



Spatial Patterns of Islands and Salt Crusts in the Okavango Delta, Botswana

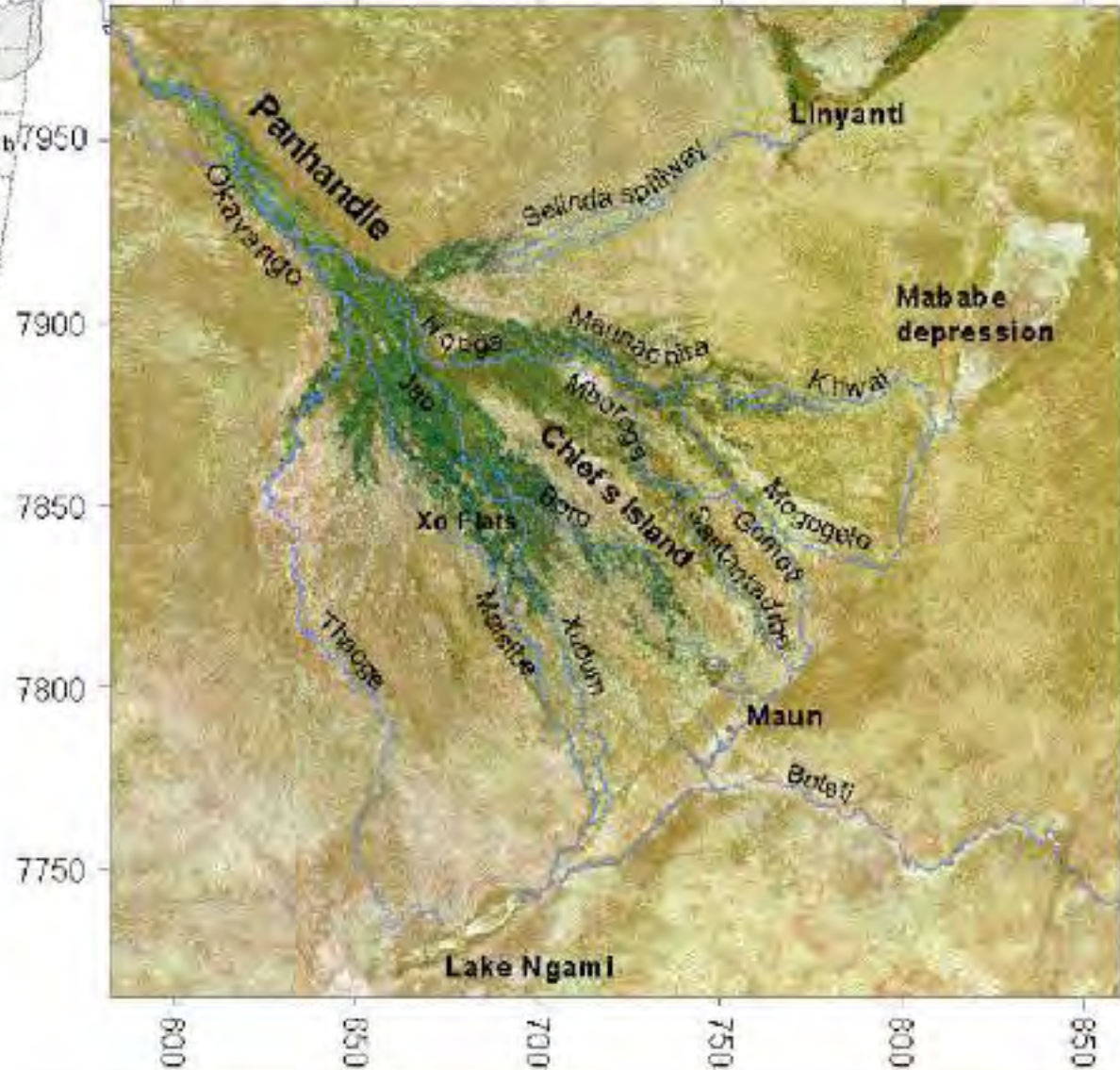
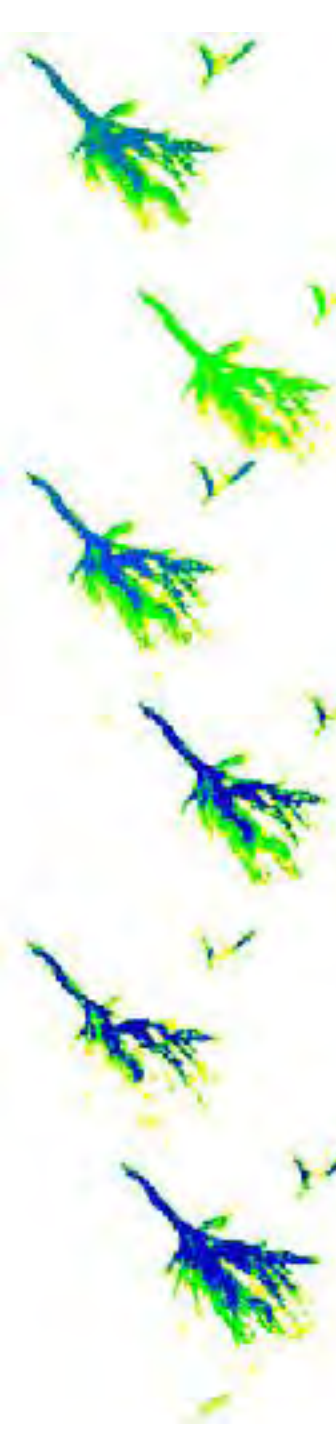
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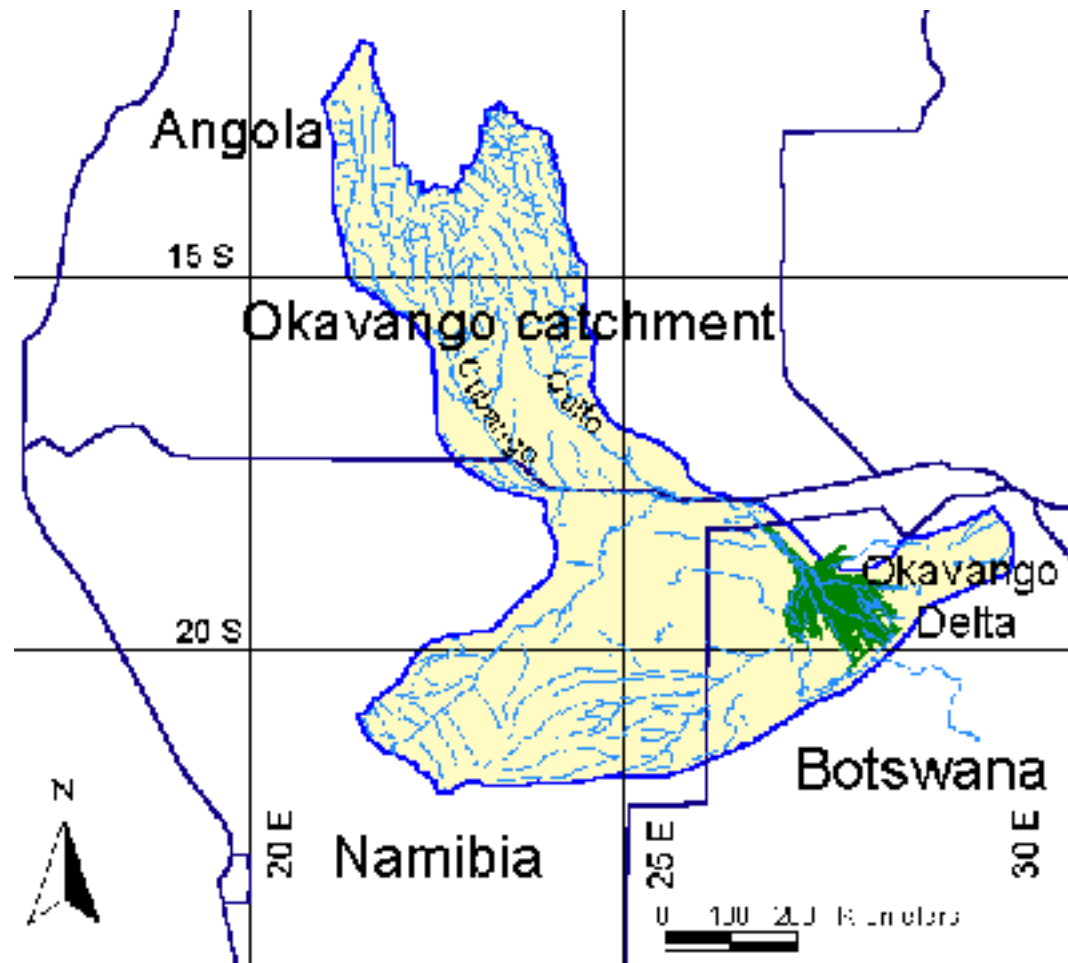
Thomas Gumbricht

