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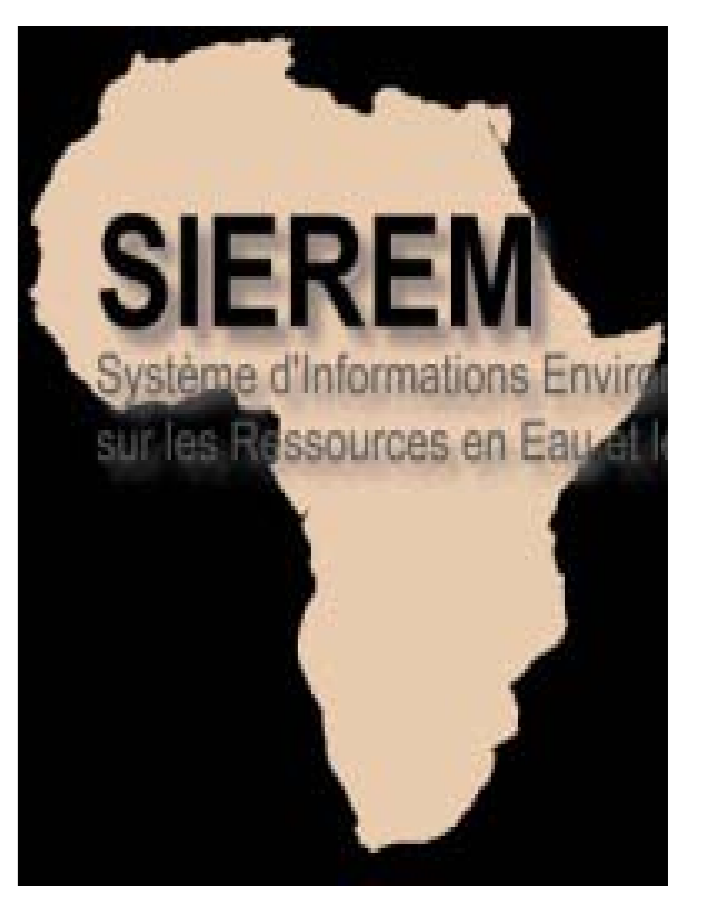
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