Modelling the spatial variation in susceptibility to gully initiation and stabilization in the Southern Main Ethiopian Rift

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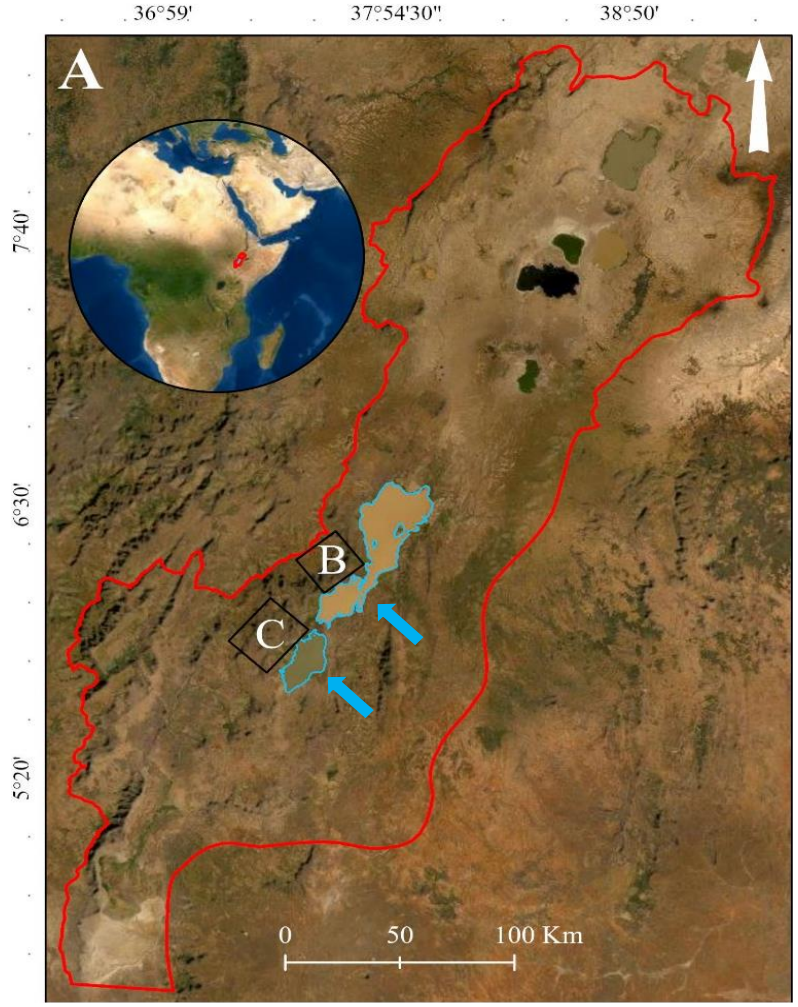
