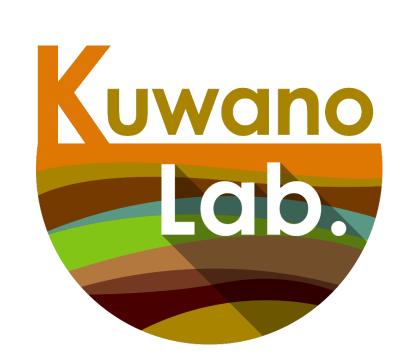


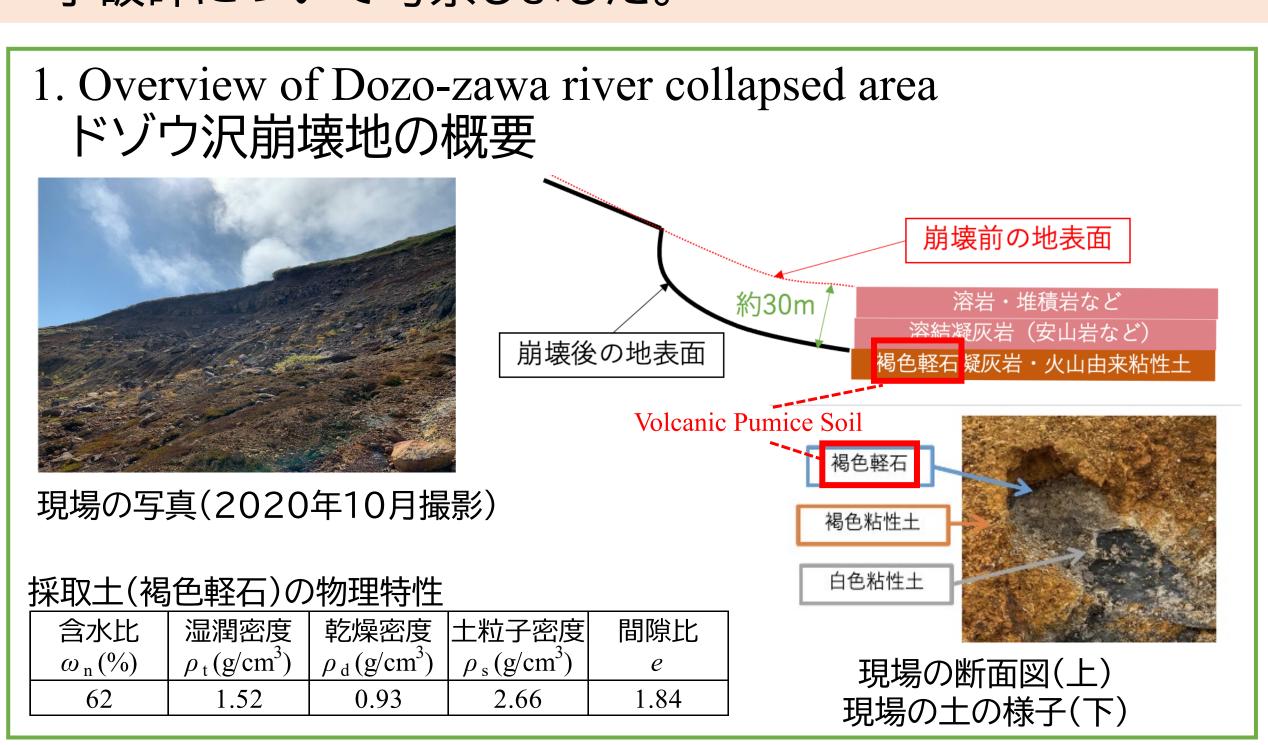
# Triaxial compression behaviour of undisturbed and re-constituted volcanic pumice soil taken from Dozo-zawa river