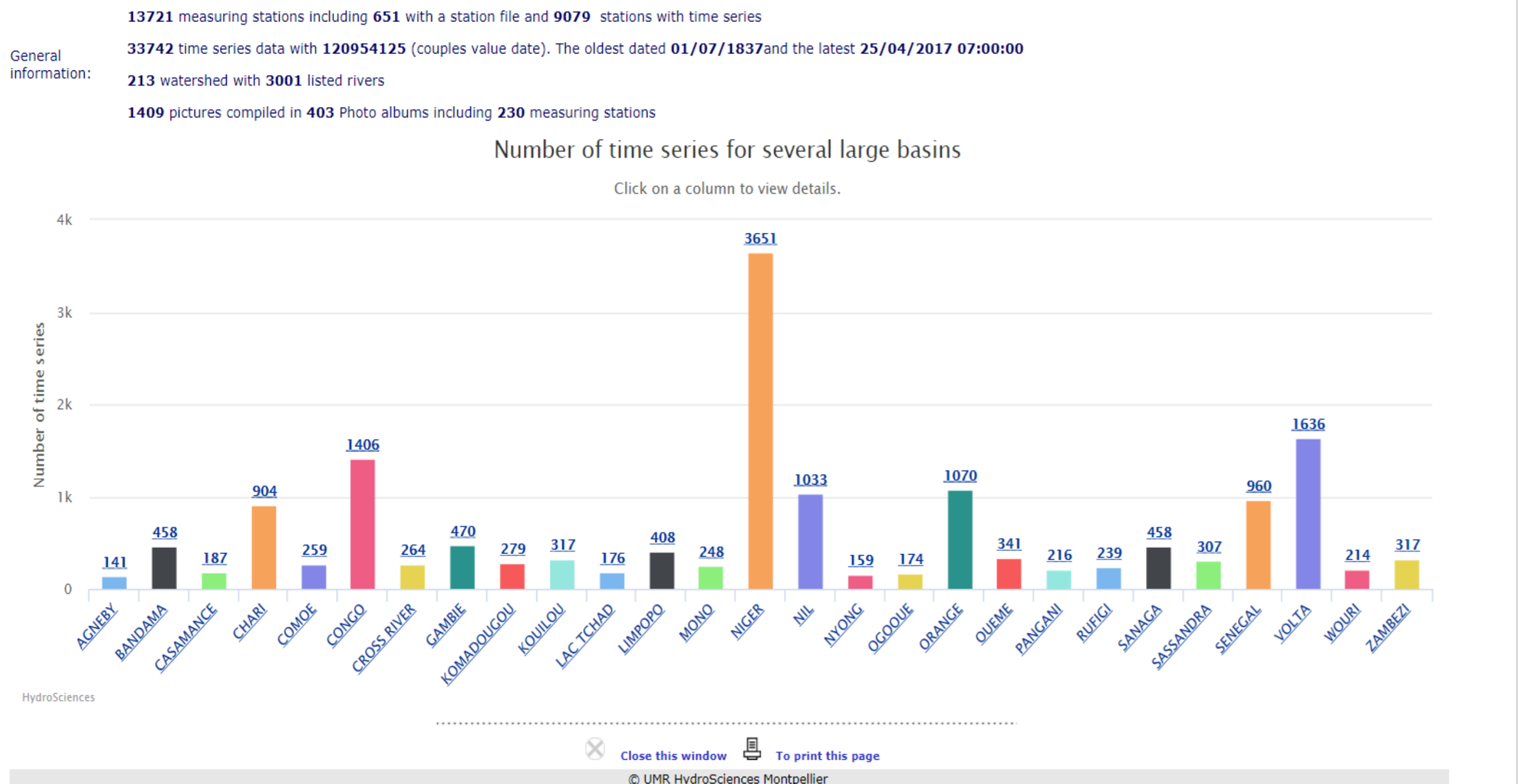
# The importance of organizing data access, its processing and use

