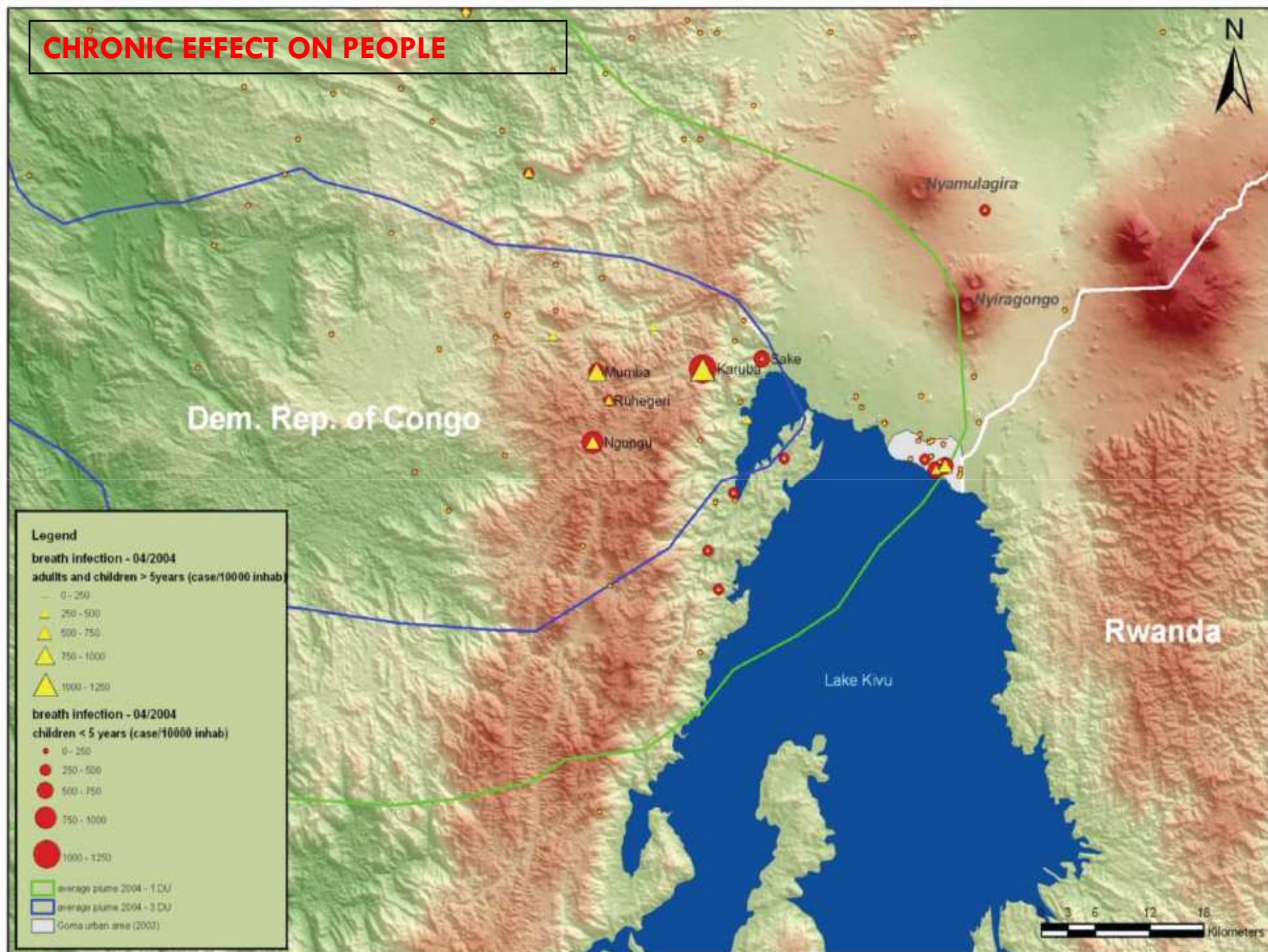


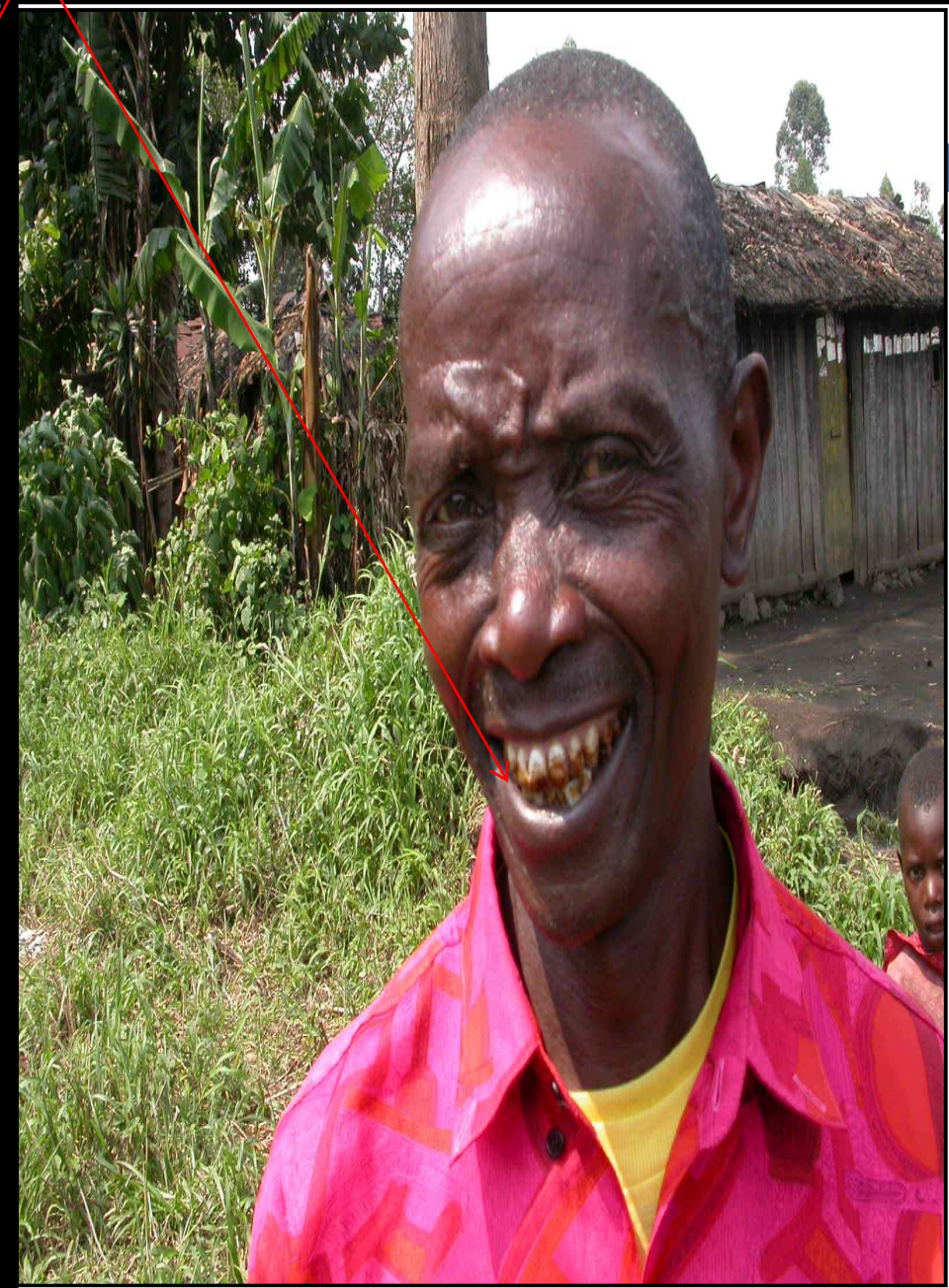
