



SPF: Choosing the right level for ecosystem health

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April 25, 2019

SPF: Building Blocks of the Everglades Patterning

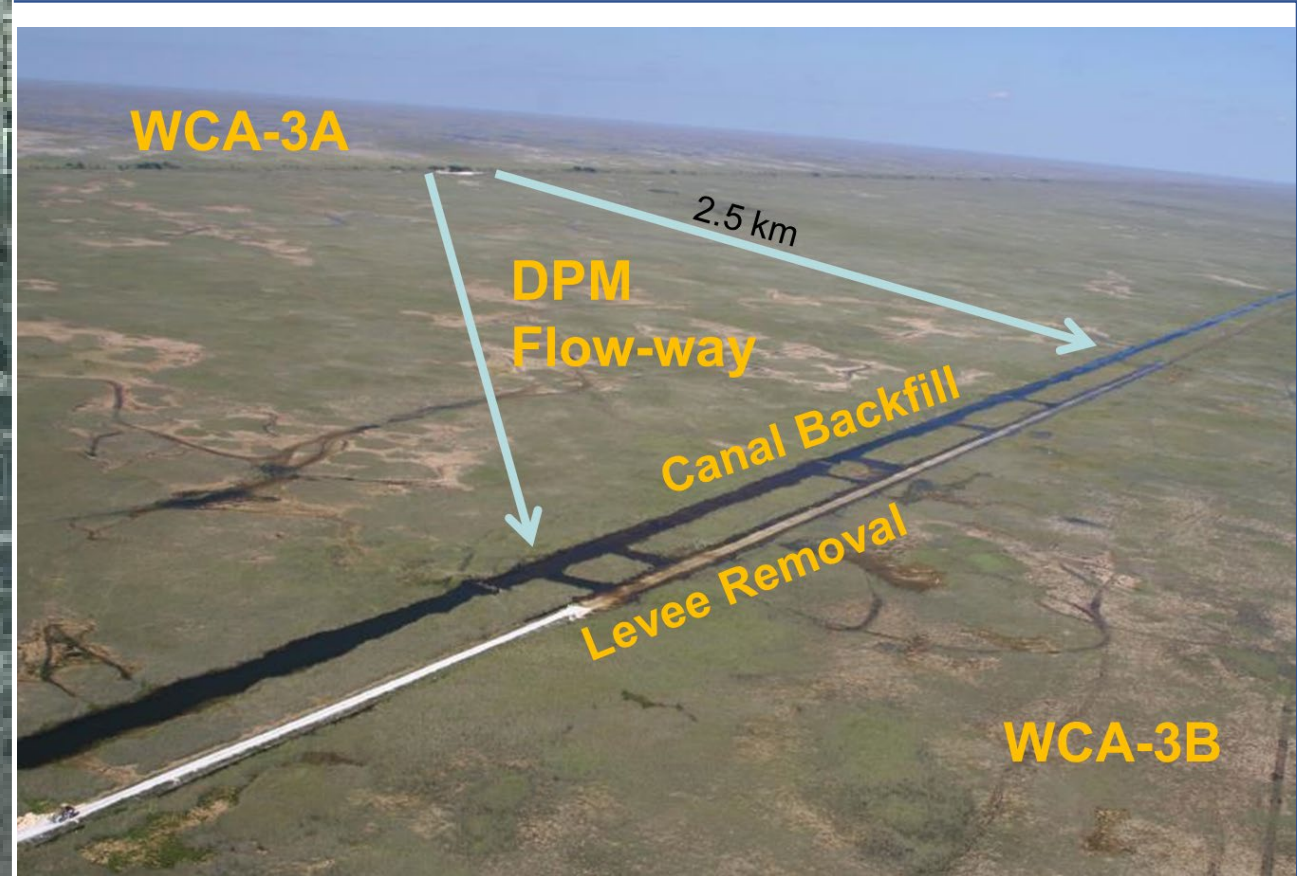
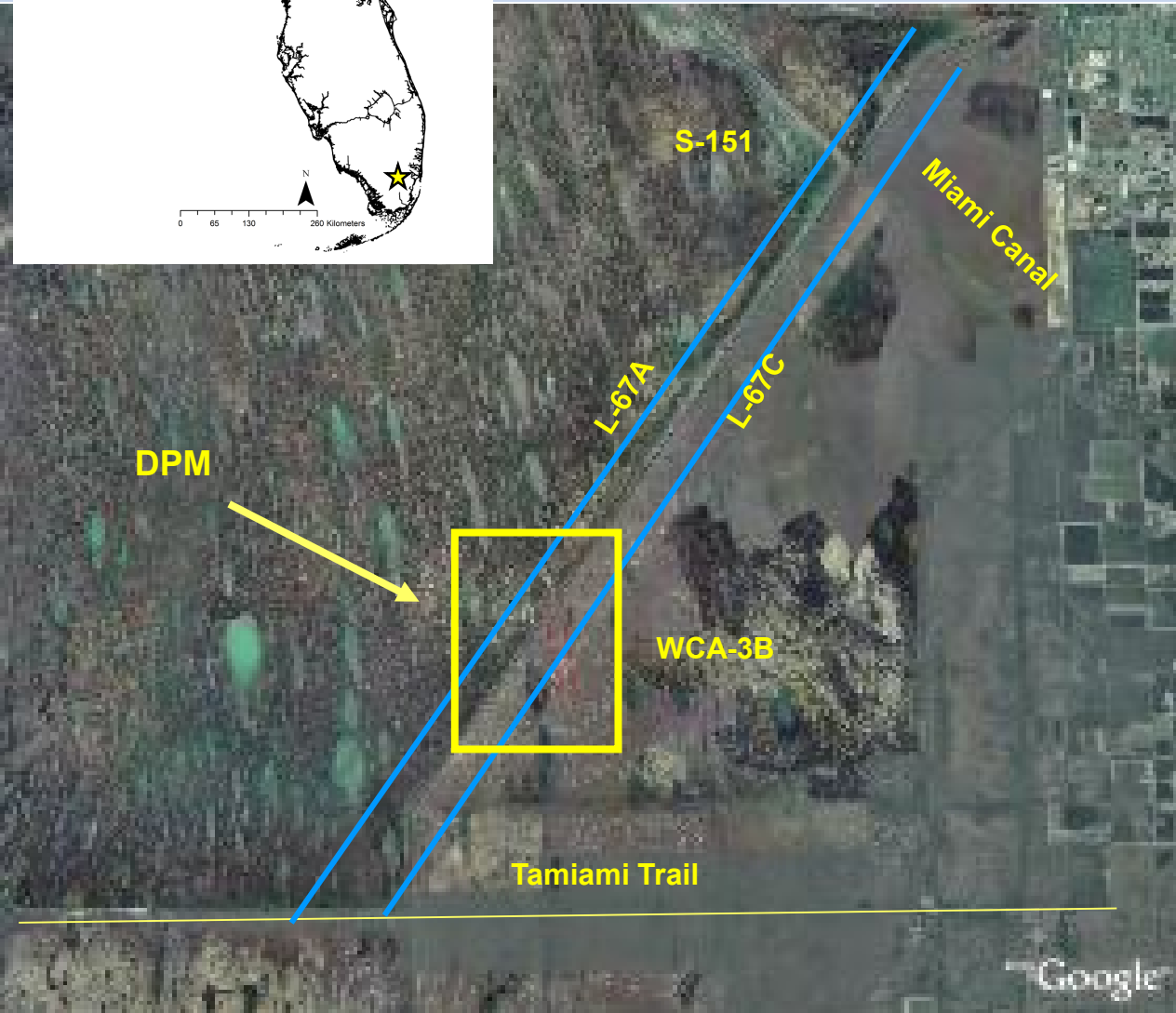
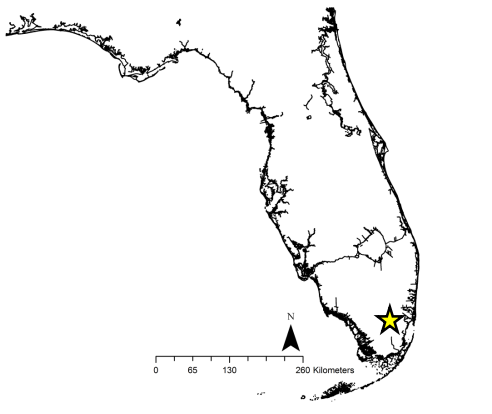
Sediment

