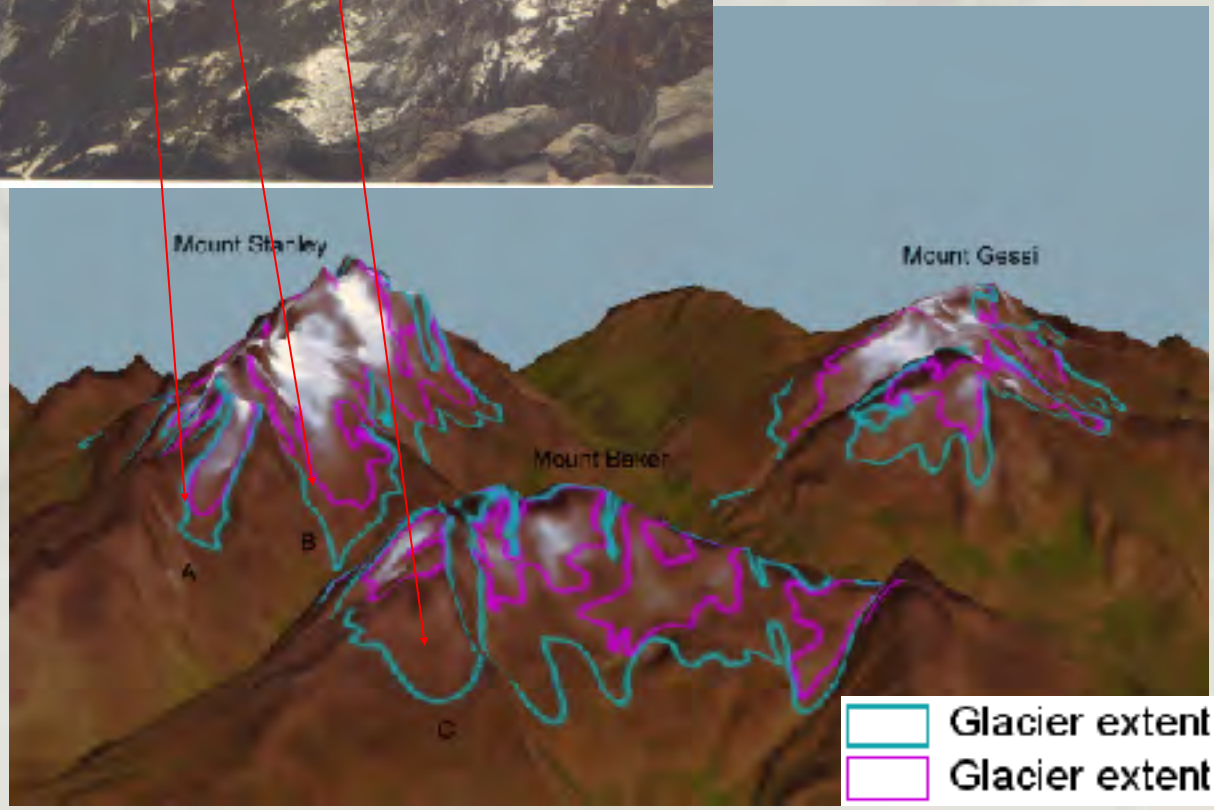
Glaciers in the Rwenzori Mountains: a reinterpretation

Photograph by Sella taken the 12th of July 1906 from Stairs Peak, showing Mount Baker and Mount Stanley.

Satellite generated image of the peaks of the Rwenzori Mountains (2005), also showing glacial extents in 1906 and 1955.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