IAS July 2002

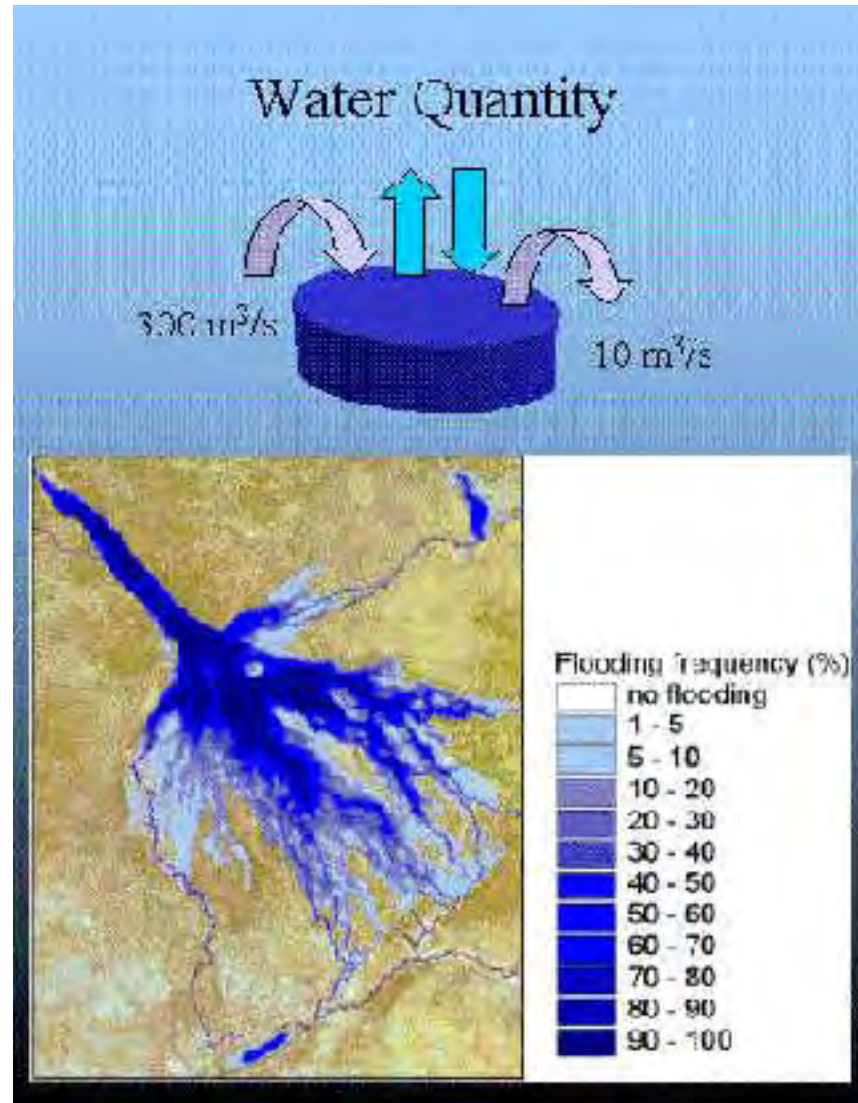
Rivers and places of the Okavango



Catchment area



Water Balance – Evapotranspiration is the big consumer



Matter balance – Where do the dissolved salts end up?





