Crop Yield prediction using SAVI

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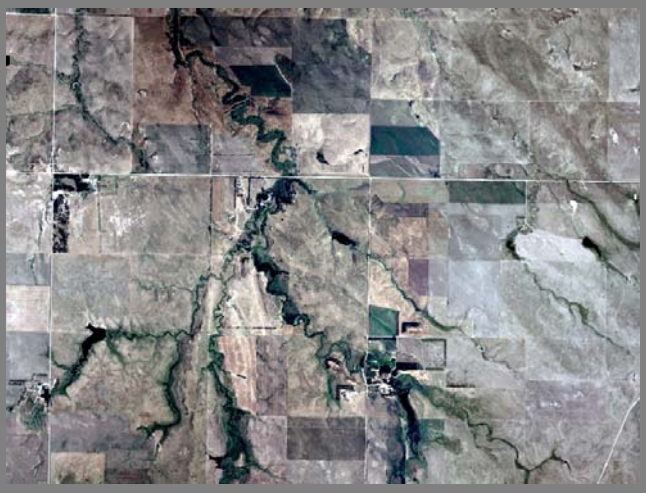
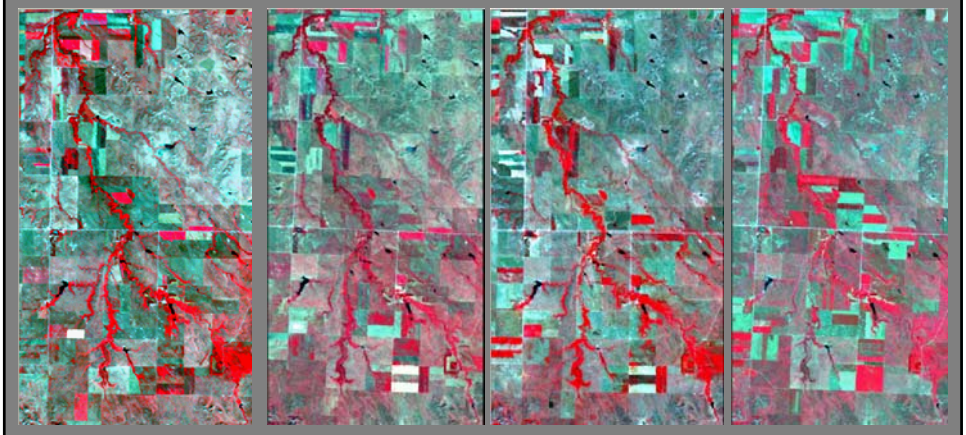
GISII

Study area



Satellite Images



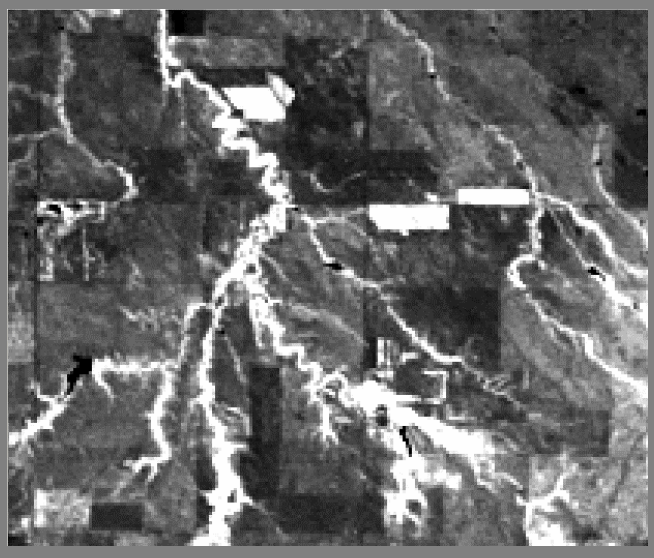
Corrected Image

SAVI

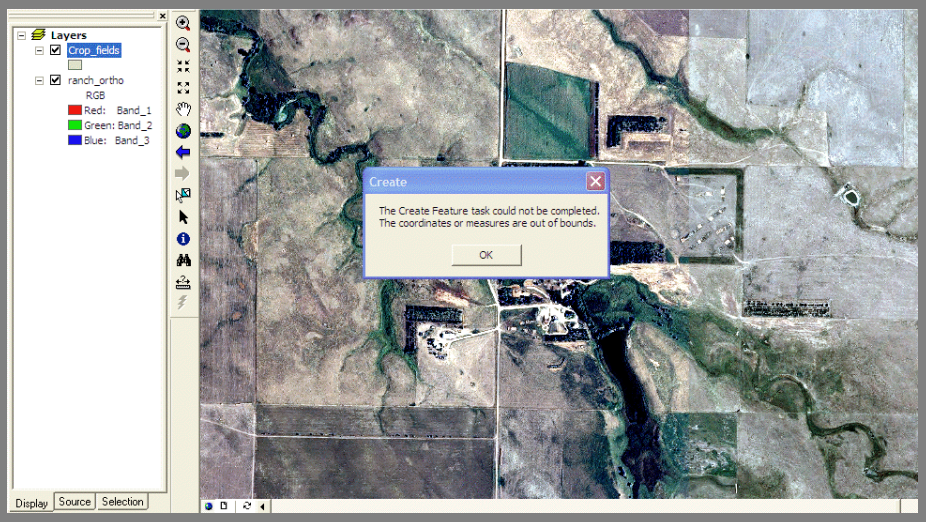
- Soil Adjusted Vegetation Index
- SAVI=(1+L)(NIR-RED)/(NIR+RED+L)
- L=.5 for most crop types

