

Grids & Datums

FEDERAL REPUBLIC OF SOMALIA

by Clifford J. Mugnier, C.P., C.M.S.

“Located in the horn of Africa, adjacent to the Arabian Peninsula, Somalia is steeped in thousands of years of history. The ancient Egyptians spoke of it as “God’s Land” (the Land of Punt). Chinese merchants frequented the Somali coast in the tenth and fourteenth centuries and, according to tradition, returned home with giraffes, leopards, and tortoises to add color and variety to the imperial menagerie. Greek merchant ships and medieval Arab dhows plied the Somali coast; for them it formed the eastern fringe of Bilad as Sudan, ‘the Land of the Blacks’. More specifically, medieval Arabs referred to the Somalis, along with related peoples, as the Berberi. By the eighteenth century, the Somalis essentially had developed their present way of life, which is based on pastoral nomadism and the Islamic faith. During the colonial period (approximately 1891 to 1960), the Somalis were separated into five mini-Somalilands: British Somaliland (north central); French Somaliland (east and southeast); Italian Somaliland (south); Ethiopian Somaliland (the Ogaden); and, what came to be called the Northern Frontier District (NFD) of Kenya. In 1960 Italian Somaliland and British Somaliland were merged into a single independent state, the Somali Republic. In its first nine years the Somali state, although plagued by territorial disputes with Ethiopia and Kenya, and by difficulties in integrating the dual legacy of Italian and British administrations, remained a model of democratic governance in Africa; governments were regularly voted into and out of office” (*Library of Congress Country Studies, 2013*).

“In 1969, a coup headed by Mohamed Siad Barre ushered in an authoritarian socialist rule characterized by the persecution, jailing, and torture of political opponents and dissidents. After the regime’s collapse early in 1991, Somalia descended into turmoil, factional fighting, and anarchy. In May 1991, northern clans declared an independent Republic of Somaliland that now includes the administrative regions of Awdal, Woqooyi Galbeed, Togdheer, Sanaag, and Sool. Although not recognized by any government, this entity has maintained a stable existence and continues efforts to establish a constitutional democracy, including holding municipal, parliamentary, and presidential elections. The regions of Bari, Nugaal, and northern Mudug comprise a neighboring semi-autonomous state of Puntland, which has been self-governing since 1998 but does not aim at independence; it has also made strides toward reconstructing a legitimate, representative government but has suffered some civil strife. Puntland disputes its border with Somaliland as it also claims portions of eastern Sool and Sanaag” (*World Factbook, 2013*).

Slightly smaller than Texas, Somalia is bordered by Djibouti (58 km) (*PE&RS, October 2008*), Ethiopia (1,600 km) (*PE&RS, March 2003*), and Kenya (682 km) (*PE&RS, June 2003*). The terrain consists of mostly flat to undulating plateau, rising to hills in the north; the lowest point is the Indian Ocean (0 m), and the highest point is Shimbiris (2,416 m).

There are a number of datum origins in Somalia, corresponding to areas in which the various colonial powers have had dominion over the past couple of centuries. Thanks to John W. Hager, in the north, corresponding to the “old British Somaliland is Berbera Pier (*the port city of Berbera on the Gulf of Aden – Ed.*) where: $\Phi_0 = 10^\circ 26' 24.0''$ N, $\Lambda_0 = 45^\circ 00' 39.0''$ E, and the ellipsoid of reference is the Clarke 1880 where: $a = 6,378,249.145$ m, and $1/f = 293.465$ ”.

Proceeding south, the next datum origin found is Dolo, Northwest of Mogadishu, in the vicinity of Dolo Bay where: $\Phi_0 = 04^\circ 10' 36.60''$ N, $\Lambda_0 = 42^\circ 50' 00.15''$ E; *unknown ellipsoid, probably Clarke 1880*. “The Ethiopia – Somalia boundary consists of three distinct sectors. The thalweg of the Dewa (*River – Ed.*) constitutes a 22-mile sector between the Kenya tripoint and the confluence of the Dewa with the Ganālē-Doryā at Dolo, from which junction the rivers form the Giuba. Between Dolo and 8° N, 48° E, the second sector is delimited by a provisional administrative line for 509 miles. The final sector, between 8° N, 48° E and the tripoint with the French Territory of the Afars and Issas at Madaha Djalēlo, is 463 miles long and is demarcated by boundary pillars” (*International Boundary Study No. 153, Ethiopia – Somalia, U.S. Dept. of State, November 5, 1975*). Dolo was likely established by the Anglo-Ethiopian Boundary Commission, 1932-1935, as reported by G.T. McCaw in *Empire Survey Review, Nos. 25-26, 1937*.

Continuing south, the next datum origin found is generally considered the major system of Somalia: Afgooye Datum, thanks to John W. Hager; established by the U.S.S.R. sometime in 1962-1968 at station “BM Ts 30” where: $\Phi_0 = 02^\circ 06' 12.14''$ N, $\Lambda_0 = 45^\circ 09' 55.46''$ E, $h_0 = 128.210$ m, and the ellipsoid of reference is the Krassovsky 1940 where: $a = 6,378,245$ m, and $1/f = 298.3$. According to *TR8350.2*, the 3-parameter transformation from Afgooye Datum to WGS84 Datum is: $\Delta X = -43$ m ± 25 m, $\Delta Y = -163$ m ± 25 m, $\Delta Z = +45$ m ± 25 m. Out of curiosity, I transformed the Afgooye Datum coordinates of station “BM Ts 30” into WGS84 Datum: $\phi = 02^\circ 06' 13.78''$ N, $\lambda = 45^\circ 09' 52.73''$ E, and I input the coordinates into Google Earth®. John W. Hager informs me that the Afgooye Datum origin is “Located on top of a square water tank. A Doppler station was established there.” Those coordinates will indeed locate the water tank on Google Earth®, including its adjacent shadow! Note that the location is actually in Lafoole, southeast of the town of Afgooye.

Continuing southwest, the next datum origin is Fortino di Trevis, where: $\Phi_0 = 01^\circ 43' 19.10''$ N, $\Lambda_0 = 44^\circ 46' 32.38''$ E, which is in the Northeast part of the town of Merca; *unknown ellipsoid*.

Continuing southwest, the last datum origin is Perduchi a Gumbo, where: $\Phi_0 = 00^\circ 14' 50.70''$ S, $\Lambda_0 = 42^\circ 37' 27.10''$ E, which is in Jidka Aaran, between Luglow and Goob Weyn and Northeast of Kismaayo; *unknown ellipsoid*.

The most common legacy Grids found in Somalia are the East Africa Belts where the Central Meridians (λ_0) are: J = $42^\circ 30'$ E, K = $47^\circ 30'$ E, L = $52^\circ 30'$ E; the Scale Factor at Origin (m_0) = 0.9995, False Easting = 400 km, and False Northing = 4,500 km, referenced to the Clarke 1880 ellipsoid. Of course, for the Afgooye Datum, the likely Grid used is the Russia Belt 8 Gauss-Krüger Transverse Mercator where $\lambda_0 = 45^\circ$ E, $m_0 = 1.0$, and False Easting = 500 km.



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