Panhandle



Permanent swamps



Seasonal swamps

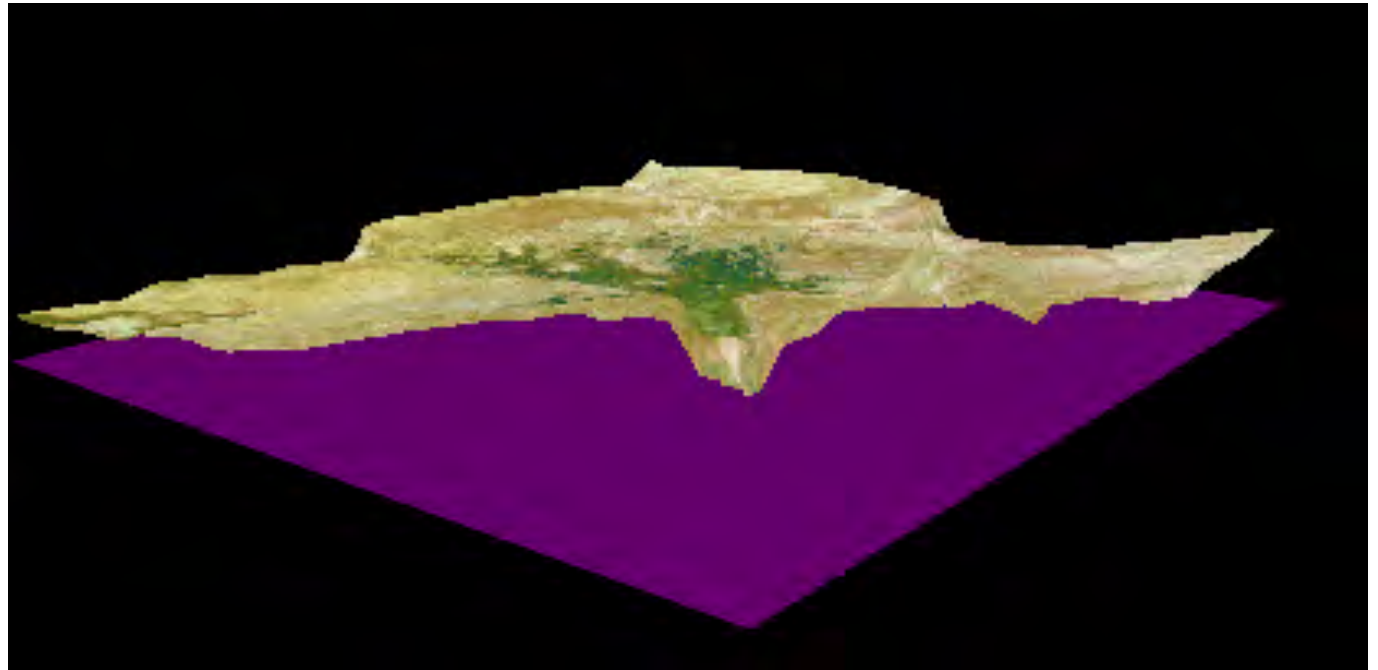


Seasonal swamps, channels



Seasonal swamps, during flood

Topography and water flow – local relief and islands must play a crucial role



Primary islands built from accumulation of clastic sediments

Island types

Inverted channel island