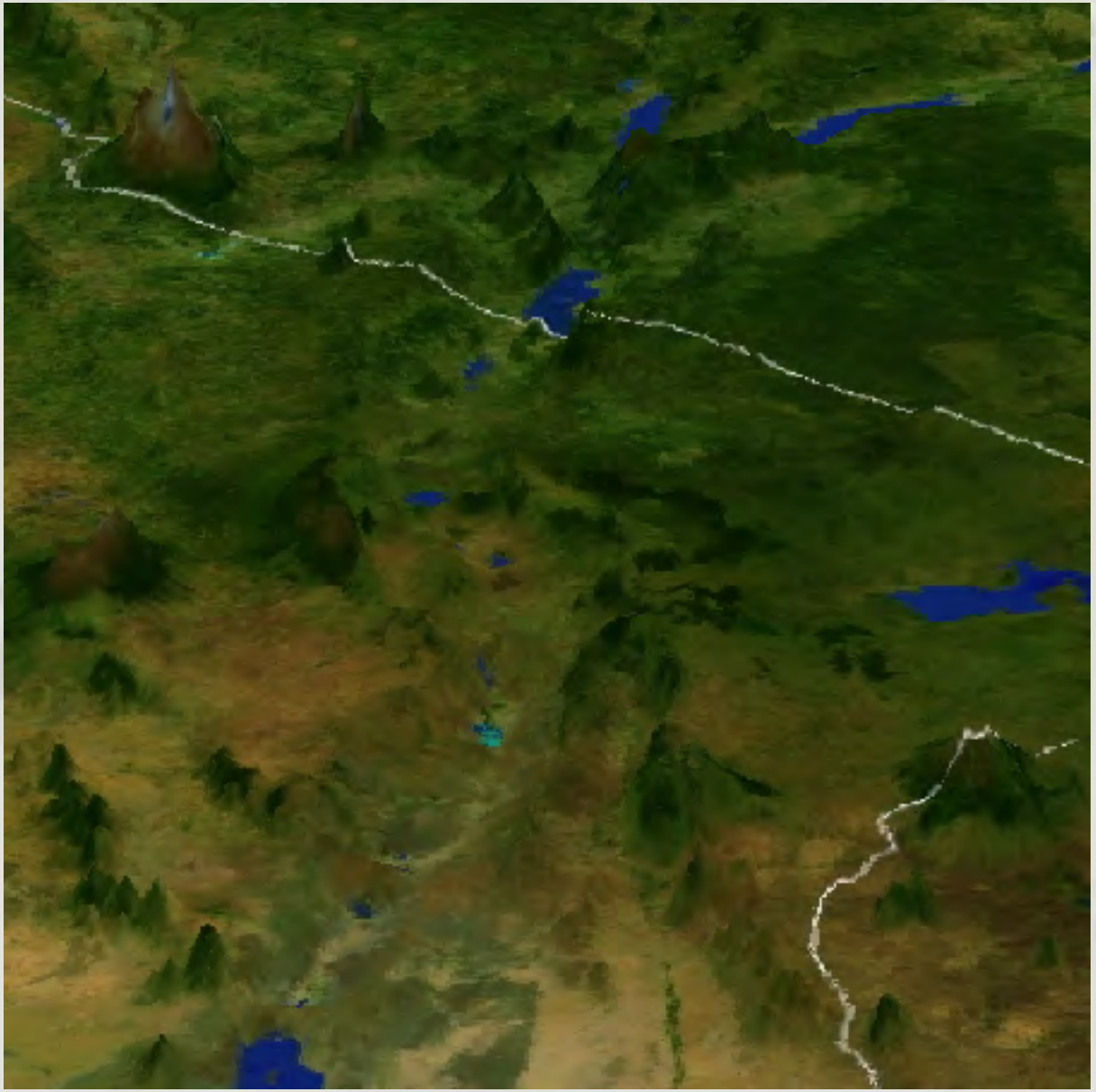
East Africa and the Rift Valley

East Africa and the two arms of the Rift Valley enclosing Lake Victoria between them. The Eastern Rift has several volcanic mountains – Kilimanjaro, Kenya, Elgon, The Western Rift instead contains a block mountain – Rwenzori.

Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

East Africa and the Rift Valley

Detail showing the Eastern arm of the Rift Valley, with the volcanic mountians Kilimanjaro, Kenya and Elgon.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

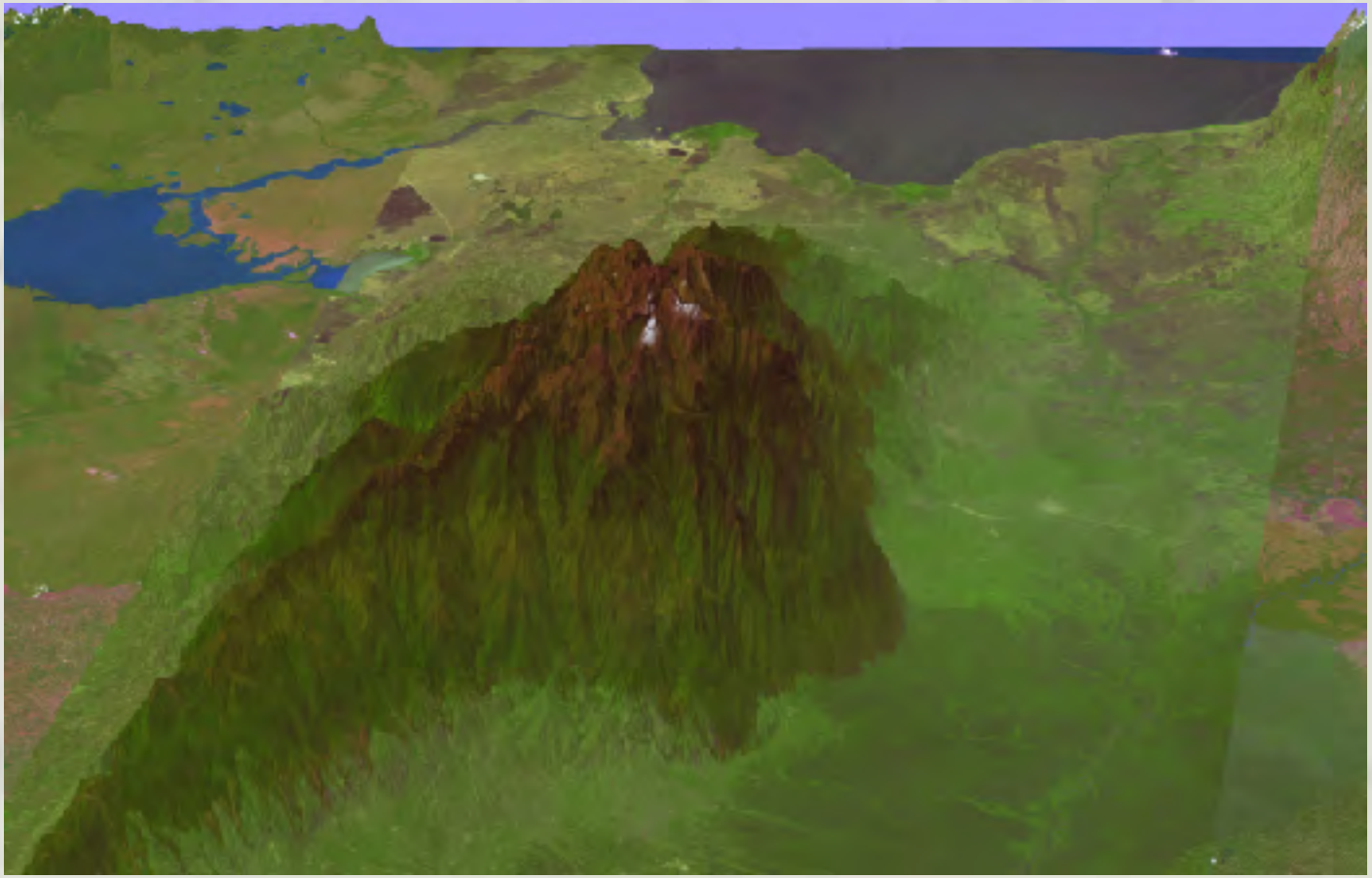
Mountain Rwenzori straddling the Uganda- DRC border

MODIS satellite image showing the Rwenzori Mountains. The Rwenzori Mountains lay in the Western arm of the East African Rift Valley, and is a block mountain (it is not a volcanic mountain)

Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Mountain Rwenzori straddling the Uganda- DRC border

TERRA ASTER satellite image showing the Rwenzori Mountains. The edges of the Rift valley can be seen in the upper part of the image.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

