Community Comment on Puhl et al. (2026)

Coarsening of fluvial sediments after the Gorkha Earthquake 2015, Nepal

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Three issues require resolution before physical downstream disappearance and one-monsoon evacuation can be inferred: vertical representativeness; EMMA score uncertainty; distinction between signal detectability and sediment removal.

1. Vertical representativeness and downstream disappearance

- Suspended sediment was sampled near the surface; the associated data documentation specifies approximately the upper metre of the water column. The manuscript notes that coarse suspended particles may be preferentially transported deeper, especially at the downstream stations (lines 590-598).
- Morin et al. (2018), cited there as evidence that this effect is negligible, report increasing concentration and D90 with depth and potentially substantial flux underestimation when vertical gradients are ignored.
- Non-detection of the coarse component at Sunkoshi therefore establishes non-detection in the sampled upper layer, not physical dilution over ~100 km (lines 527-540). The same limitation applies to sediment-load estimates derived from these concentrations.

Requested revision

- Correct the interpretation of Morin et al. (2018), or provide page/figure evidence supporting the stated negligible effect.
- Demonstrate that vertical sorting cannot account for the downstream loss of the signal, or restrict the inference to the sampled upper layer.

2. EMMA score uncertainty and presence/absence

- The manuscript reports EM4 occurrence, absence at Sunkoshi during ISM 2015, and downstream disappearance without defining a detection criterion or reporting score uncertainty (lines 319-340).
- EMMAgeo propagates loading uncertainty into scores by Monte Carlo. A comparable coarse loading remains identifiable at Sunkoshi; the critical change is therefore the estimated score, not necessarily physical absence.

Requested analysis

- Report propagated score uncertainty; define the presence/absence criterion; test whether the downstream interpretation persists under that uncertainty.
- Do not equate low or zero scores with physical absence without an explicit detection criterion.

3. Detectability versus one-monsoon evacuation

- The conclusion states that the post-2015 reduction of the grain-size signal implies efficient evacuation of directly supplied landslide material within one monsoon (lines 610-617).
- The observations establish reduced detectability of the suspended-sediment signature, not removal of the corresponding sediment mass. Hillslope or headwater-channel storage, delayed transfer, incomplete connectivity, unmeasured bedload, and missing upstream discharge are acknowledged alternatives (lines 453-480, 600-607).

Requested revision

- Replace the evacuation inference with loss of detectability unless independent mass-flux, storage, or bedload evidence demonstrates one-monsoon removal.

4. Technical corrections

Methods (lines 183-185) date the first landslide sampling to 2016, whereas Fig. 3 labels it 2015. The 2016 material was sieved at 600 micrometres while other datasets extend to ~2500 micrometres; source-EM comparability therefore needs a common-domain sensitivity check. Debris-flow and tributary source sets contain only 10 and 15 samples; absence of a corresponding end-member should be interpreted cautiously. Applying volume-based EM scores to g L-1 and kg s-1 requires explicit density and pretreatment assumptions because H2O2/HCl treatment precedes laser analysis. EM4 also peaks during the 2016 GLOF and reaches comparable or higher contribution at Kahule Khola in 2017, supporting a mass-wasting-related component rather than an earthquake-specific fingerprint. Abstract: “~400 mm” should be “~400 micrometres”; “particularly dominant in the two smallest catchments” is inconsistent with the 4.8% EM4 contribution at Kahule Khola in ISM 2015.

Method references: Morin et al. (2018), JGR Earth Surface, doi:10.1029/2017JF004460; Dietze and Dietze (2019), E and G Quaternary Science Journal 68, 29-46; Dietze et al. (2022), Sedimentology 69, 845-863, doi:10.1111/sed.12929; Andermann et al. (2024), data publication doi:10.5880/GFZ.4.6.2023.001.