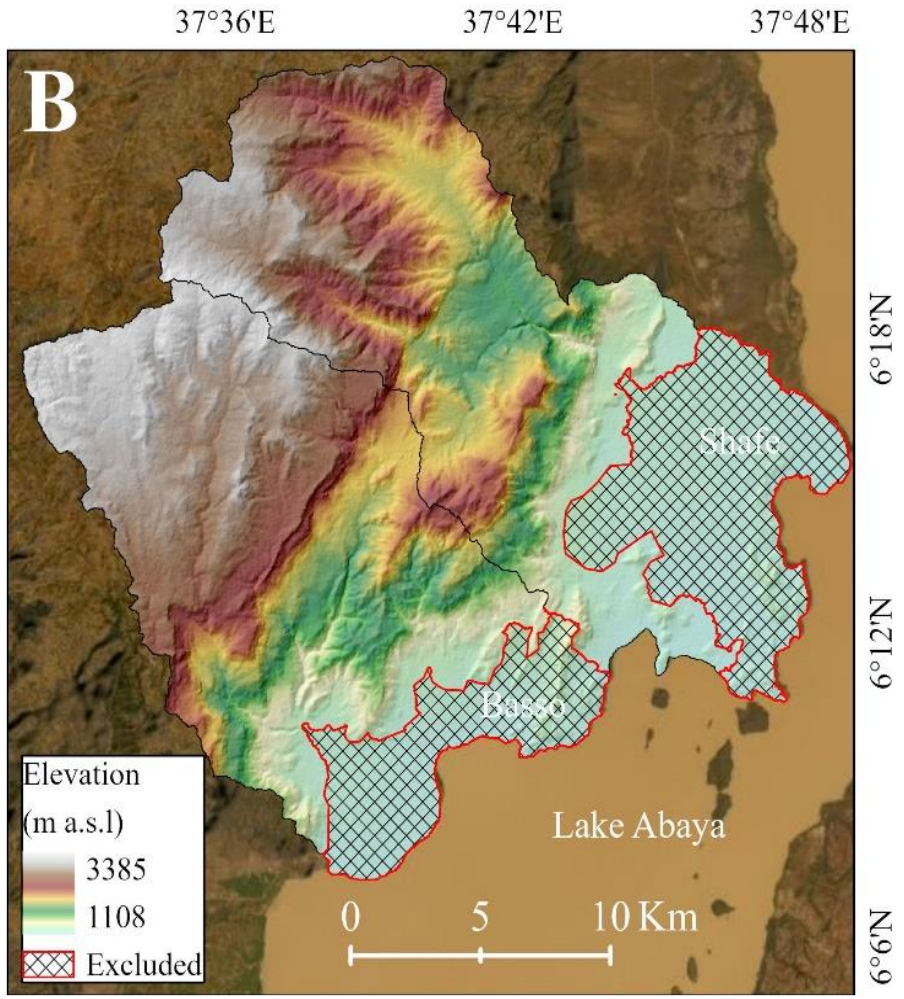
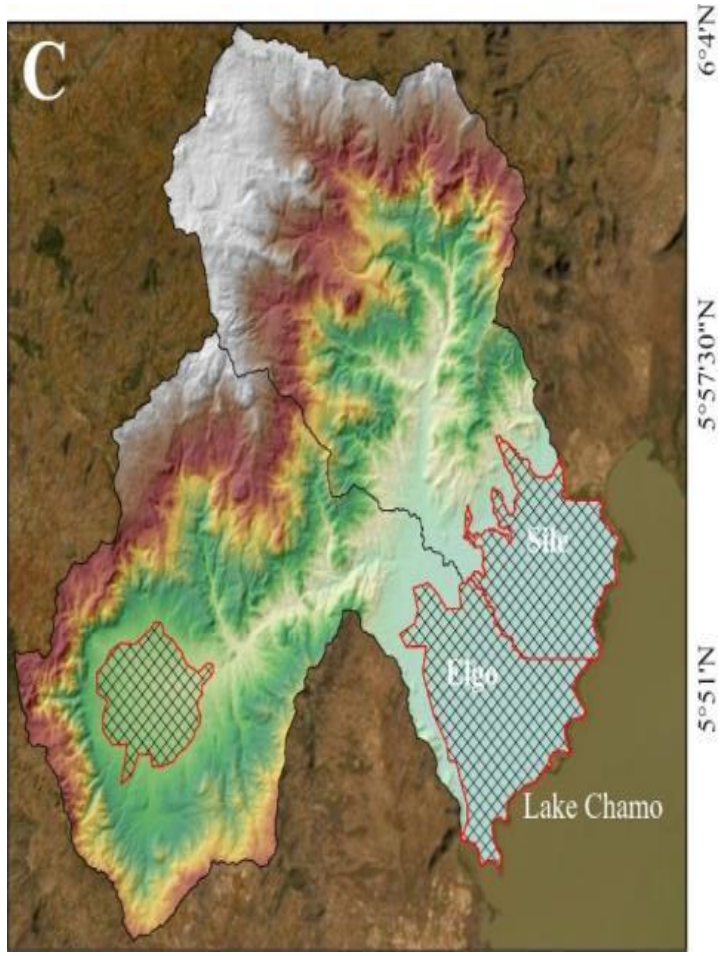
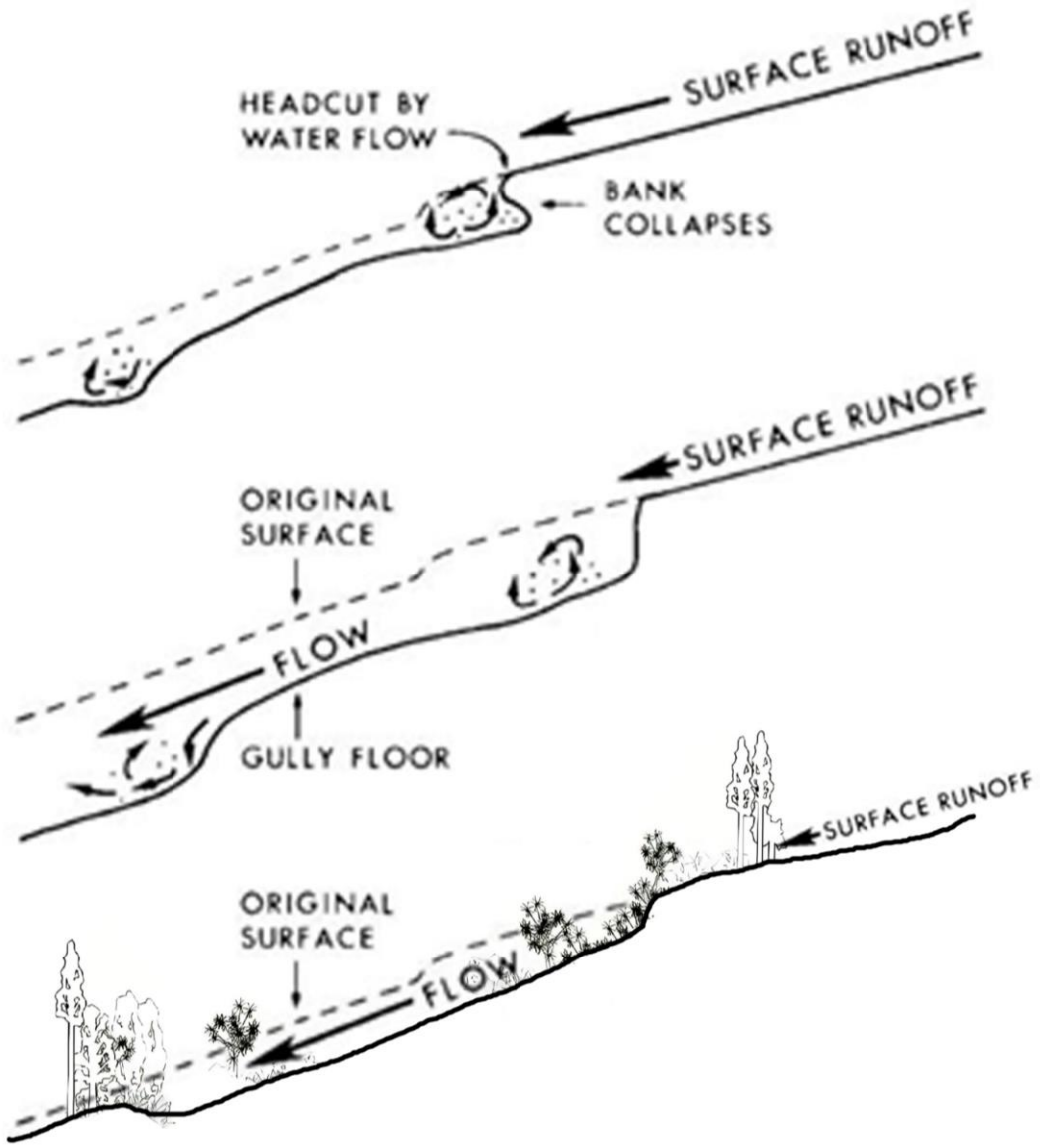








