Agriculture Land Conversion in Alberta

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Background

- Urban development of concern due to pressure for conversion/fragmentation of agricultural land
  - Economic, social, environmental costs
  - Potential conflicts between farm businesses and new residents
  - Bylaws restricting agricultural activities
  - Inability to achieve economies of scale
  - Reduced level of “service” from related agribusinesses
- How big a problem?

"Economic Evaluation of Farmland Conversion and Fragmentation in Alberta"

- Three year project funded by ALI
- Assess/Quantify economics of agricultural land fragmentation and conversion
  - Four individual studies
- Objectives:
  - Examine degree of conversion/fragmentation and identify contributing factors
  - Identify areas of risk for increased fragmentation/conversion in future
  - Identify and assess values of multiple goods and services associated with land use
  - Inform policy makers

Spatial Analysis of Agricultural Land Conversion in Alberta

- Objectives:
  - Examine degree and pattern of change in land cover over the period 2000-2013
  - Identify contributing factors (e.g., market returns, development pressure, fragmentation)

Study Methods

- Remote sensing data for multiple years (land cover) from AAFC
  - 2000, 2009, 2011, 2012, 2013
- Graphical/Tabular presentation of land cover and patterns of land cover change
- Statistical analysis to relate land cover changes to potential drivers, 2000 - 2012

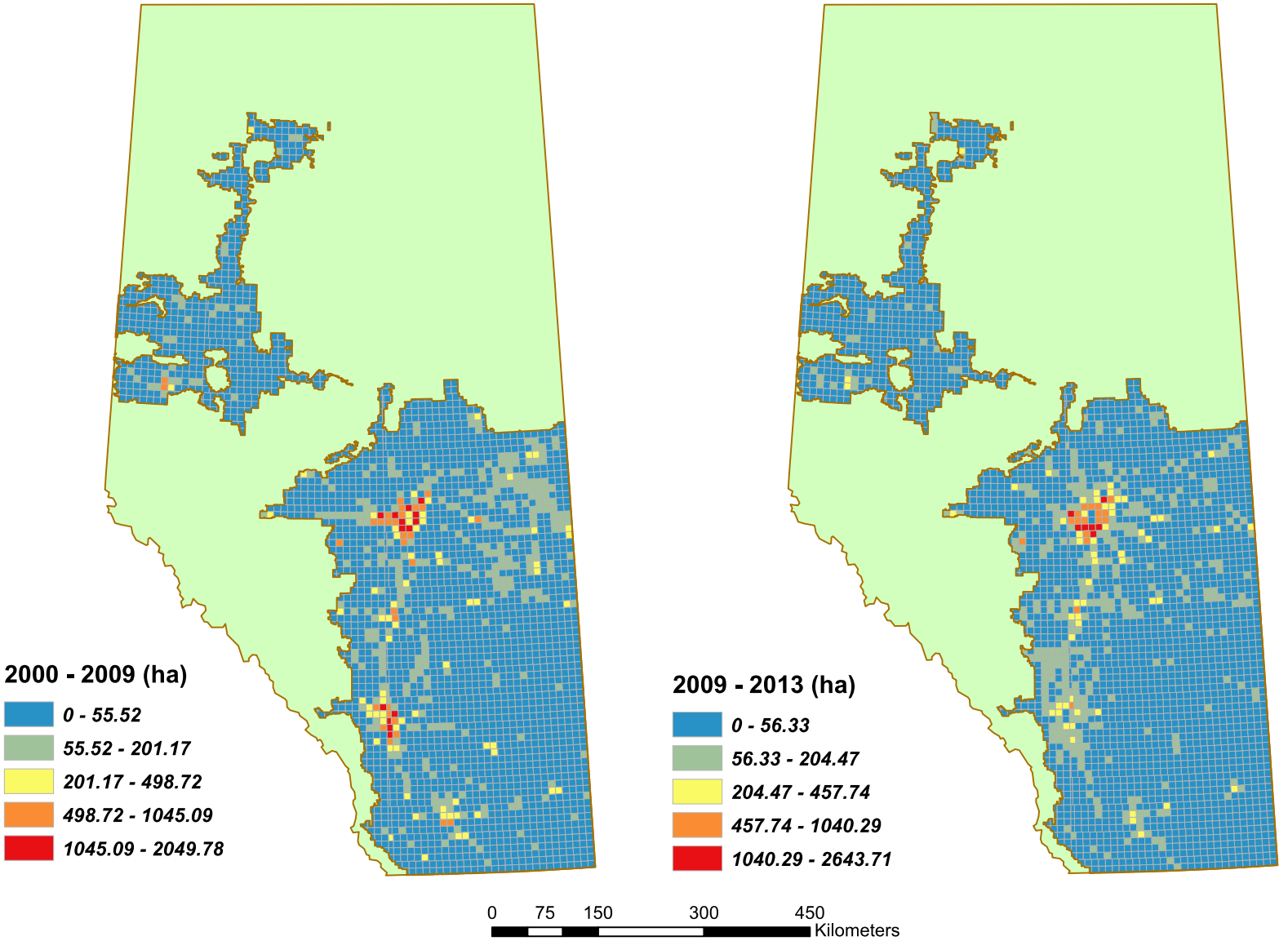
Land Cover, Alberta White Zone (ha, 2000 – 2013)