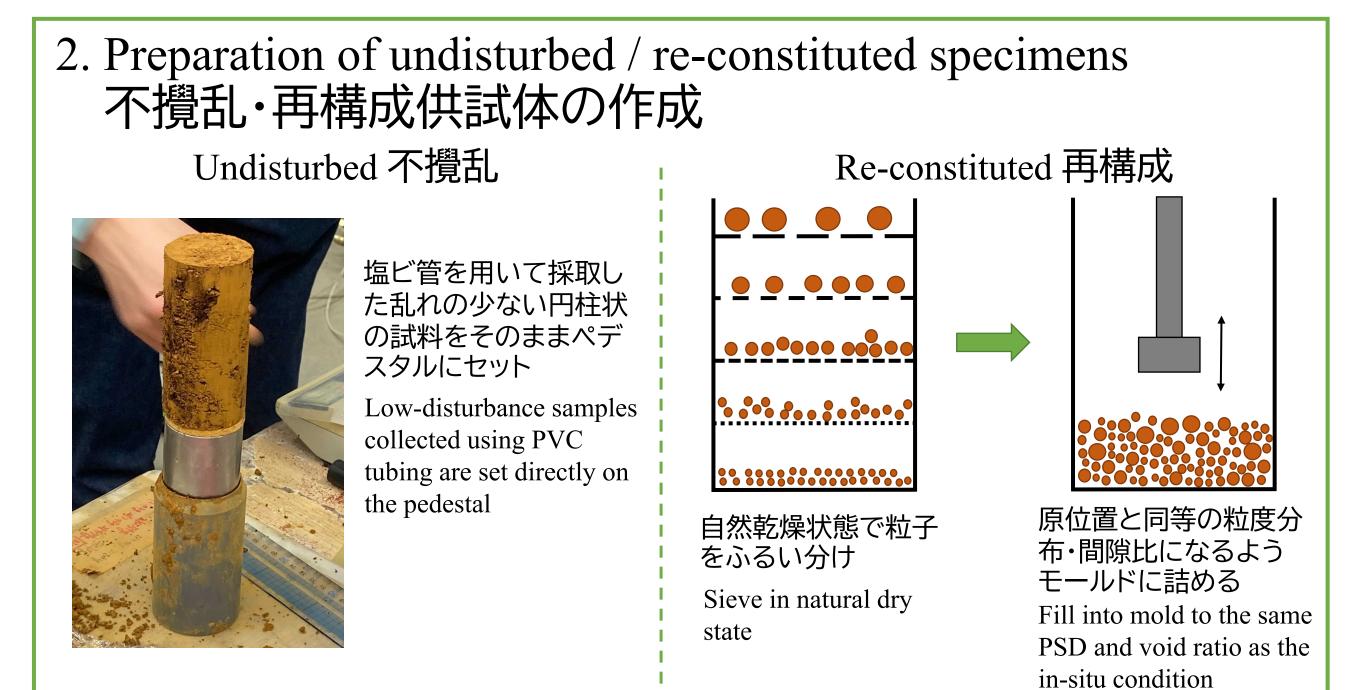


### ドゾウ沢火山性軽石の不攪乱・再構成供試体の三軸圧縮挙動

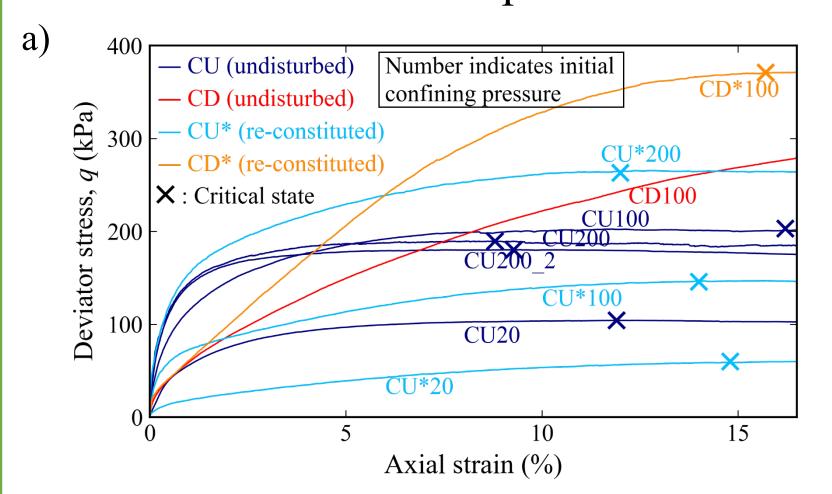
The Iwate-Miyagi Nairiku Earthquake (M7.2) that occurred on June 14, 2008 caused a slope failure in Dozo-zawa River near the summit of Mt. Kurikoma. The debris flow caused by the slope failure flowed for about 10 km and took the lives of 7 people. The mechanisms of the slope failure and long-distance debris flow have not yet been well understood. In this study, undisturbed and re-constituted specimens were prepared using brown pumice soil collected from the collapsed area. Shear behavior and particle breakage were investigated by performing a series of triaxial compression tests.

2008年6月14日に発生した岩手・宮城内陸地震(M7.2)によって栗駒山の山頂付近で大規模な斜面崩壊が起こりました。斜面崩壊に起因する土石流がドゾウ沢を約10kmに渡って流下して死者7名という大きな被害をもたらしたものの、斜面崩壊や長距離流動のメカニズムは未だ解明されていません。本研究では、崩壊地で採取した褐色軽石を用いて不攪乱・再構成供試体を作成し、圧密排水/非排水三軸圧縮試験(CD/CU試験)を行って起因層となった土のせん断挙動と粒子破砕について考察しました。