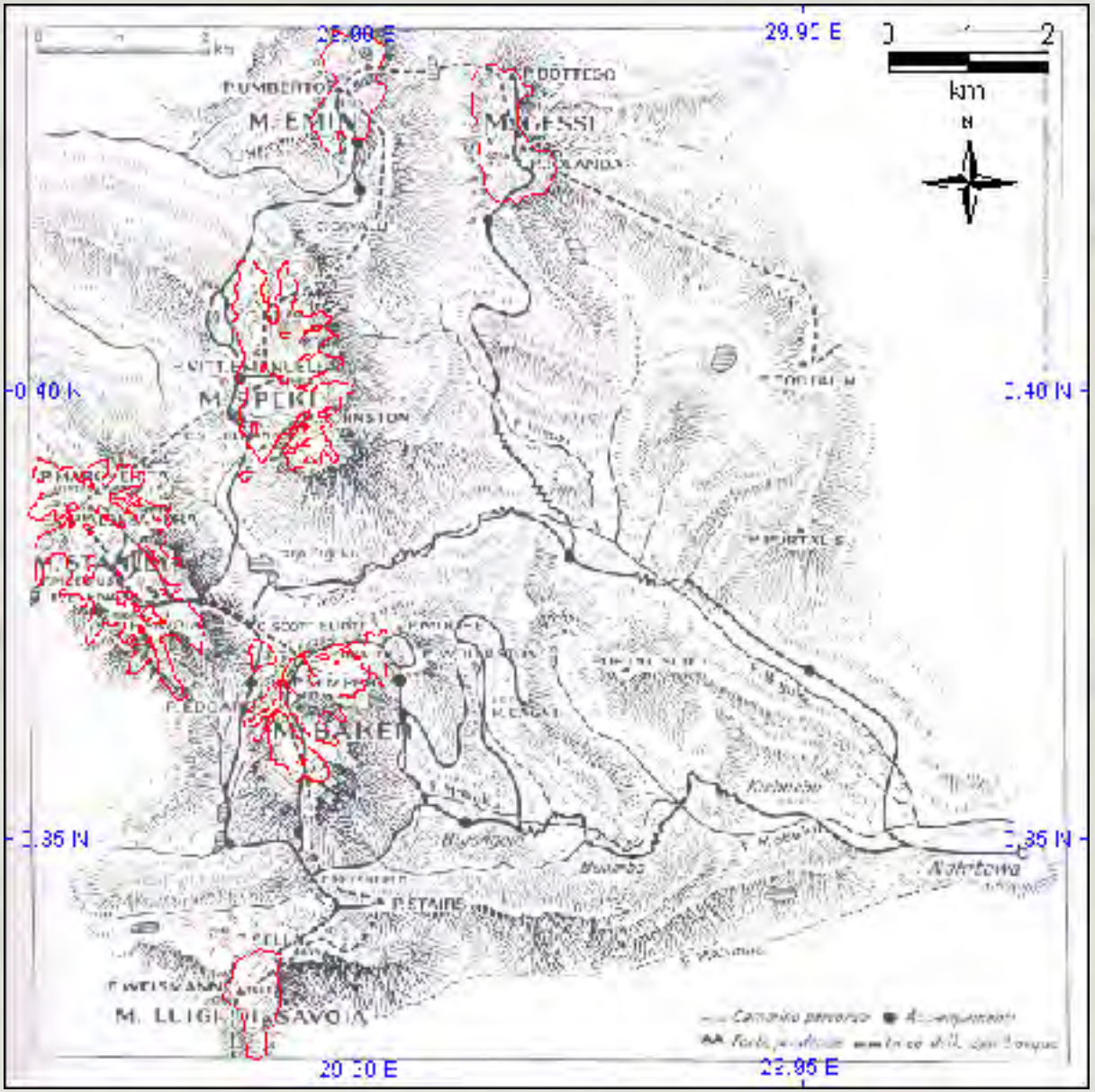
Duke of Abruzzi expedition peak map from 1906

Map published in Geographical Journal, 1907. Reprint by A.A. Michieli, Milan, 1937.

Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Duke of Abruzzi expedition peak map from 1906

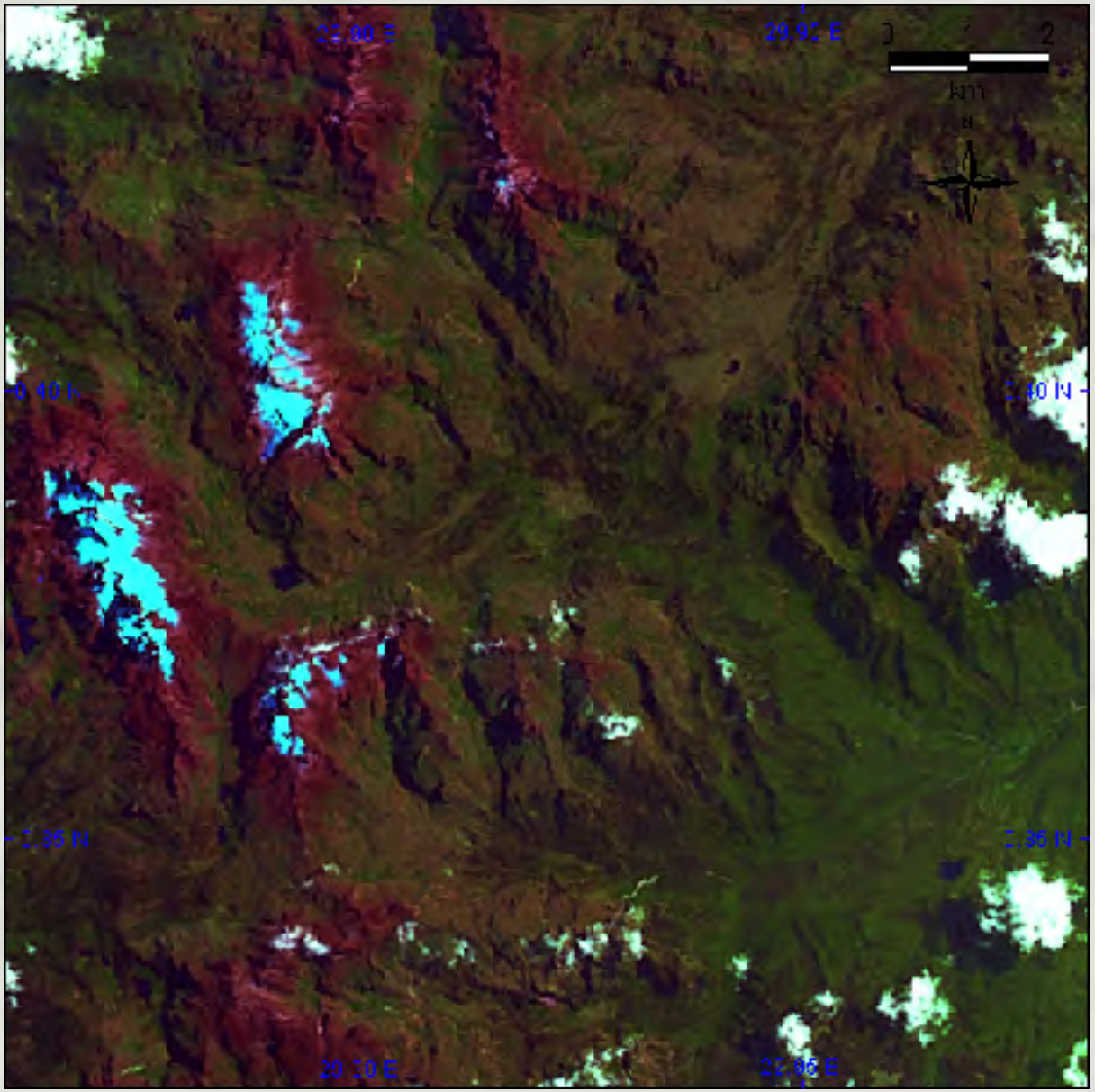
The extent of the glaciers 1906 as mapped by the Duke of Abruzzi expedition. Interpreted by Kaser and Noggler, 1996.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Landsat TM satellite image acquired 7th of August 1987

