

Landslide Hazard Assessment & Mitigation

DML – 502 Lecture - 6

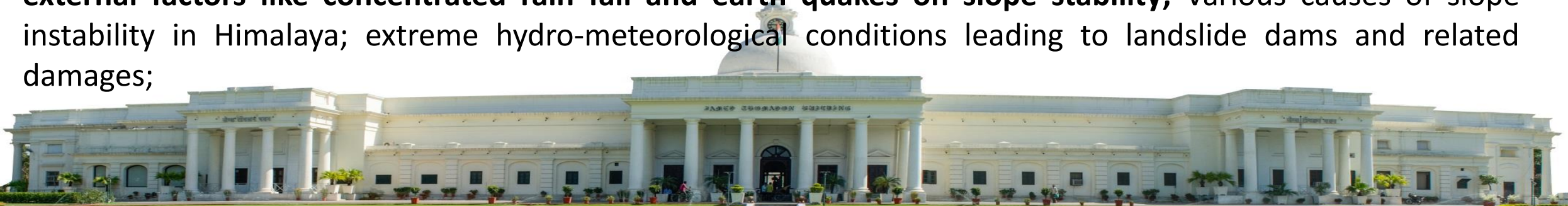
Subject Code: DML-502

Course Title: Landslide Hazard Assessment & Mitigation

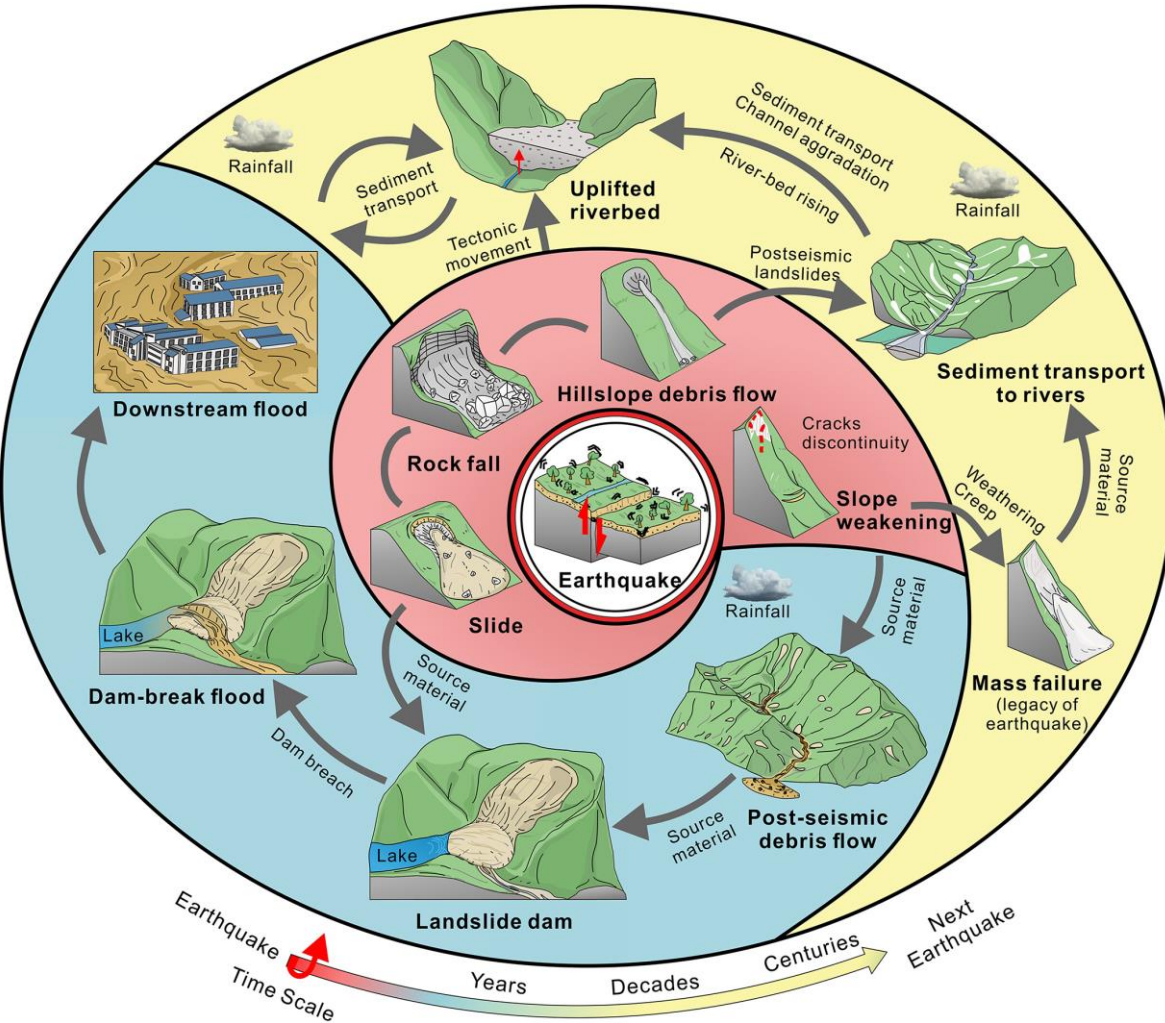
“To understand mapping and hazard assessment techniques of landslides and protection against landslide.”

S. No 2

Causative factors of landslides – natural including inherent factors and external factors as well as anthropogenic factors; Impacts of natural causative factors like lithology, structure, slope morphometry, relative relief, hydrogeological conditions and land use and land cover on stability of slopes ; **Impacts of external factors like concentrated rain fall and earth quakes on slope stability**; Various causes of slope instability in Himalaya; extreme hydro-meteorological conditions leading to landslide dams and related damages;



