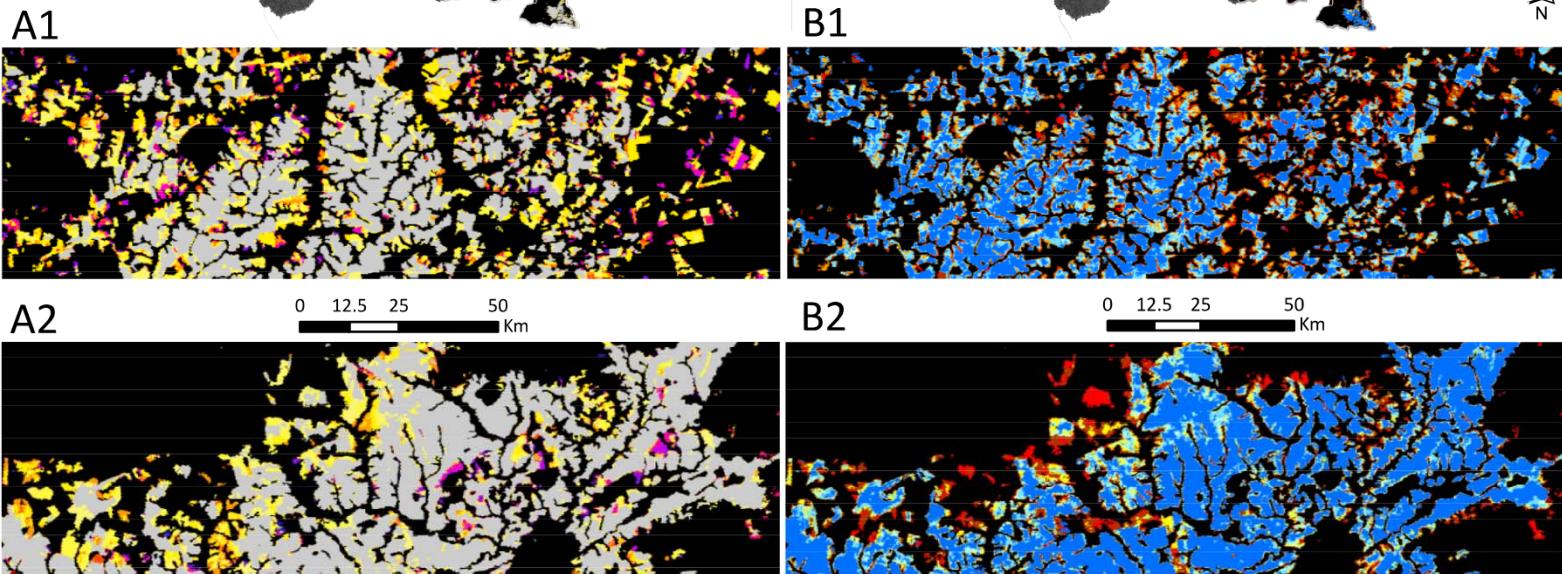