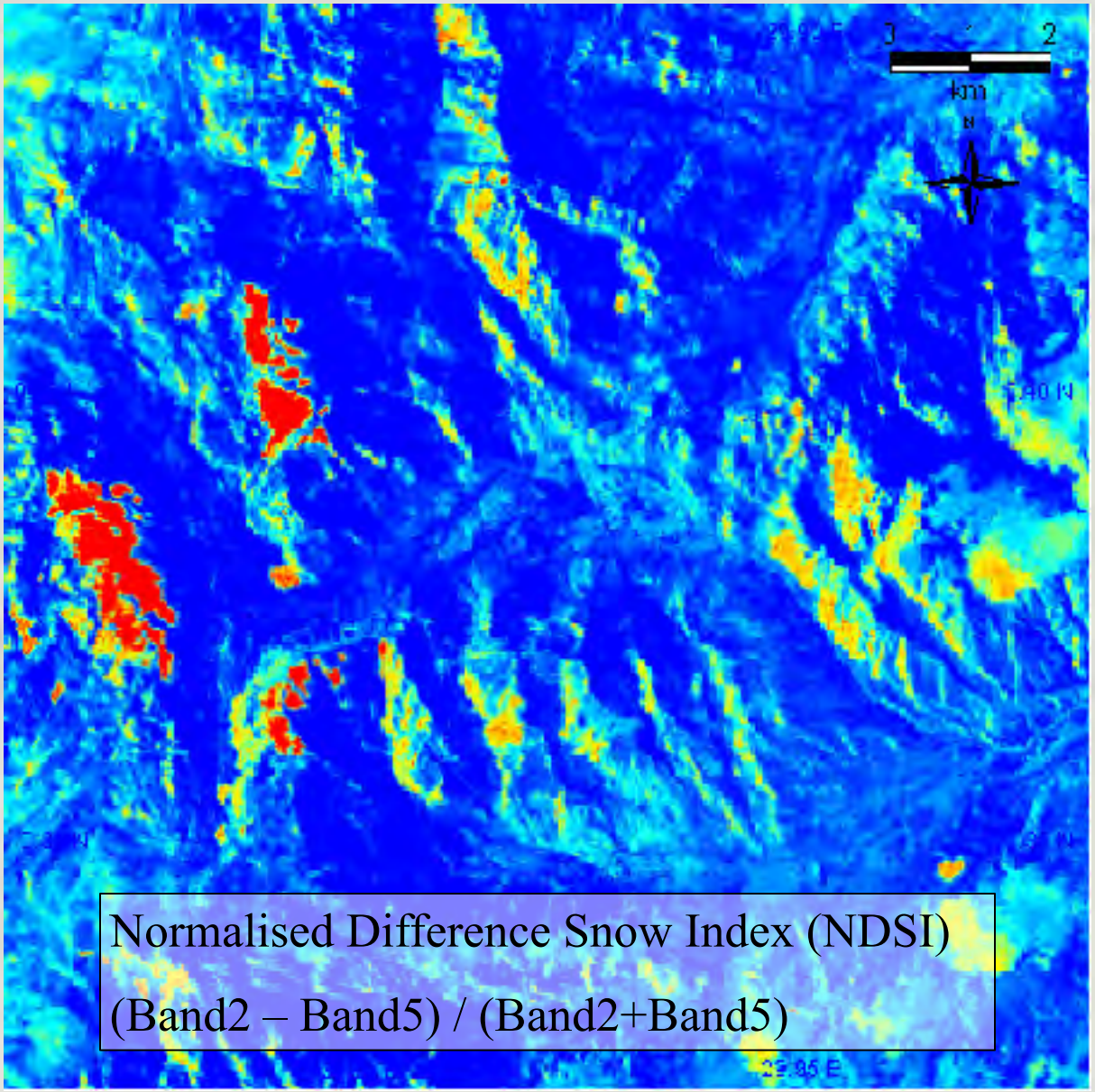
In this satellite image the glaciers stand out as light blue. Clouds are white.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Landsat TM satellite image acquired 7th of August 1987

This image shows the snow content (red) in the satellite image.