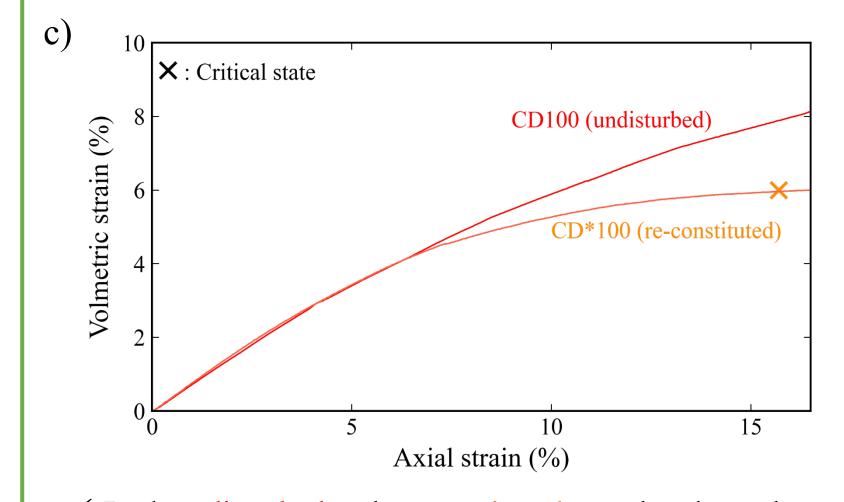




#### 3. Results of triaxial compression test 三軸圧縮試験の結果

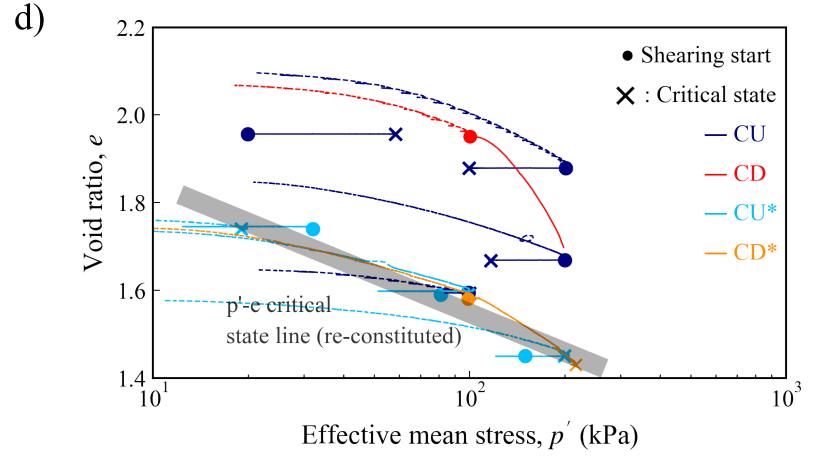


- ✓ In the CU tests, both undisturbed and re-constituted reached steady-state (axial strain increases with no stress state change).
- ✓ CU試験では、不攪乱・再構成ともに限界状態(応力状態が変化せず軸ひずみが増加)に至った。



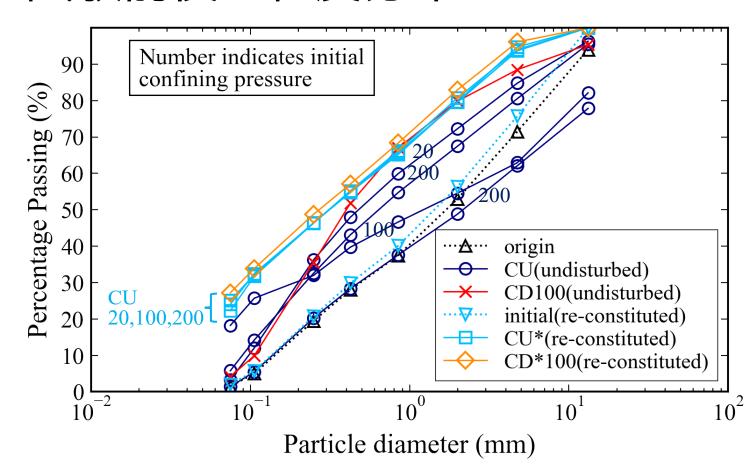
- ✓ Both undisturbed and re-constituted samples showed strong tendency to contract. <u>Stronger contract tendency</u> for undisturbed.
- ✓ 不攪乱・再構成ともに強い収縮傾向。不攪乱の方が より強い収縮傾向を示し、体積一定に至らなかった。

- b) 400 CU (undisturbed) CD (undisturbed) CU\* (re-constituted) CD\* (re-constituted)
  - ✓ Undisturbed samples, especially in the case of 200 kPa of confining pressure, showed strong contractancy.
- ✓ 不攪乱では特に拘束圧200kPaのケースで<u>強い収</u> 縮性を示して限界状態へ至った。



- ✓ In all tests, undisturbed samples had a larger void ratio than re-constituted samples at the same p'.