Primary islands built from accumulation of clastic sediments

Island types

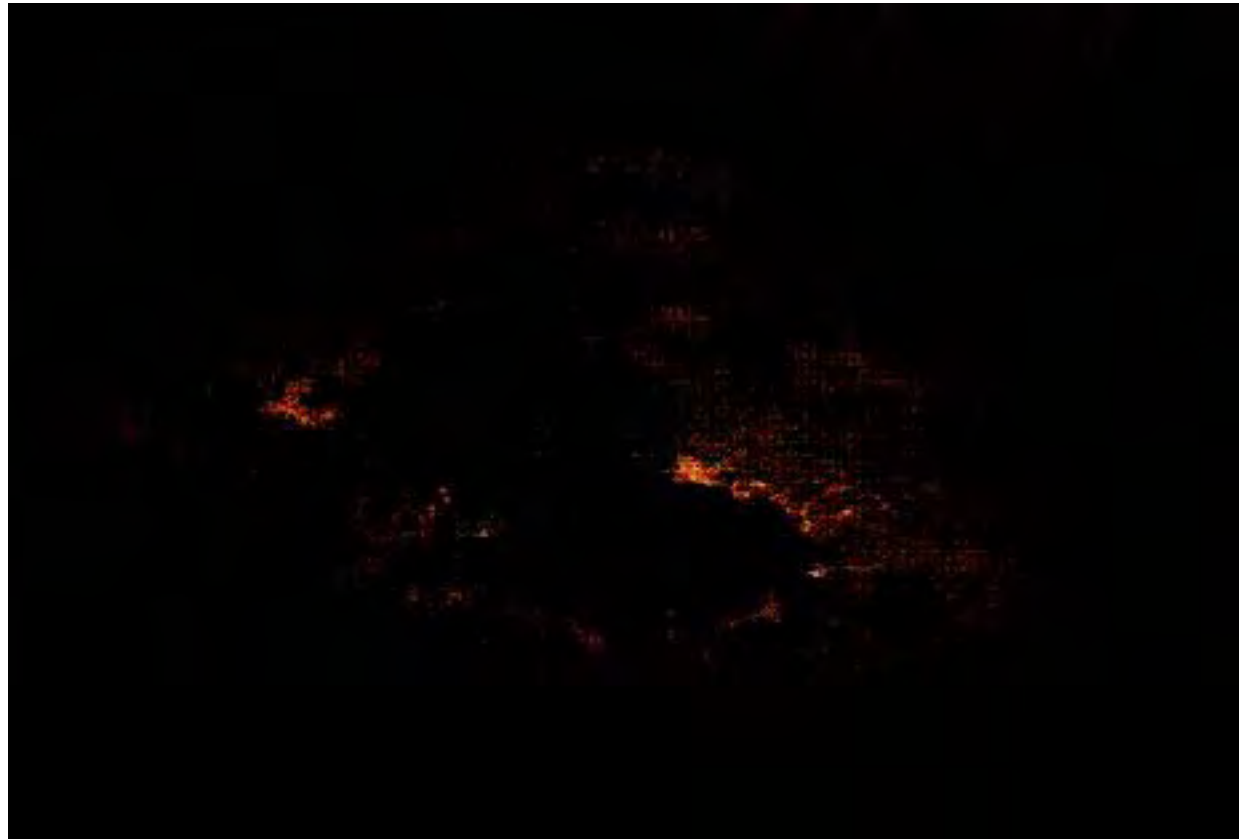
Scroll bar island



Primary islands built from accumulation of clastic sediments

Island types

Anthill island



Secondary islands grown from precipitation of chemical sediments

Island types

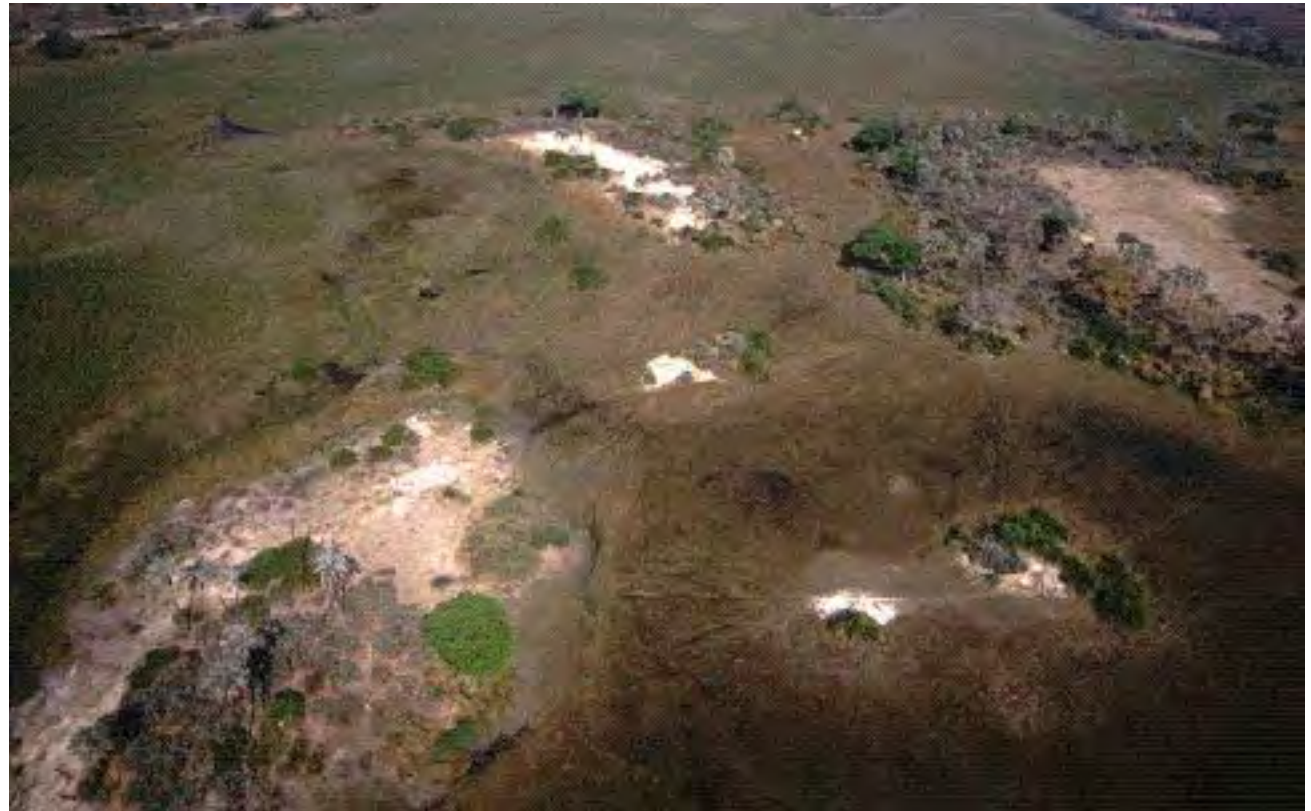