So far,

=>susceptibility

=> initiation points (S-A thresholds)

=> gully heads, separately

Aim:

=>susceptibility

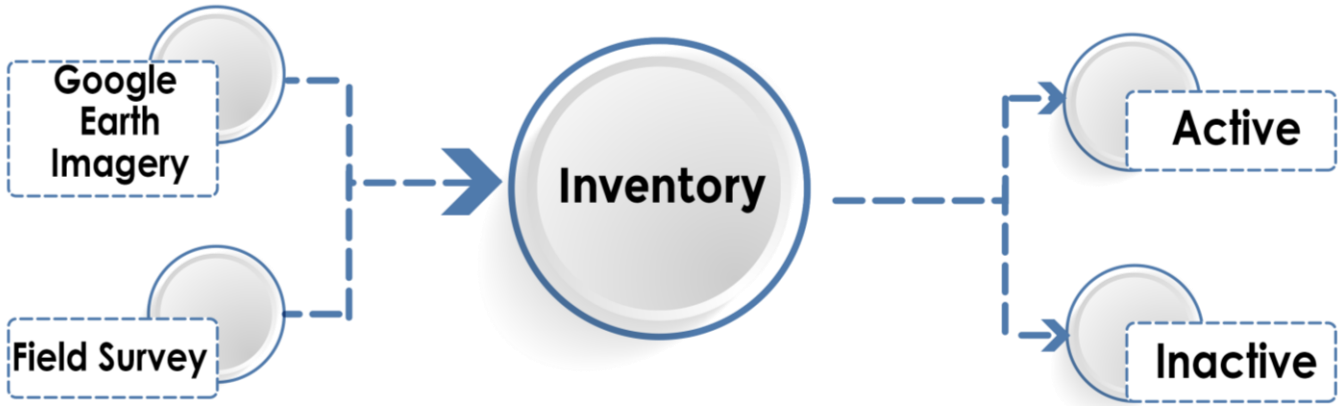
initiation & stabilization using

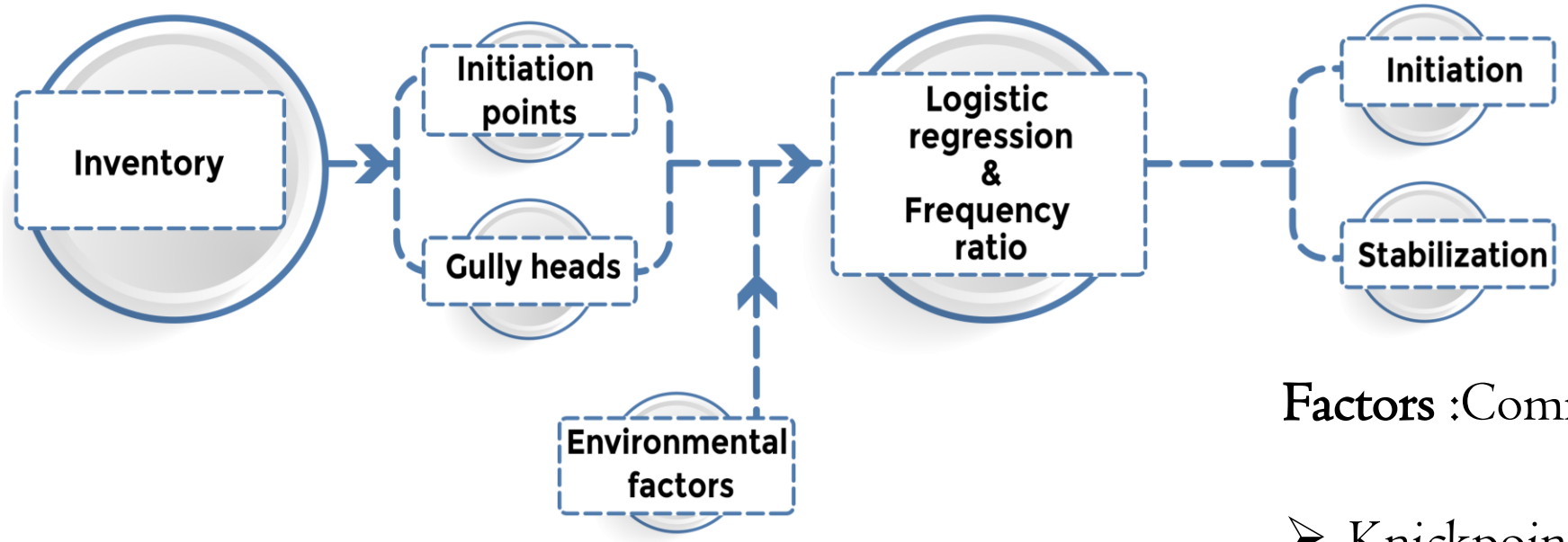
=>initiation points (S-A thresholds)

