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## Preliminary report on geological survey in and around Lake Nyos, northwestern Cameroon

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Lake Nyos, which is a maar volcano in northwestern Cameroon, exploded in August 1986, releasing a large amount of CO<sub>2</sub> that killed ca. 1800 people and over 3000 cattle. Since steady input of gas to the lake after the disaster implied recurrence of a similar event in the future, artificial degassing of the lake started in 2001 as an international project. However, a large amount of CO<sub>2</sub> still remains in the lake.

Recently a new project launched with a title "Magmatic Fluid Supply into Lakes Nyos and Monoun, and Mitigation of Natural Disasters through Capacity Building in Cameroon" under the Science and Technology Research Partnership for Sustainable Development (SATREPS, co-sponsored by JICA and JST). We performed preliminary fieldwork at Lake Nyos in January 2011 to clarify an eruptive history of the Nyos maar volcano. We found that pyroclastic deposits derived from the eruption of the volcano directly overlie the Pan-African quartz monzonite basement. The deposits can be divided into three units: pyroclastic-flow deposits, scoria-fall deposits and pyroclastic-surge deposits in an ascending order. Basal pyroclastic flow deposits are observed at the base of the eastern lakeshore wall and the downstream side of the dam. The deposits are poorly sorted and divided into the lower, fine grained unit and the upper clast-rich unit. Scoria-fall deposits overlying the basal pyroclastic flow deposits are recognized at the eastern to northeastern lakeshores. They are partially densely welded. Pyroclastic-surge deposits occur at the northern to eastern lakeshores. The surge deposits are well-stratified and thickest of all the pyroclastic deposits. The depositional sequence suggests that a series of eruptive events that formed Lake Nyos started with a pyroclastic flow eruption followed by a strombolian activity that produced scoria-fall deposits, and finally by explosive eruptions discharging multiple pyroclastic surges.

Keywords: volcanic lake, volcanic gas disaster, pyroclastic deposit, eruptive history