

ALOS Kyoto and Carbon Initiative

Global Lake Census and Carbon Accumulation

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Objectives

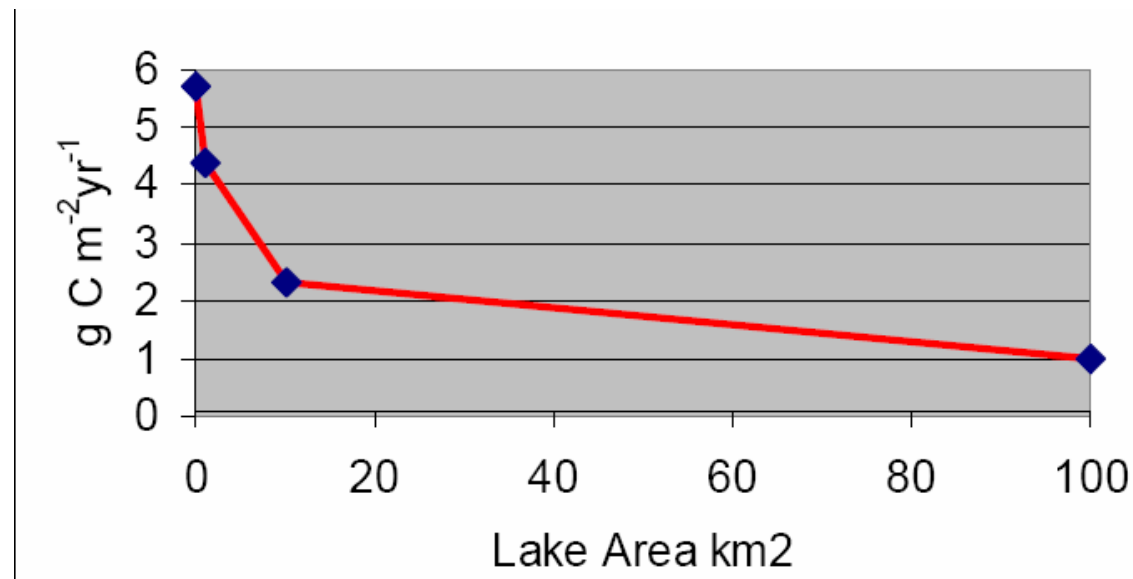
- **Current census of the world's lakes and reservoirs and map their size and spatial distribution**
- **Estimate carbon fluxes**
- **Establish the baseline form monitoring changes to lakes globally**

What do we know?

- Carbon accumulated ~ 19 to 27 PgC/ yr (Pajunen, 2000)
Kortelainen et al., 2004
- Second largest pool of C after peatlands
- Others (Einselle et al., 2002) ~ up to 70 Tg/yr
- 25% as much as oceans

What do we know?