Land Cover	2000	2013	Annual Rate of Change (%)
Cropland	8,987,533	9,801,750	0.70
Pasture	+6,013,712	+4,213,093	-2.30
Agricultural Land	15,001,245	14,014,843	-0.51
Forest	3,734,371	3,716,156	-0.038
Grassland/Shrubland	4,928,008	5,425,905	0.78
Wetland	814,486	1,005,226	1.80
Other	755,259	919,756	1.68
Developed	303,016	429,604	3.21

Land Cover Conversion, Alberta White Zone (2000 – 2013)

Conversion	2000 - 2013
Cropland to Developed (Annual Average)	66,679 (4,763)
Pasture to Developed (Annual Average)	60,766 (4,340)
Agricultural to Developed (Annual Average)	127,445 (9,103)

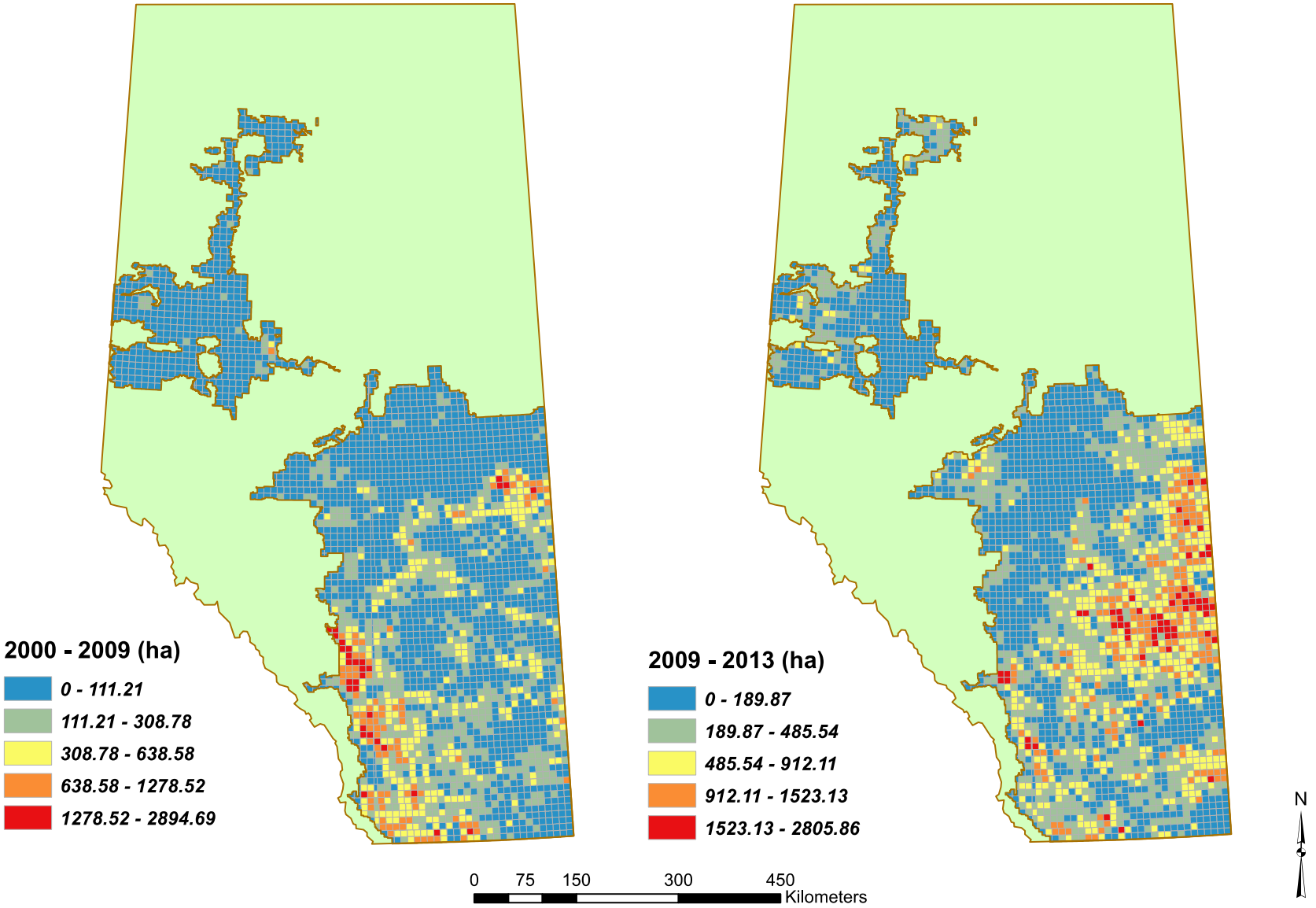
Alberta White Zone
Agricultural Land Conversion to Development (2000-2013)



