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Landslides caused by recent earthquakes

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With the advent of GIS analysis and satellite-borne remote sensing, post-earthquake investigations of landslides have the potential for being more comprehensive and detailed than ever. Studies in several recent earthquakes, many of which have used one or both of these tools, have in some cases confirmed previous conclusions concerning the patterns of occurrence of earthquake-induced landslides, have in some cases added considerable detail to our understanding of these patterns, and in some cases have identified anomalies that have extended the range of our knowledge in this area. Significant findings from the recent earthquakes include the following. (1) Landslides continue to cause substantial damage and casualties during earthquakes; rapidly moving soil flows and rock avalanches are particularly hazardous to life, even though they are relatively rare. (2) Whereas concentrations of landslides typically diminish regularly with distance from the earthquake source, geologic conditions in some cases may also lead to occurrence of individual landslides or high landslide concentrations at relatively great distances. (3) In contrast, in some earthquakes landslide occurrence may be restricted to zones much smaller than indicated by general trends. (4) Landslide movement may occur after substantial time delays. (5) A wider range of hazards is now recognized from earthquake-triggered landslides. (6) Landsliding and associated ground-failure may be severe enough, at least in large earthquakes, to locally produce a seismically “shattered landscape.”