CHRONIC EFFECT ON PEOPLE



**Fluorosis in the Virunga Volcanic Province,
Goma- The DRC**



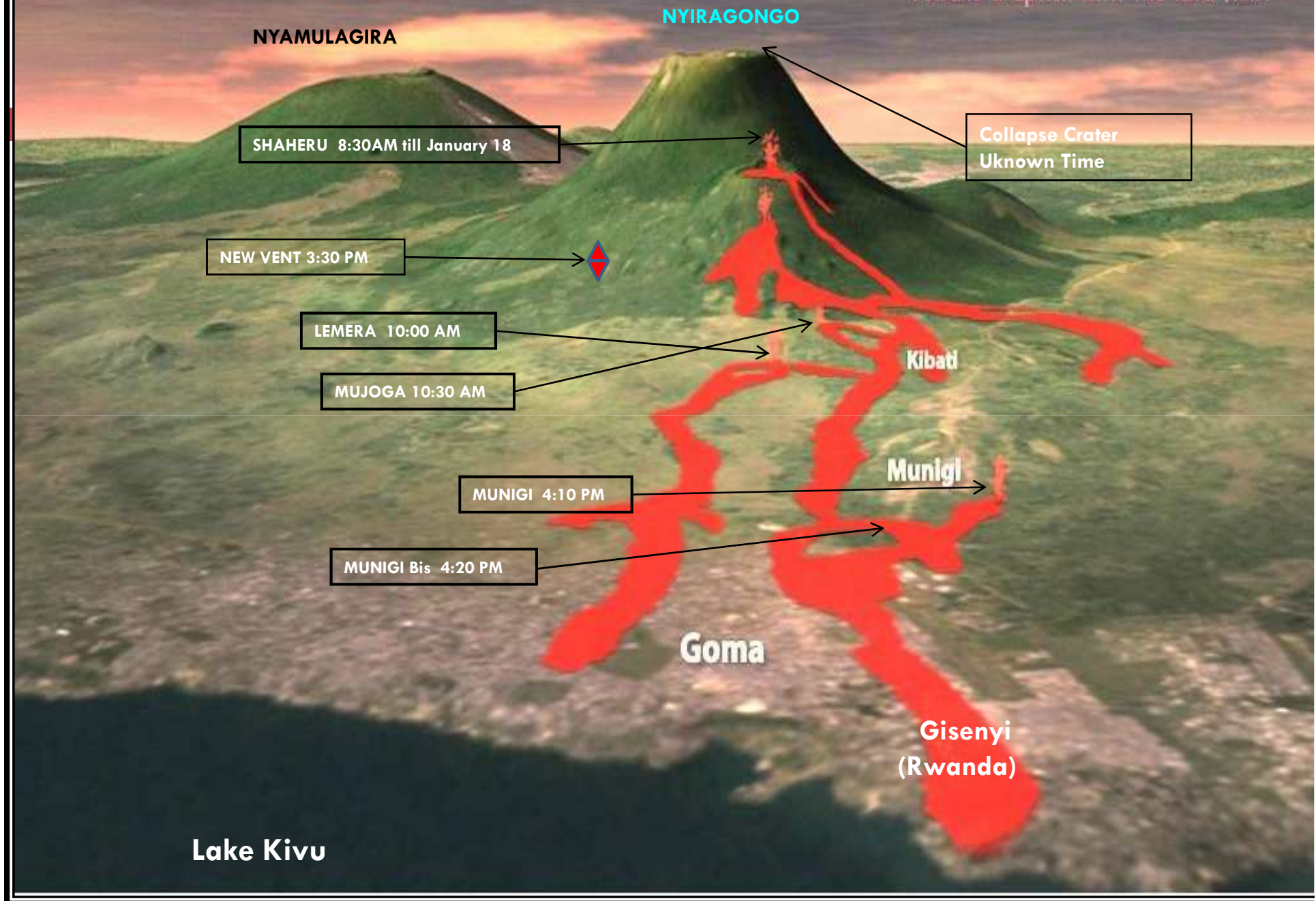
Fluorosis in the Virunga Volcanic Province, Goma- The DRC





