

Grids & Datums

REPUBLIC OF BURUNDI

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"In the 16th century, Burundi was a kingdom characterized by a hierarchical political authority and tributary economic exchange. A king (*mwan*) headed a princely aristocracy (*ganwa*) that owned most of the land and required a tribute, or tax, from local farmers and herders. In the mid-18th century, this Tutsi royalty consolidated authority over land, production, and distribution with the development of the *ubugabire*—a patron-client relationship in which the populace received royal protection in exchange for tribute and land tenure. Although European explorers and missionaries made brief visits to the area as early as 1856, it was not until 1899 that Burundi came under German East African administration. In 1916 Belgian troops occupied the area. In 1923, the League of Nations mandated to Belgium the territory of Ruanda-Urundi, encompassing modern-day Rwanda and Burundi. The Belgians administered the territory through indirect rule, building on the Tutsi-dominated aristocratic hierarchy. Following World War II, Ruanda-Urundi became a United Nations Trust Territory under Belgian administrative authority. After 1948, Belgium permitted the emergence of competing political parties. Full independence was achieved on July 1, 1962. In the context of weak democratic institu-

Thence the course of the Kagera downstream to meet the western boundary of Bugufi; Thence this boundary to its junction with the eastern boundary of Urundi; Thence the eastern and southern boundary of Urundi to Lake Tanganyika.

"An Anglo-Belgian protocol signed at Kigoma on 5 August 1924, afforded the precise alignment and demarcation of the Tanganyika-Urundi boundary which included Bugufi in the British mandate. The protocol of 1924 is the basis for the present Burundi-Tanzania boundary. In 1934 an Anglo-Belgian agreement was reached on the water rights of the respective mandates of the two states along the boundary" (*International Boundary Study, Burundi – Tanzania Boundary*, No. 70 – 16 May 1966, Department of State).

"Extending from west to east between the Rusizi and Kagera rivers, the Burundi-Rwanda boundary has a length of 290 km. Most of the boundary follows streams, of which the Ruwa (*Luhwa*), Kanyaru (*Akanyaru*), and Kagera are the principal rivers. It also passes through Lac Cohoha (*Lac Cyohoha-Sud*) and Lac Rweru (*Lac Rugwero*) and utilizes a number of straight-line segments between streams. There are no known boundary pillars demarcating the boundary. Ordinance

"Fourteen years later a protocol between Belgium and the United Kingdom established the common Boundaries of Tanganyika and Ruanda-Urundi at the point where the present Tanzania tripoint is located at the confluence of the thalwegs of the Mwibu and Kagera."

tions at independence, Tutsi King Mwambutsa IV established a constitutional monarchy comprising equal numbers of Hutus and Tutsis. In 1972, an aborted Hutu rebellion triggered the flight of hundreds of thousands of Burundians. Civil Burundi's civil war officially ended in 2006 under a South Africa-brokered cease-fire agreement with the last of Burundi's rebel groups. Today the government is focused on rebuilding its infrastructure and reestablishing external relations with its regional neighbors" (*Dept. of State Background Notes*, 2009).

Slightly smaller in area than the state of Maryland, Burundi is bordered by the Democratic Republic of the Congo (233 km) (*PE&RS*, June 2005), Rwanda (290 km), and Tanzania (451 km) (*PE&RS*, February 2008).

"The Burundi-Tanzania boundary has a length of 451 km, of which 24 km are in Lake Tanganyika. Tripoints with the Congo (Léopoldville) and Rwanda are located on the median line of Lake Tanganyika and at the confluence of the thalwegs of the Mwibu and Kagera, respectively. East of Lake Tanganyika, the boundary is demarcated by streams and pillars.

"According to the terms of the British mandate for East Africa, the boundary between Tanganyika and Urundi was delimited as follows:

No. 21/258 issued by the Vice-Governor General of Ruanda-Urundi on 14 August 1949 officially delimited the boundary between the two residencies of the Belgian Trusteeship. Both Ruanda and Urundi became independent on 1 July 1962 as the Republic of Rwanda and the Kingdom of Burundi, respectively.

"The tripoint with Congo (Léopoldville) is located at the confluence of the Ruwa and Rusizi, presumably at the junction of the thalwegs of the two rivers. The Rusizi was established by Belgium and Germany as the boundary between their respective territories by a convention signed on 11 August 1910. Fourteen years later a protocol between Belgium and the United Kingdom established the common Boundaries of Tanganyika and Ruanda-Urundi at the point where the Present Tanzania tripoint is located at the confluence of the thalwegs of the Mwibu and Kagera. Prior to WW I, the tripoint of Ruanda and Urundi with the remainder of German East Africa was apparently at the confluence of the Ruvuvu and Kagera. Following WW I, the Kisaka or Kissaga (now known as Gisaka) district in northeast Ruanda was included in the Tanganyika mandate for a short time as the possible location of an all-British route for a railroad to Uganda. Likewise, the Bugufi area between the Ruvuvu and Kagera and westward to the Present

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Burundi-Tanzania boundary, which apparently had been previously administered by Urundi, was included in Tanganyika" (*International Boundary Study, Burundi – Ruanda Boundary*, No. 72 – 1 June 1966, Department of State).

My personal file on Burundi lists three grid systems found in the country: the Burundi Gauss-Krüger Transverse Mercator where the central meridian (λ_0) = 30° E, scale factor at origin (m_0) = 1.0, False Easting = 500 km, False Northing = 1,000 km, the Congo Oriental TM Fuseau 30° where λ_0 = 30° E, m_0 = 1.0, False Easting = 220 km, False Northing = 565 km, and the East Africa TM Belt G where: λ_0 = 32° 30' E, m_0 = 0.9995, False Easting = 400 km, False Northing = 4,500 km. The ellipsoid of reference is the Clarke 1880 where: a = 6,378,249.145 meters, and $1/f$ = 293.465. Note that the False Northings are rather large presumably because the entire country is in the Southern Hemisphere.

The published relation between Arc 1950 Datum and WGS84 Datum in Burundi by the NGA is as follows: $\Delta X = -153 \text{ m} \pm 20 \text{ m}$, $\Delta Y = -5 \text{ m} \pm 20 \text{ m}$, $\Delta Z = -292 \text{ m} \pm 20 \text{ m}$, and this solution was based on 3 points in 1991. Interestingly, "Analysis of TR8350.2 contour charts suggest Arc 1960" (*EPSG v. 7.1*). However, the ellipsoid of reference for both Arc 1950 and for Arc 1960 Datums is the Clarke 1880.



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