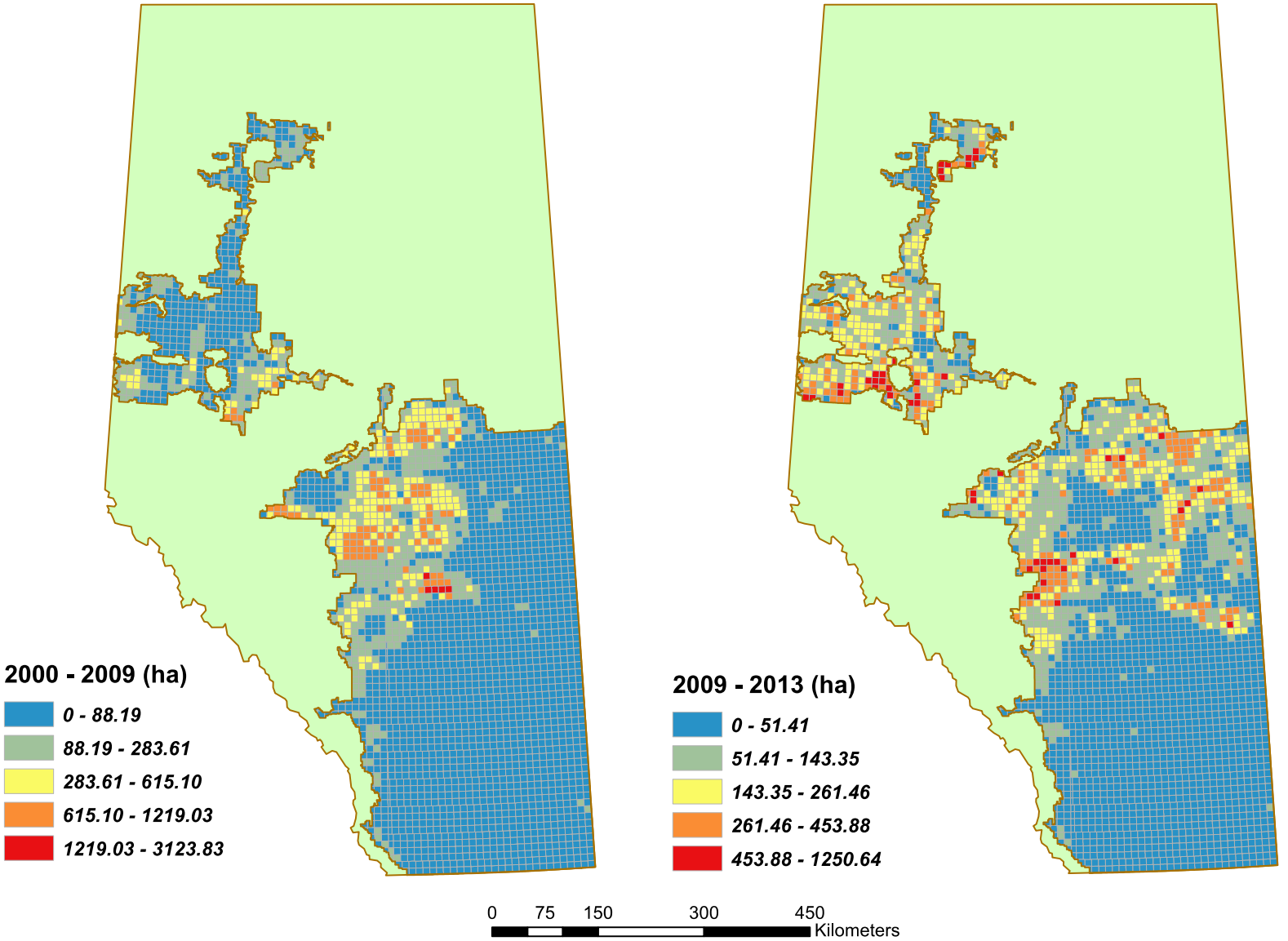
Spatial Regression Analysis

- Uses data for land cover change, 2000 – 2012
- Regress area converted from agriculture to developed on explanatory variables
- Results?
  - Population density (+, but non-linear)
  - Proximity to urban centres (+)
  - Neighbour spillover effects (+)
  - Results are region-specific

Alberta White Zone
Natural Land Conversion to Agricultural Land (2000-2013)



Alberta White Zone
Forest Conversion to Agricultural Land (2000-2013)



Results

- Major provincial land use changes:
  - Agricultural land conversion to development
  - However, other conversions also occurring (net effect?)
- Loss of Agricultural Land?
  - 0.85% of agricultural land converted for development 2000-2013 (~127,450 ha, annual rate of 0.07%)
  - Greater concentration in Edmonton-Calgary Corridor
  - Conversion tends to be on higher quality land
- Fragmentation?
  - Inconclusive results but tend towards less fragmentation

Additional Considerations?

- What's lost with conversion?
  - Agricultural productivity (net impact?)
  - Local food production
  - "amenities" and ecosystem services
- What's gained?
  - Property values
- Need for "valuation" research

Thank you for your time and attention!

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