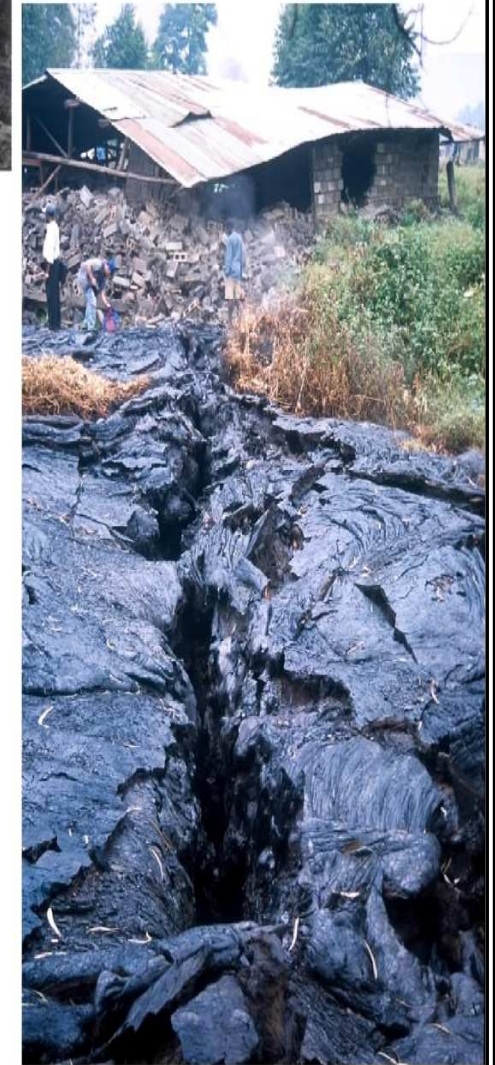
3. NEW ERUPRION: - NEW VENTS- LAVA FLOW-ASH-GAS

The January 17, 2002 Nyiragongo Volcano Eruption with the lava flow.





