Identifying riparian climate corridors to inform climate adaptation planning

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Riparian areas are expected to facilitate range shifts and provide refugia.
Riparian areas span climatic gradients
Riparian areas contain cool, moist micro-climates relative to surrounding areas.
Riparian areas feature high species richness and benefit upland and aquatic species.
Which riparian corridors are most likely to promote biological resilience?

- Span climatic gradients
- High canopy cover
- Relatively wide
- Low solar insolation
- Low human modification
Using geomorphology to identify a base layer of potential riparian areas
Calculating a Riparian Climate Corridor Index

- Temperature
- Canopy Cover
- Area
- Relative radiation
- Land use

\[
\text{Index} = \Delta T \times \frac{(C + A)}{(R + L)}
\]
Using Flow Accumulation to calculate index

Accumulate values to headwater
Riparian Climate Corridor Index
Riparian Climate Corridor Index
High correlation among most variables
High value corridors at higher elevations are well protected.

High value corridors in flat, low-lying areas are poorly protected.
Riparian areas are especially valuable for climate adaptation

High value riparian climate corridors are disproportionately found in mountainous areas

High value riparian climate corridors in landscapes with intensive human land use are poorly protected, but may be most important for adaptation
Thank you