Plants

Flow



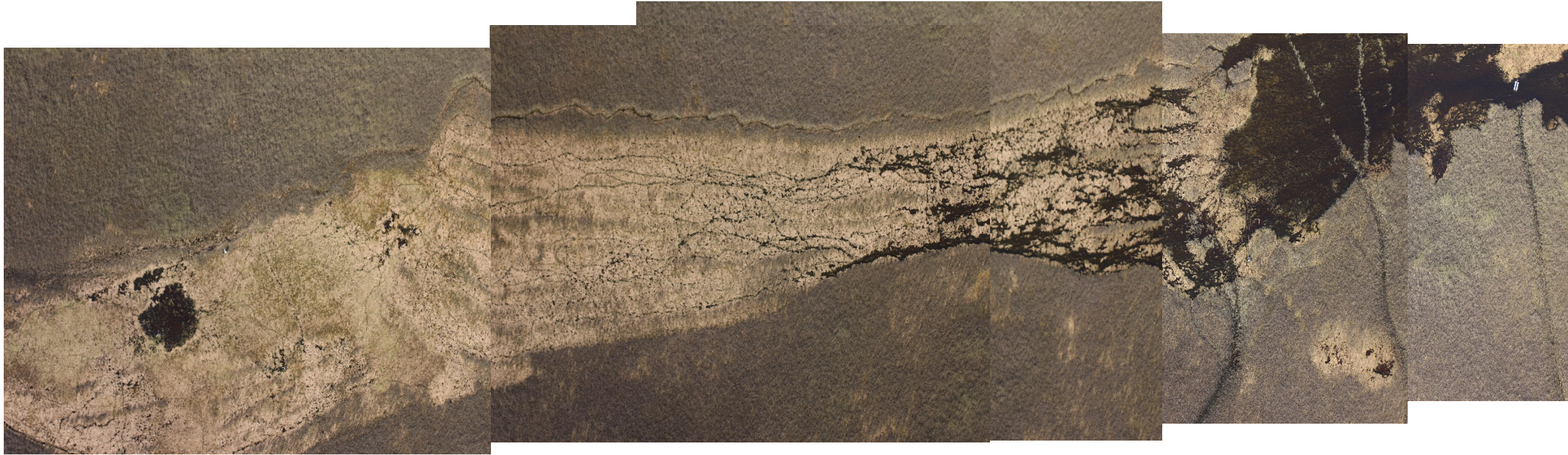
Decomp Physical Model



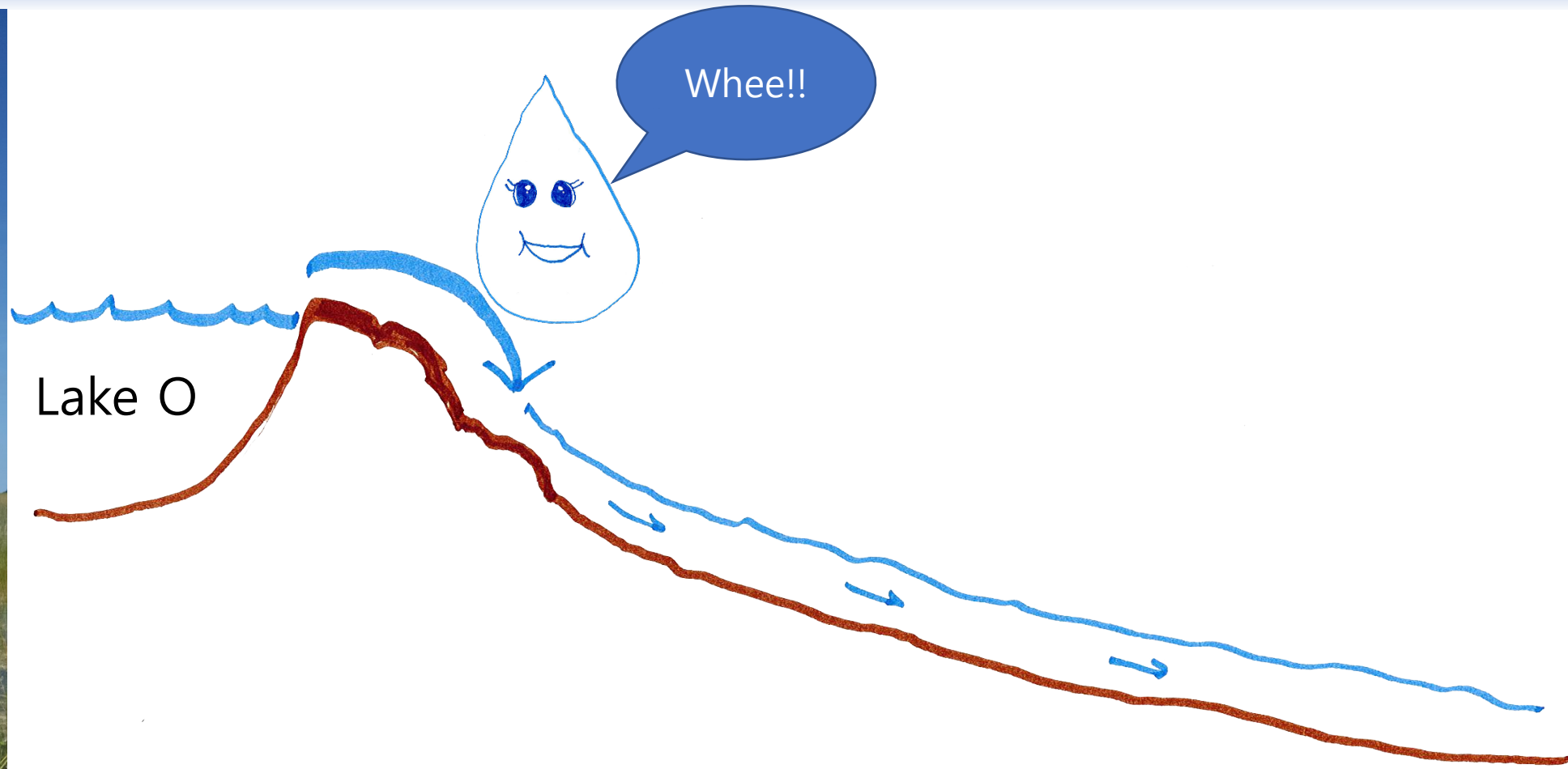
2-5 cm/sec Flows

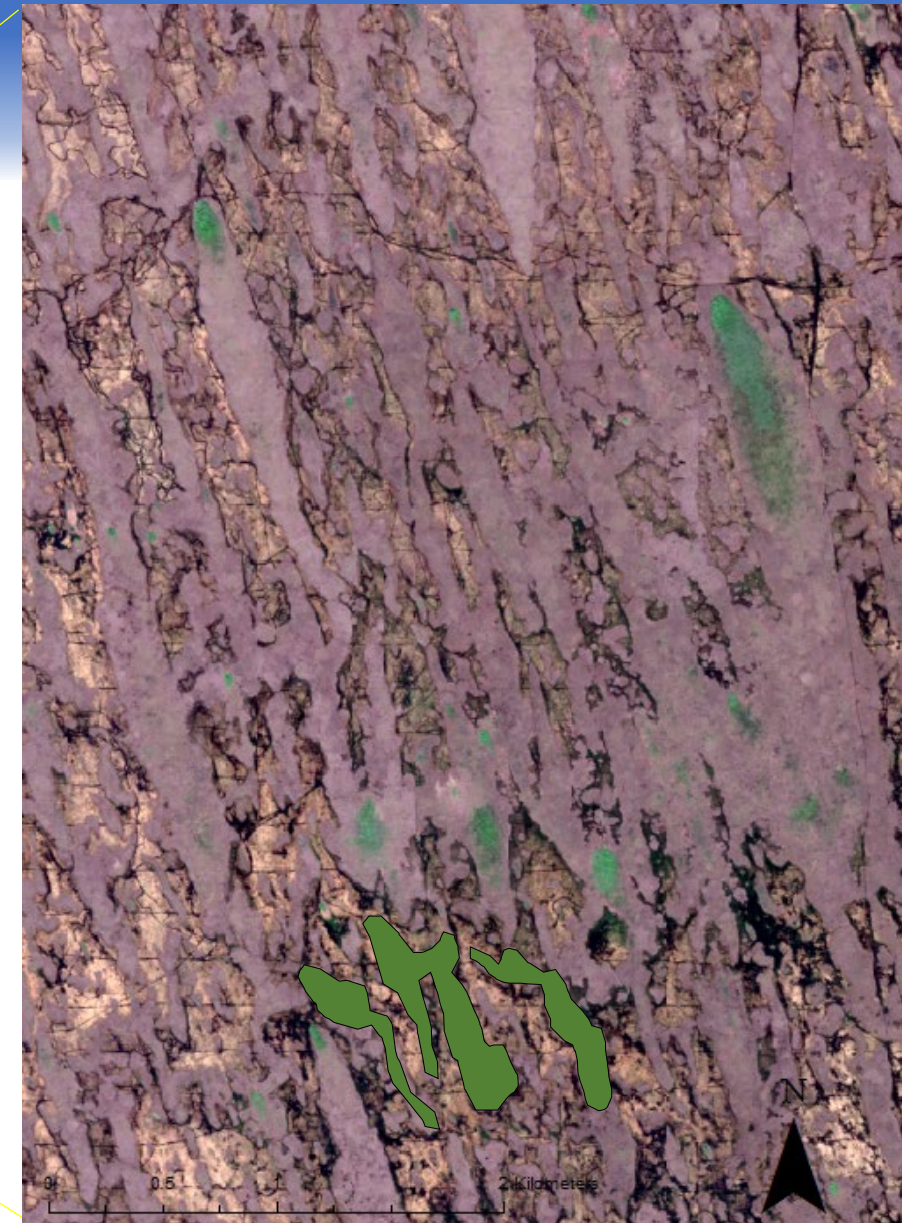
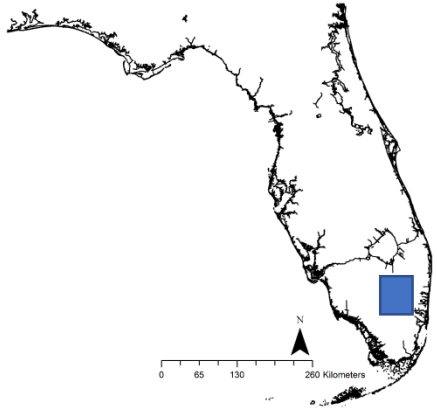