Goma city, January 2002



Lava flow in Goma city, January 2002

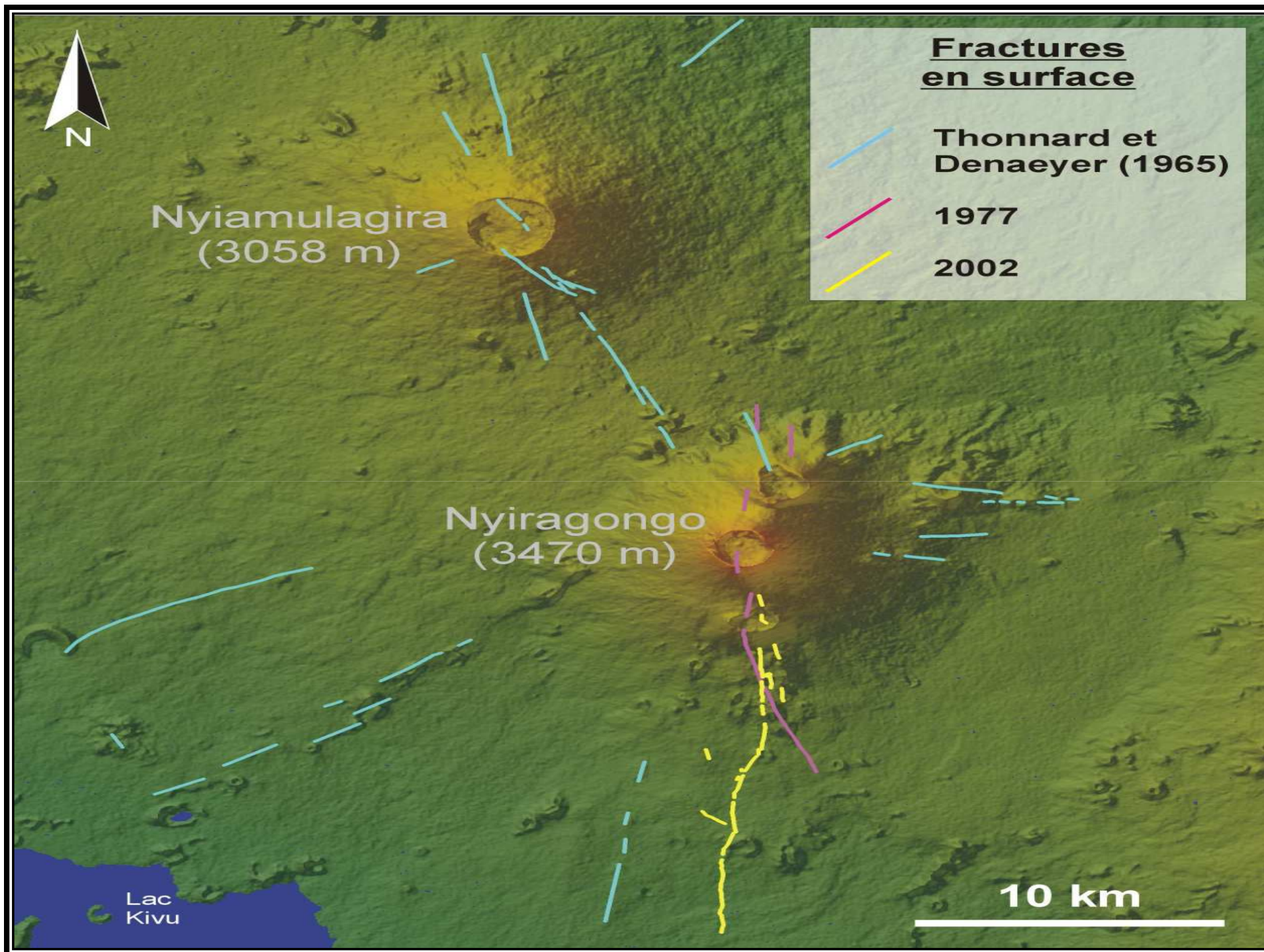


January 2002

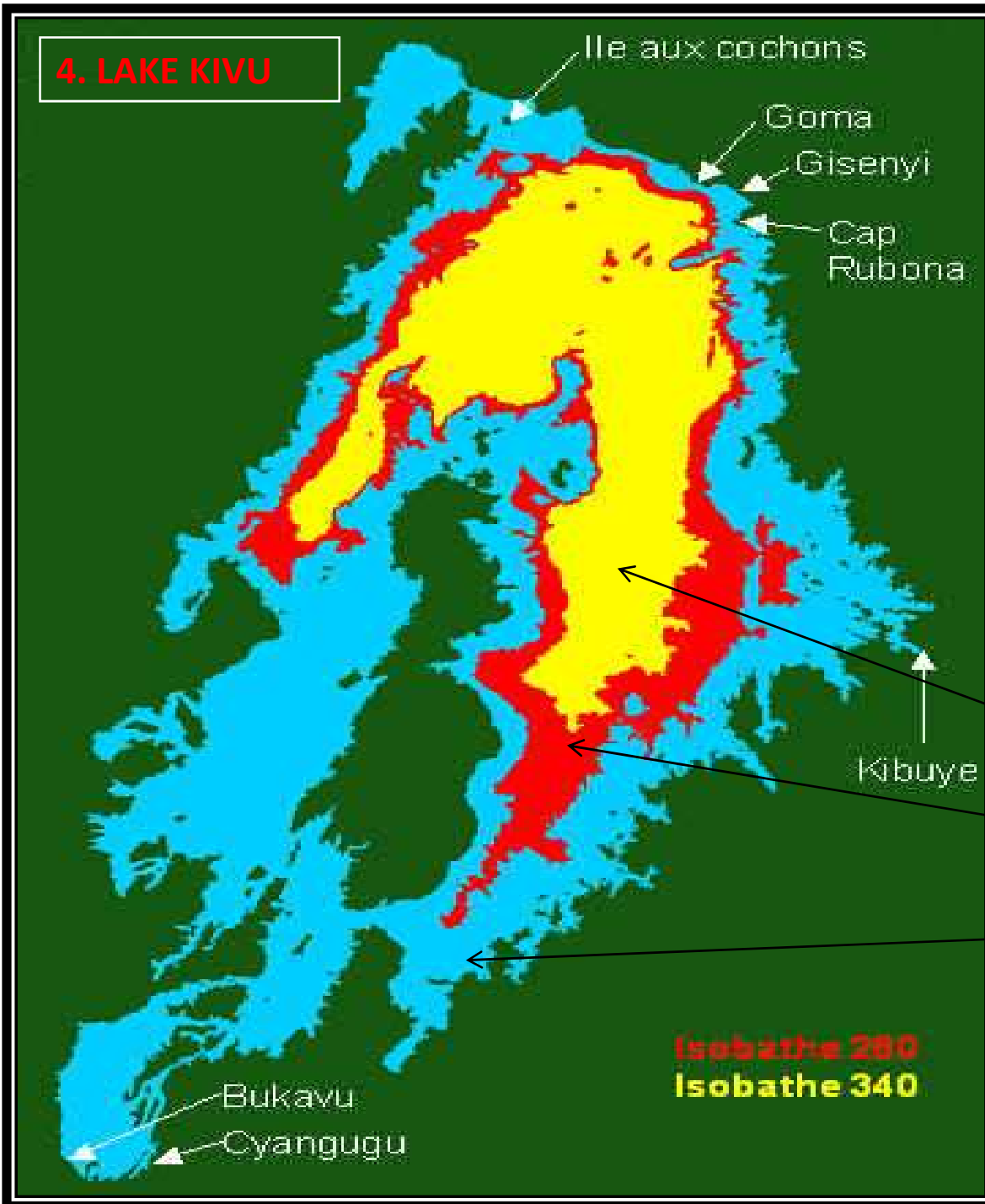


Lake Kivu





4. LAKE KIVU



Total volume of water = 560,000 m³

Volume of CO₂ : 256 000 m³

Volume of CH₄) : 54 ,000 m³

Altitude : 1,462 m

Maximum depth: 485 m

CH₄

CO₂

H₂O

A LIMNIC ERUPTION IN LAKE KIVU:

-HOW?, WHEN,? THE MECANISME, CONSEQUENCES-

For a limnic eruption to occur, the lake must be nearly saturated with gas.

However, an **volcanic eruption**, an **earthquake**, or even **wind** and **rain storms**, **Landslide** are other possible triggers: each event that can break the equilibrium of layers, may start the eruption.

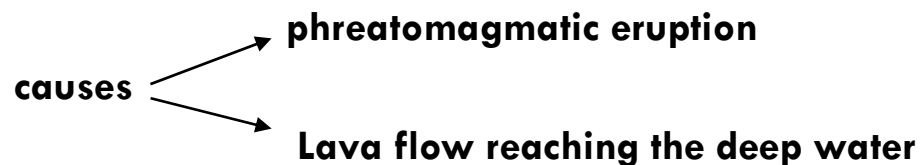
SCENARIO 1 : Increasing in the [gases] ($\text{CO}_2, \text{CH}_4, \dots$) :

The \sum Pression of dissolved gases \geq Hydrostatic Pression

SCENARIO 2 : An eartquake located or no in the bassin of lake Kivu

SCENARIO 3 :

Sudden increasing in the température of the deep water :



Condition : $2,4 \cdot 10^{15}$ Joules to heat about 30.000 m^3 of water up to 20°C

Feature Lake Kivu Lake Nyos

	Kivu	Nyos
Elevation (m)	1462	1094
Area (km ²)	2,060	1.58
Volume (km ³)	580	0.18
Maximum depth (m)	435	208
Volume Of CO ₂ (m ³)	256,000	more less than in Kivu
Volume Of CH ₄ (m ³)	54.000	Not present

- The 15 August 1984 gas release at Lake Monoun that killed 37 people
- The Lake Nyos event on 21 August 1986 caused at least 1,700 fatalities in villages surroundings the lake (till to 30 km far from the lake).

Solving the lake Kivu's problem

1. Methane extraction



Photo: Charles Balagizi
Goma Volcano Observatory

Degassing.....

PM 1:56 25/OCT/2010





Nyiragongo and Nyamulagira volcanoes are a permanent threat to both of Goma and Gisenyi population and villages surroundings.