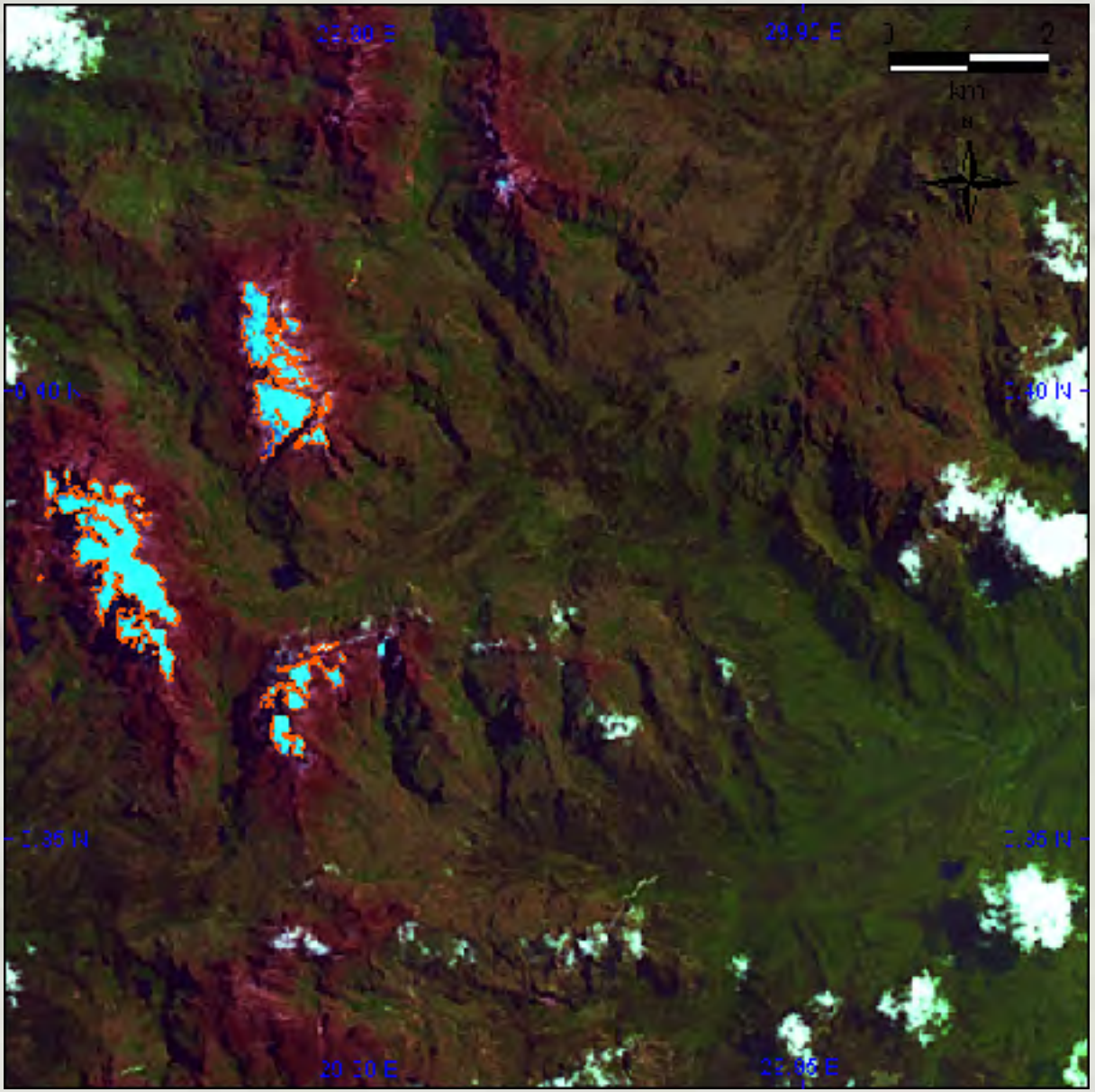
Normalised Difference Snow Index (NDSI)

(Band2 – Band5) / (Band2+Band5)

Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Landsat TM satellite image acquired 7th of August 1987

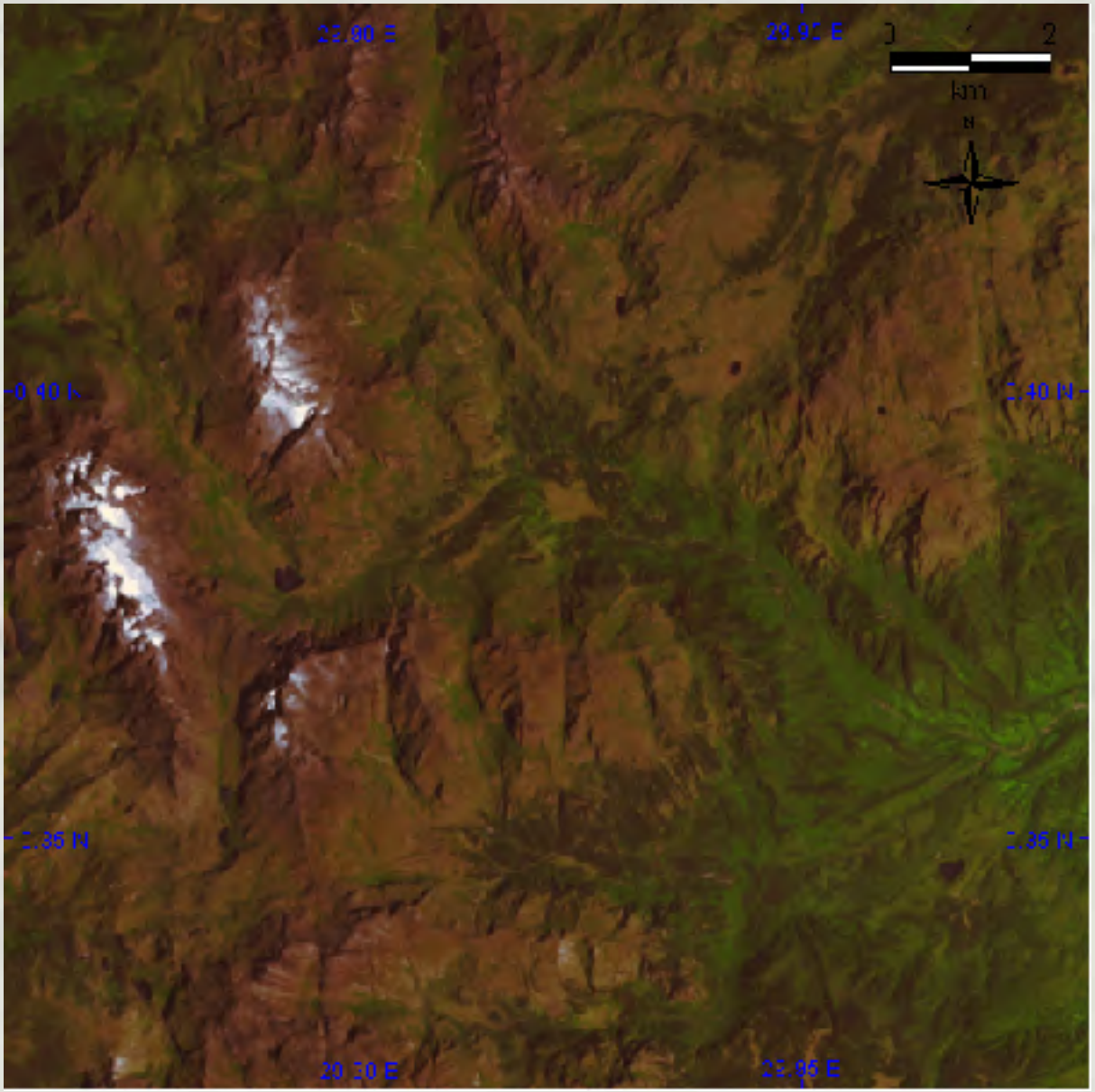
The extent of the glaciers 1987 interpreted from the backdrop satellite image.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