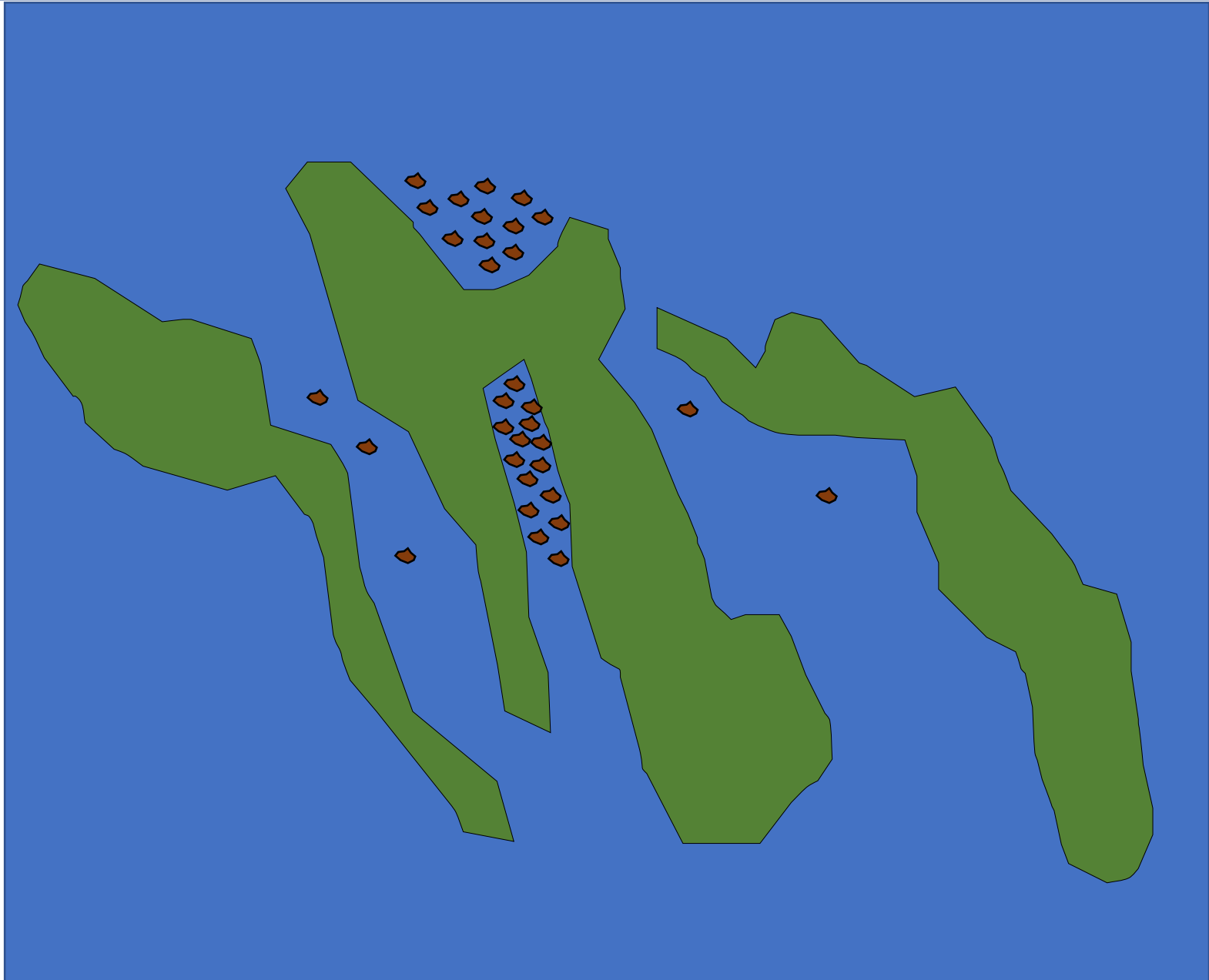
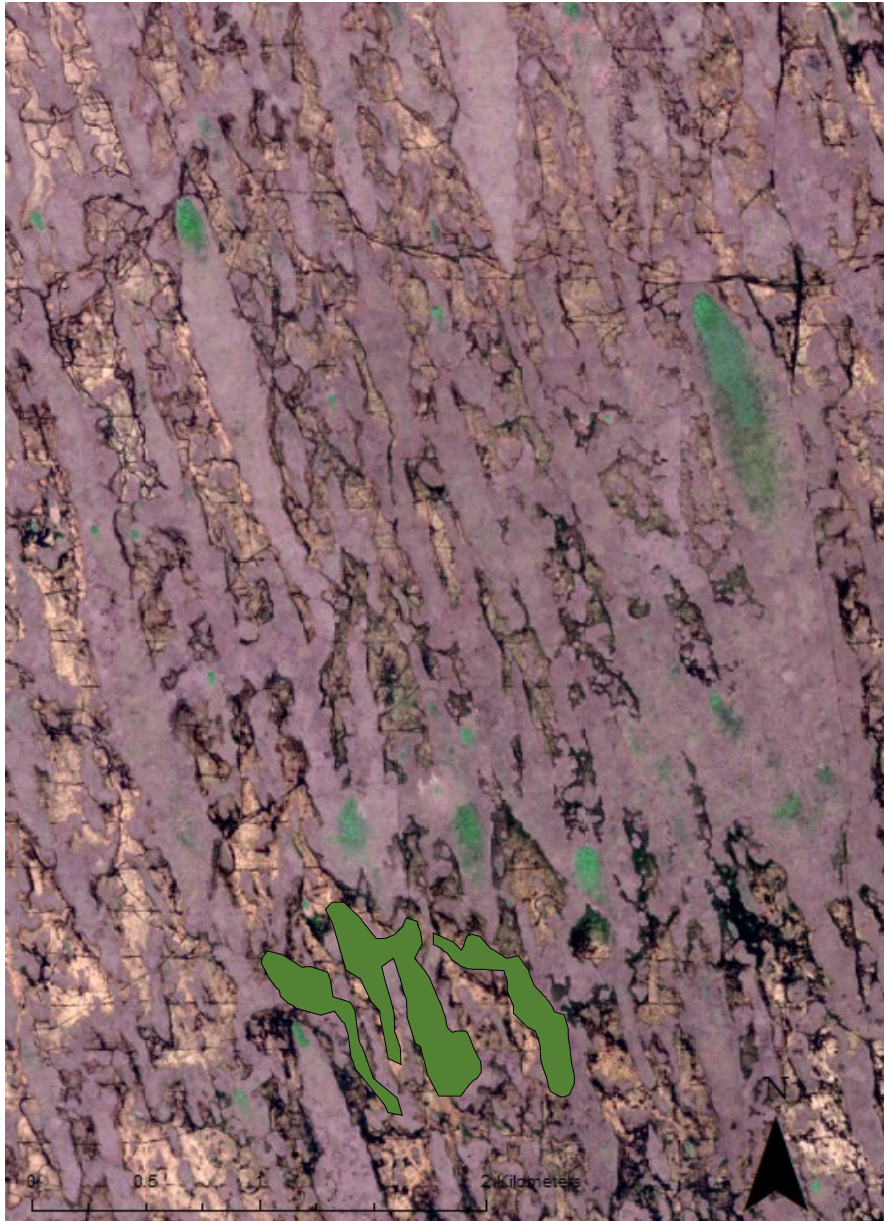
Moving Flow Front



