



## Mt. Kilimanjaro expedition in earth science education

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Mt. Kilimanjaro, Africa's highest mountain is 5,895 meters above sea level and is located 330 km south of the equator in Tanzania. In 1976 glaciers covered most of Mt. Kilimanjaro's summit; however in 2000, an estimated eighty percent of the ice cap has disappeared since the last thorough survey done in 1912. There is increased scientific interest in Mt. Kilimanjaro with the increase in global and African average temperatures.

A team of college and pre-college school students from Tanzania, South Africa and Kenya, teachers from South Africa and the United States, and scientists from the University of Alaska Fairbanks in the United States and Akita University in Japan, climbed to the summit of Mt Kilimanjaro in October 2009. They were accompanied by guides, porters, two expedition guests, and a videographer. This expedition was part of the GLOBE Seasons and Biomes Earth System Science Project and the GLOBE Africa science education initiative, exploring and contributing to climate change studies.

Students learned about earth science experientially by observing their physical and biological surroundings, making soil and air temperature measurements, participating in discussions, journaling their experience, and posing research questions. The international trekkers noted the change in the biomes as the altitude, temperature and conditions changed, from cultivated lands, to rain forest, heath zone, moorland, alpine desert, and summit. They also discovered permafrost, but not at the summit as expected. Rather, it was where the mountain was not covered by a glacier and thus more exposed to low extreme temperatures. This was the first report of permafrost on Mt. Kilimanjaro. Classrooms from all over the world participated in the expedition virtually. They followed the trek through the expedition website (<http://www.xpeditiononline.com/>) where pictures and journals were posted, and posed their own questions which were answered by the expedition and base camp team members. This was an opportunity for South African, Tanzanian and Kenyan students to work side by side with scientists, experience the wonder of summing Africa's tallest mountain, and to learn hands-on earth science at a remote location. For students worldwide, it was an opportunity to share in the exciting earth science learning experience of going to the top of Africa without leaving their classrooms.