TERRA ASTER satellite image acquired 22nd of February 2005

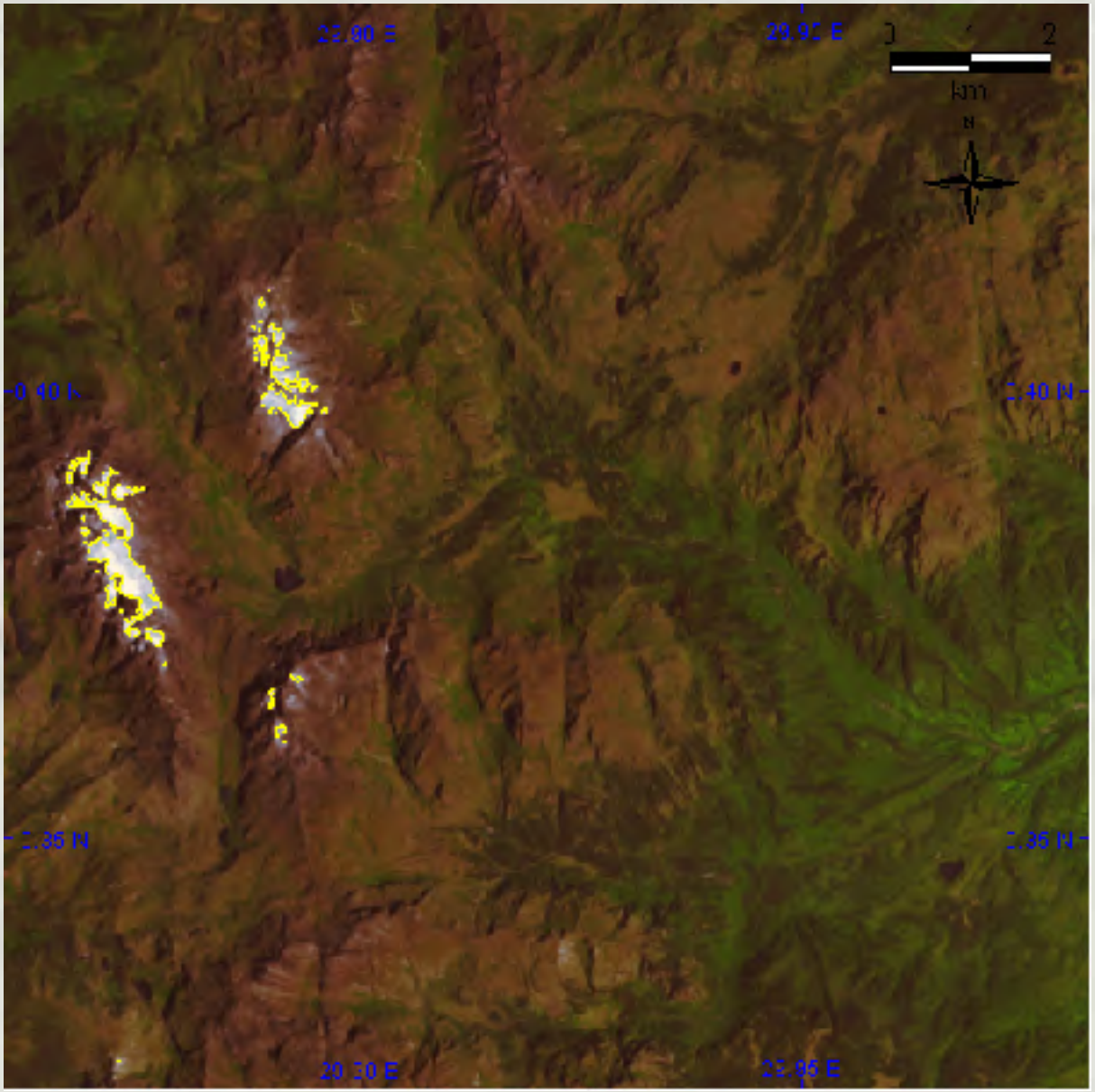
There are no clouds in this image and the glaciers stand out as white, with off-white probably representing newly fallen snow and exposed rock (glacial retreat)