& compare with gully heads

=>Active & inactive gullies considered

Methods



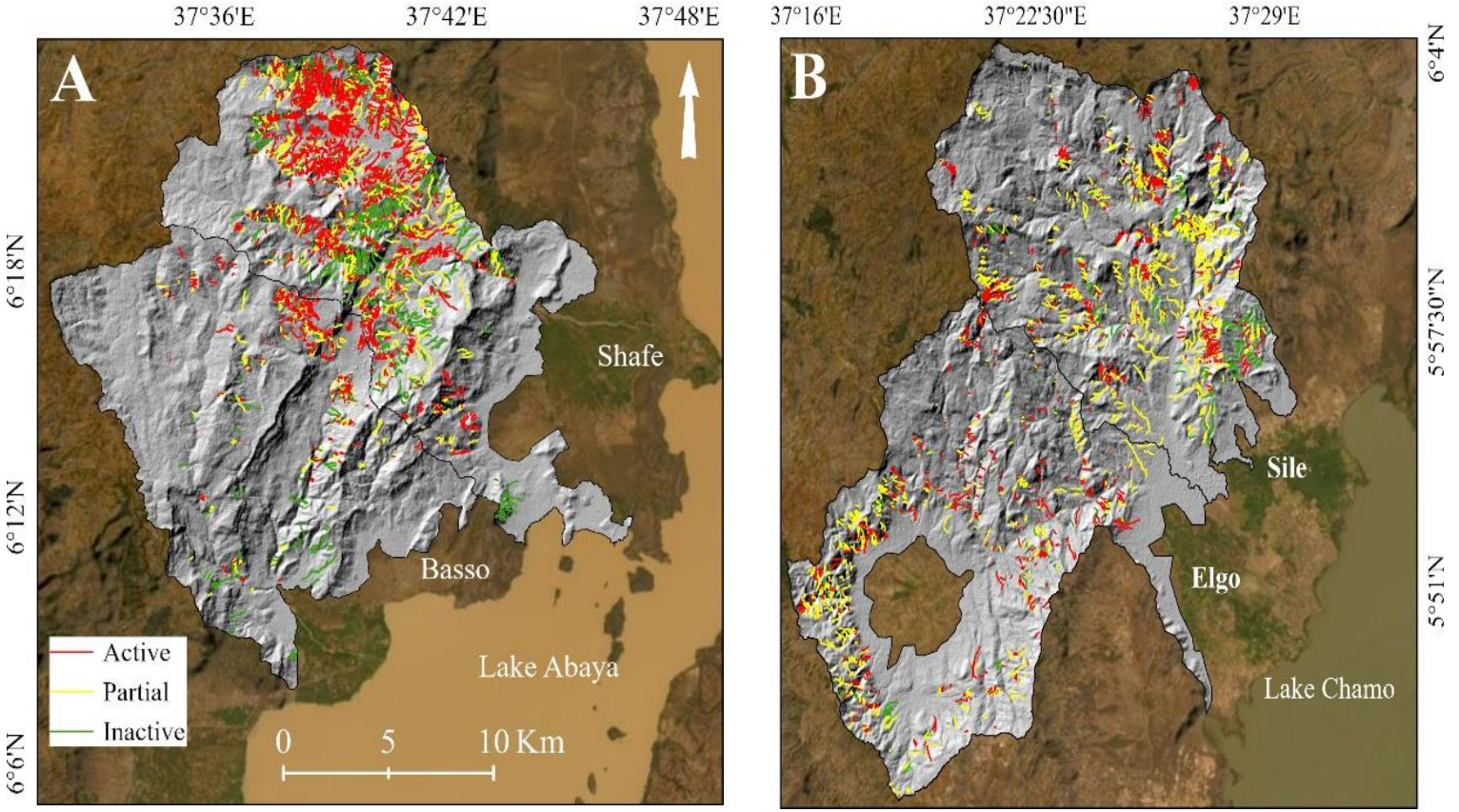