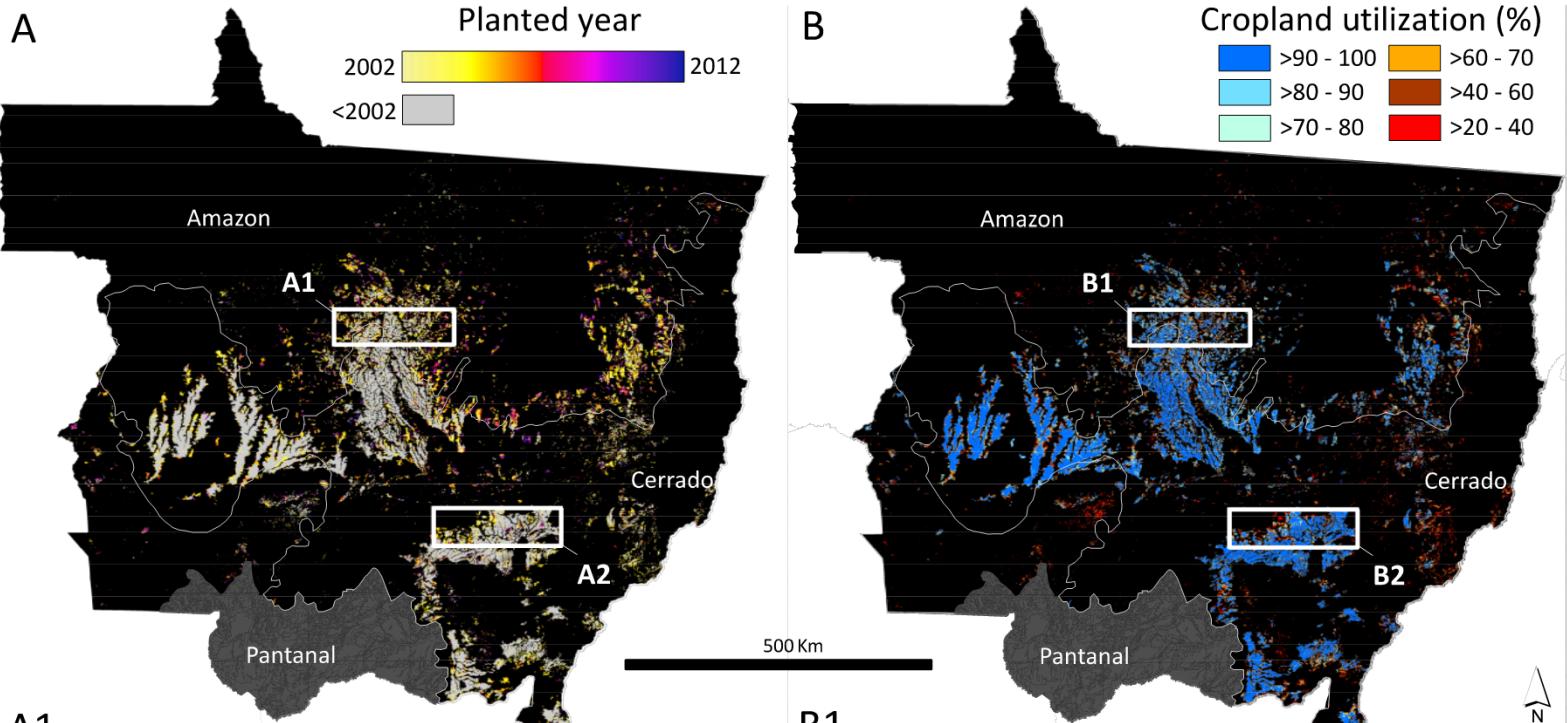


