V157-P003 **Room: Poster Session Hall** **Time: May 21**

Near-vent sedimentation processes during a plinian phase of a marine caldera-forming eruption, Kikai volcano, Japan

Fukashi Maeno[1]

[1] ERI, Univ. TOKYO

Near-vent sedimentation processes of the plinian fallout and high temperature dilute currents erupted 7.3 ka from mostly submerged Kikai caldera were discussed based on analyses of stratigraphy, textural, lithofacies characteristics, and components of the pyroclastic deposits. The welded eruptive deposits, Unit B, were produced during column collapse phase (Phase 2) following a large plinian eruption (Phase 1), and can be divided into two subunits, Units B_l and B_u. Unit B_l is primarily deposited in topographic depression in proximal islands, and consists of multiple thin flow units with stratified and cross-stratified facies in various degree of welding, including erosional signatures. Each thin unit looks like a single aggrading unit, composed of a lithic-rich layer or pod and a welded pumice-rich layer. Lithic-rich parts are fine-depleted, and mostly composed of brittle-shaped dense particles, bearing altered lava, obsidian clasts with chilled margin, and submarine boulders. On the other hand, Unit B_u shows only densely welded stratified facies, composed of alternating a lithic-rich layer and a pumice-rich one. The layers mantle lower units and they are sometimes viscously deformed by ballistics. The sedimentary characteristics of Unit B_l indicate that, during the column collapsing, high temperature dilute pyroclastic density currents were repetitively generated from phreatomagmatic explosions. It is thought that, on such condition, dense brittle particles have been segregated in a turbidity current and was instantaneously followed by sedimentation of hot lighter pumice-rich particles, resulting in multiple aggrading units composed of lithic-rich layers or pods and pumice-rich ones. Furthermore, it is suggested that the depositional temperature of eruptive materials increased from Phase 1 to 2 and the eruptive style changed from normal plinian eruption (Unit A) through surge-generating explosions (Unit B_l) into agglutinate-dominated eruption (Unit B_u). On the basis of field data, welded pyroclastic surge deposits (Unit B_l) could be produced only in specific conditions, such as (1) quick accumulation of still-viscous pyroclasts above the minimum welding temperature, (2) elastic particles' interactions with substrate deformation or erosion through corrosion as the result of impingements of brittle particles. These conditions may be achieved within high temperature and highly energetic density currents from magma-water interaction, which is accompanied with a small amount of seawater. These appearances and origins of pyroclastic deposits may introduces some ideas for understanding emplacement mechanisms of agglutinated or welded deposits, and also be key elements in understanding eruptive conditions and sedimentation processes of pyroclastic density currents in near-vent areas during a large-scale marine eruption.