



Field and laboratory tests on risk of slope failure due to weathering of rock materials

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Authors set out the challenge to explore the mechanism of rock weathering and its effects to the geotechnical hazards. Any natural or human induced disturbances to the natural slopes speed up their weathering process. So, exploration of both disturbed and undisturbed slopes is necessary for robust understanding. Various regions in Asia were explored to experience variety of environmental and climatic conditions. Field exploration on the thickness and in-situ mechanical property was carried out by performing seismic refraction surveys, dynamic cone penetration tests and Schmidt hammer tests at various sites in Japan and Pakistan. In laboratory change in mechanical property of soft rocks due to weathering has been observed and slake durability tests were conducted on various rocks. Field exploration indicated that the thickness of weathered layer is 1 meter or its roundabouts and having S-wave velocity of 200-300 m/s. Laboratory testing differentiated the slaking potential and mechanical property degradation of various rocks. Moreover sensible correlations had been observed in thickness calculated by seismic refraction or dynamic cone penetration in field. Slake durability index showed good correlation with Schmidt hammer hardness and mechanical property. A general agreement was also observed when strength and S-wave velocities from laboratory tests were compared with the field exploration. Authors believed that the study provides the useful information on the long term prediction and assessment of landslide risk.