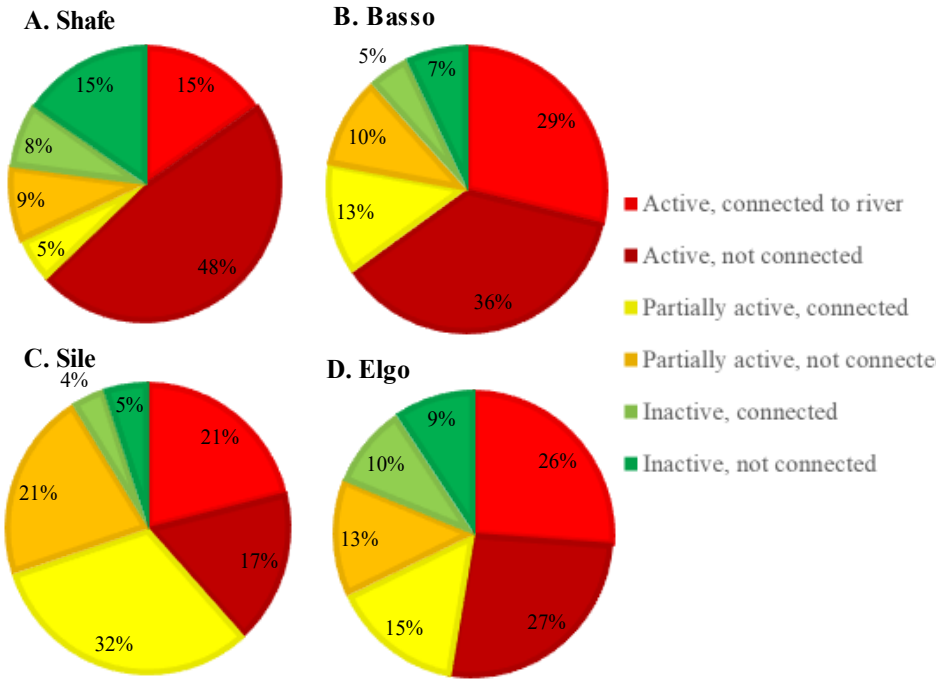
Factors :Commonly used

and

- Knickpoints & landscape rejuvenation
- Landslides

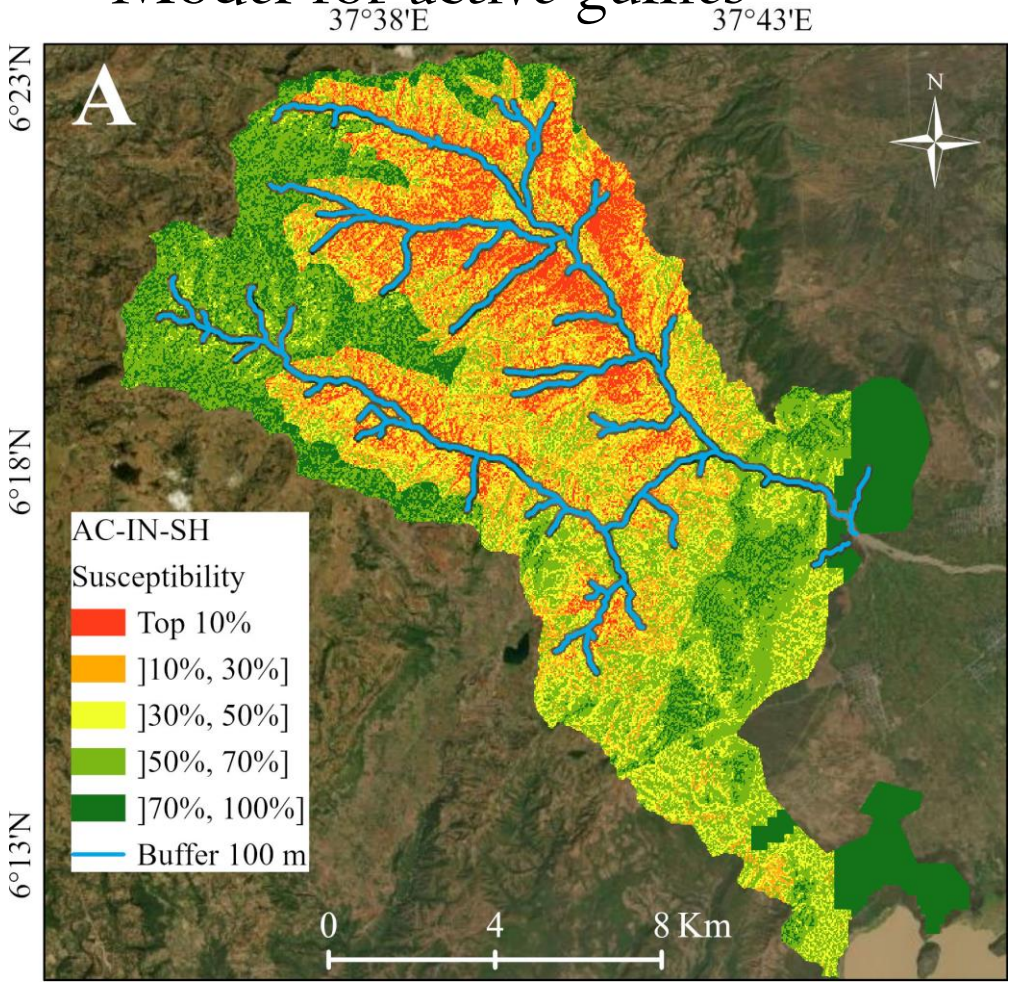