These volcanoes are being monitored using modern scientific technics from which the GVO gives the alerte level.

4. Climbing Mount Nyiragongo.



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Nyamulagira

Nyiragongo

Summit , 3470 m

4th rest point, 3242 m

3rd rest point, 2762 m

2nd rest point, 2560 m

First rest point, 2250 m

Tshibati Station
1994 m

Goma

Ihusi Hotel

Lake Kivu, 1460m

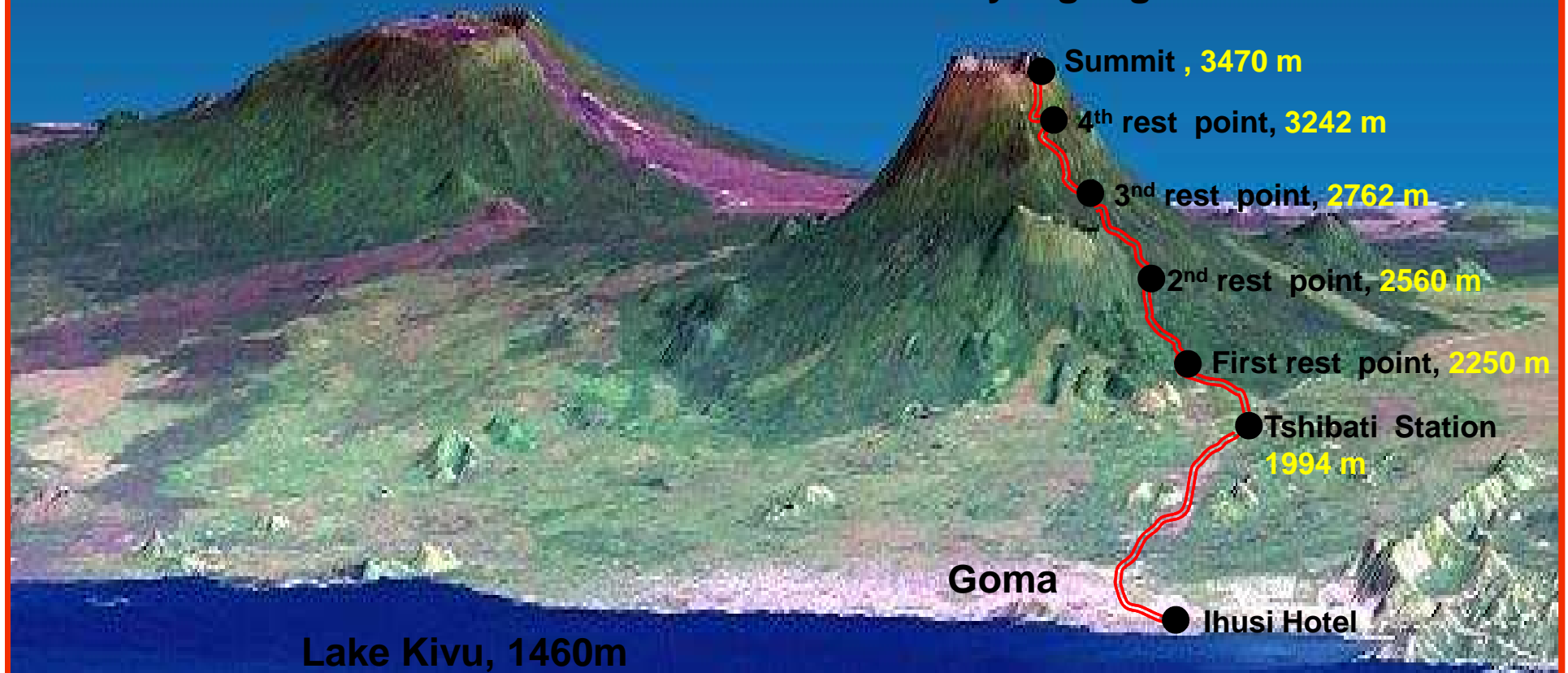


Photo: Charles Balagizi
Observatoire Volcanologique de Goma



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PM12:01 26/FEB/2011