



# The CORS Network Conversation in the Continent of Africa

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CORS is an acronym that stands for Continuously Operating Reference Stations. These stations provide Global Navigation Satellite System data in support of three dimensional positioning, meteorology, precision agriculture and monitoring movement of tectonic plates among other uses.

A single CORS comprises of a geodetic GNSS receiver that is permanently configured to continuously collect and record GPS data. However since a single CORS has a range of up to 70 km, it is imperative to have an equitable distribution to cover an entire country in order to benefit all users wherever they may be. Hence the term CORS network. The data collected from CORS network is made available to users via wireless internet connection.

In Countries that don't have an operational CORS network, land professionals (more specifically land surveyors) who form the bulk of the users of this innovative facility, have to contend with the traditional base and rover set-up for their GPS surveys. This traditional method is costly since the surveyor has to buy two GPS receivers (One base One rover) driving the initial cost of equipment to unprecedented high levels and subsequently locking out many 'would be' independent surveyors. Furthermore the traditional base and rover set up has a limited range of only 15-20 km.

First world countries have successfully implemented their CORS networks and users have subsequently reaped the benefits for a number of years now. This is due to solid partnerships between individual governments, universities, research institutions and self-funding agencies.

In Africa, the development of CORS networks is driven under the auspices of a continental initiative known as the African Geodetic Reference Frame (AFREF). According to the Regional Centre for Mapping of Resources for Development (RCMRD), an intergovernmental organization with 20 contracting states in sub-Saharan Africa, the objective of the AFREF initiative is to unify and modernize the geodetic reference frame in Africa.

The initiative encourages African governments through their national Mapping Agencies to modernize their geodetic networks using modern GNSS technologies. This involves establishing a network of CORS that will provide a variety of services including DGPS/RTK correction and supporting various applications such as mapping, engineering, cadastral, weather, geodynamics etc. When fully implemented, it will consist of a network of continuous, permanent GNSS stations such that a user anywhere in Africa would have access to the generated data.

Despite the ingenuity of this initiative in the African continent some countries have quickly installed their CORS networks while others have, at best, dragged their feet. From my observation, the countries that have set the pace in the CORS conversation in Africa are those with benevolent presidents and good governance systems.

But it's easy to blame individual governments for a sheer lack of political goodwill when perhaps the problem is a deplorable dearth of advocacy among the involved stakeholders. When the conversation is not out there in national forums and political manifestos then there is a likelihood that the agenda is just a blue-print gathering dust somewhere in a government office. For an effective implementation of a unified CORS network the involved stakeholders should shy away from timidity and ensure that it is an agenda that features prominently in political manifestos.

Avoiding the danger of a being a pessimist, there is good progress in some countries. Starting from home, Kenya has a network of 3 CORS but plans are in high gear to install many more with the tender for supplying, installing and commissioning CORS having gone out in September 2015 through the country's only power distributor, Kenya Power. I don't have updates as to the work-in-progress situation.

South Africa has a CORS network going by the name Trignet. It comprises of 55 CORS which were fully commissioned by September 2010. Botswana, similarly, has a network of 55 CORS. It's perhaps the African country that has put up their CORS network at the fastest speed at an average of 10 CORS per year since the project was commenced in 2011. Their network is referred to as Botswana Net. Then there is Nigerian NINGET which comprises a network of 15 CORS, according to RCMRD. Not far away from home is Rwanda Geonet, a network of 8 CORS put up by Paul Kagame's government.

In total there are more than 100 installed CORS in the African continent which is still a small number if you compare with USA which as of November 2008 had a network of 1350 CORS. I'll be scandalized if I knew the number they have today. Surveyors and other GPS users are having a field day over there.

What is the status of the CORS network in your country? Kindly inform in the comments section below.

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