Riparian forest island



Secondary islands grown from precipitation of chemical sediments

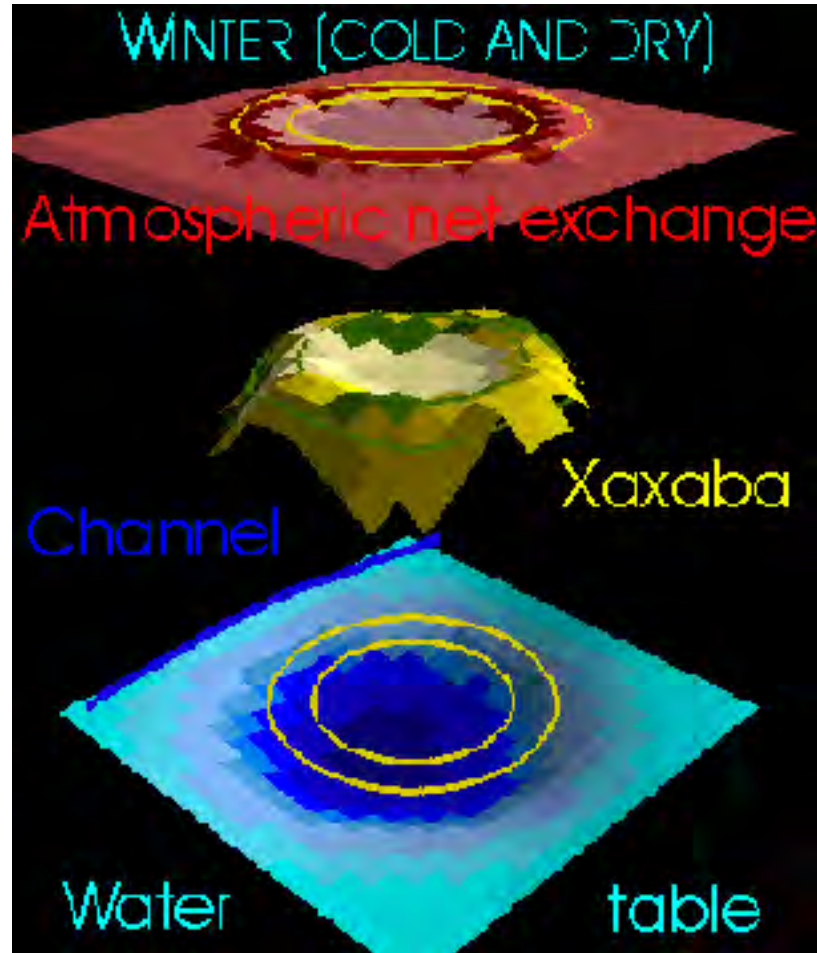
Island types

Salt islands

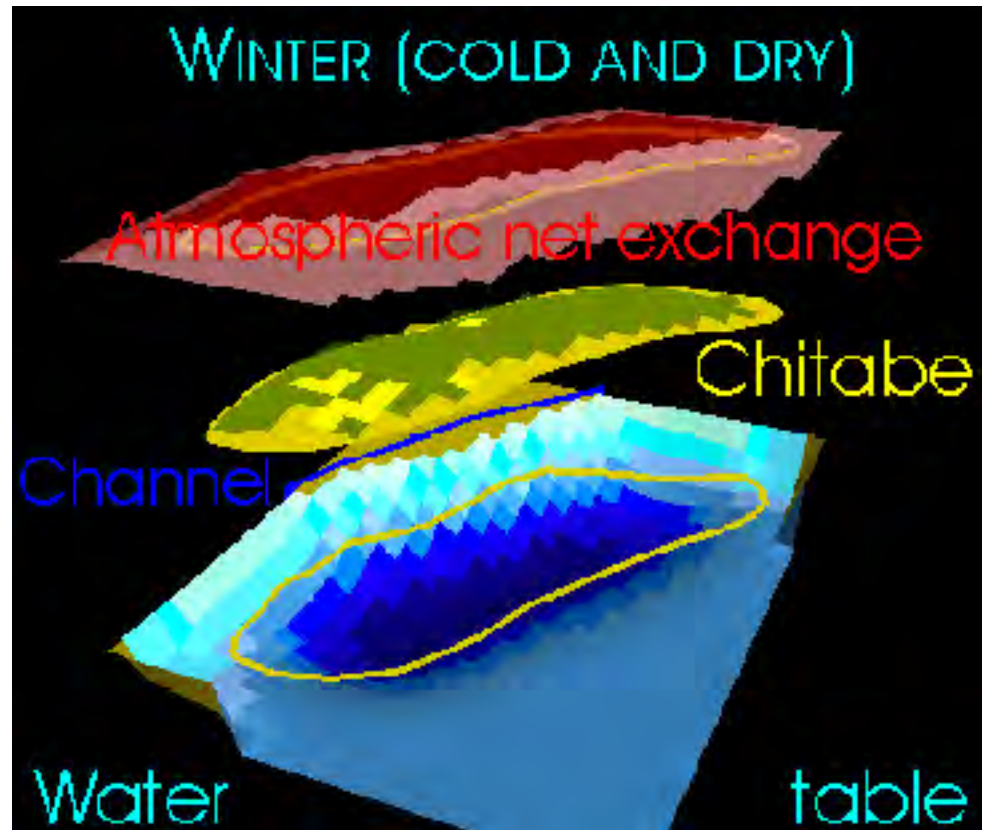


Groundwater flow under an island

In the Permanent swamp



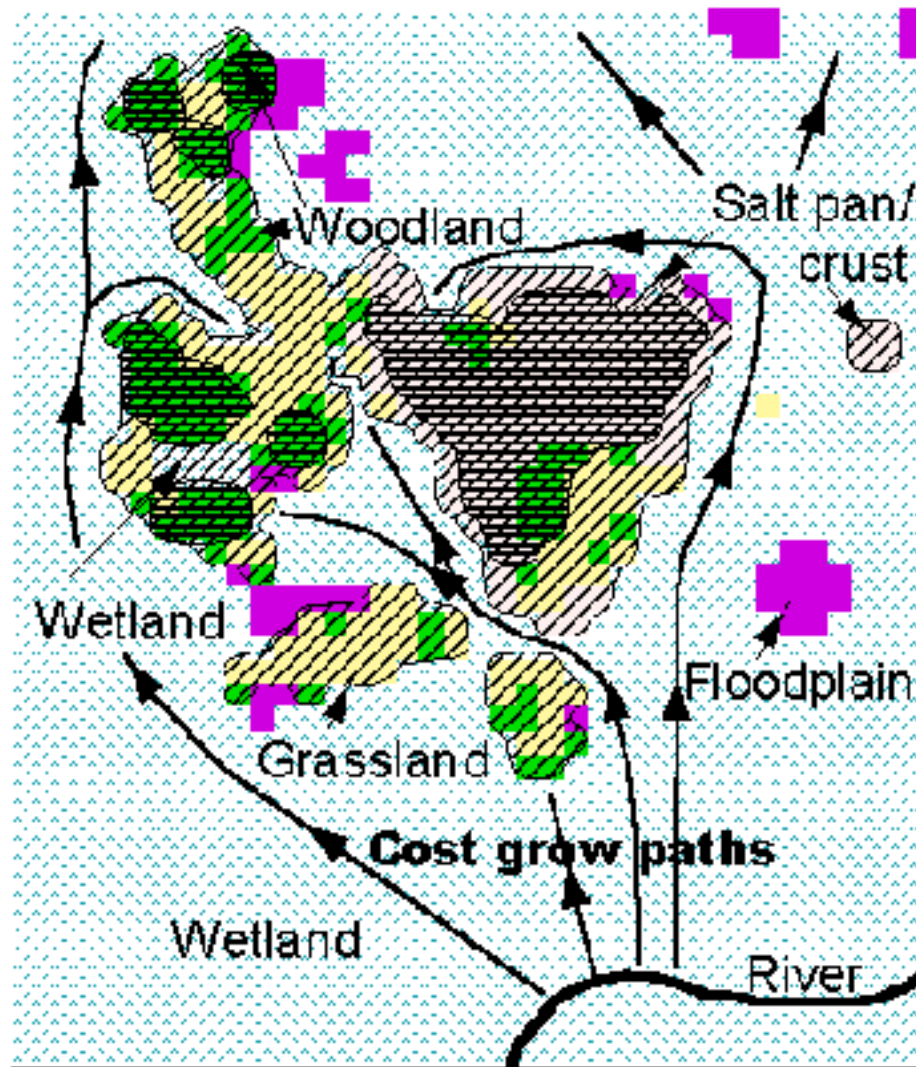
Groundwater flow under an island In the Seasonal swamp