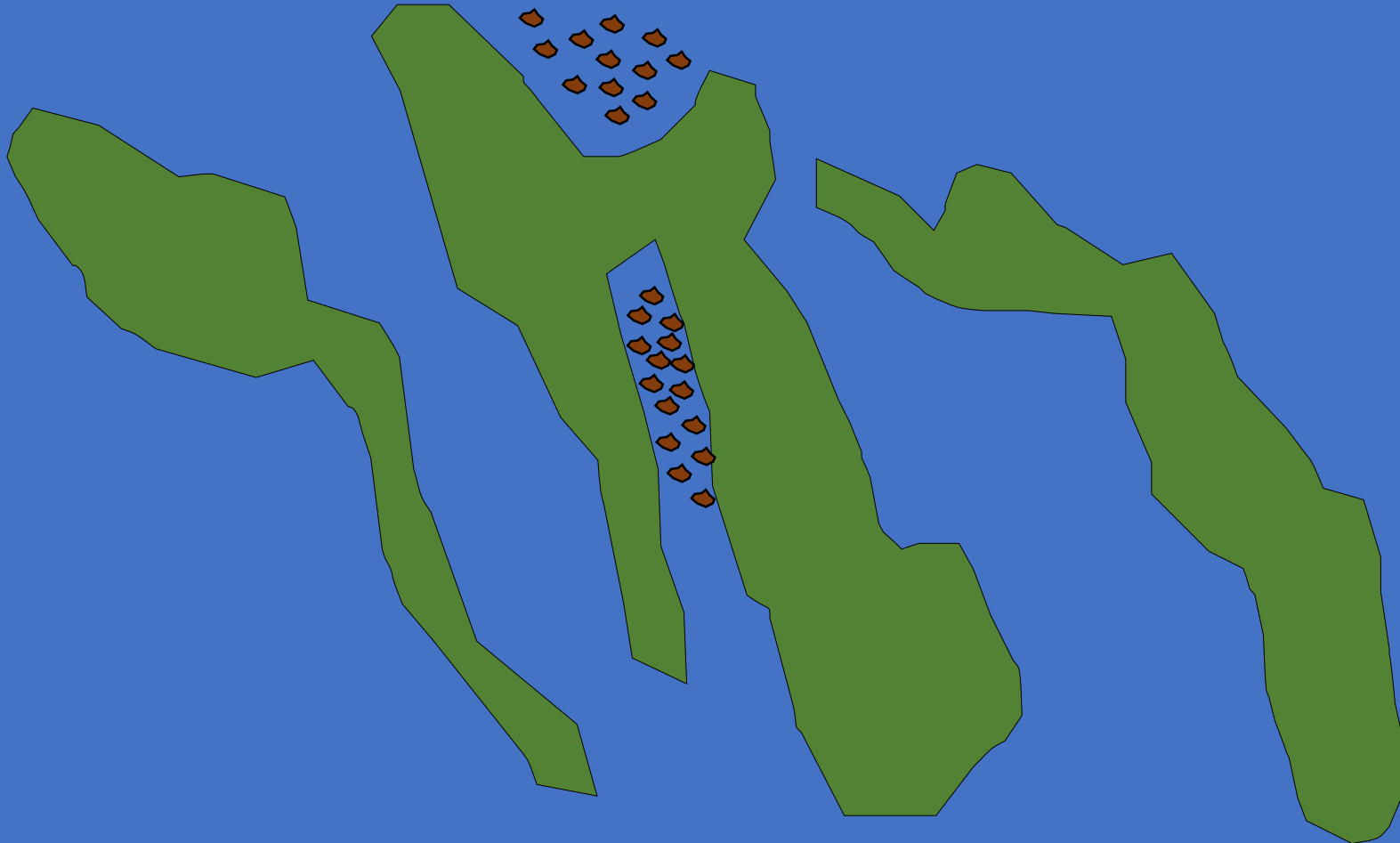
The story of the historic Everglades



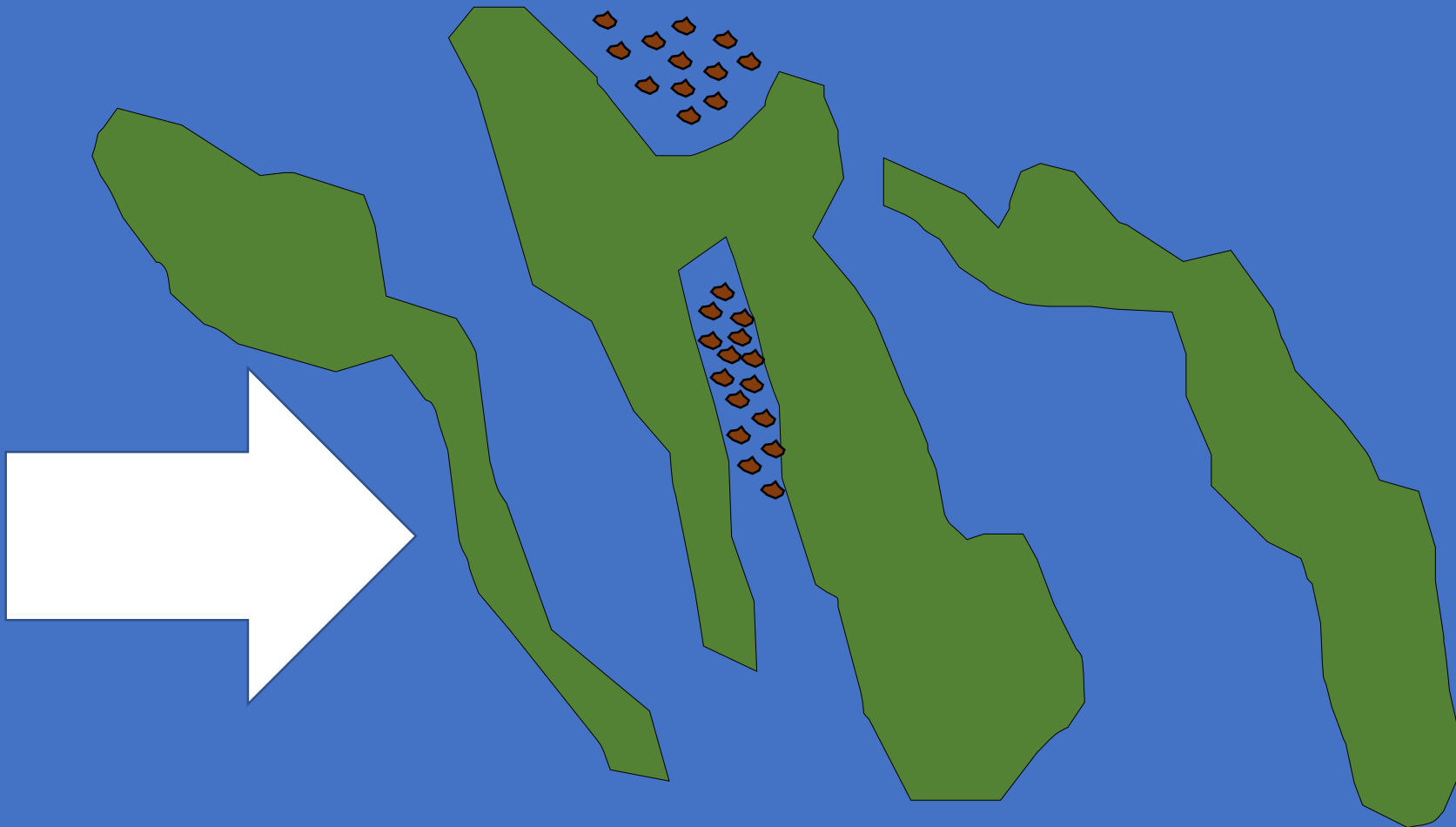




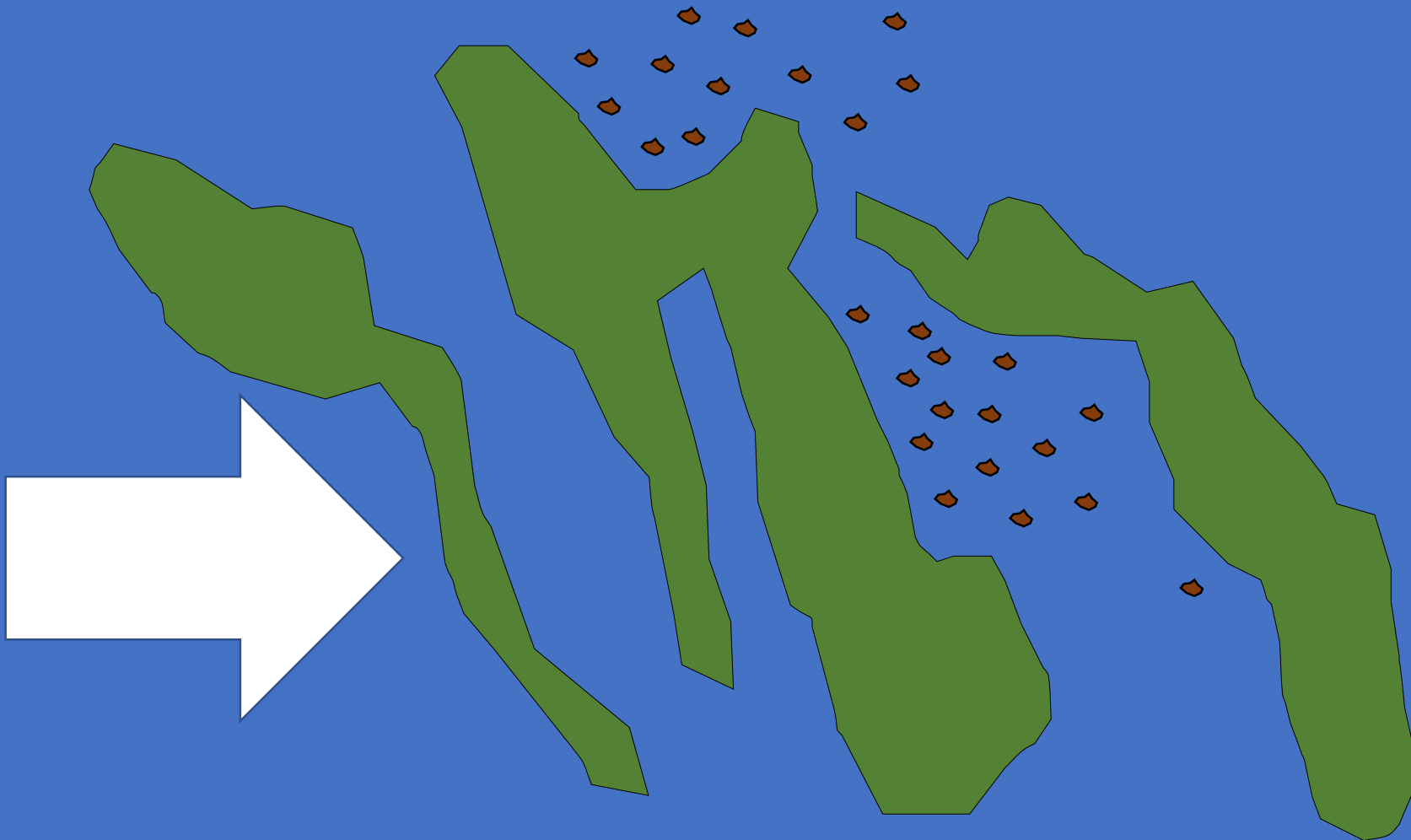
Disturbance



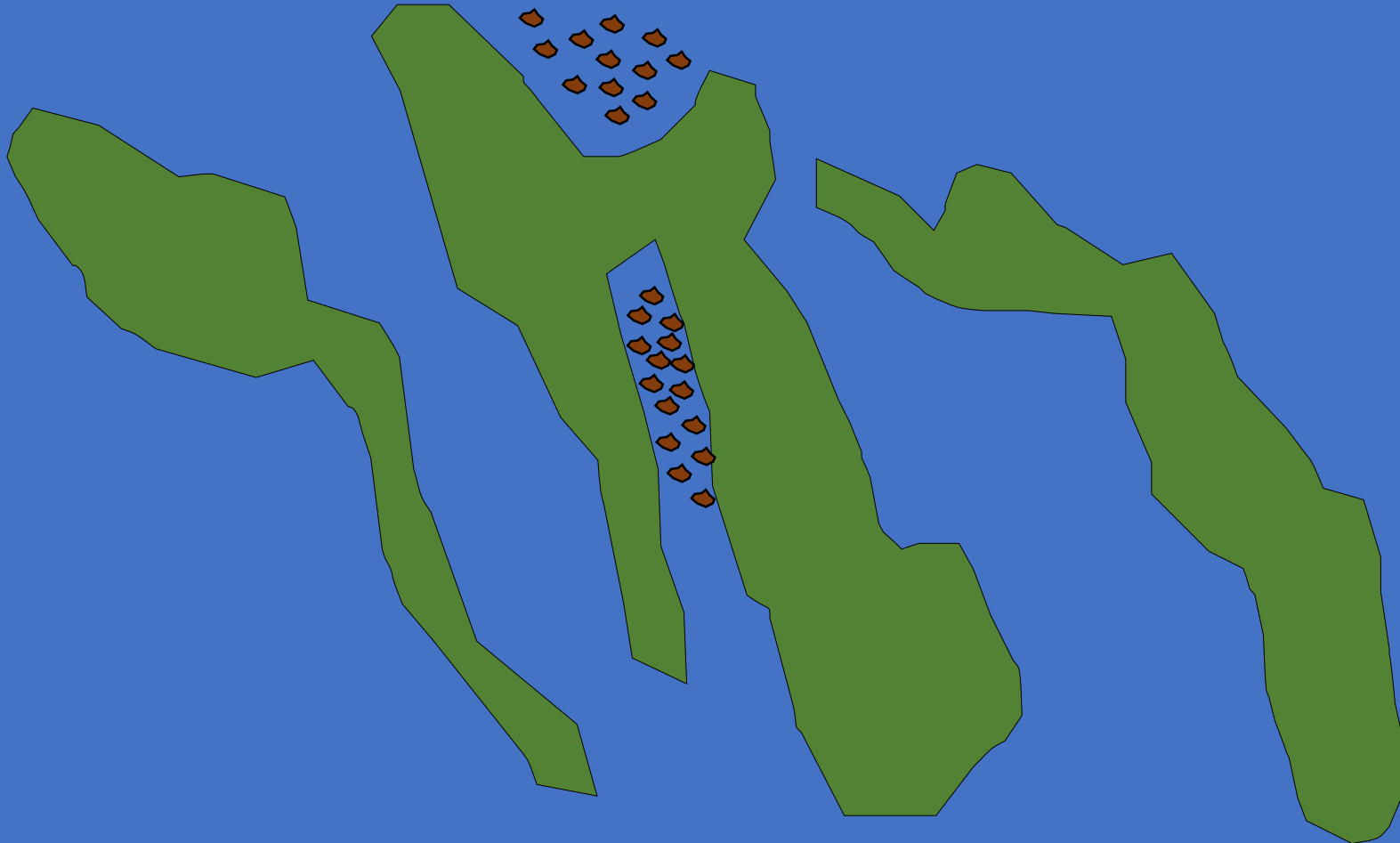
Disturbance—Wind



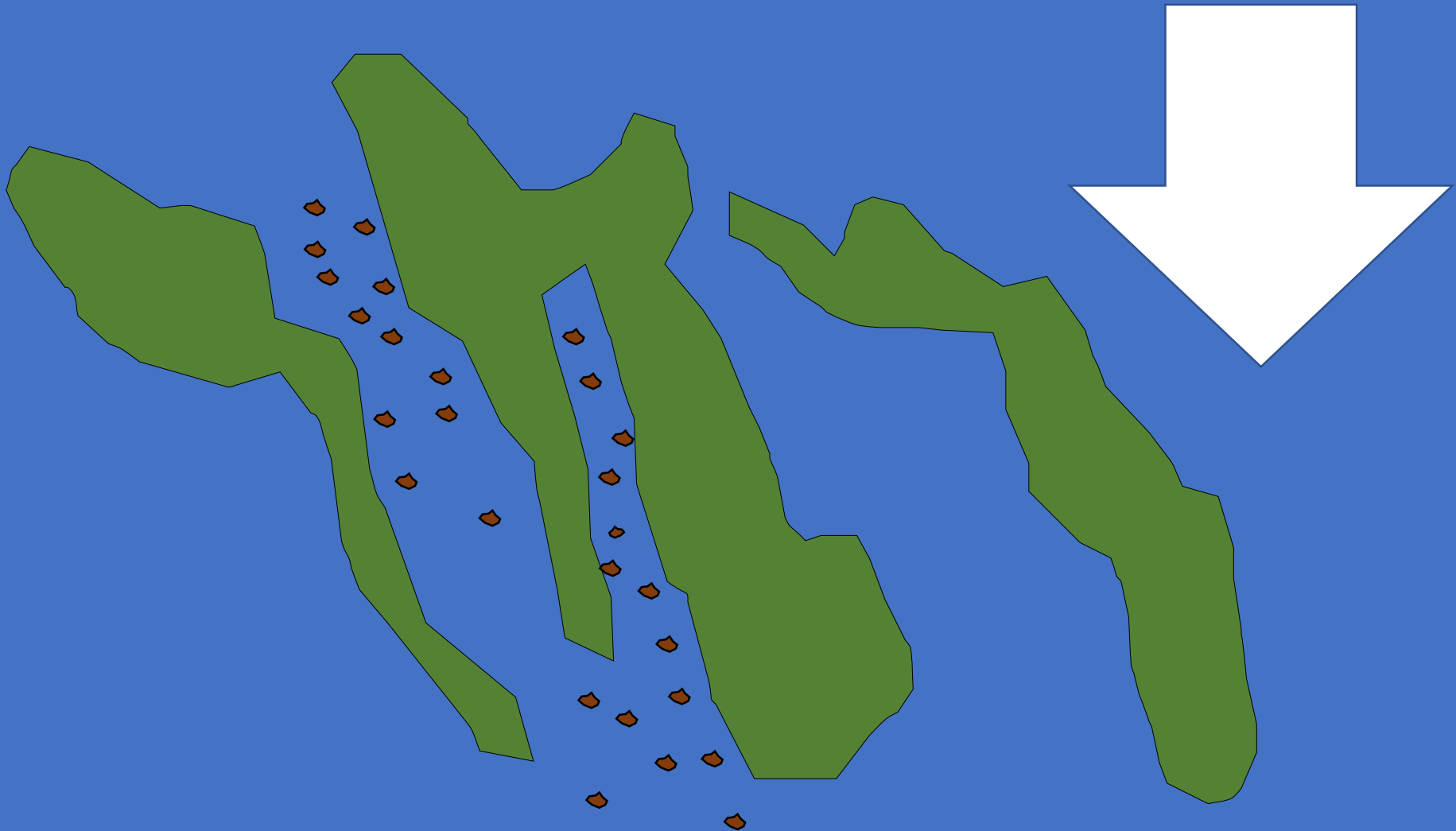
Disturbance—Wind