Results



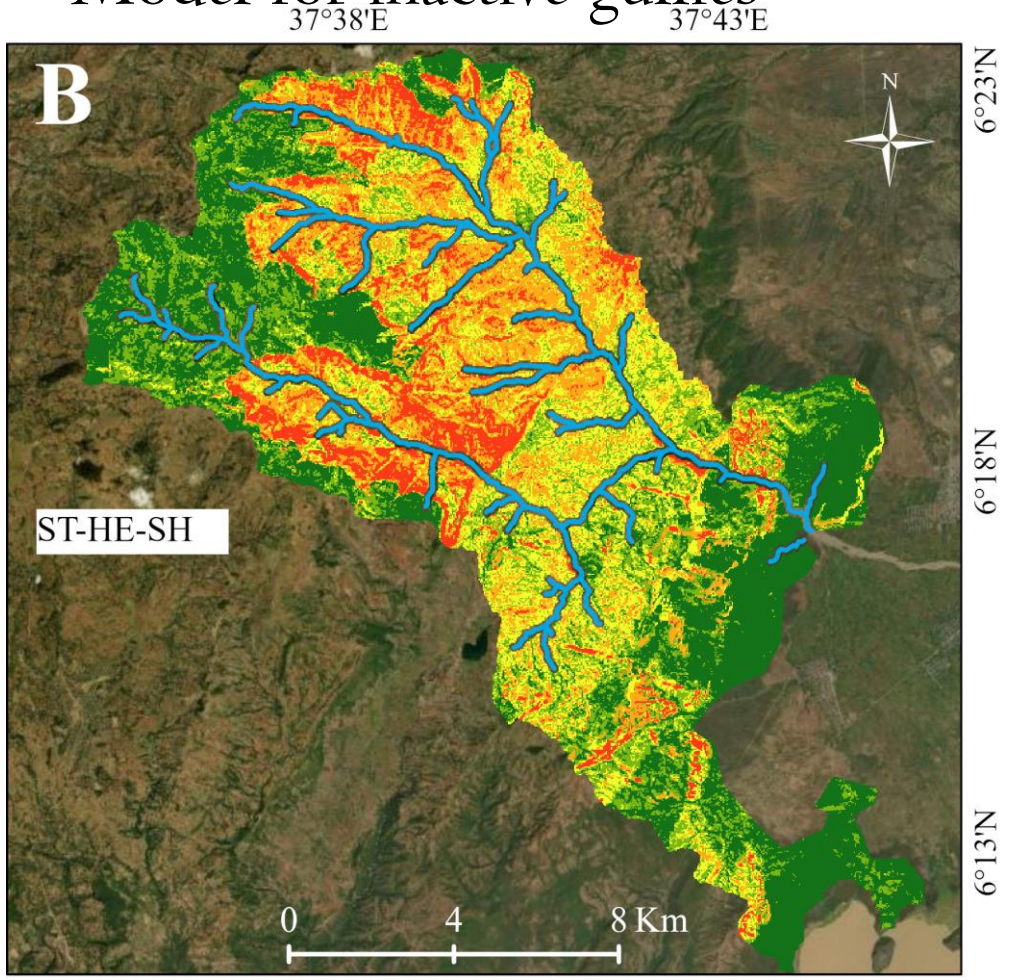


- 7336 gullies (56% active)
- One-fifth gullies are active & connected to the rivers.

