Characteristics of large-sized landslide dams around the World

Javed Iqbal, Fuchu Dai, Ling Xu, and Tu Xinbin
Institute of Geology and Geophysics, Chinese Academy of Sciences, 100029 Beijing, China

Stability and failure mechanism of Large-sized landslide dams has become most important debate in the scientific community, as these dams are most hazardous in term of both property and human loss. Over 500 large-sized landslide dams from different countries of the world with volume > 1 x 105m3 have been reviewed. The factual data presented in this study shows that 58 % catastrophic landslides were triggered by earthquakes and 21 % by rainfall, revealing that earthquake and rainfall are two major triggers for more than $\frac{3}{4}$ fractions of large-sized landslide dams with the highest frequency during 1990s and 2000s all around the World. The mean landslide dam volume of the studied cases was 533.9 x 105m3 with mean dam height of 71 m, while the mean lake volume was 1566.2 x 105m3. Failure of these large landslide dams pose a severe threat to the property and people living downstream, hence the absolute attention is required to deal with this problem. A stability index (SI) has been derived on the basis of 65 large-sized landslide dams from different countries of the world with complete parametric information. Nevertheless, much work has been done on landslide dam failure prediction and mitigations measures by different researchers, however still there is a break in lithological studies of the landslide dams in terms of dam longevity. A lithological based classification of landslide dams have been proposed here which can be very helpful in subsequent studies in order to find out the accurate dam stability. 21 landslide dam types have been proposed on the basis of transported landslide material and surrounding lithology of the deposition area.
Key words: Landslide dam, longevity, lithological studies, landslide frequency, classification.