Landcover ecoregions



Island delineation

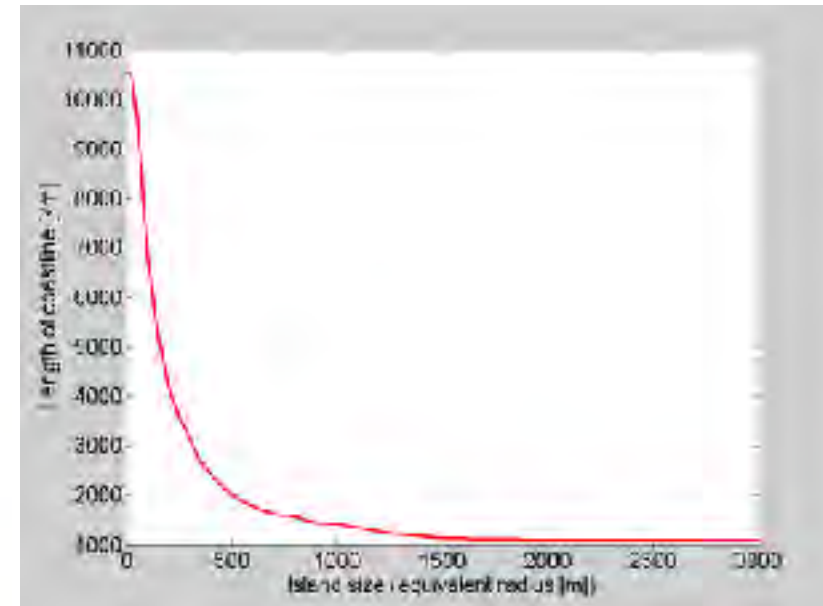


Island max



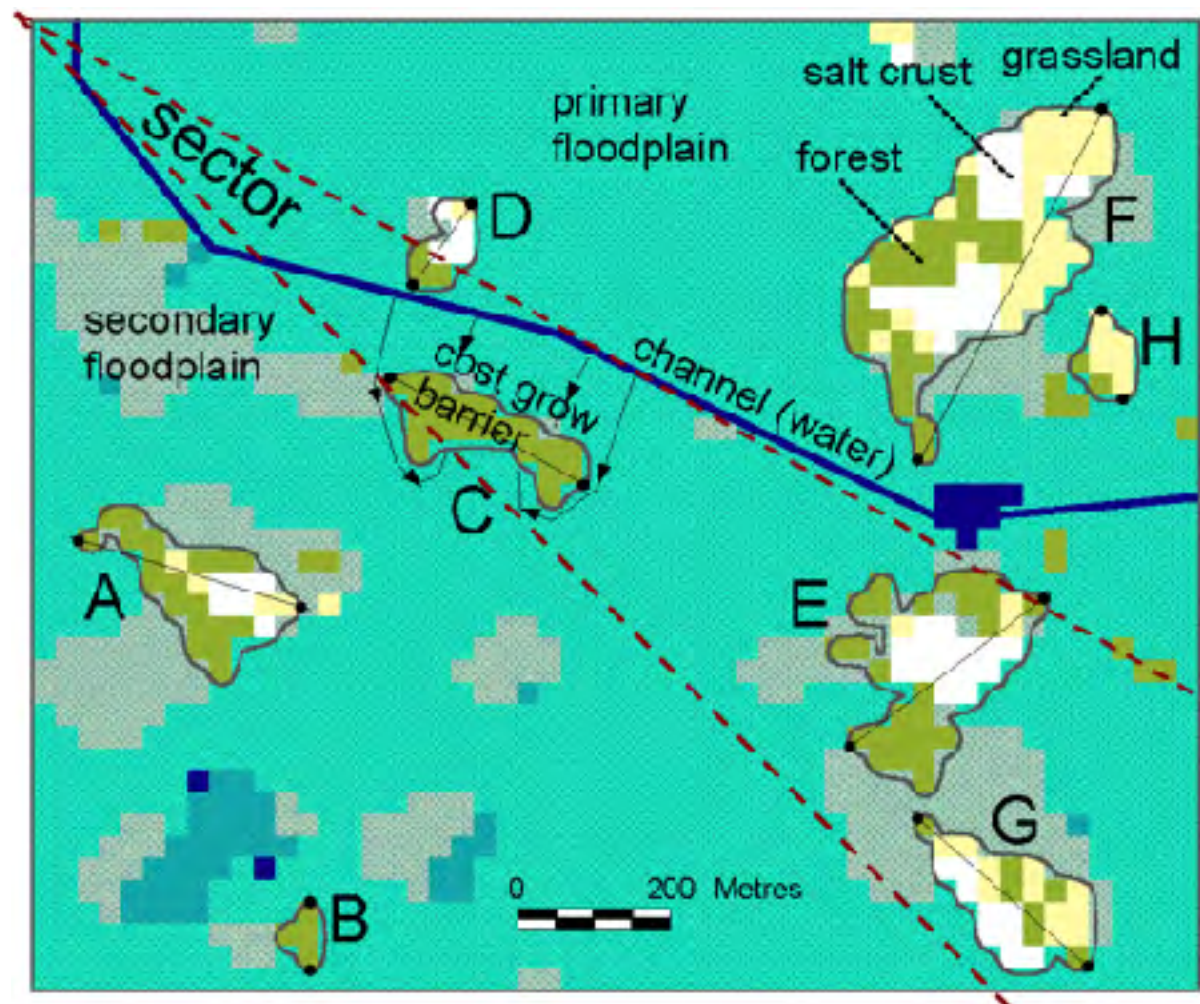
Island core

Salt Balance: Coastline from Remote Sensing



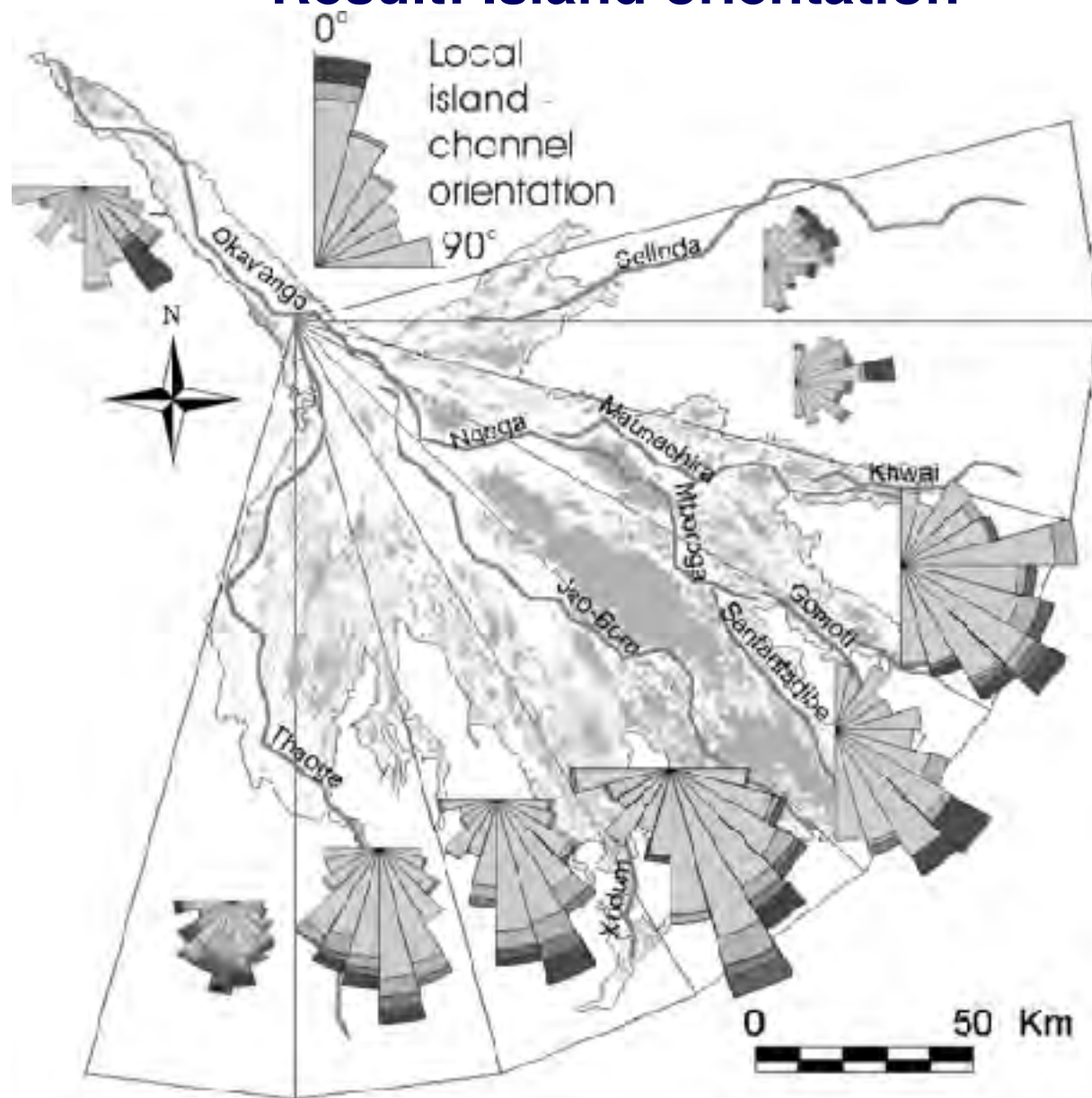
Order of magnitude
correct

Method: Exploring island orientation

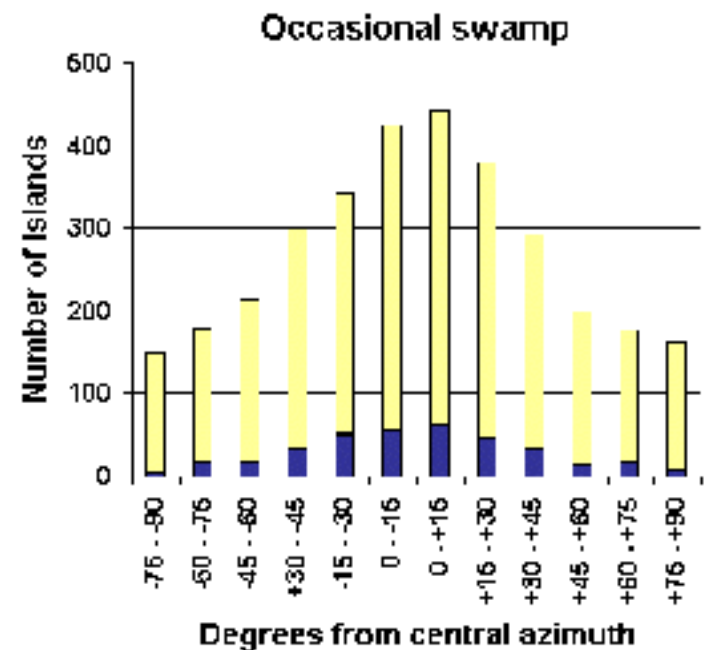
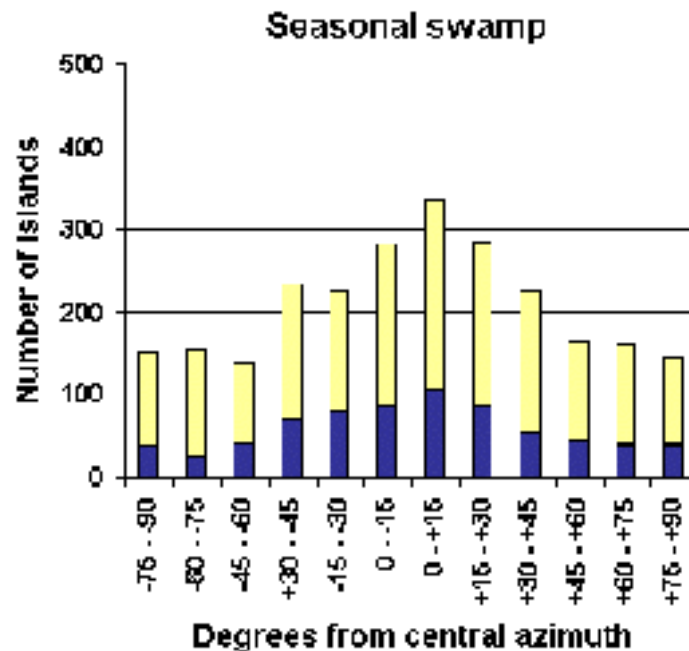