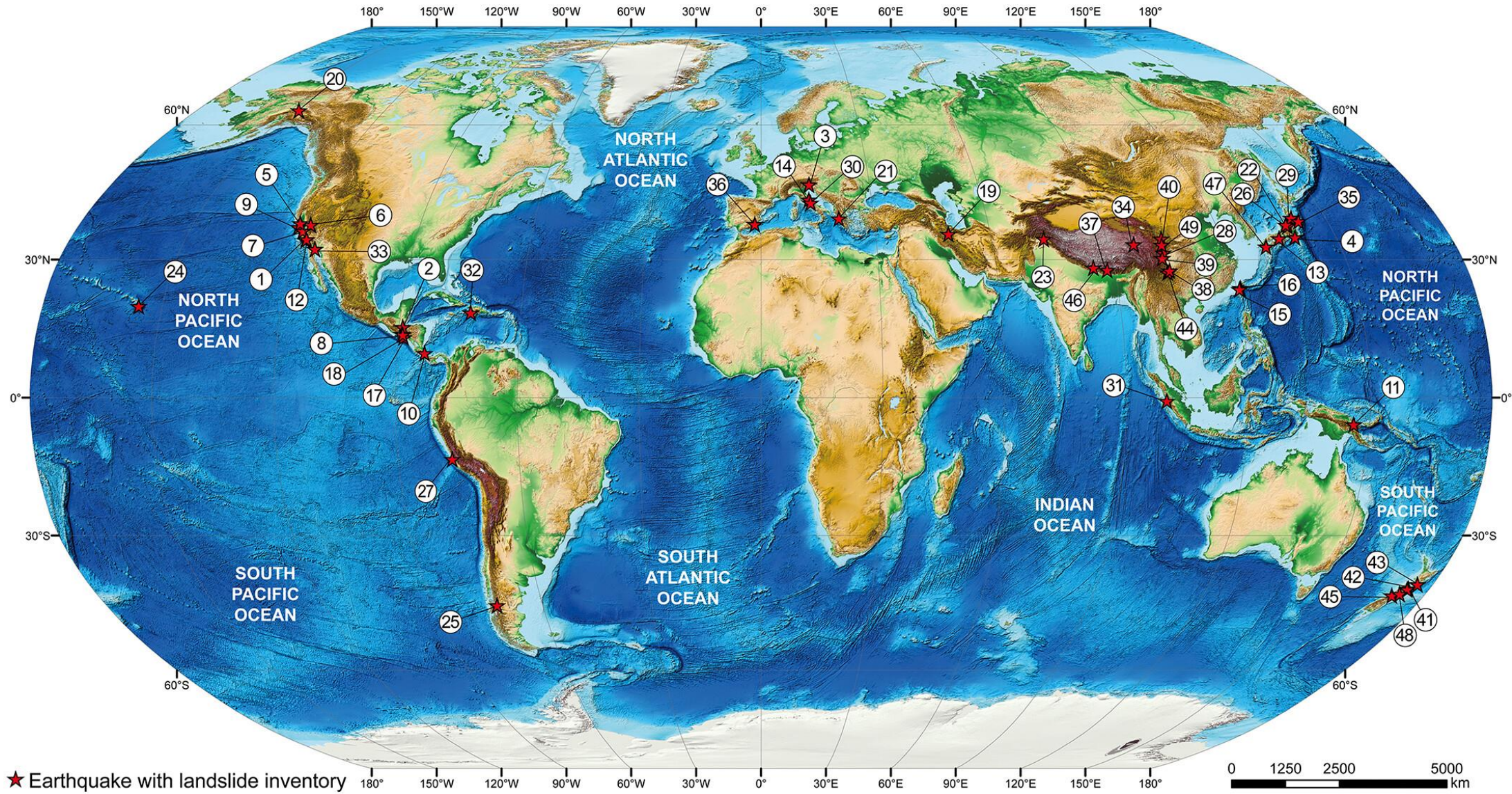
EARTHQUAKE ON HILLSLOPES



- Chains of geologic hazards triggered by a strong continental earthquake.
- Causal relations between hazards are indicated.
- Red background shows different types of coseismic landslides; blue background indicates the post-seismic cascade of hazards in days to years later; and yellow background represents the long-term impact of an earthquake, years to decades later, and perhaps longer.

