

GISCV.ORG :: COORDINATE REFERENCE SYSTEMS

KEY CONCEPTS SHEET (EN)

Three Coordinate Reference Systems (CRS) are particularly suitable for use in Cabo Verde and can be classified according to two main criteria: the reference surface on which they are based and their spatial extent. With respect to the first criterion, CRS are broadly divided into Geographic Coordinate Systems (GCS) and Projected Coordinate Systems (PCS). GCS define locations on the Earth's surface using a three-dimensional reference model, typically expressed in angular units (latitude and longitude), as exemplified by the World Geodetic System 1984 (WGS 84). In contrast, PCS represent these locations on a two-dimensional planar surface derived from a map projection, such as the Universal Transverse Mercator system (UTM). According to the second criterion, CRS may be classified as global, regional, or national in scope. Global systems, such as WGS 84, are designed for worldwide applications, whereas regional systems, including the UTM Zones, provide improved spatial accuracy for specific areas. In addition, national or local datums may be employed for higher-precision applications where available.

Summary of the main Coordinate Reference Systems (CRS) recommended for use in Cabo Verde, including their classification (geographic or projected), spatial extent (global, regional, or national), EPSG codes, and typical applications in field data collection, spatial data storage and analysis, and GIS-based cartographic production

CRS for Cabo Verde	global	regional	national
Geographic Coordinate System (unit: degree)	EPSG:4326 - WGS 84 - World Geodetic System 1984 <i>(main uses: field data collection and small scale mapping)</i>		
Projected Coordinate System (unit: metre)		EPSG:32626 - WGS 84 / UTM Zone 26N (for Santo Antão, São Vicente, Santa Luzia, Branco, Raso, São Nicolau, Fogo, Brava and Rombo, islands and islets located west of the 24°W Meridian) EPSG:32627 - WGS 84 / UTM Zone 27N (for Sal, Boa Vista, Maio and Santiago, islands and islets located east of the 24°W Meridian) <i>(main uses: detailed / island scale data analysis and mapping, and field data collection)</i>	EPSG:4826 - WGS 84 / Cabo Verde National (for the archipelago as a whole) <i>(main uses: nationwide geospatial analysis and mapping; mandated as the official national CRS by Decree-Law No. 35/2011, which establishes the legal framework for geodesy in Cabo Verde)</i>

In practical terms, during fieldwork, handheld GNSS receivers and mobile applications typically support only global and regional CRS. For spatial analysis within GIS environments and the production of digital cartographic outputs, the projected systems WGS 84 / UTM Zone 26N (EPSG:32626) and WGS 84 / UTM Zone 27N (EPSG:32627), together with the national geographic system WGS 84 / Cabo Verde National (EPSG:4826), are recommended for use in Cabo Verde. Transformations between these CRS can be readily performed using standard GIS software. Under these conditions, the introduced positional uncertainty typically ranges from sub-metre to a few metres, depending on the quality of the transformation parameters and the spatial resolution of the data. For most ecological and biogeographical applications, these discrepancies are negligible; however, they may become significant in high-precision studies, such as cadastral mapping or engineering surveys.

Some historical cartographic products, such as the “Carta de Cabo Verde” prepared and published by the former Serviço Cartográfico do Exército of Portugal at the 1:25,000 scale, adopted a PCS based on the International 1924 ellipsoid. At the time, the georeferencing frameworks used were International 1924 / UTM Zone 26N and International 1924 / UTM Zone 27N. The International 1924 datum (Hayford ellipsoid) differs geodetically from the modern WGS84 datum, resulting in systematic positional offsets that may reach several metres depending on location and transformation method.