Gibbs et al., 2015

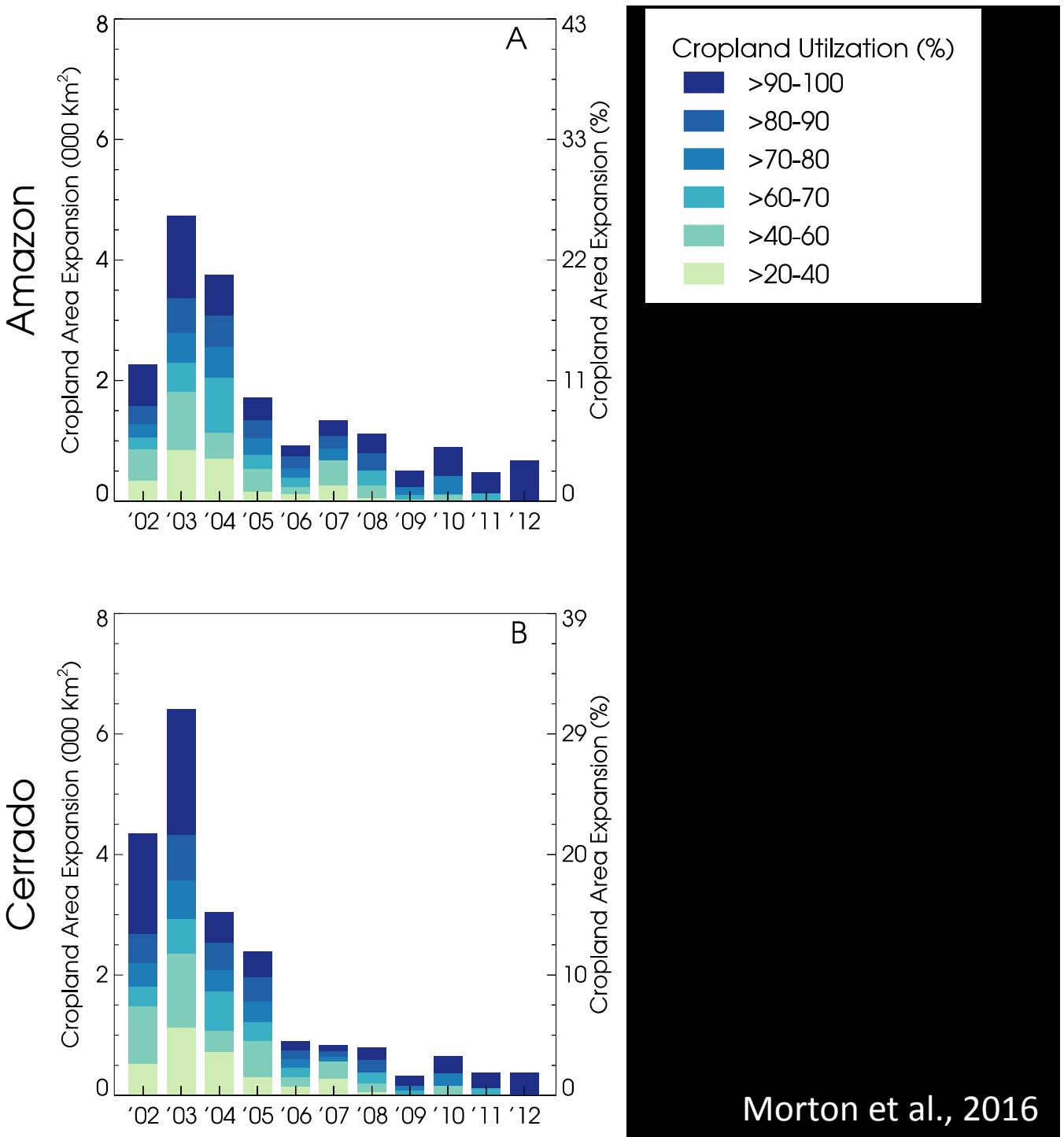


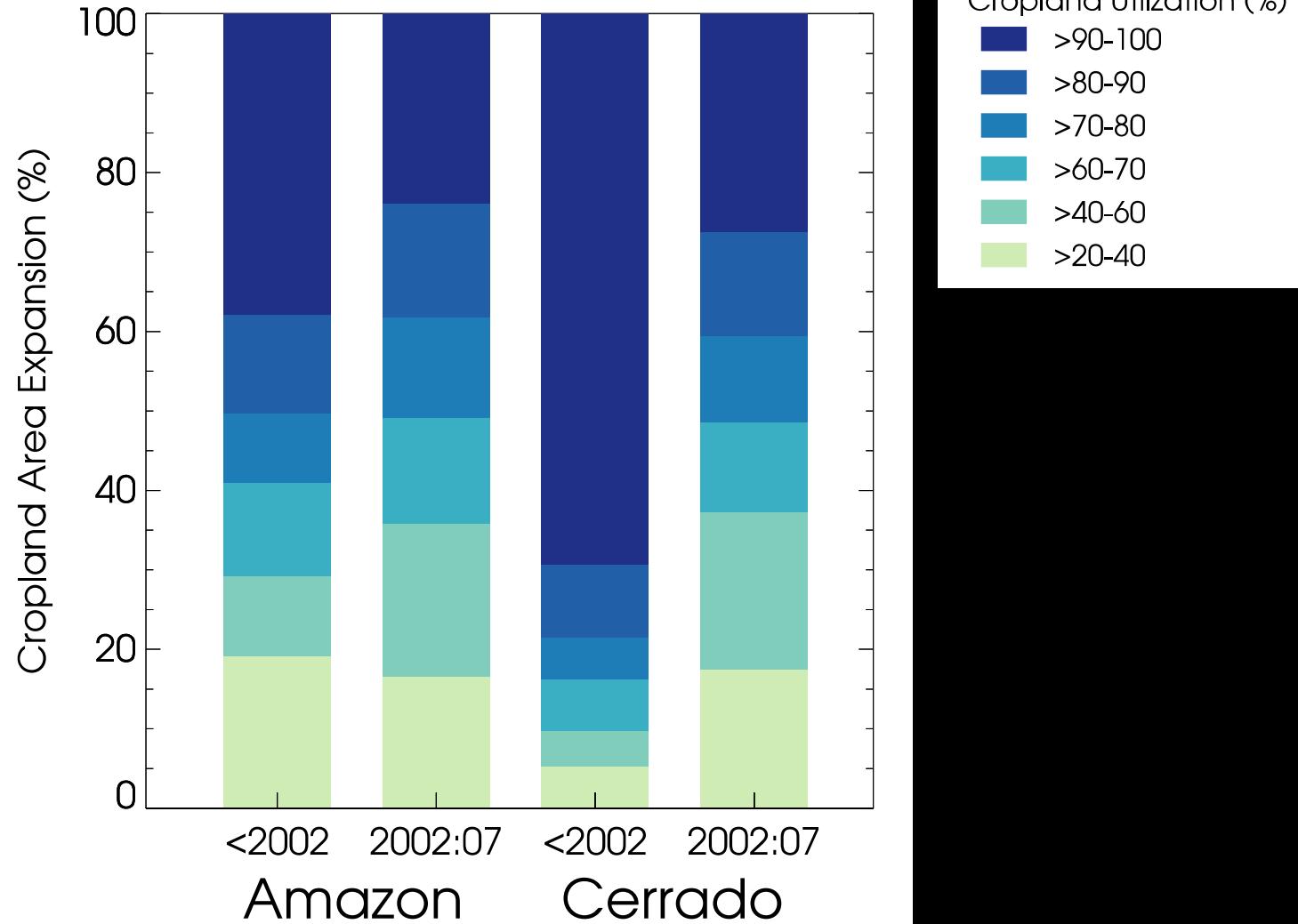


Gibbs et al., 2015

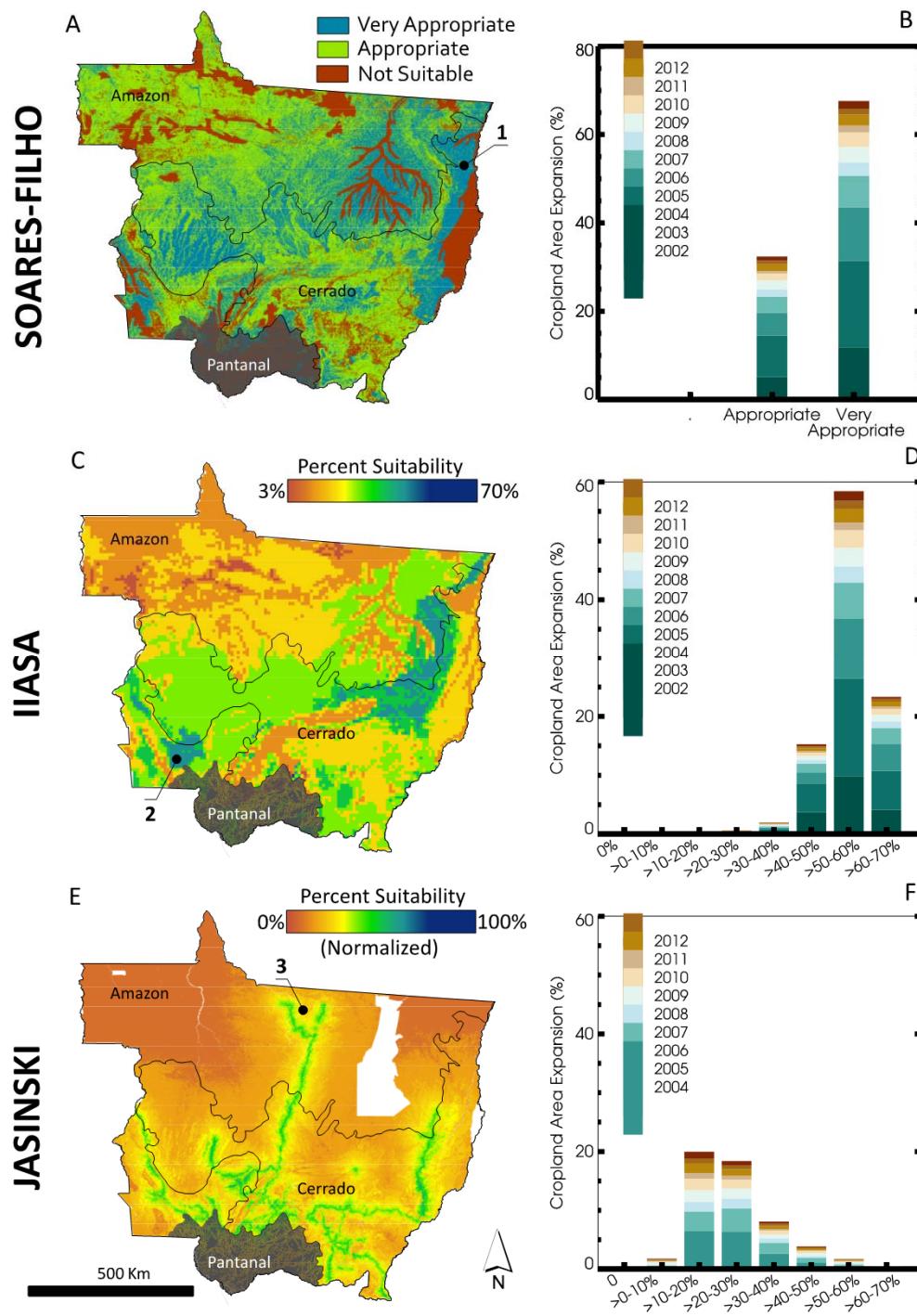


Morton et al., 2016