(Xavier & Vettorazzi 2004)

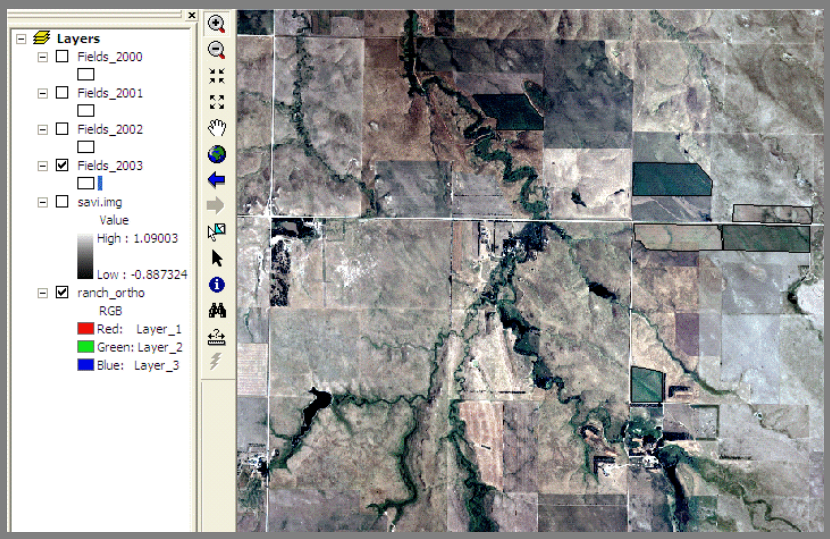
SAVI Image



First Problem



Shape files of Fields

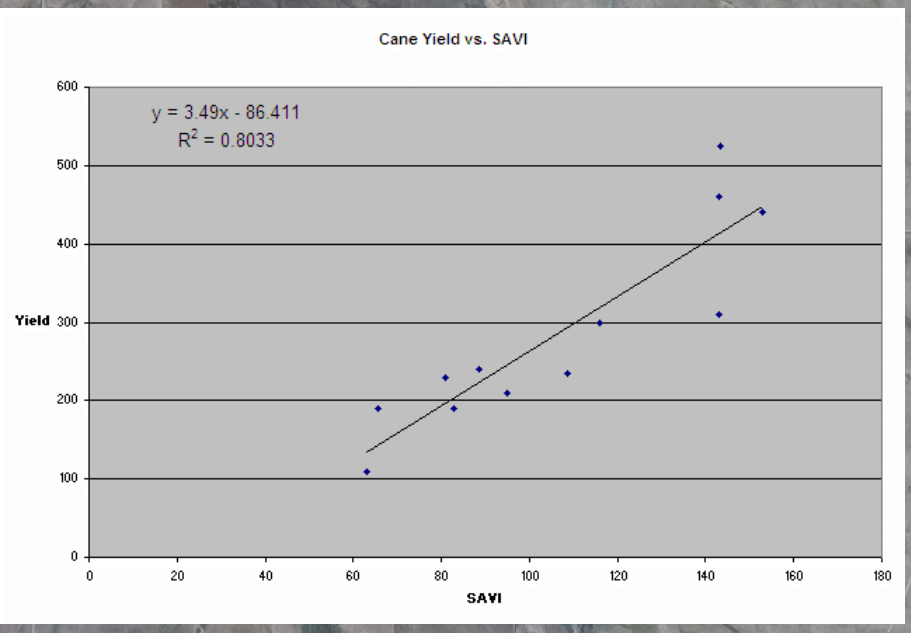


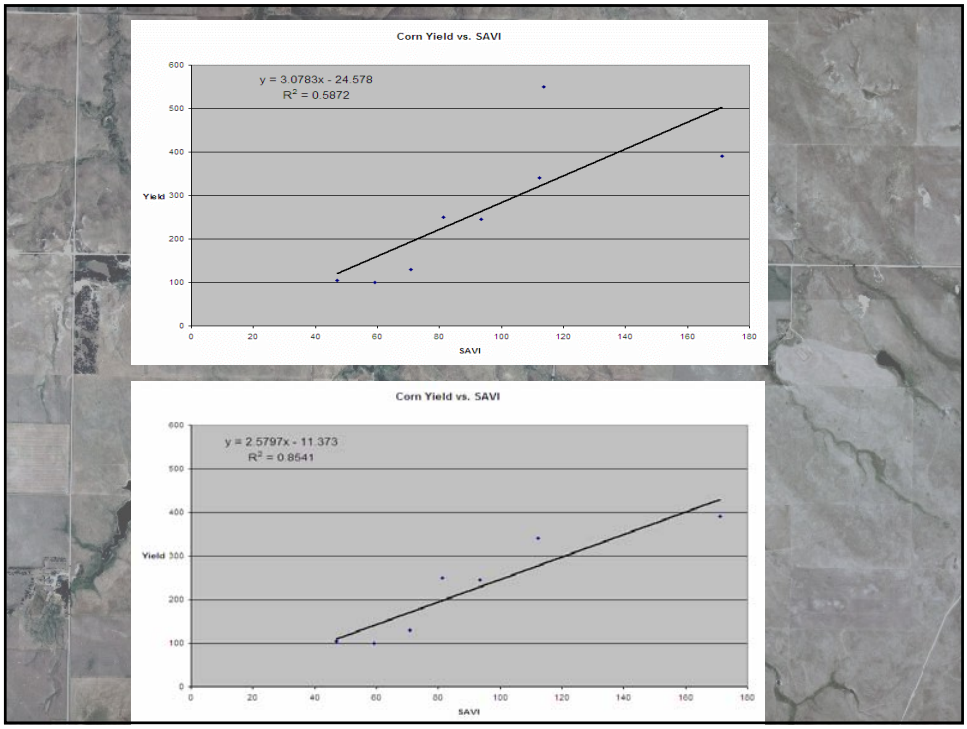
Zonal statistics

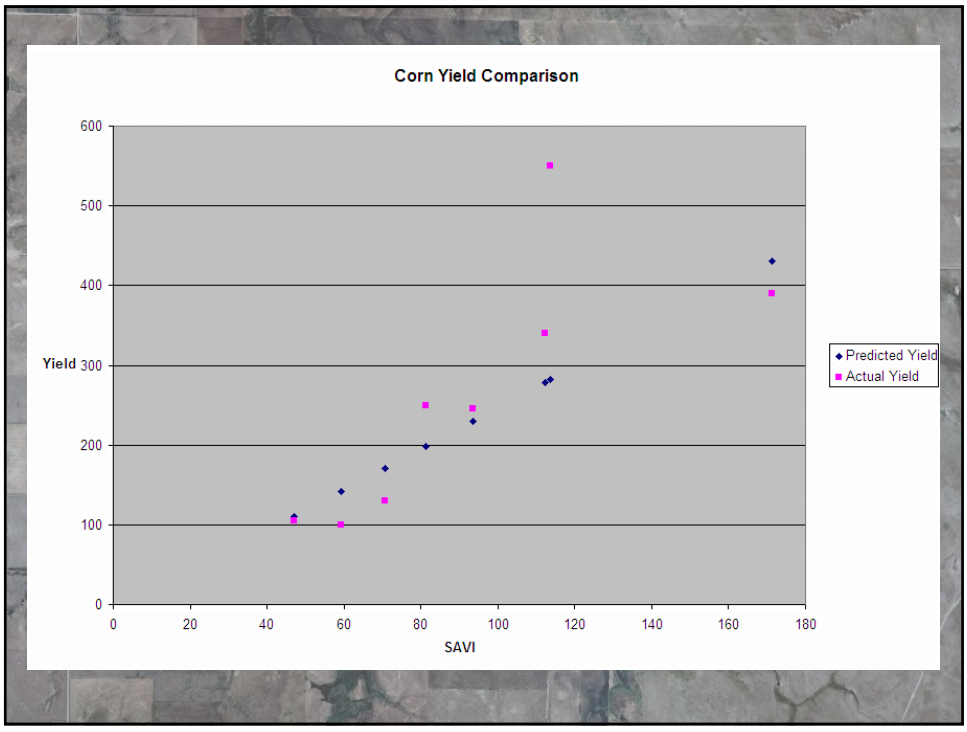
Attributes of 2001

VALUE*	COUNT	AREA	MIN	MAX	RANGE	MEAN	STD	SUM
1	88	79200	0.376518	0.939502	0.562984	0.745119	0.151993	65.5704
2	211	189900	0.238806	0.574163	0.335357	0.443521	0.065432	93.583
3	194	174600	0.240964	0.901099	0.660135	0.739302	0.134546	143.425
4	153	137700	0.186529	0.614634	0.428106	0.419751	0.1081	64.222
5	113	101700	0.344681	0.914498	0.569817	0.734284	0.120302	82.974
6	196	176400	0.2287	0.840467	0.611767	0.414988	0.085939	81.3376

Record: 1 Show: All Selected Records (0 out of 6 Selected.) Options




Corn Yield vs. SAVI
y = 3.0783x - 24.578
R² = 0.5872
Yield
SAVI
Corn Yield vs. SAVI
y = 2.5797x - 11.373
R² = 0.8541
Yield
SAVI


Corn Yield Comparison
Yield
SAVI
Predicted Yield
Actual Yield

Conclusions

- Positives:
  SAVI can be used to predict crop yields with fairly accurate results,
  Could be implemented on a large or small scale
- Limitations:
  Must have prior knowledge of crop type,
  To make predictions more accurate one must have many known yields with images