Agricultural Classification of Multi-Temporal MODIS Imagery in Northwest Argentina Using Kansas Crop Phenologies

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RESEARCH QUESTIONS

Can I...

- develop a phenological classification toolset?
- extract crop signatures from Kansas data?
- classify an Argentina study area with the Kansas signatures?

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OUTLINE

1. Background
2. Study Areas
3. Data and Methods
4. Results and Discussion
5. Concluding Remarks

BACKGROUND

DEFORESTATION IN ARGENTINA

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- 1998 to 2002: 940,000 ha deforested
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  - Classified red, yellow, and green areas

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DEFORESTATION IN ARGENTINA

Table: Deforestation in Argentina, 2006 to 2011

Time Period	Hectares Deforested
2006 to *Ley de Bosques* (2007)	573,296
Ley de Bosques to OTBN (2009)	473,001
OTBN to 2011	459,108
Total	1,505,405

DEFORESTATION IN ARGENTINA

- Deforestation has remained extremely high
- The effect of the the *Ley de Bosques* has been questioned

SOY AND ITS EFFECTS

- Argentina's soybean cultivation has continually increased
  - 5 million ha in 1993 to 19 million ha in 2011

SOY AND ITS EFFECTS

- Soy production highly mechanized
- Over 99 percent of Argentine soy is genetically modified
  - Resistance to glyphosate = heavy pesticide use
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- More effective land management policies

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Questions

- What if two crops have similar VI values on a single date?
- How to determine the VI values of a crop in an image?

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Answer

Use imagery from multiple dates.

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- Contains enough bands to cover an entire growing season

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PHENOLOGICAL CLASSIFICATION

Graphics/wardlowCropSignatures.png

(From Wardlow and Egbert 2005)

PHENOLOGICAL CLASSIFICATION

Question

How to determine the VI values of a crop in an image?

Answer

Existing approaches require training sites.

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PHENOLOGICAL CLASSIFICATION

Problem

What if you don’t have training sites?

STUDY AREAS

DEPARTMENT OF PELLEGRINI

DATA AND METHODS

RESULTS AND DISCUSSION

CONCLUDING REMARKS