

Supplementary Materials

Table S1. The normalized weights for the classes of the criteria based on the frequency ratio (FR) technique for each digital evaluation model (DEM).

| Criteria | Classes | FR 12.5 (m) | FR 30 (m) | FR 90 (m) |
|--------------------------|--------------------------------------|-------------|-----------|-----------|
| Landforms | Active flood plain | 0.00 | 0.00 | 0.00 |
| | Channel island | 0.00 | 0.00 | 0.00 |
| | Glacial terrain | 0.00 | 0.00 | 0.00 |
| | Highly dissected hill and valley | 0.02 | 0.00 | 0.01 |
| | Moderately dissected hill and valley | 0.00 | 0.68 | 0.00 |
| | Piedmont slope | 0.00 | 0.00 | 0.00 |
| | River | 0.96 | 0.00 | 0.99 |
| | Snow cover | 0.00 | 0.31 | 0.00 |
| | Younger alluvial plain | 0.00 | 0.01 | 0.00 |
| Distance to fault (m) | 0–2000 | 0.40 | 0.35 | 0.38 |
| | 2000–4000 | 0.38 | 0.34 | 0.37 |
| | 4000–6000 | 0.20 | 0.26 | 0.23 |
| | 6000 | 0.02 | 0.06 | 0.02 |
| Distance to drainage (m) | <200 | 0.47 | 0.42 | 0.40 |
| | 200–400 | 0.15 | 0.28 | 0.25 |
| | 400–600 | 0.17 | 0.15 | 0.21 |
| | 600–800 | 0.16 | 0.09 | 0.08 |
| | >800 | 0.04 | 0.07 | 0.06 |
| Slope ° (%) | 0–10 | 0.00 | 0.04 | 0.04 |
| | 10–20 | 0.00 | 0.10 | 0.03 |
| | 20–30 | 0.18 | 0.13 | 0.15 |
| | 30–40 | 0.33 | 0.25 | 0.17 |
| | > 40 | 0.49 | 0.48 | 0.61 |
| Elevation (m) | <1000 | 0.00 | 0.00 | 0.00 |
| | 1000–3000 | 1.00 | 0.85 | 0.01 |
| | 3000–4500 | 0.00 | 0.16 | 0.86 |
| | >4500 | 0.00 | 0.00 | 0.13 |
| Aspect | Flat | 0.00 | 0.00 | 0.00 |
| | North | 0.00 | 0.05 | 0.03 |
| | Northeast | 0.04 | 0.06 | 0.05 |
| | East | 0.04 | 0.07 | 0.06 |
| | Southeast | 0.19 | 0.21 | 0.19 |
| | South | 0.43 | 0.26 | 0.39 |
| | Southwest | 0.19 | 0.21 | 0.16 |
| | West | 0.11 | 0.06 | 0.08 |
| | Northwest | 0.00 | 0.05 | 0.04 |
| | North | 0.00 | 0.02 | 0.00 |
| Distance to roads (m) | <50 | 0.00 | 0.21 | 0.21 |
| | 50–100 | 0.41 | 0.44 | 0.35 |
| | 100–150 | 0.53 | 0.27 | 0.37 |
| | >150 | 0.06 | 0.08 | 0.07 |
| Lithology | Biotite schist, Kynite gneiss | 0.00 | 0.00 | 0.00 |
| | Glacio-fluvial deposits | 0.00 | 0.00 | 0.00 |
| | Granitic gneiss and Granitoid | 0.00 | 0.00 | 0.00 |
| | Micaceous sandstone | 0.12 | 0.17 | 0.14 |
| | Pale white to Green quartzite | 0.00 | 0.00 | 0.00 |
| | Pebbly siltstone | 0.37 | 0.10 | 0.20 |
| | Phyllite quartzite, Basic flows | 0.00 | 0.00 | 0.00 |
| | Quartzite schist | 0.00 | 0.06 | 0.02 |
| | Slate phyllite | 0.00 | 0.01 | 0.00 |
| | Streaky banded gneiss | 0.05 | 0.13 | 0.11 |
| | Wangtoo granite | 0.00 | 0.01 | 0.01 |
| | Phyllite | 0.03 | 0.03 | 0.01 |
| | Phyllite schist | 0.38 | 0.46 | 0.45 |
| Purple limestone | 0.04 | 0.04 | 0.06 | |