- ✓ 全ての試験において、<u>不攪乱の方が</u>再構成よりも同 じ平均有効応力で<u>間隙比が大きくなった</u>(圧密段階 で緩い構造が保持された)。

## 4. Particle size distribution 試験前後の粒度分布



- ✓ In re-constituted cases, significant particle breakage occurred.
- ✓ No relationship between p' and amount of particle breakage.
- ✓ 再構成のケースでは顕著な<u>粒子破砕</u>が生じた。
- / 拘束圧と破砕量の間に関連性は見られなかった。

#### 5. Conclusions まとめ

- ✓ In all cases except CD100, steady-state was reached.
- ✓ CD100を除く全ケースで限界状態に至った。
- ✓ Undisturbed samples retained their initial structure during consolidation compared to re-constituted samples, and those with greater confining pressure showed stronger contractancy during shearing.
- ✓ 不攪乱試料では、再構成試料よりも圧密時に初期構造が保持され、拘束圧が大きいものほど<u>せん断時に</u>強いコントラクタンシーが見られた。
- ✓ In re-constituted cases, significant particle breakage occurred. No notable relationship was observed between confining pressure and the amount of particle breakage.
- ✓ 再構成のケースでは<u>著しい粒子破砕</u>が生じた。破砕量と拘束圧に顕著な関係性は確認できなかった。

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