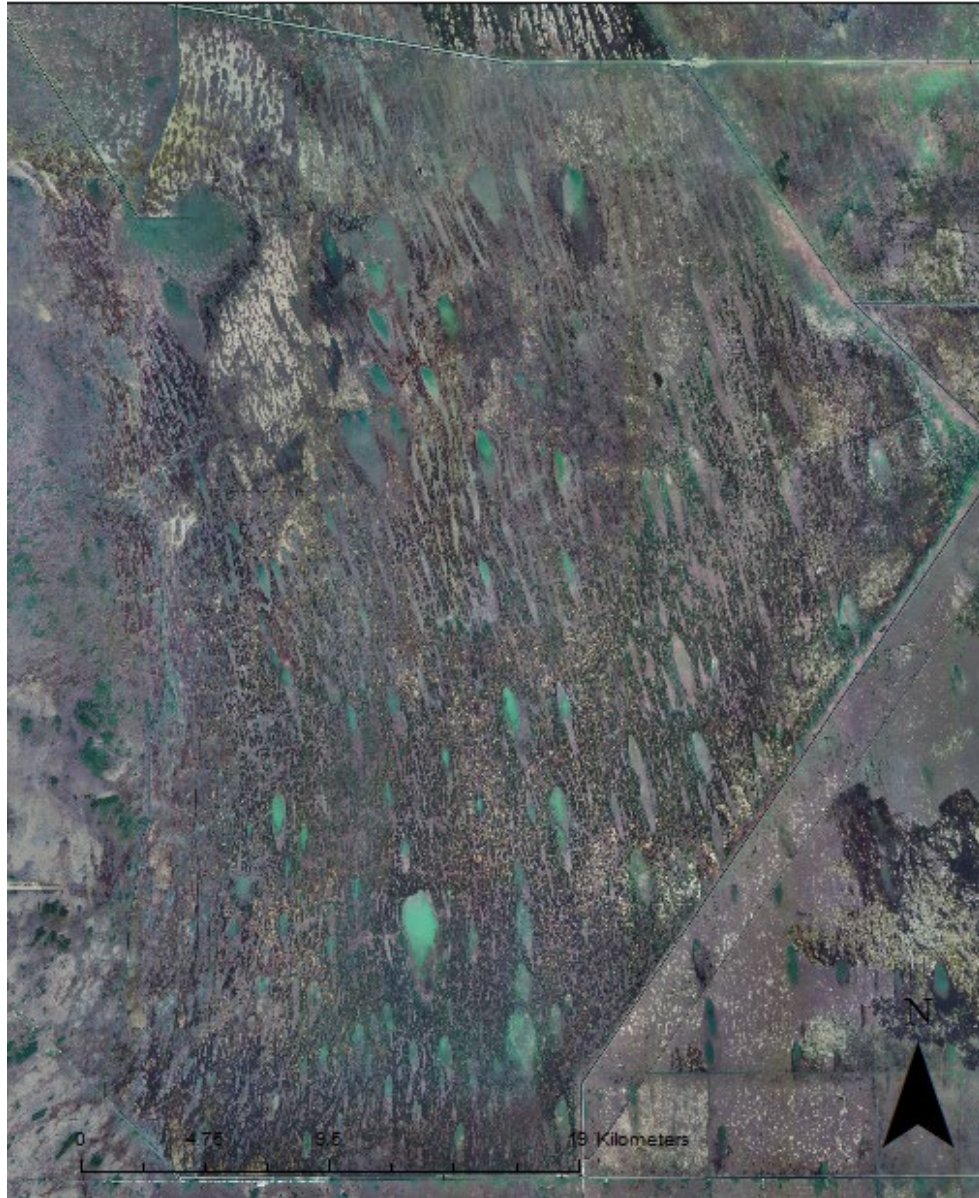
Disturbance—Flood



Disturbance—Flood

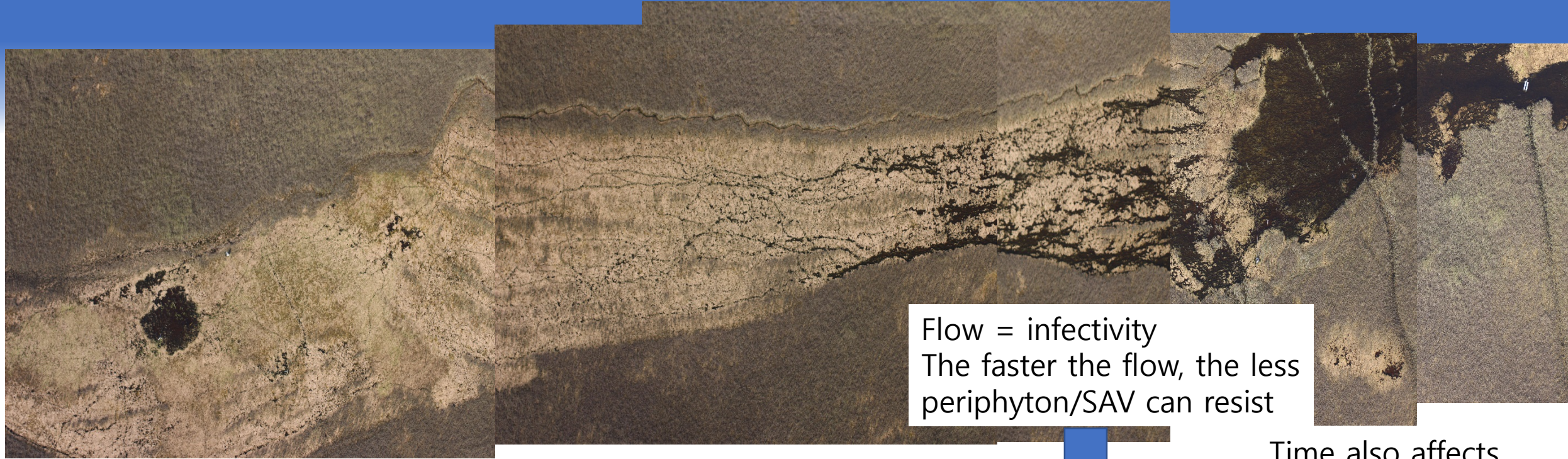


2004



2013





Flow = infectivity
The faster the flow, the less
periphyton/SAV can resist

Time also affects
resistance—it erodes
the periphyton/SAV
resistance over time.