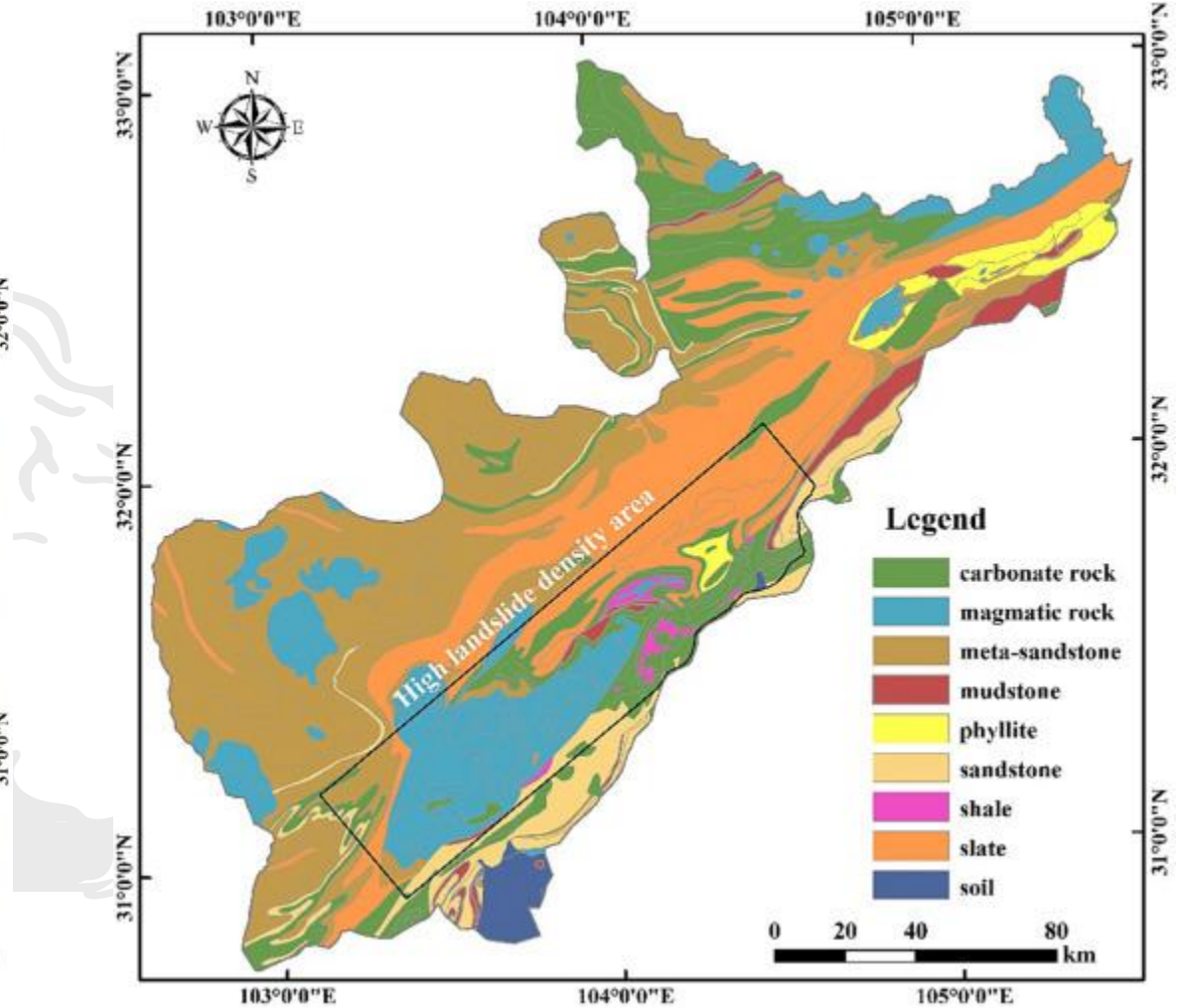
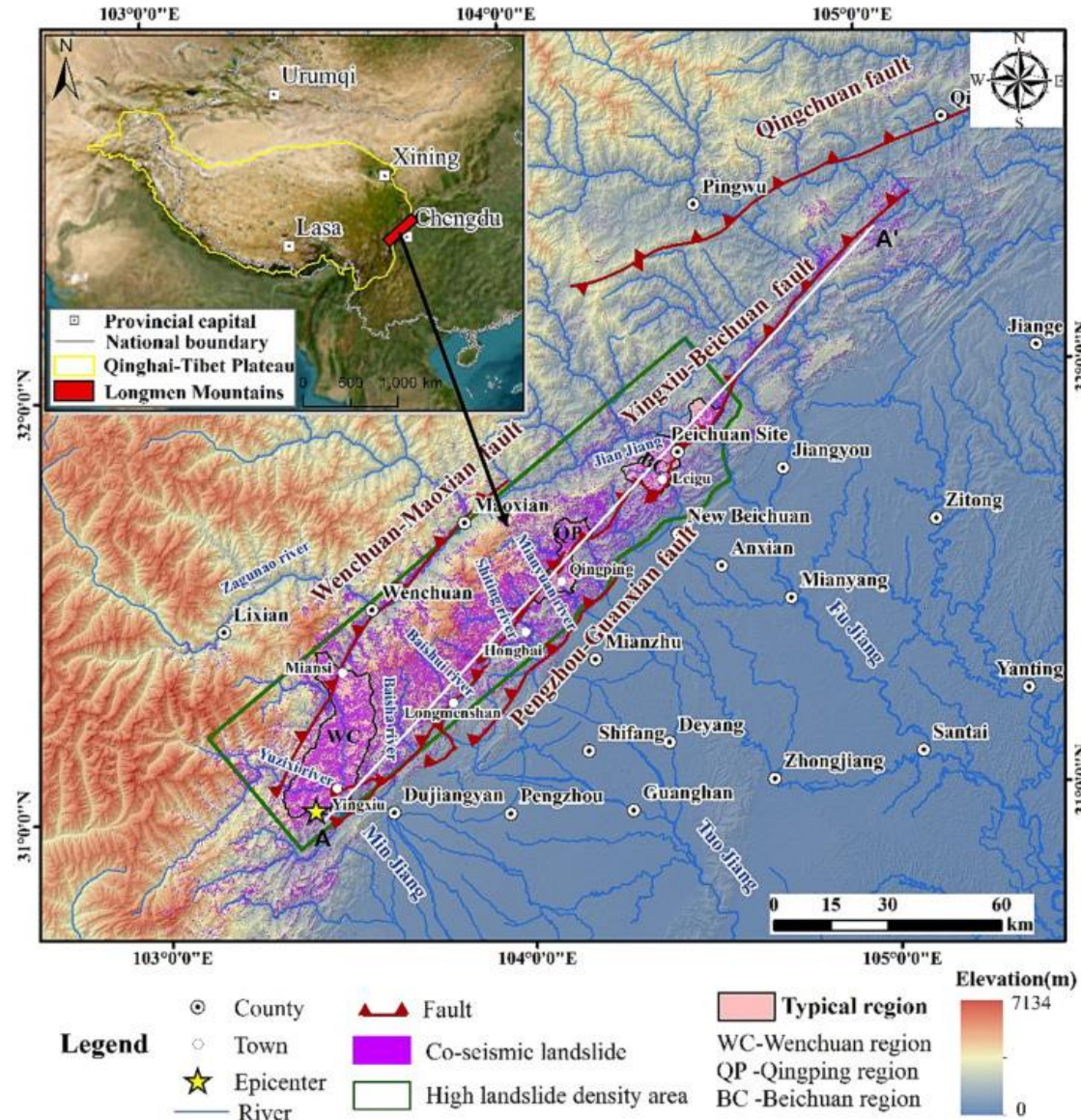
Triggering and controls on coseismic geo-hazards	Triggering and controls on post-seismic debris flows	Post-seismic landslides and their hazard	Long-term impact of strong earthquakes
<ul style="list-style-type: none"> • Mapping, spatial distribution patterns • Initiation and failure mechanism analyses • Evaluation of runout characteristics • Controls on formation and failure of coseismic landslide dams 	<ul style="list-style-type: none"> • Case studies and inventory • Initiation and runout: mechanisms and modelling • Observations and modelling of changing rainfall thresholds • Structural and non structural risk management and mitigation 	<ul style="list-style-type: none"> • Distribution patterns and spatio-temporal evolution • Controls on the post-earthquake geo-hazards evolution • Susceptibility and hazard assessment • Risk assessment and reconstruction strategies 	<ul style="list-style-type: none"> • Weathering-related post-seismic landsliding • Sediment cascade and yield after a strong earthquake • Long-term landscape evolution: the mass balance problem • Tectonic control on landslide occurrence

