**Fig DR1:** Image of earthflow terrain along the Eel River, at the northern end of the study area. Two, large earthflow complexes are outlined in blue. Active earthflows (yellow) and 62 year displacement vectors (red) are presented as in Fig. 8. Contour interval is 100 m. The earthflow on the west is largely dormant, with the exception of a slump on the toe. The inset highlights ancient lateral margin features in the transport zone of the large earthflow. Channels have incised up towards the headscarp, but have not yet extensively perturbed the source area. Gullies have reached a small tributary flow (crossing 500 m contour) on the west of the earthflow transport zone, which appears to have been recently active. This earthflow complex is well depicted by Fig. 14C in the conceptual model of long-term earthflow evolution.

The slightly smaller earthflow complex to the east has been more extensively reactivated with activity confined to the upper slopes, other than a small slump on the toe face. This earthflow complex is approaching the activity state depicted in Fig. 14D, with earthflow activity in the upper slopes leading to reactivation of the larger earthflow complex.

**Fig. DR2:** Map of hillslopes at the southern end of the study area with three inset images. Two large dormant earthflow complexes are outlined in blue. Active earthflows (yellow) and 62 year displacement vectors (red) are presented as in Fig. 8. Contour interval is 100 m. The northern earthflow complex is dormant and we did not detect any movement using the photo-LiDAR comparison. An extensive gully network has propagated into the headscarp, and the small-scale roughness in the south facing headscarp slope indicates the slope has experienced recent activity, possibly preceding or undetected by our earthflow mapping. The dormant earthflow complex is well depicted in Fig. 14C, where gullies are starting to destabilize the source zone.

The other earthflow complex to the southeast has experienced further perturbation in the source area leading to extensive reactivation of the upper slopes. Fig. DR2B highlights the complex mass movement in the reactivated source zone. This earthflow complex is also well depicted by Fig. 14C, with extensive headscarp reactivation. Further activity and loading in the source area could lead to activation of the whole earthflow complex (Fig. 14D). This large reactivated section of terrain spans a ridge line, showing how earthflows can lower ridges and cause drainage capture. Much of this slope to the south is also active, with earthflows moving downslope. The southeastern earthflow complex has detail transport zone morphology (Fig. DR2C), including lateral margins, and viscous flow features. Note the deep axial gully cutting through the dormant transport zone.
Fig. DR-2

Top-down reactivation of dormant earthflows

Incipient destabilization of headscarp wall

Gullies propagating into headscarp

Earthflow spanning ridgeline, capturing drainage area

Old, dormant earthflows outlined in blue

Multiple flows advancing downslope

Gullying and widespread failure of source area

Old lateral margins

Deep (25 m) axial gully cutting through transport zone of old earthflow

Viscous flow features preserved in dormant earthflow transport zone