

## The detailed lithology discription :The Black Chert Member of Dixon Island Formation in the coastal Pilbara terrane, Australia.

# Shoichiro Koge[1]; Shoichi Kiyokawa[2]; Minoru Ikehara[3]; Fumio Kitajima[4]; Takashi ITO[5]

[1] Earth and Planetary Sci., Kyushu Univ; [2] Earth & Planetary Sci., Kyushu Univ.; [3] Center Adv. Marine Core Res., Kochi Univ.; [4] Earth and Planetary Sci., Kyushu Univ.; [5] Fac. Education, Ibaraki Univ.

The Pilbara terrane, western Australia, is one of the most complete and best-preserve examples of middle Archean hydrothermal oceanic setting stratigraphy. The Dixon Island, especially, is a region where spread outcrops continuously along the coast line. So it is possible to obtain detailed geological information. The Dixon Island Formation is about 400m thick and composed of the Rhyolite Tuff Member, the Black Chert Member, the Varicolored Chert Member, in ascending order. The Rhyolite Tuff Member contains a lot of black chert veins toward the Black Chert Member. There are six blocks, DX-A–DX-F, which are separated by dextral strike-slip faults in Dixon Island. Thin section and did detailed observation chemical analysis of carbon isotopic ratio and TOC. In this time, we focused on DX-C, DX-E and DX-F.

### Lithofacies of the Black Chert Member

The Black Chert Member is composed of massive black chert, laminated black chert, green chert, red chert, tuff and so on.

### Petrography observation

These rocks could be roughly classified into four groups. (1): carbonaceous grains, (2):iron grains (3): clayly Black chert, red chert and green chert which are judged in outcrops classified into (1),(2) and (3) respectively. Furthermore these could be sorted into composite grains.

### TOC and carbon isotope

TOC and carbon isotopic ratio was measured, using EA/MS (Elemental Analyzer-Conflo 3-DELTA plus advantage) at Marine Core Research Center, Kochi University.

### Result

The lower part of the Black Chert Member is similar to the black chert vein at the upper part of the Rhyolite Tuff Member in respect of containing black spherical grains as a result of the observation of thin section. Green chert is clayey and show low TOC comparing with others and there are few carbon grains. It is frequent to produce in DX-F section. Increasing to the top, the carbon isotope is heavy in the lower of the Black Chert Member.

### Summary

Because of the similarity of observation of thin section, the black chert vein in the Rhyolite Tuff Member supply carbons to the Black Chert Member. TOC of DX-B is about 0.2-0.5%(Katagami 2005). But TOC of DX-C is about 0.02-0.04(%) and TOC of DX-F is less than 0.02(%) this time. Therefore it is suggested that DX-B block existed in the center of hydrothermal eruption and the activity became weak from DX-B to DX-F.