Modern iron sedimentation and hydrothermal activity at post Kikai Caldera volcano in Satsuma Iwo-Jima, Kagoshima, Japan: To understand modern bedded iron formation at shallow hydrothermal environment

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Satsuma Iwo-Jima Island at northwest limb of the Kikai Caldera was located 38 km south of Kyushu Island, Japan. Nagahama Bay in the island took on reddish brown color and high density iron-oxyhydroxides seawater which is formed by the neutralization of ferrous iron in acidic hot-spring. After dredging work at 1998, iron-oxyhydroxide sediments have accumulated about 1 to 1.5 meter on the bottom of this bay. For estimate the amount of iron material discharge and sedimentation history, we collected 13 core samples from this bay and form cross section in this bay. The stratigraphy in these cores well preserved volcanic activity and weather condition such as storm, heavy rain and calm condition from comparison meteorological data. Also cross section and column show elucidated sedimentation period of characteristic key beds and calculated sedimentation rate of iron-oxyhydroxides.

Cores contains iron-oxyhydroxides muds layers, three thick tuff beds and a thick sandy mud bed. Iron-oxyhydroxides mud consisted minor volcanic glass and mainly 1 micro meter to 100 nano mater Fe mineral. Tuff beds were composed of volcanic glass and Si-bearing minerals. Sandy mud bed was essentially a mixture of rock fragments, volcanic glass and fine reddish-brown grains. Comparison with this stratigraphy and meteorological data show that ash beds were correlated to heavy rainfall in 2000, 2001 and 2002 which years occur volcanic ash fall at mountain, and a thick sandy mud bed was corresponded to strong typhoon events in 2004 to 2005. Heavy rainfall supplies ash material to bottom of seafloor from rhyolite volcano Iwo-Dake depositing unformed tuff-rich sediment which was deposited at the top of volcano during. Strong typhoon drives Al and Si-bearing material to Nagahama Bay and these materials are re-sediment together as sandy mud bed. We will try to identify iron formation mechanism to identified relationship between hydrothermal activity and sedimentation. Before estimation of iron formation, at least we subtract wave and rain effects. Unformed iron-oxyhydroxides mud accumulated rapid speed at 33.3 cm par year at 1m-sediment-trap cores placed on the seafloor. From meteorological comparison dating, estimated accumulation rate of iron-oxyhydroxides mud is 4.7 cm par year. As a result, we estimate that approximate 800 cubic centimeter iron-oxyhydroxides discharge from bottom of seafloor, and only 14 percent preserved in this Nagahama Bay.