SPF cellular automata model

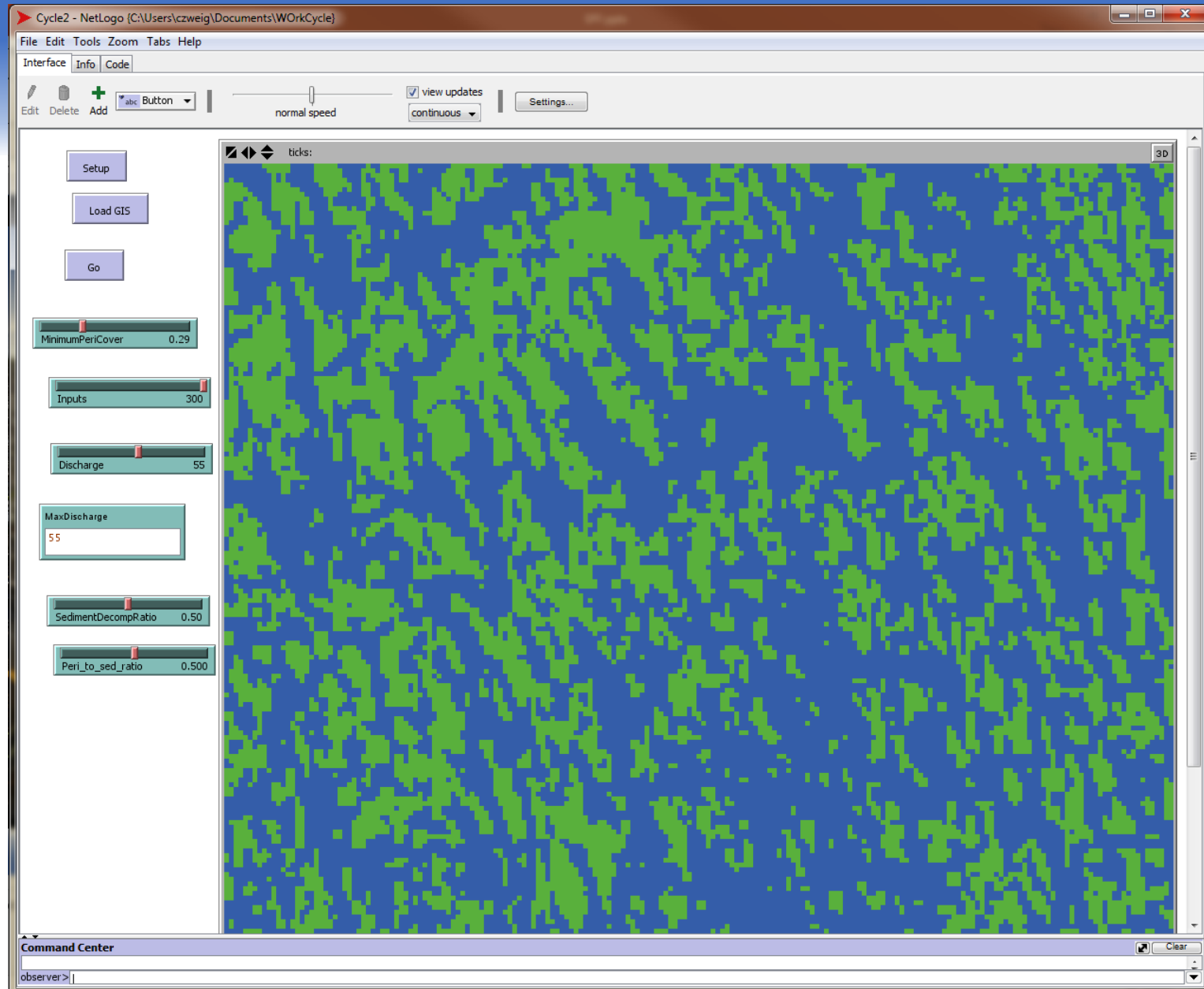
When flow is off,
periphyton/SAV
recovers

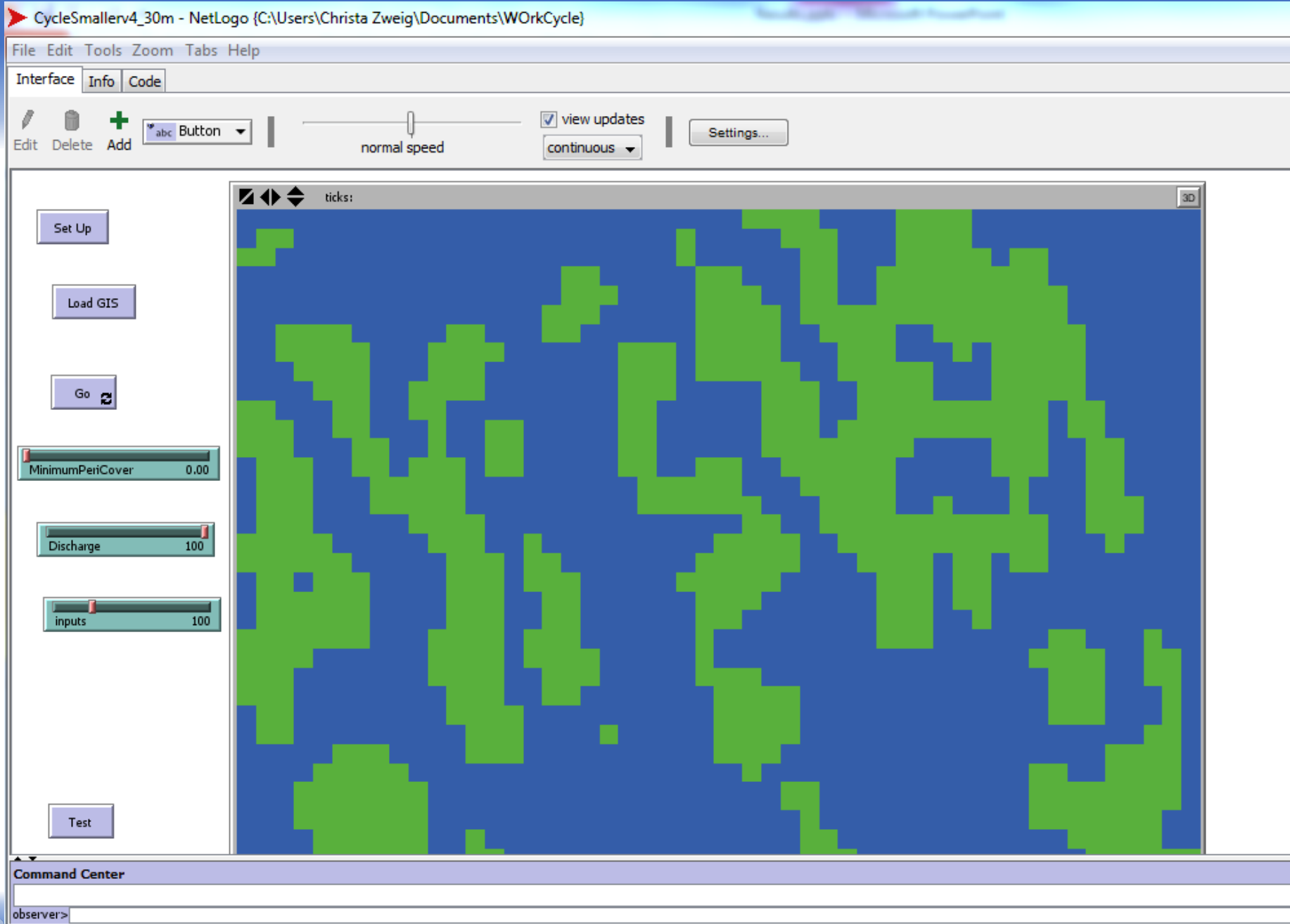
%
periphyton/SAV
= resistance to
flow

SPF Model

Explores:

