

## The process of Onion Weathering (Crack Forming)

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We found Onion Weathering of sedimentary rock through a geological survey around the *Metoba* River in *Matsumoto, Nagano* Prefecture. We wondered if a layer of sand and mud, which is accumulated horizontally, weathers like an onion in the weathering process, so we started this research. We did a field survey, drilling, model experiment, and a measurement experiment of Fe ions. Finally we considered that Onion Weathering is formed by the interaction between physical weathering and chemical weathering from the results of the following research:

1. There were vertical and horizontal joints in stratum, and the outside skin was formed from water that entered there.
2. There was a layer towards the inside from the outside.
3. Fe ions dissolved in water from the mineral in the rock, and gathered at the skin. It ran out from the outside skin, because a lot of water flowed into it.