Salt weathering in the lapilli tuff on the coastal cliff in Isotake, Oda City, Shimane Prefecture southwest Japan - Preliminary Study-

R. SUEYOSHI[1], I MATSUMOTO [1] AND T. KOGURE[2]

[1] Graduate School of Education, Shimane University, 1060 Nishikawatsu, Matsue, Shimane 690-8504, Japan. chromim@edu.shimane-u.ac.jp (corrspondence, I.M.)

[2] Faculty of Science and Engineering, Shimane University, Matsue, 690-8504, Japan.

Tertiary volcanic rocks are sometimes located in Shimane prefecture Southwest Japan. These rocks on the coastal cliff often have salt weathering by sea water. The purpose of study is to clarify the mechanism of salt weathering by sea water.

The outcrop of the subjects is coastal cliff located Isotake, Oda city with a width of 30m and height of 15m. This outcrop consists of Tertiary andesitic volcanic rocks (mainly lapilli tuff) called the Omori Formation. This outcrop is a place where salt weathering by sea water is remarkable. This research is preliminary and clarified chemical composition of rocks using handheld XRF. The handheld XRF used for study is GENIUS 3000 XRF by SKYRAY INSTRUMENT.

In this study, we tried to grasp the chemical change in the weathering mechanism in the outcrop size. The handheld XRF measurement revealed the chemical properties of salt weathering in the four elements K, Ca, Fe and Ti, preliminary.

The outline of the result as follows: K (n.d. -2.71wt%), Ca (0.98-44.02 wt%) , Fe (1.40-25.47 wt%) and Ti (0.01-0.44). And based on the range of chemical values we were able to classify into three types (Type 1, Type 2 and Type 3).

Type 1: Increase of Ca (>10wt%) accompanying the salt weathering

Type 2: Increase of Fe (>5wt%) and of Ti (>0.25wt%) accompanying the weathering

Type 3: Ca poor than Type 1 and 2 and medium content of Fe (1.5<, 5.7>) and Ti (0.19<, 0.21>)

As a result of this study, salt weathering has recognized three types. This can point out the possibility of representing the difference of the source lapilli fragument. In addition, the degree of weathering is also considered important.