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

TERRA ASTER satellite image acquired 22nd of February 2005

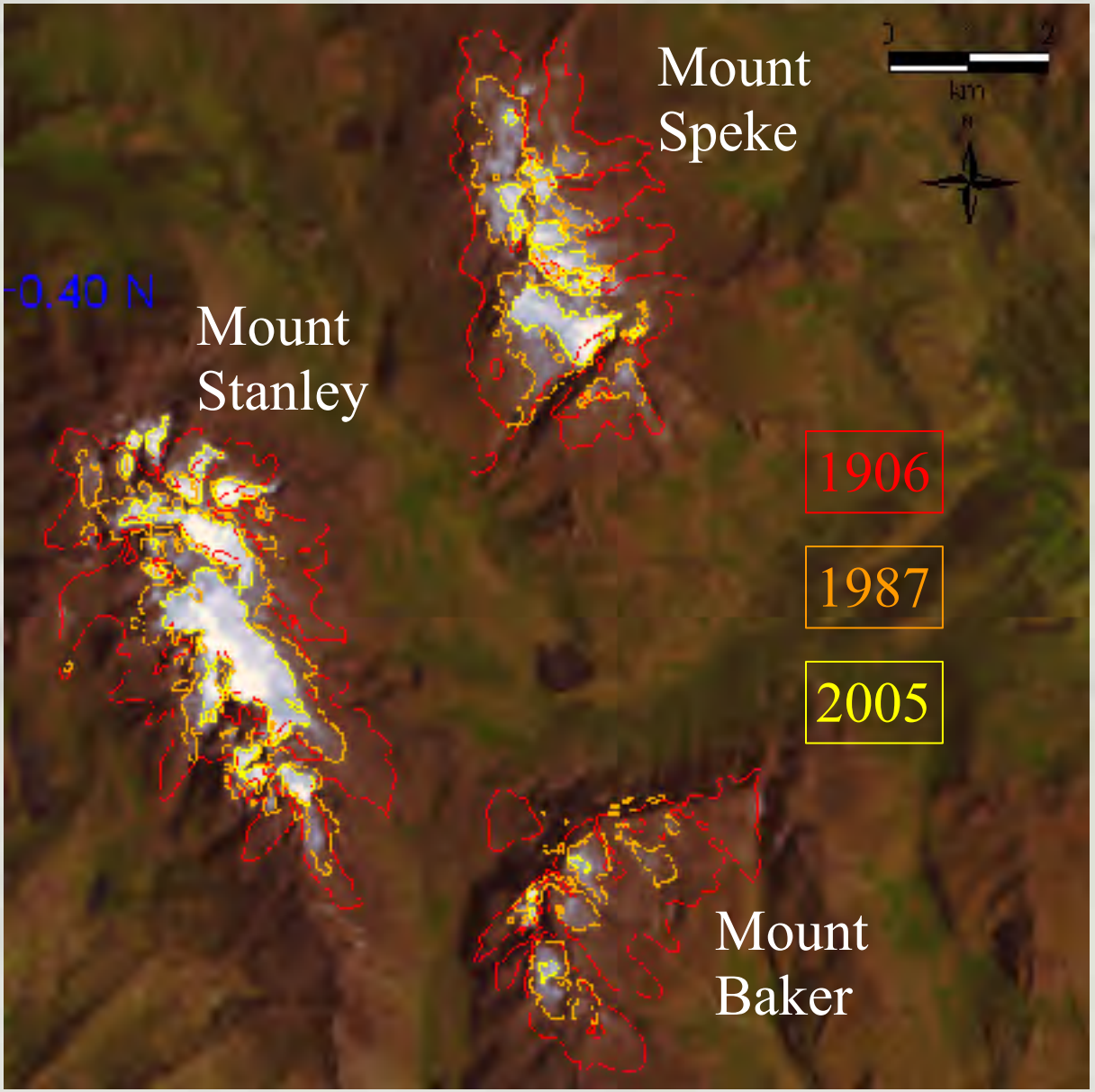
The extent of the glaciers 2005 interpreted from the backdrop satellite image.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Mountain Rwenzori Glacier Changes 1906-2005

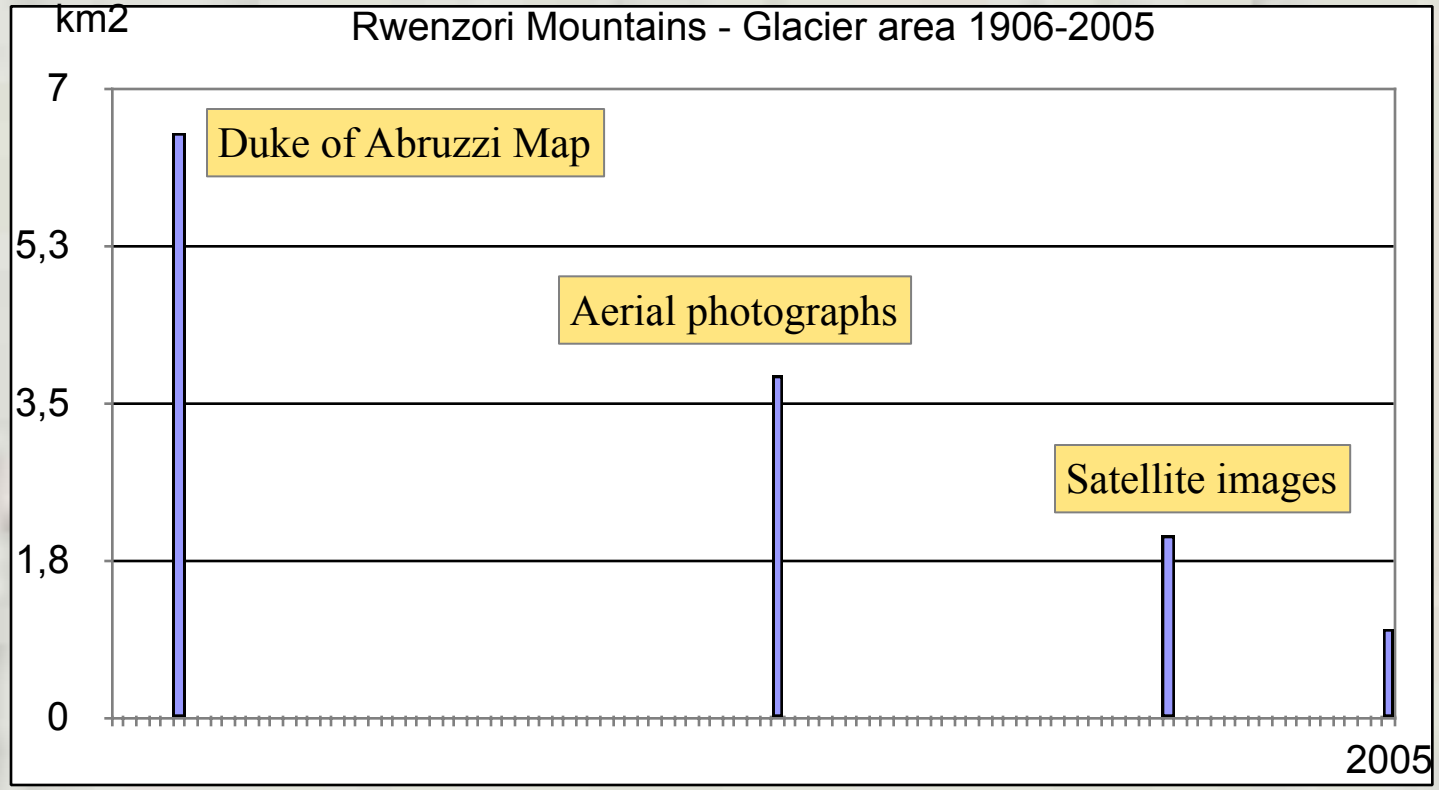
The extent of the glaciers of Mountain Rwenzori 1906, 1987 and 2005.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Duke of Abruzzi expedition peak map from 1906