EARTHQUAKE ON HILLSLOPES

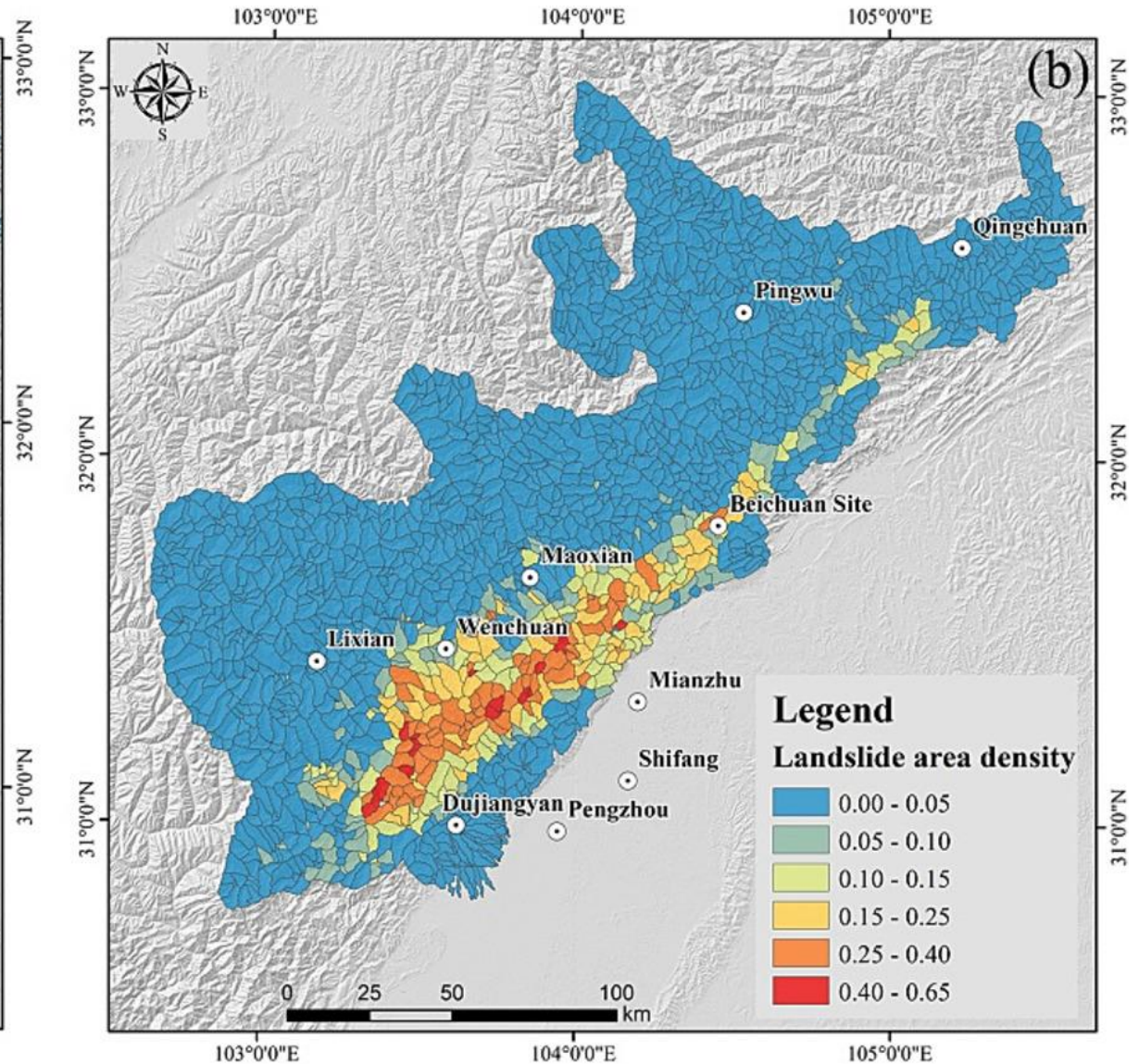
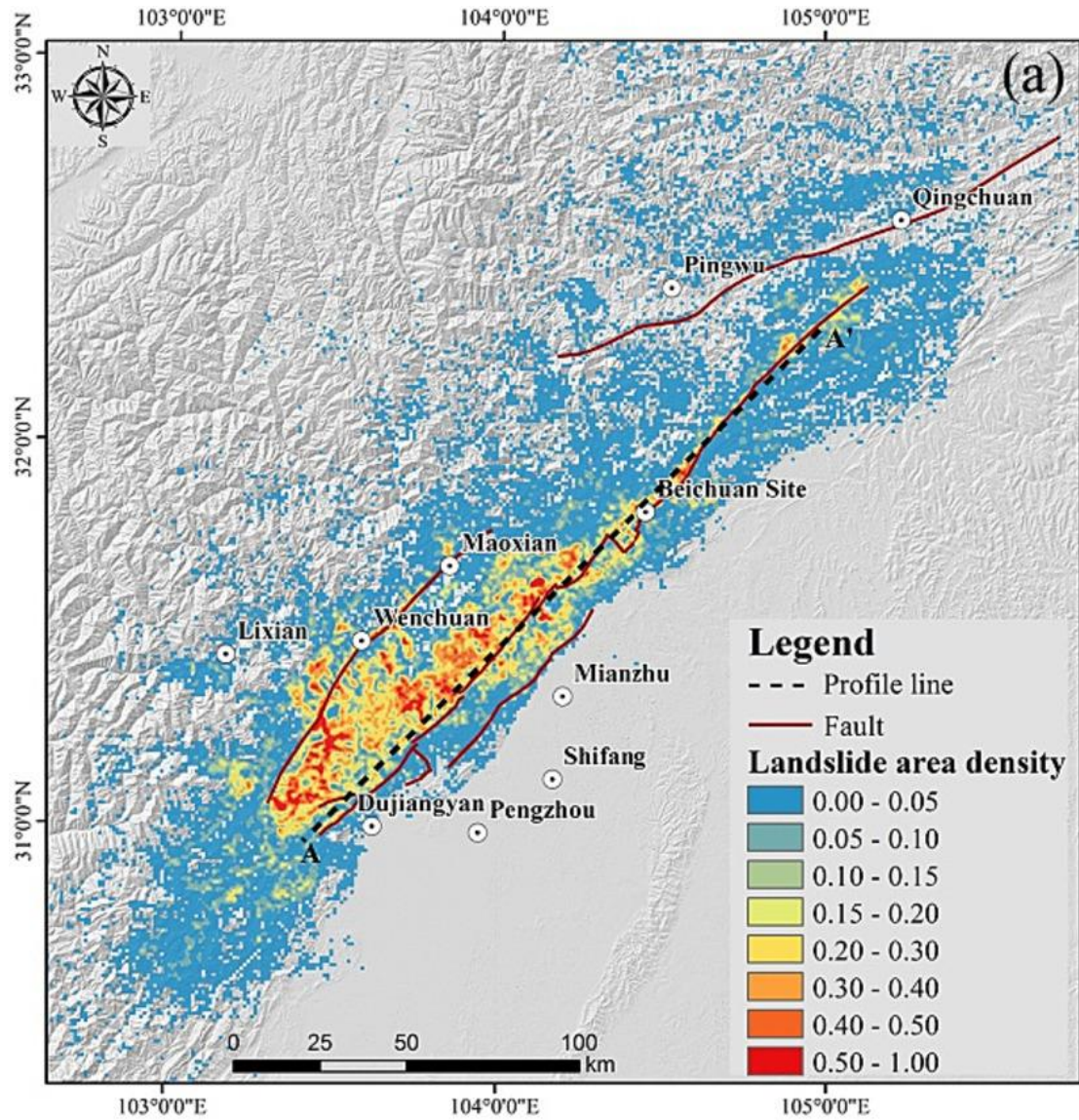


Distribution of earthquakes having digitally available earthquake-triggered landslide inventories