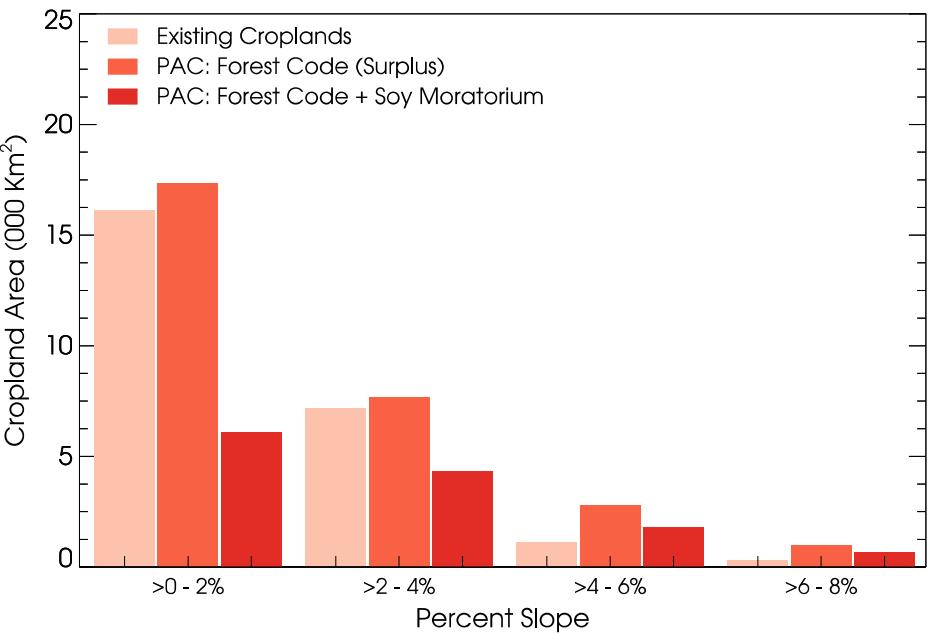
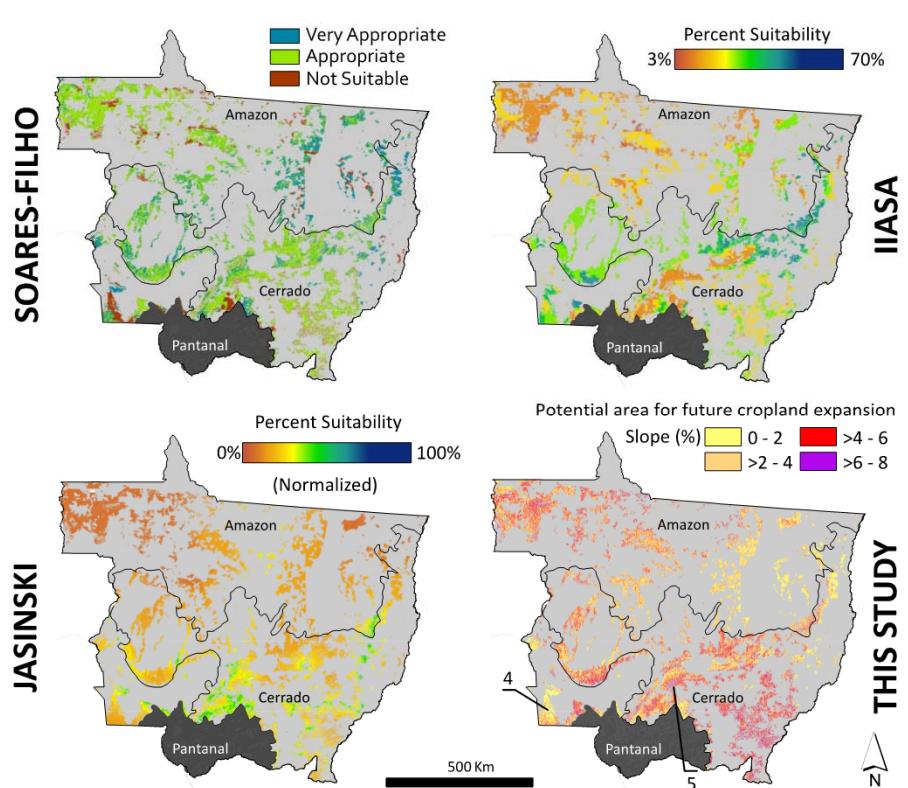




Morton et al., 2016



Morton et al., 2016



Morton et al., 2016

Conclusions

- **Satellite Monitoring:** field scale data support long-term monitoring of cropland dynamics.
- **Cropland Expansion:** regional shift from Center West to Matopiba, Amazon to Cerrado.
- **Cropping Intensity:** recent expansion had lower utilization—alternative management or lower suitability?
- **Zoning:** spatial & temporal resolution matter.



Questions?

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