Since 1906 the glaciers of the Rwenzori Mountains have decreased from around 6.5 km2 to 1.0 km2. If the trend continues the glaciers will disappear in 20 years.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Driving forces contributing to glacier retreat

Global changes in temperature and atmospheric circulation patterns.

Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Driving forces contributing to glacier retreat

Global changes in temperature and atmospheric circulation patterns.

Continental drying (less precipitation and more sunshine)

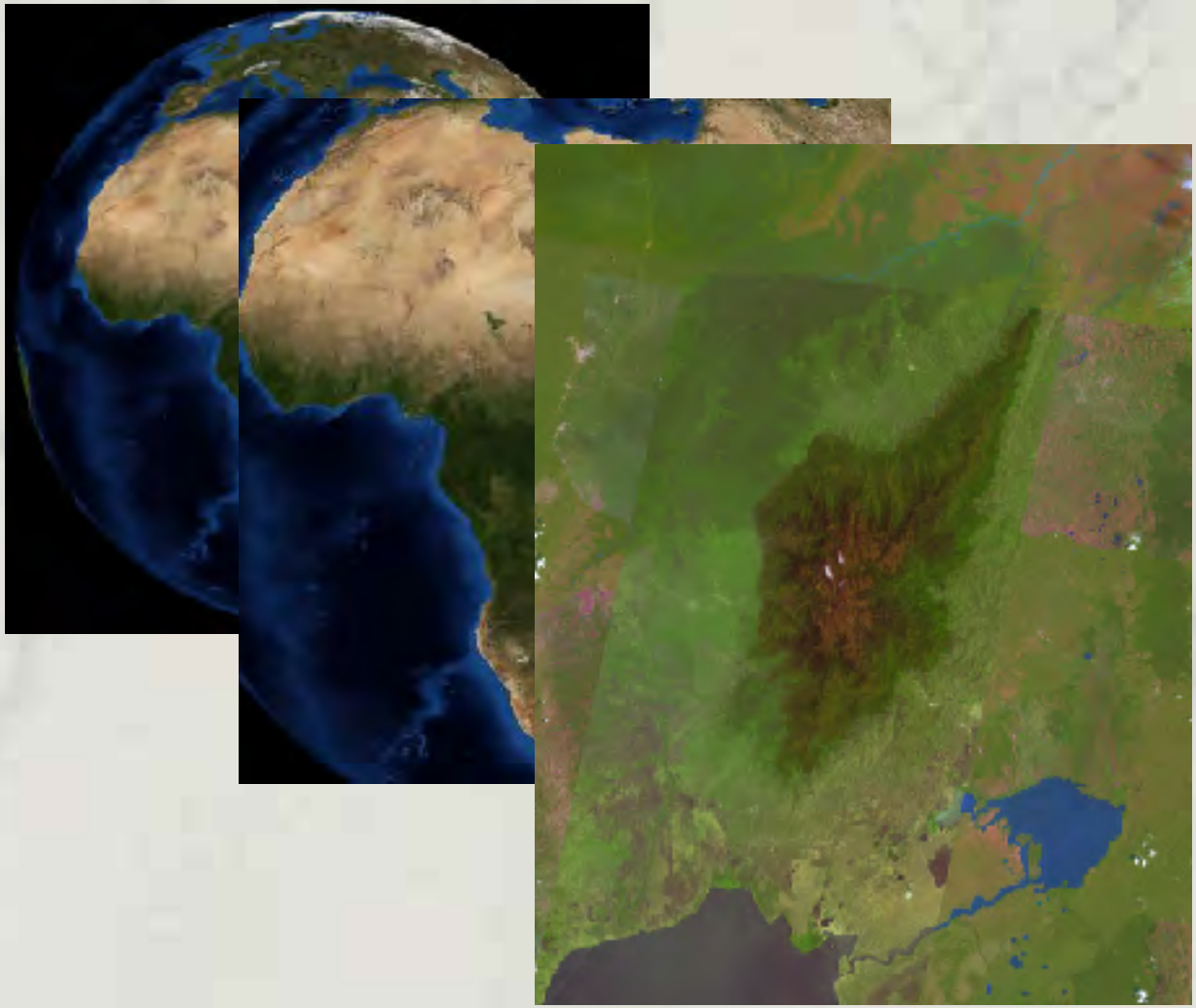
Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin

Driving forces contributing to glacier retreat

Global changes in temperature and atmospheric circulation patterns.

Continental drying (less precipitation and more sunshine).

Local changes in land use and land cover, documented in other Mountains in East Africa, but not the Rwenzoris.



Guido Santino and Thomas Gumbricht,
FAO, Information Products for the Nile Basin