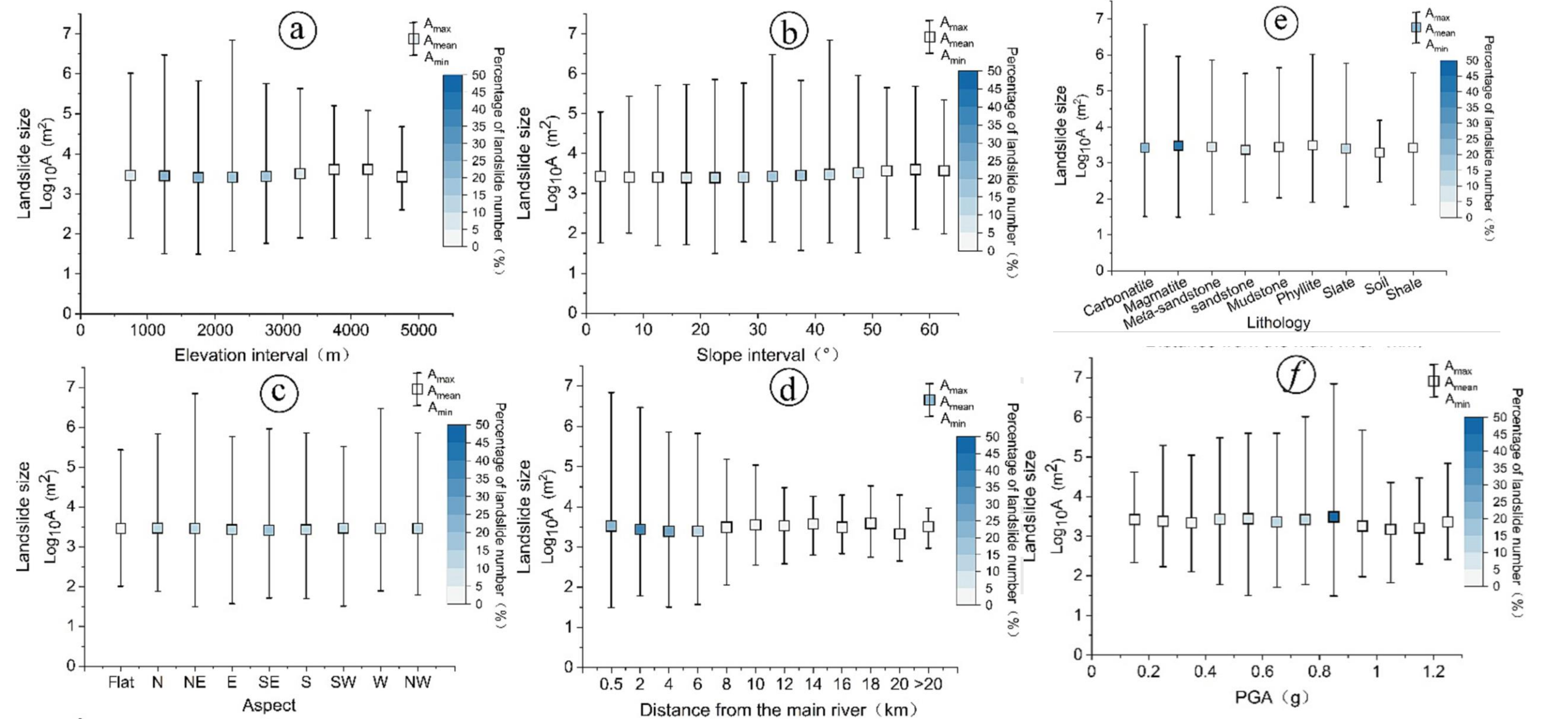
THE 2008 M_s 8 WENCHUAN EARTHQUAKE



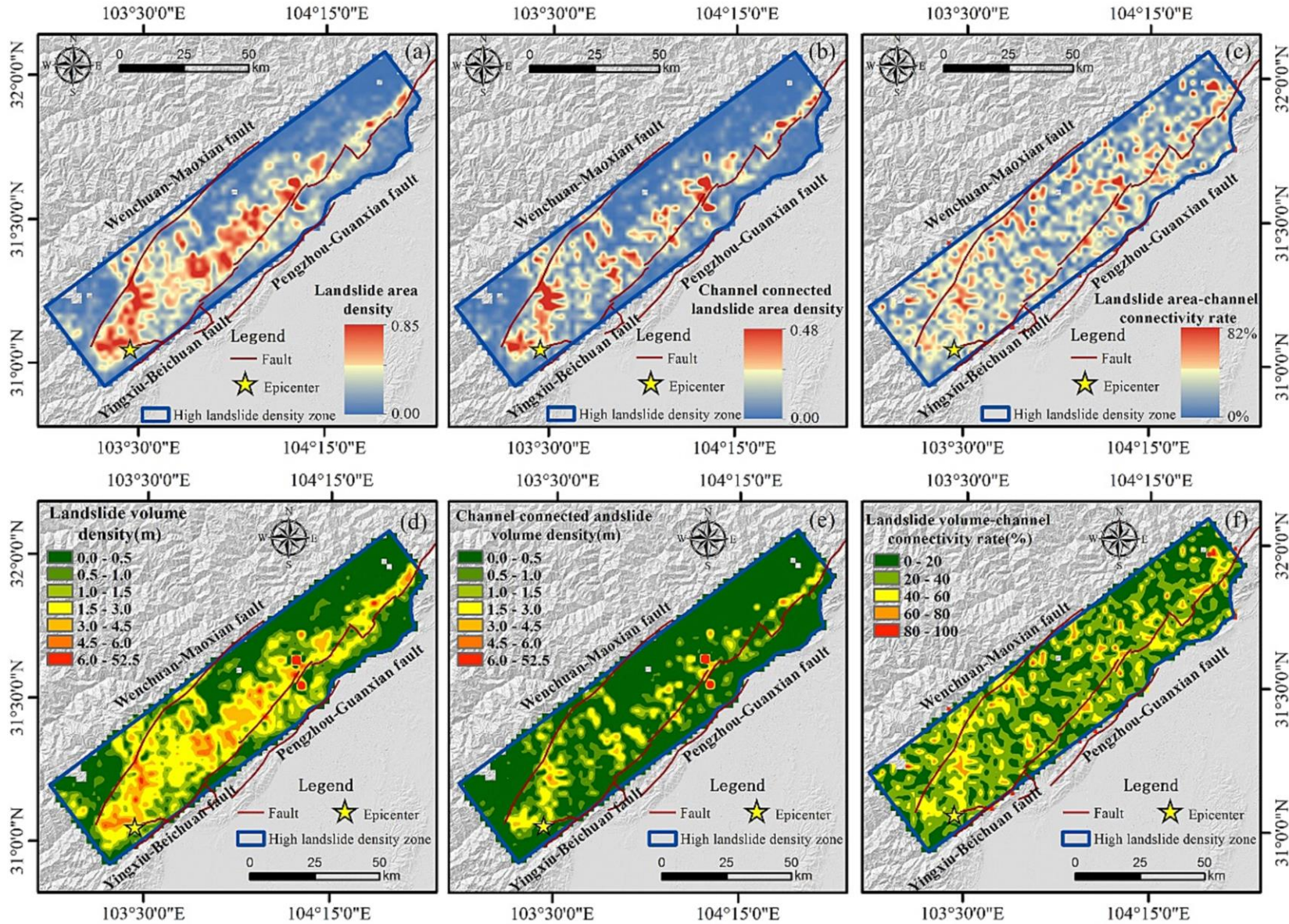
