

## Did ground acceleration influence orientation bias of slope failures triggered by the 1994 Northridge, California earthquake?

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Harp and Jibson (1996) reported that the 1994 Northridge, South California, earthquake (Mw6.7) triggered 11,000 landslides in 10,000 km<sup>2</sup> and Parise and Jibson (2000) revealed that the landslides have orientation bias from southeast to southwest in the Santa Susana quadrangle, 124 km<sup>2</sup>. However, no study has investigated the bias in wider area. As the study area I selected 3,200 km<sup>2</sup> in mountain slope, and we found that the bias shows from south to west and that it is not controlled by geologic units. I also investigated the relation between the landslide orientation bias and direction of peak ground acceleration using horizontal ground acceleration data observed at the three instruments; however, they did not give the explanation about the bias. Next, I investigated the relation between the landslide orientation and ground acceleration direction simultaneously known with sliding acceleration, using simulated horizontal and vertical ground acceleration data. I classified positive sliding acceleration between slope aspect and acceleration direction, accumulated the sliding acceleration between them (figure), and investigated the result. It was found that south and northeast direction of ground acceleration tended to yield peak sliding acceleration in the slope aspect north and southwest, respectively; however, I can not specify that northeast is the unique direction of ground acceleration which triggered the landslides.

### References

Harp and Jibson, 1996, Landslides triggered by the 1994 Northridge, California earthquake. *Bulletin of the Seismological Society of America* 86(1B): S319-S332.

Parise and Jibson, 2000, A seismic landslide susceptibility rating of geologic units based on analysis of characteristics of landslides triggered by the 17 January, 1994 Northridge, California earthquake. *Engineering Geology* 58: 251-270.

### LS + No-LS cells