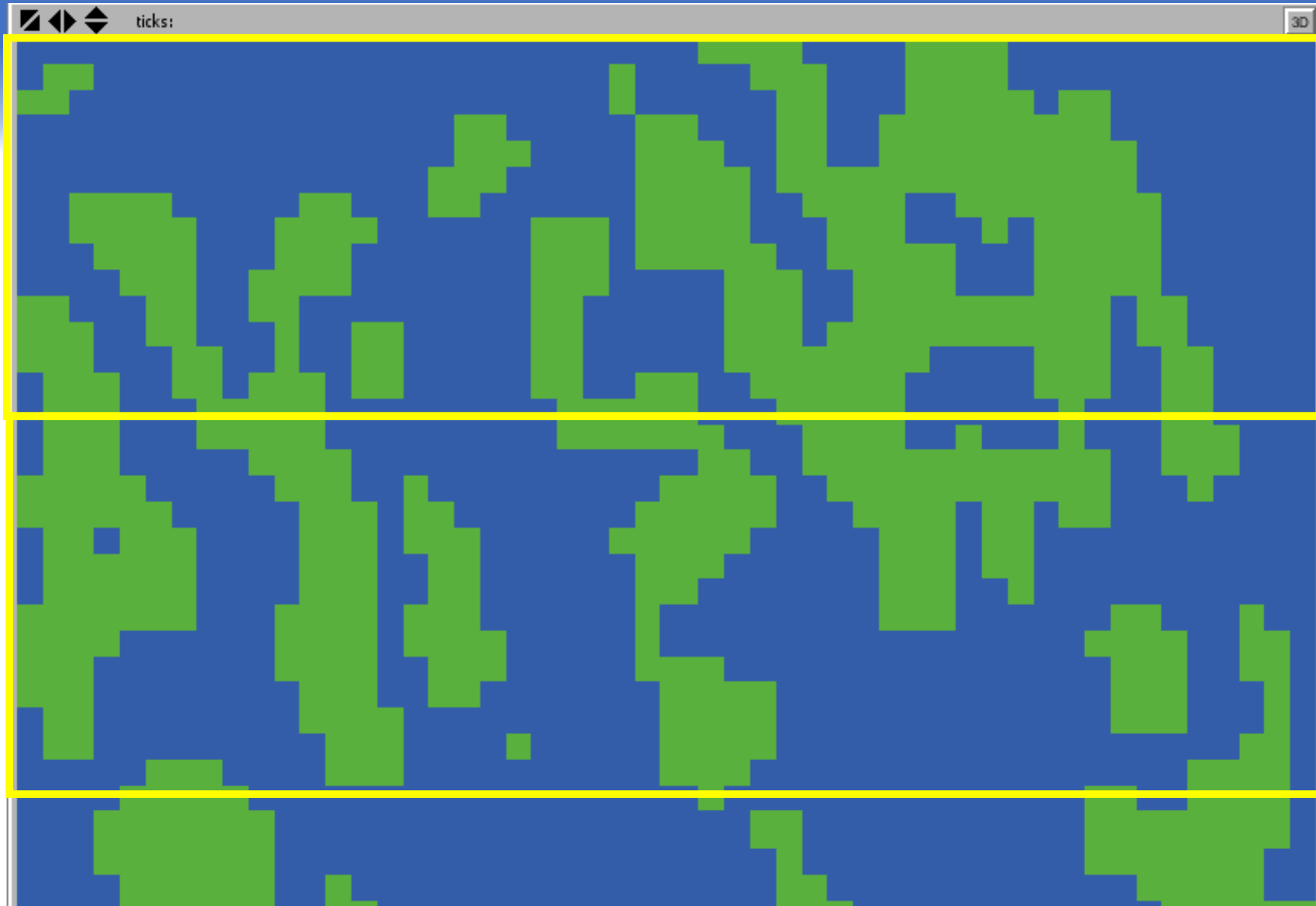
- Configuration
- Hydrologic cycles



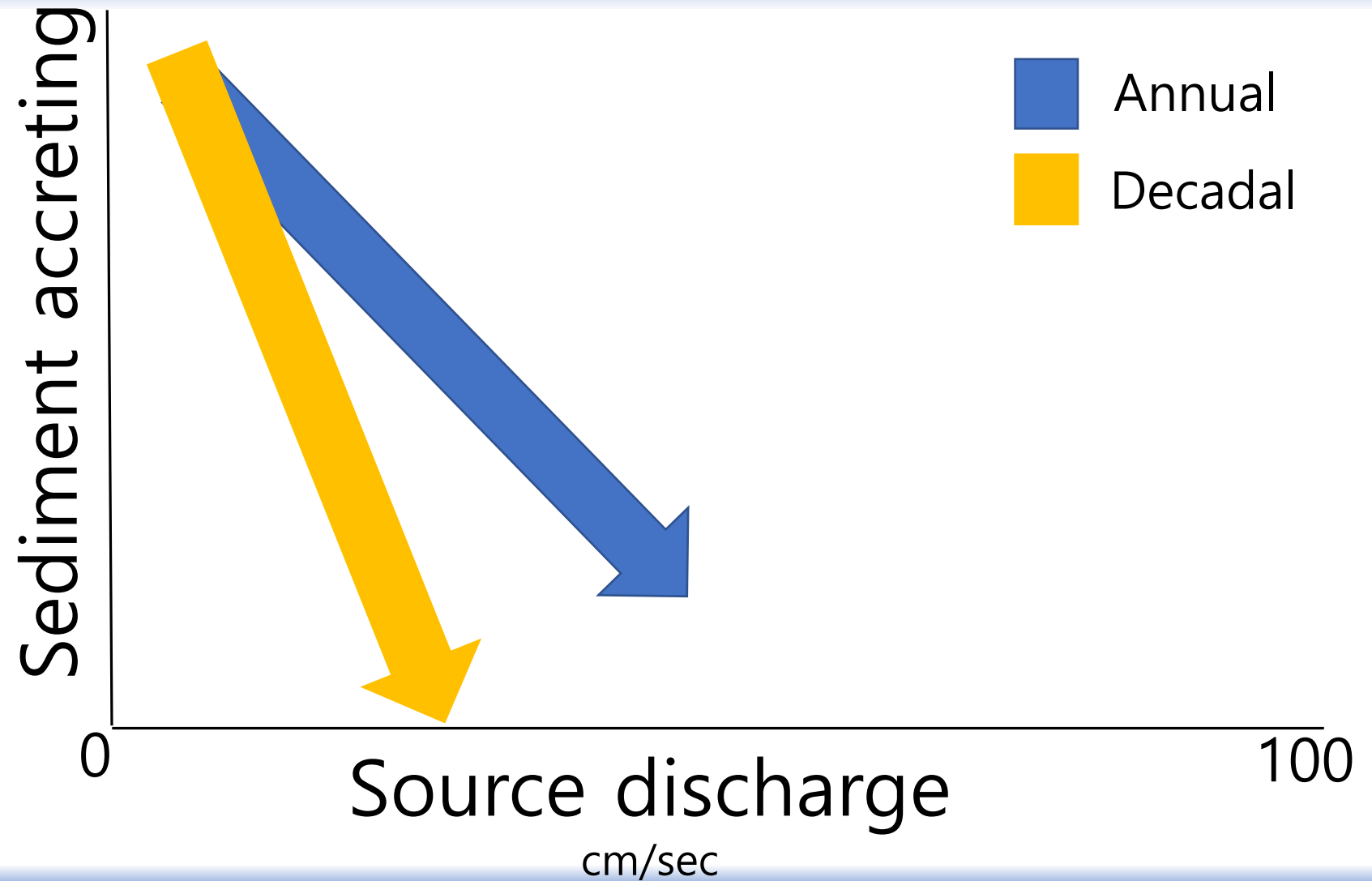
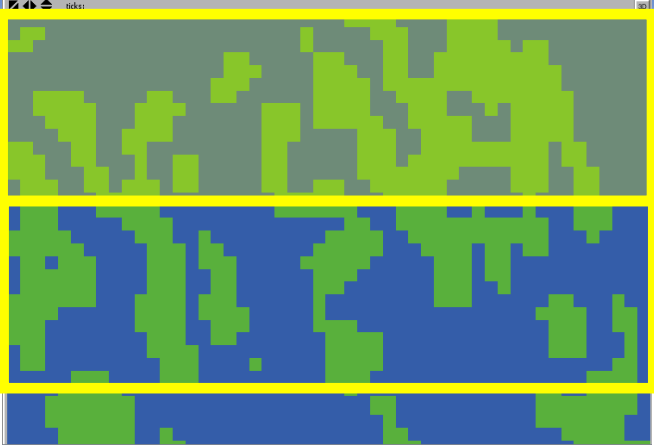


~1km

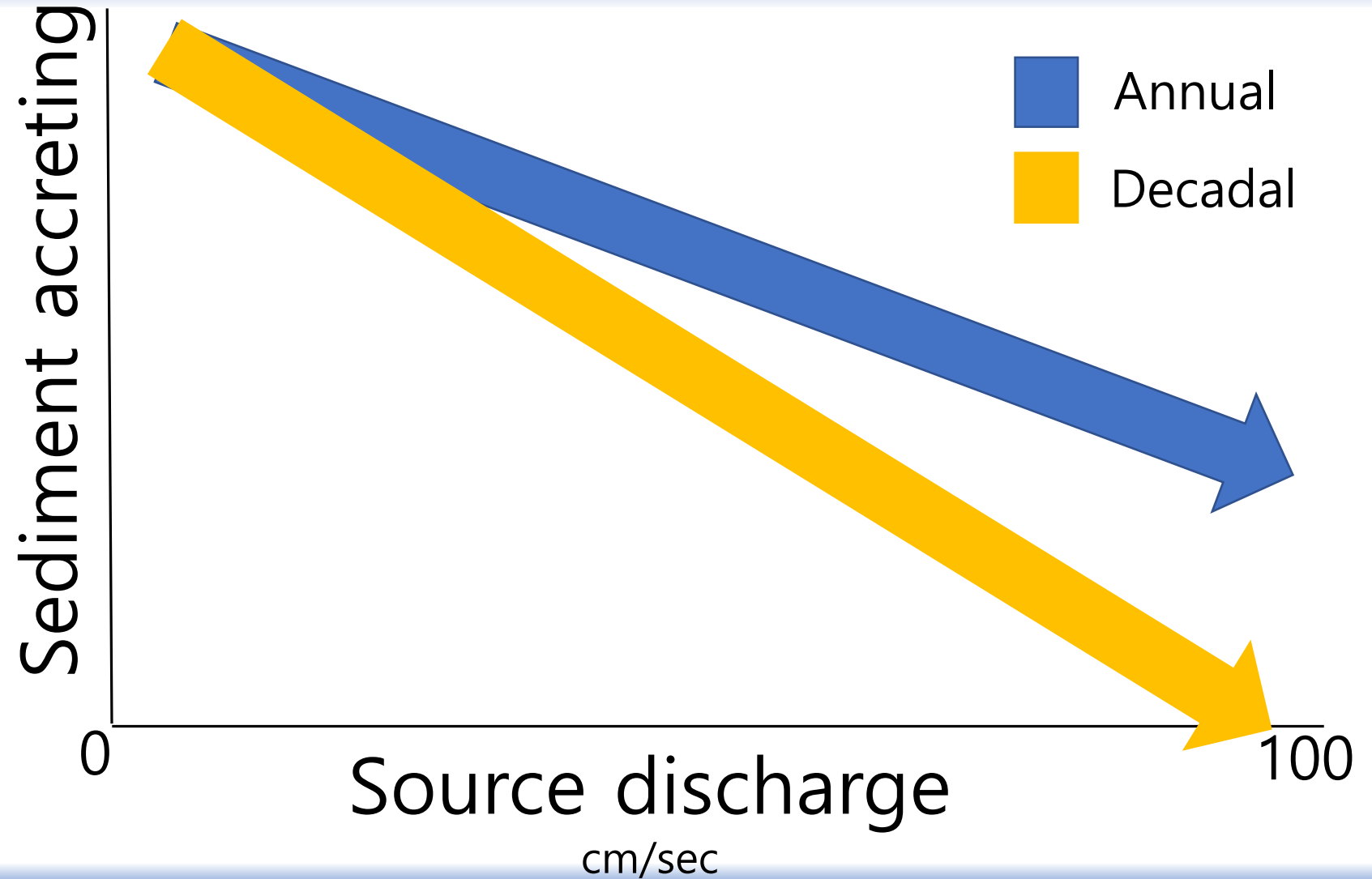
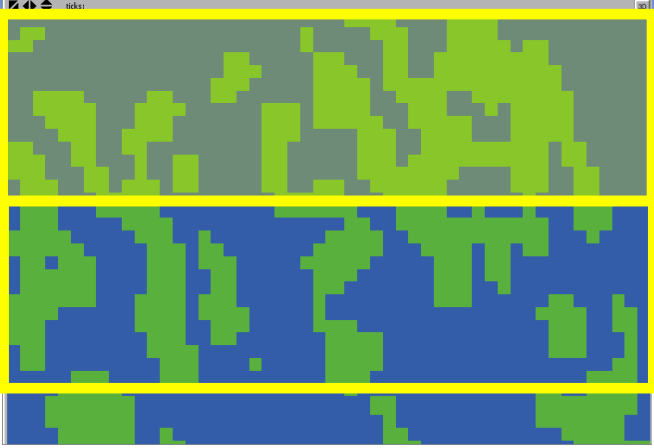
~1km