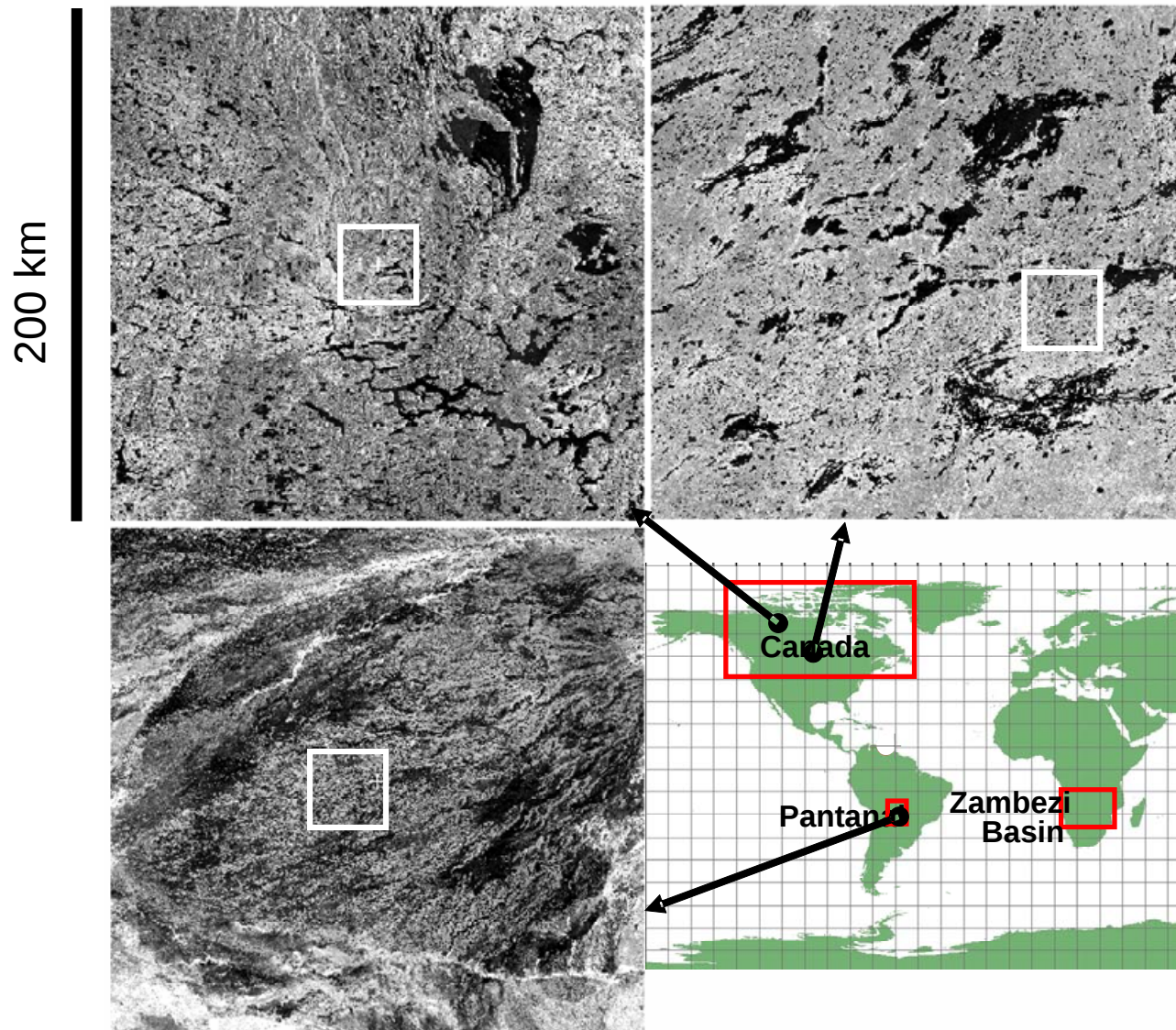
- Smaller lakes accumulate C faster (Pajunen, 2000)



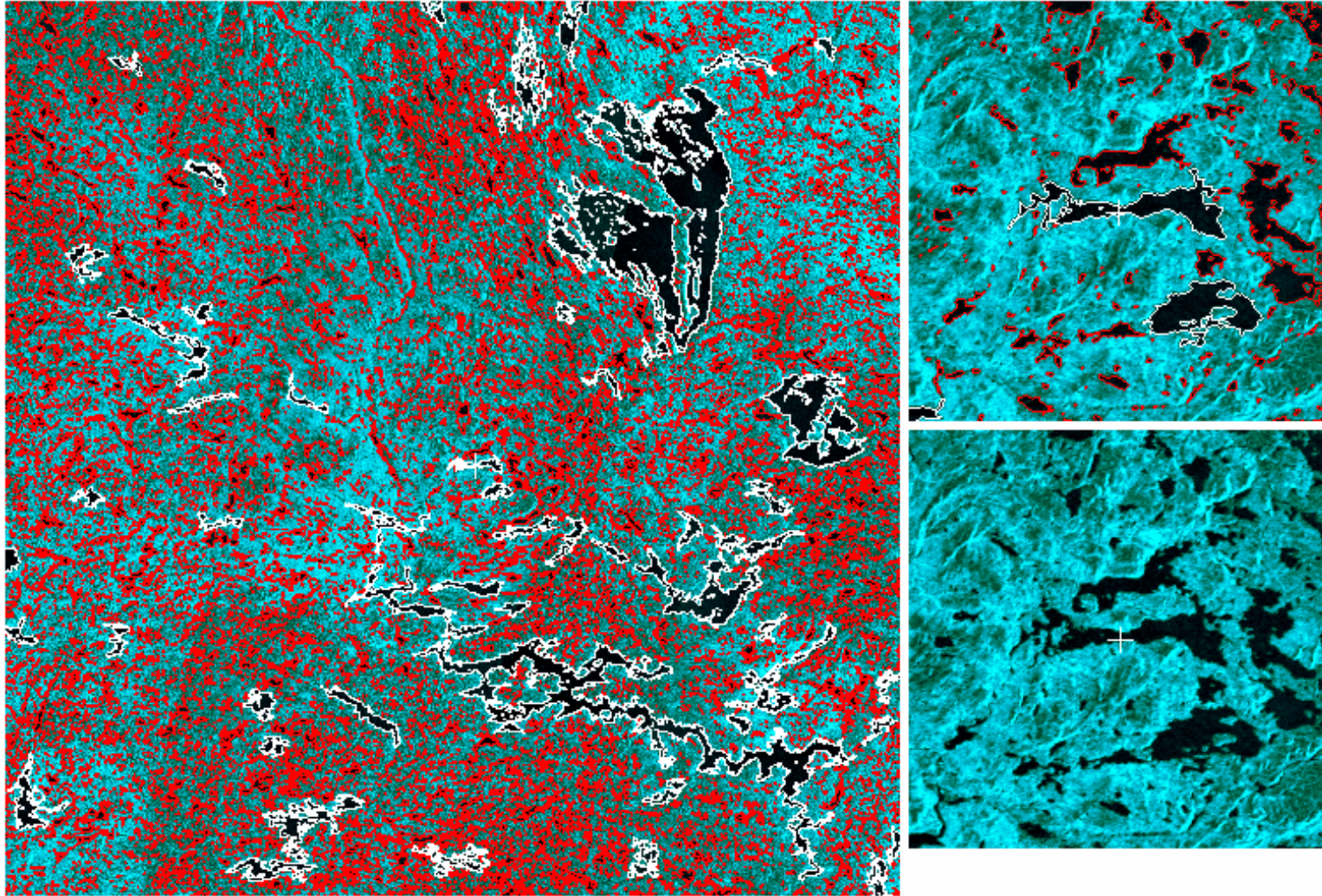
- Lake size changes due to climate change: C release (Siberia) (Smith, et al., 2005), *Science*.