Table S2. Resulting R-indexes for the landslide susceptibility mapping (LSMs) based on the three different resolution DEMs for training data.

| Validation Methods | Susceptibility Class | Number of Pixels | Area (m ²) | Area Percent (ni) | Number of Landslides | Landslide Percent (Ni) | R-Index |
|--------------------|----------------------|------------------|------------------------|-------------------|----------------------|------------------------|---------|
| 12.5 m DEM | Very Low | 0 | 2,017,397,188 | 36.92 | 0 | 0.00 | 0 |
| | Low | 1250 | 720,696,250 | 13.19 | 28 | 26.92 | 30 |
| | Moderate | 938 | 1,036,240,625 | 18.96 | 20 | 19.23 | 15 |
| | High | 2188 | 930,471,719 | 17.03 | 11 | 10.58 | 9 |
| | Very high | 6564 | 760,008,438 | 13.91 | 45 | 43.27 | 46 |
| 30 m DEM | Very Low | 3600 | 1,938,565,800 | 35.22 | 0 | 0.00 | 0 |
| | Low | 3600 | 1,086,637,500 | 19.74 | 11 | 10.58 | 8 |
| | Moderate | 13,500 | 737,317,800 | 13.39 | 10 | 9.62 | 11 |
| | High | 17,100 | 1,066,855,500 | 19.38 | 40 | 38.46 | 30 |
| | Very high | 37,800 | 675,126,000 | 12.26 | 43 | 41.35 | 51 |
| 90 m DEM | Very Low | 8100 | 1,004,602,500 | 18.38 | 1 | 0.96 | 1 |
| | Low | 40,500 | 1,373,719,500 | 25.14 | 9 | 8.65 | 6 |
| | Moderate | 105,300 | 1,363,788,900 | 24.95 | 33 | 31.73 | 22 |
| | High | 129,600 | 1,265,957,100 | 23.16 | 39 | 37.50 | 28 |
| | Very high | 56,700 | 457,147,800 | 8.36 | 22 | 21.15 | 43 |

Table S3. Resulting R-indexes for the LSMs based on the three different resolution DEMs for testing data.

| Validation Methods | Susceptibility Class | Number of Pixels | Area (m ²) | Area Percent (ni) | Number of Landslides | Landslide Percent (Ni) | R-Index |
|--------------------|----------------------|------------------|------------------------|-------------------|----------------------|------------------------|---------|
| 12.5 m DEM | Very Low | 0 | 2,017,397,188 | 36.92 | 0 | 0.00 | 0 |
| | Low | 1250 | 720,696,250 | 13.19 | 14 | 31.11 | 35 |
| | Moderate | 938 | 1,036,240,625 | 18.96 | 9 | 20.00 | 16 |
| | High | 2188 | 930,471,719 | 17.03 | 6 | 13.33 | 12 |
| | Very high | 6564 | 760,008,438 | 13.91 | 16 | 35.56 | 38 |
| 30 m DEM | Very Low | 3600 | 1,938,565,800 | 35.22 | 0 | 0.00 | 0 |
| | Low | 3600 | 1,086,637,500 | 19.74 | 5 | 11.11 | 8 |
| | Moderate | 13,500 | 737,317,800 | 13.39 | 4 | 8.89 | 10 |
| | High | 17,100 | 1,066,855,500 | 19.38 | 16 | 35.56 | 27 |
| | Very high | 37,800 | 675,126,000 | 12.26 | 20 | 44.44 | 54 |
| 90 m DEM | Very Low | 8100 | 1,004,602,500 | 18.38 | 1 | 2.22 | 2 |
| | Low | 40,500 | 1,373,719,500 | 25.14 | 6 | 13.33 | 10 |
| | Moderate | 105,300 | 1,363,788,900 | 24.95 | 13 | 28.89 | 21 |
| | High | 129,600 | 1,265,957,100 | 23.16 | 18 | 40.00 | 32 |
| | Very high | 56,700 | 457,147,800 | 8.36 | 7 | 15.56 | 34 |