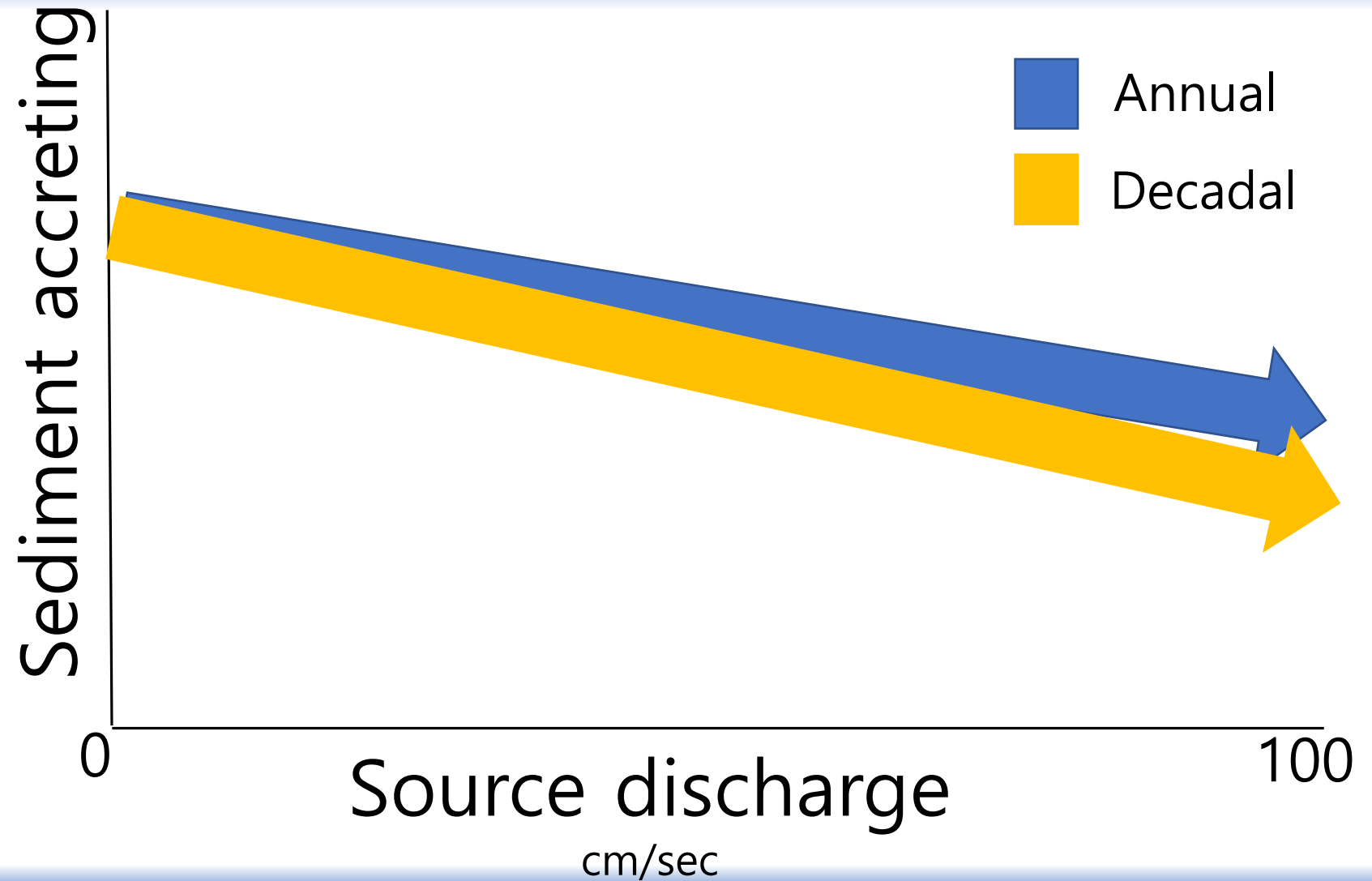
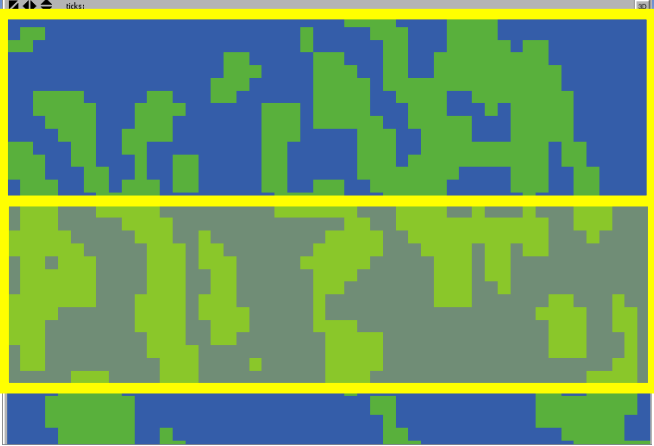
No Isolated Sloughs



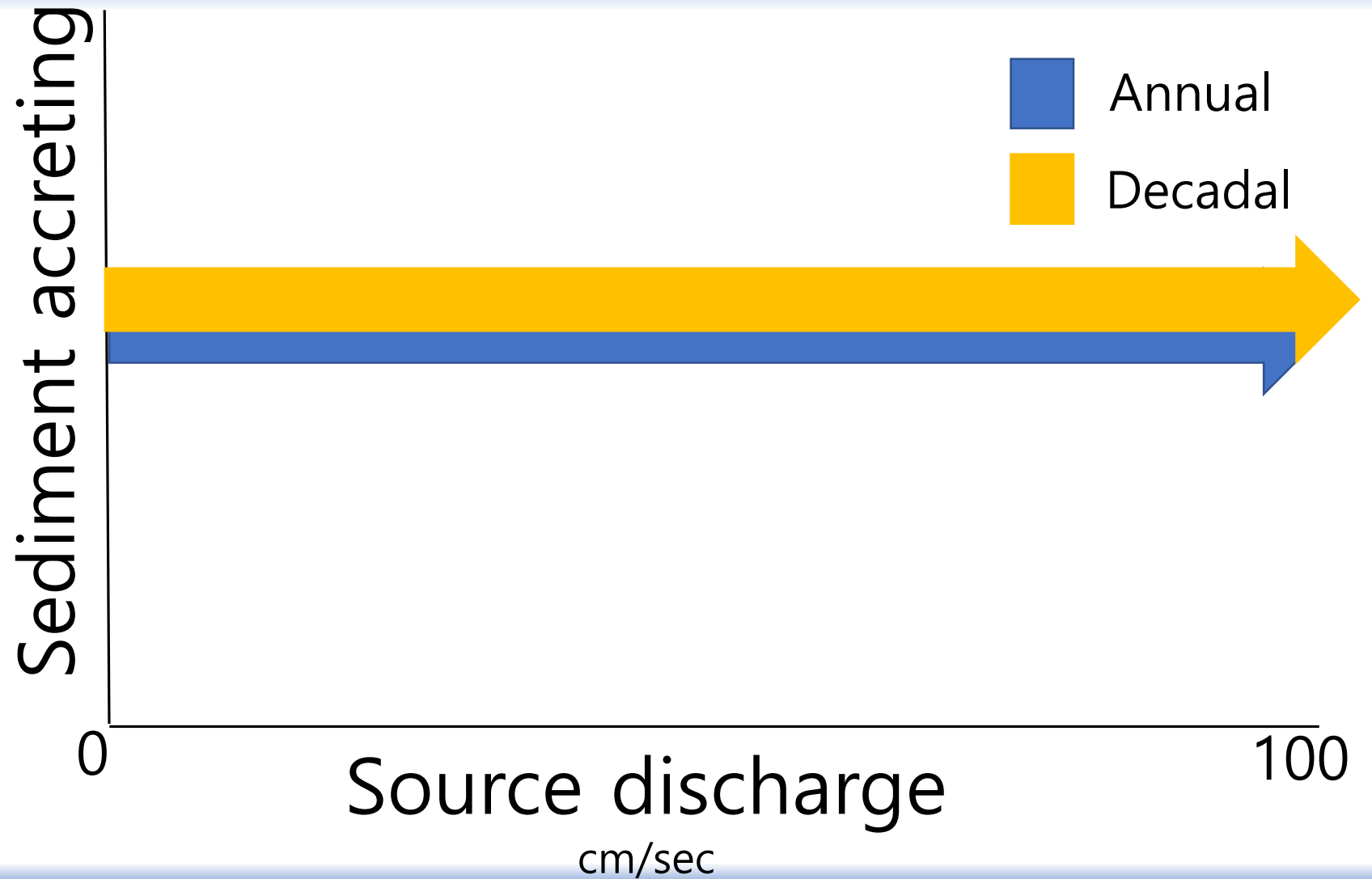
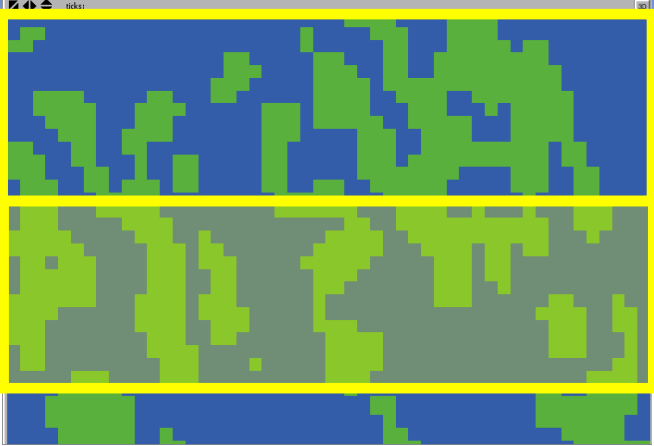
Original Landscape



No Isolated Sloughs



Original Landscape



Why does this matter?





Acknowledgements: Sue Newman, Colin Saunders,
Michael Manna, Erik Tate-Boldt, and Chris Hansen