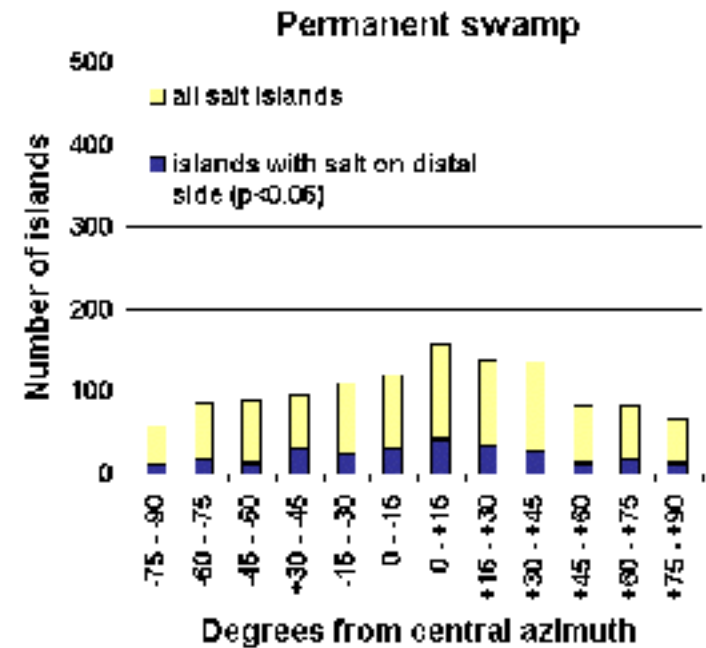


	A	B	C	D	E	F	G	H
Roundness	0.49	0.91	0.51	0.48	0.36	0.47	0.58	0.92
Regional salt position	distal ²	na	na	proximal	distal	equal	proximal	na
Channel salt position	front	na	na	back	back	back	back ⁺	na

Result: Island orientation

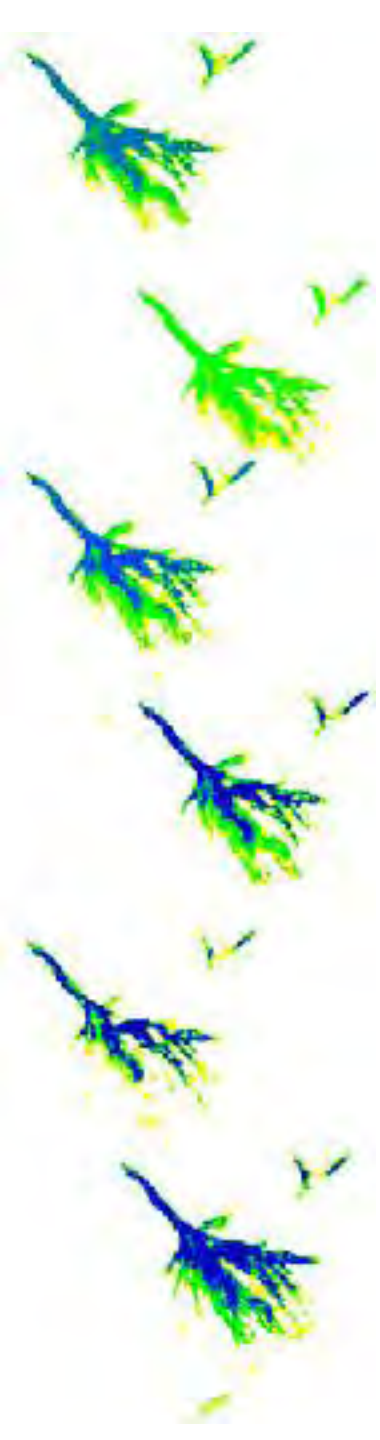


Result: Island orientation



Conculsion

- Islands in the Okavango Delta are oriented along the azimuth of the Delta surface
- Distribution of salt crusts suggests that this partly is due to secondary island growth
- The un-isotropic orientation of islands influences water flow and sediment distribution, and plays a role in the channel switching on the Delta





Acknowledgements

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