Following the catastrophic eruption of Volcano Nyiragongo on January 17, 2002, a great effort has been devoted to the seismic surveillance of volcanoes Nyiragongo and Nyamuragira located at the northern of Lake Kivu in the Western branch of the East African rift system.

Five years of observations at 6 seismic stations let us derive the following results:

(a) The authors could locate, with enough accuracy, 10657 long period earthquakes related to deep magma activity of volcano Nyamuragira. The epicenters are spreading mainly along a NNW-SSE direction which coincides with the main fracture zone within the Virunga volcanic complex. The four recent eruption outbursts at this volcano lie within the above epicenter area.

(b) Compared to other eruptions at this volcano, the November, 2006 Nyamuragira eruption is unique for having been preceded by a swarm of short-period earthquakes that occurred few hours before the lava outburst. The epicenters of those earthquakes correlate well with the location of the eruption site as it also does with the InSAR observations of surface deformation associated with the eruption. InSAR deformation maps indeed indicate a NNW-SSE trending deformation on the southern flank of the volcano extending up to the Nyiragongo southwestern flank.

(c) Hypocenters of the swarm type of Long-period earthquakes that forerunned the november 27, 2006 eruption of volcano Nyamuragira were located. From the hypocenter location, it is inferred that shallow magma chambers that gave rise to the eruption is within 4 to 9 km beneath the eruption location as indicated by an aseismic region within this depth range.