Model for active gullies



Model for inactive gullies

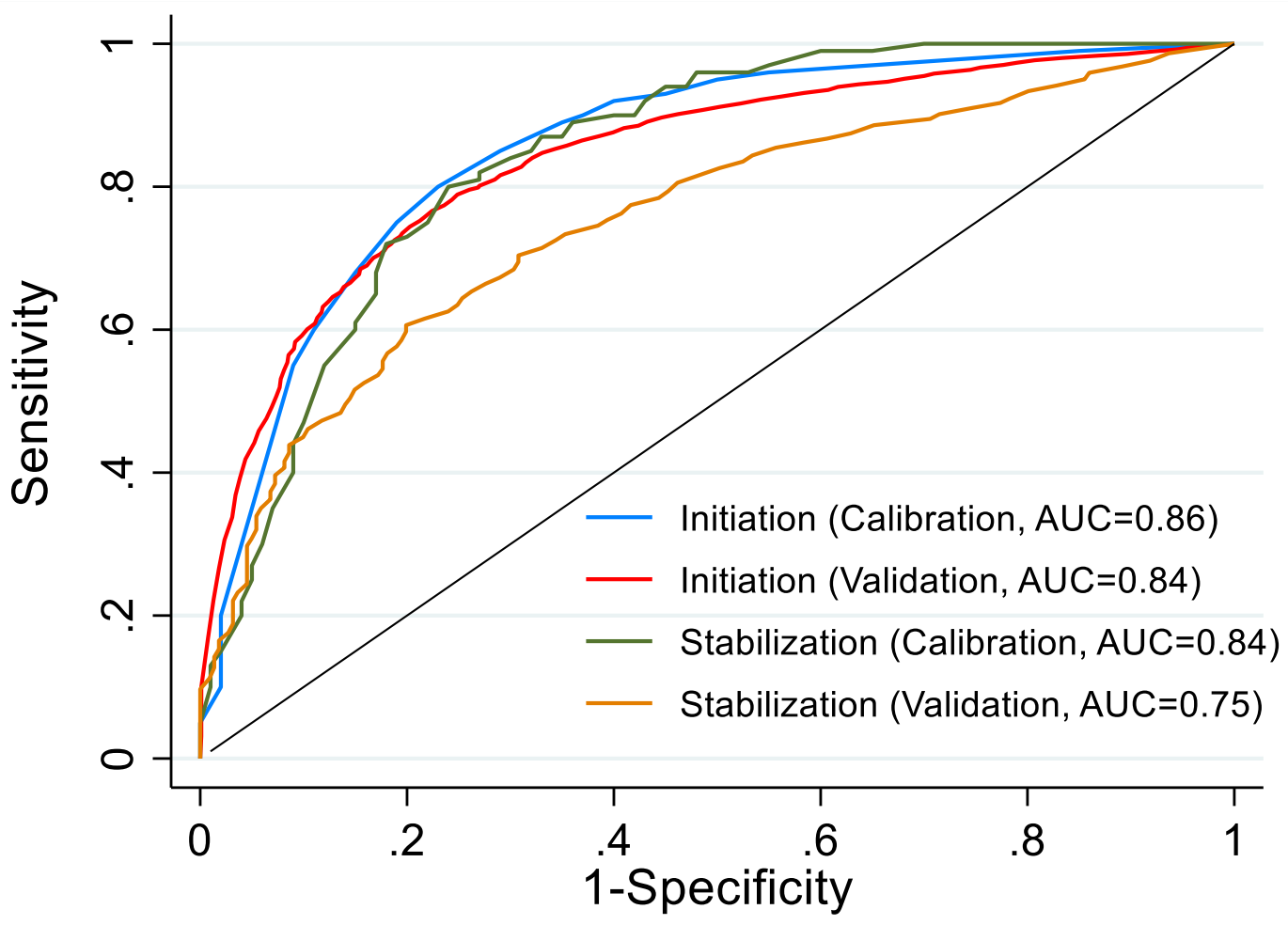


Rejuvenated landscape
Landslides
Higher topographic wetness index
Concave slopes

Initiation of active gullies

Lower topographic wetness index
Convex slopes

Stabilization (inactive) gullies



Receiver characteristics curve (ROC)

=>validity of the models

Conclusion

- Some differences observed in predicting gullies using initiation points & gully heads
- Rejuvenated landscape plays vital role for gully development
- S-A thresholds approaches enables identifying initiation areas.
- Our results contributes to prioritize areas for soil and water conservation.

The way forward

Soil loss rate estimation =>UAV(3D) & interview


Thank You!