Methodology development

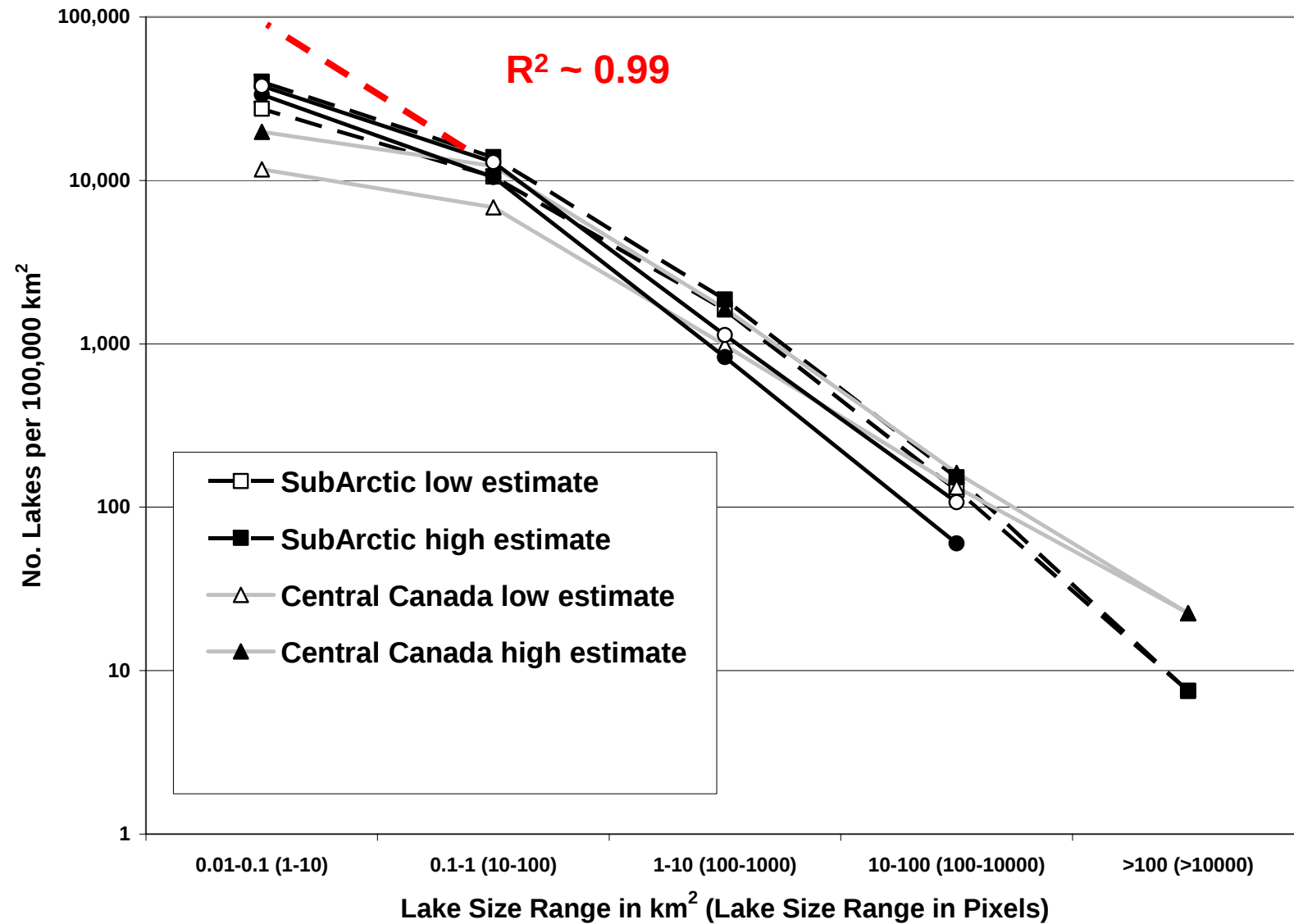
JERS-1 mosaic



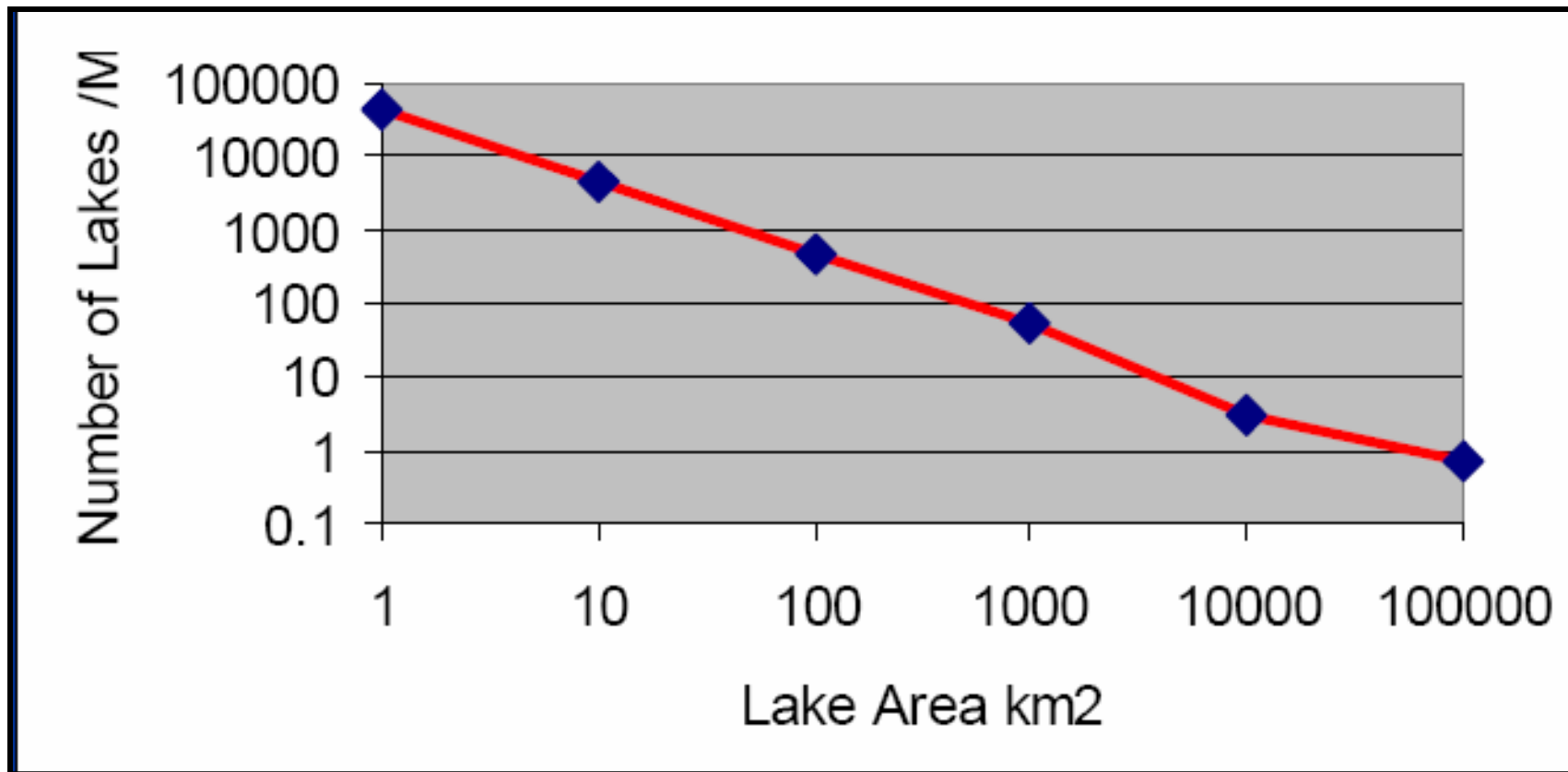
Shorelines: NWT Canada Lakes > 10km²



Results

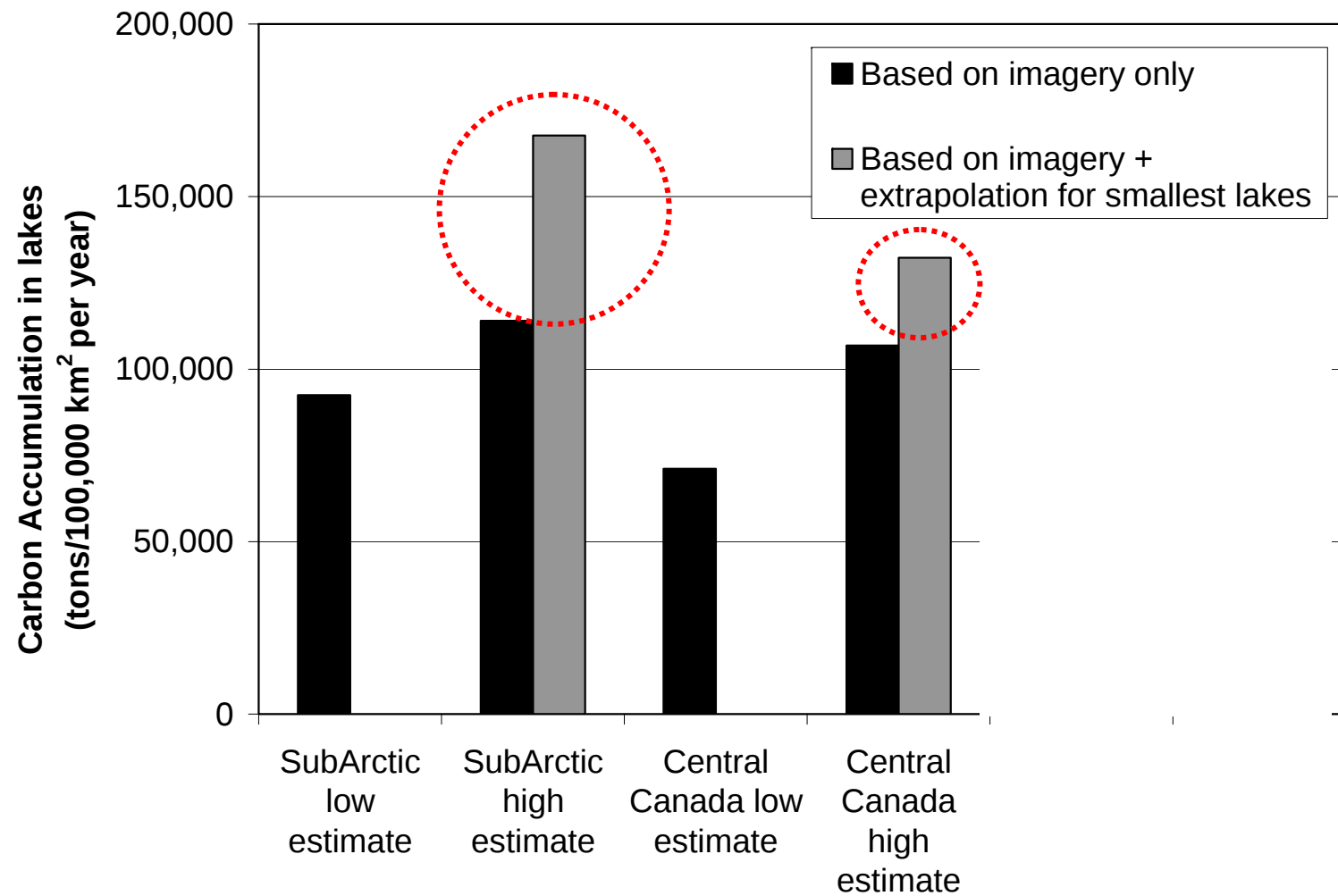


Results



(Pajunen, 2000)

Results



Summary

- Good for lakes $> 0.1 \text{ km}^2$
- Problems to define area of small lakes: $< 0.1 \text{ km}^2$
 - mixing problems
 - 50 m will help, but need fine res to calibrate
- Extrapolation: Field validation
- Field data: C accumulation
- SRTM
- high res JERS-1 for 15 years comparison



Telmer and Costa (in press), *Journal of Aquatic Conservation*

Thank you