THE 2008 M_s 8 WENCHUAN EARTHQUAKE



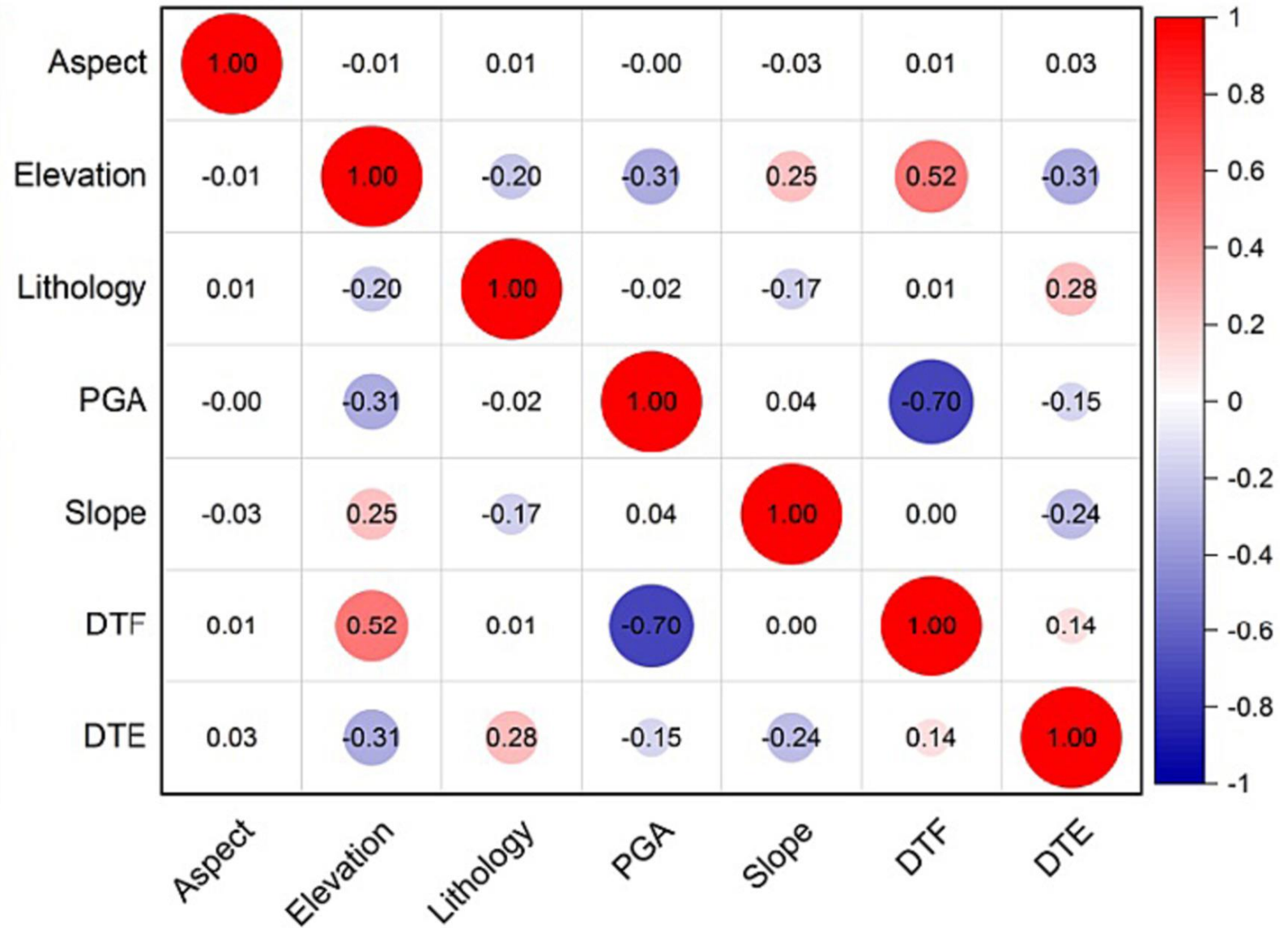
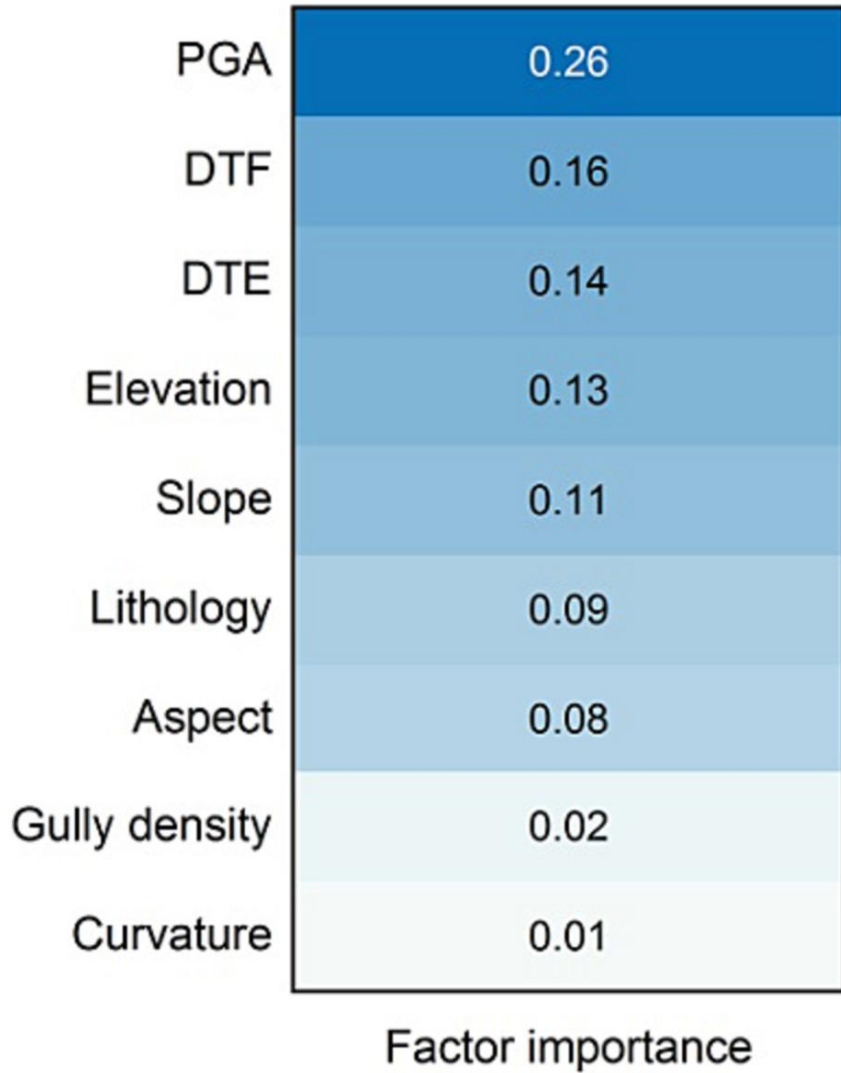
LANDSLIDES AND CONTROL FACTORS



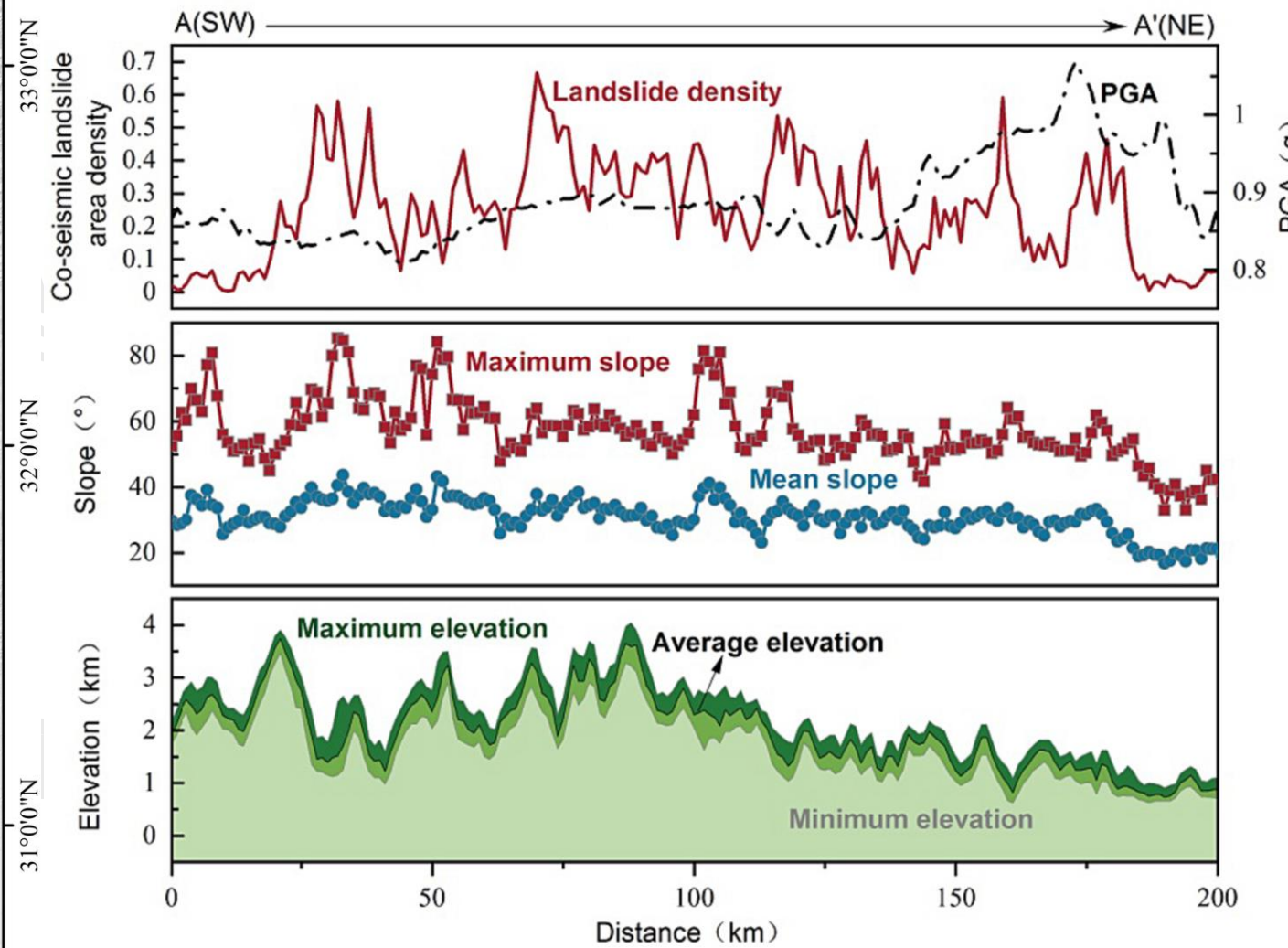
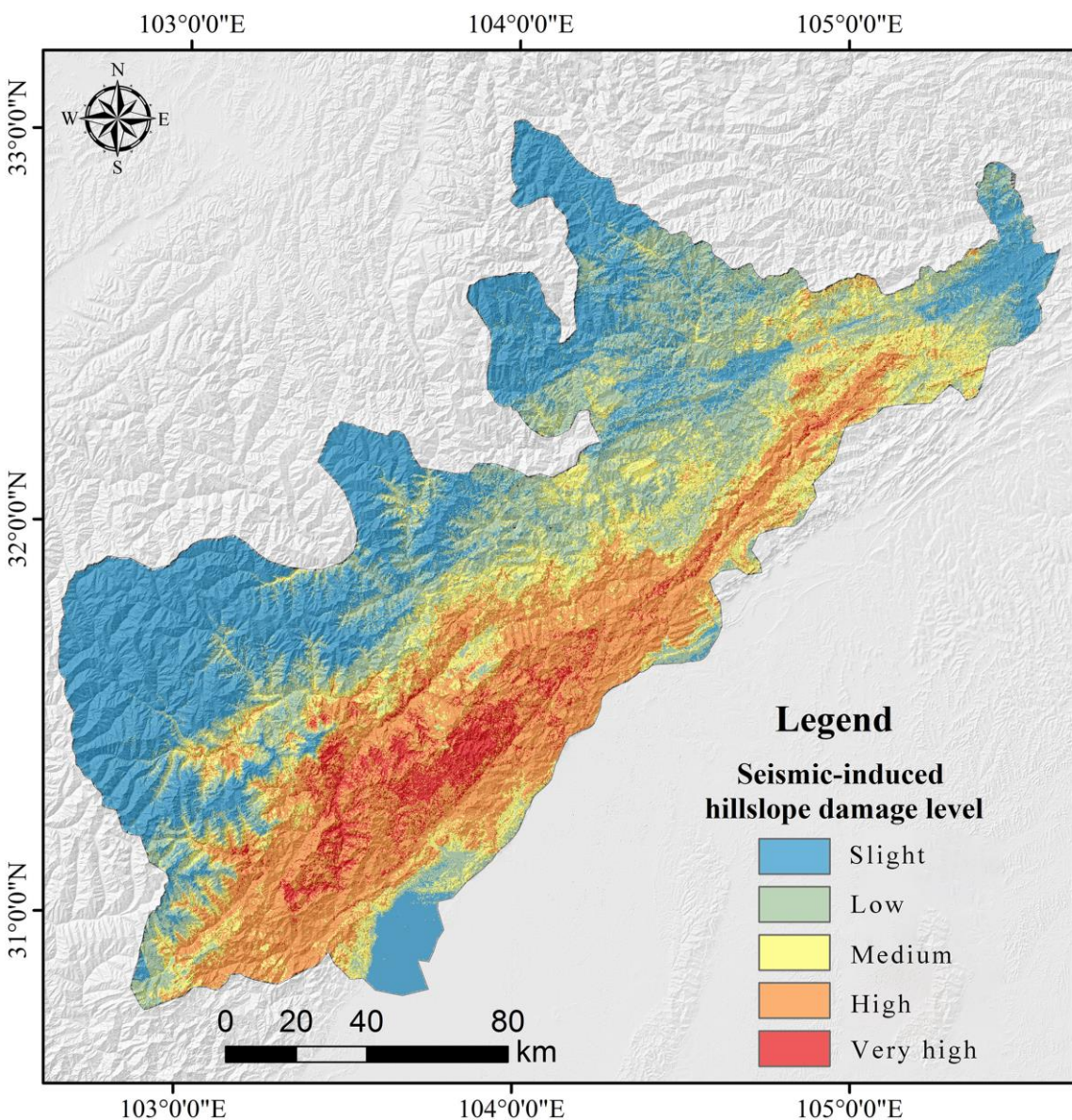
LANDSLIDES AND CONTROL FACTORS



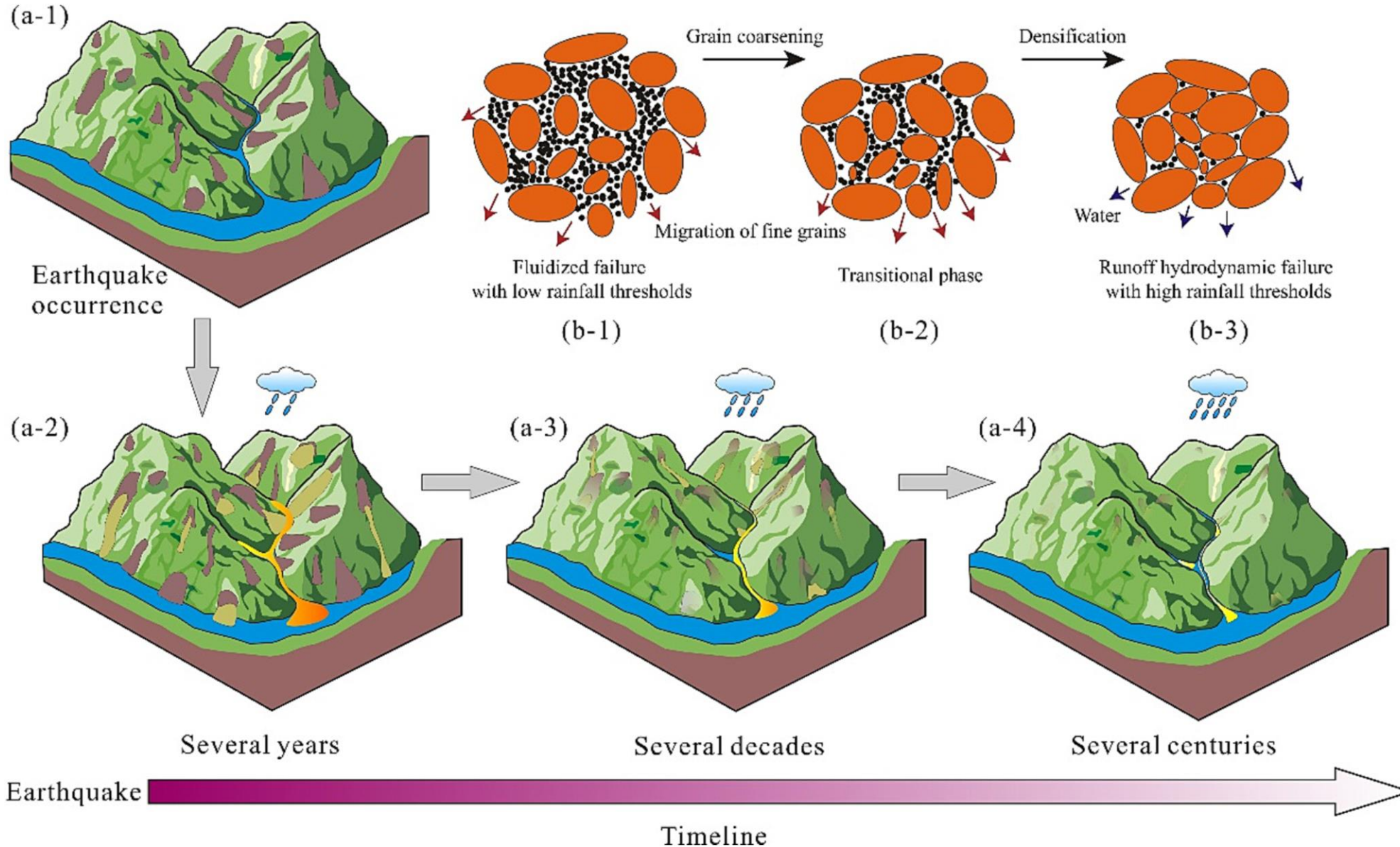
LANDSLIDES AND CONTROL FACTORS



EARTHQUAKE INDUCED HILLSLOPE DAMAGE



EARTHQUAKE INDUCED HILLSLOPE DAMAGE



Thank you very much for your
kind attention and time!

Question time