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<http://www.hydrosciences.fr/sierem>  
 Poster program W18 Thursday, 13 July 2017 Room B  
 Innovative ICT tools for water management and science



## BACKGROUND AND OBJECTIVES

Data and information are often scattered, heterogeneous or incomplete ; they are rarely comparable and suited to needs. Numerous public, semi-public and private organizations produce and manage data, but often they do not have the resources to exchange, assemble, standardize, summarize and capitalize on the data that they possess. Over and above these difficulties, there is also the more general problem of a natural and widespread reluctance to share information, particularly when it is considered strategic because it can be used for paid services or to provide access to power. While most countries and basins (national or transboundary) clearly need to make an effort to alleviate current data deficiencies, it is also vital that they develop links between data producers and users no matter what the theme or level of intervention (local, basin, national and international) and reinforce capacities for accessing, processing and using existing data. It is in this context and aware of these stakes that HydroSciences Montpellier Laboratory (HSM) has developed an information system, known as SIEREM, which contains several types of environmental variables for the whole of Africa.



With 13,000 measurement stations and 33,000 chronological series (i.e. more than 117 million recordings) for 1837-2015, this is the largest environmental information system in Africa. The SIEREM site provides free access to all information except raw measurement data, which is the property of the national services of African countries.

## RESULTS

Inventory list of rainfall stations

Code	Nom	Latitude	Longitude
10000011	ENKA	3.4812	10.7
10000012	ENKA	3.4807	10.7007
10000013	PERBARO	2.5047	11.4
10000017	OLAME	4.4333	11.3033
10000018	OLAME	4.3667	11.4033
10000019	MOUJEN	2.7533	11.3333
10000020	MOUJEN	2.8433	11.3333
10000021	MOUJEN	2.8433	11.3333
10000022	MOUJEN	2.8433	11.3333
10000023	MOUJEN	2.8433	11.3333
10000024	MOUJEN	2.8433	11.3333
10000025	MOUJEN	2.8433	11.3333
10000026	MOUJEN	2.8433	11.3333
10000027	MOUJEN	2.8433	11.3333
10000028	MOUJEN	2.8433	11.3333
10000029	MOUJEN	2.8433	11.3333
10000030	MOUJEN	2.8433	11.3333
10000031	MOUJEN	2.8433	11.3333
10000032	MOUJEN	2.8433	11.3333
10000033	MOUJEN	2.8433	11.3333
10000034	MOUJEN	2.8433	11.3333
10000035	MOUJEN	2.8433	11.3333
10000036	MOUJEN	2.8433	11.3333
10000037	MOUJEN	2.8433	11.3333
10000038	MOUJEN	2.8433	11.3333
10000039	MOUJEN	2.8433	11.3333
10000040	MOUJEN	2.8433	11.3333
10000041	MOUJEN	2.8433	11.3333
10000042	MOUJEN	2.8433	11.3333
10000043	MOUJEN	2.8433	11.3333
10000044	MOUJEN	2.8433	11.3333
10000045	MOUJEN	2.8433	11.3333
10000046	MOUJEN	2.8433	11.3333
10000047	MOUJEN	2.8433	11.3333
10000048	MOUJEN	2.8433	11.3333
10000049	MOUJEN	2.8433	11.3333
10000050	MOUJEN	2.8433	11.3333

Map with geographical coordinates stations

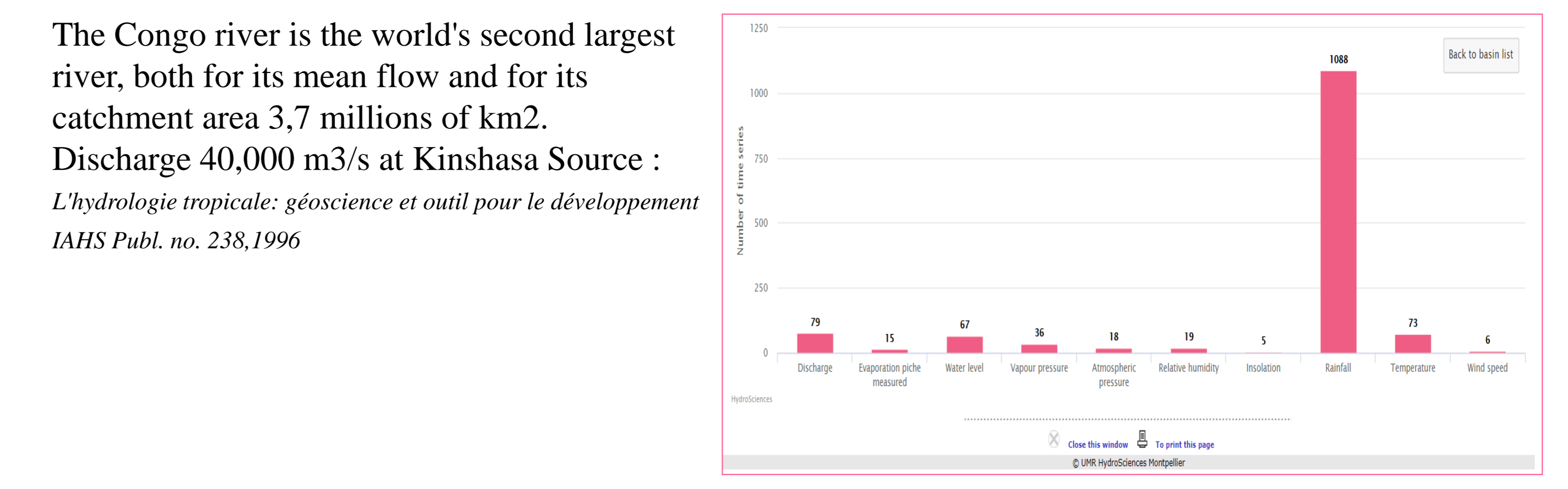
Annual rainfall map of Africa

Map of the density stations of the SIEREM data base

## DATA SET SIEREM

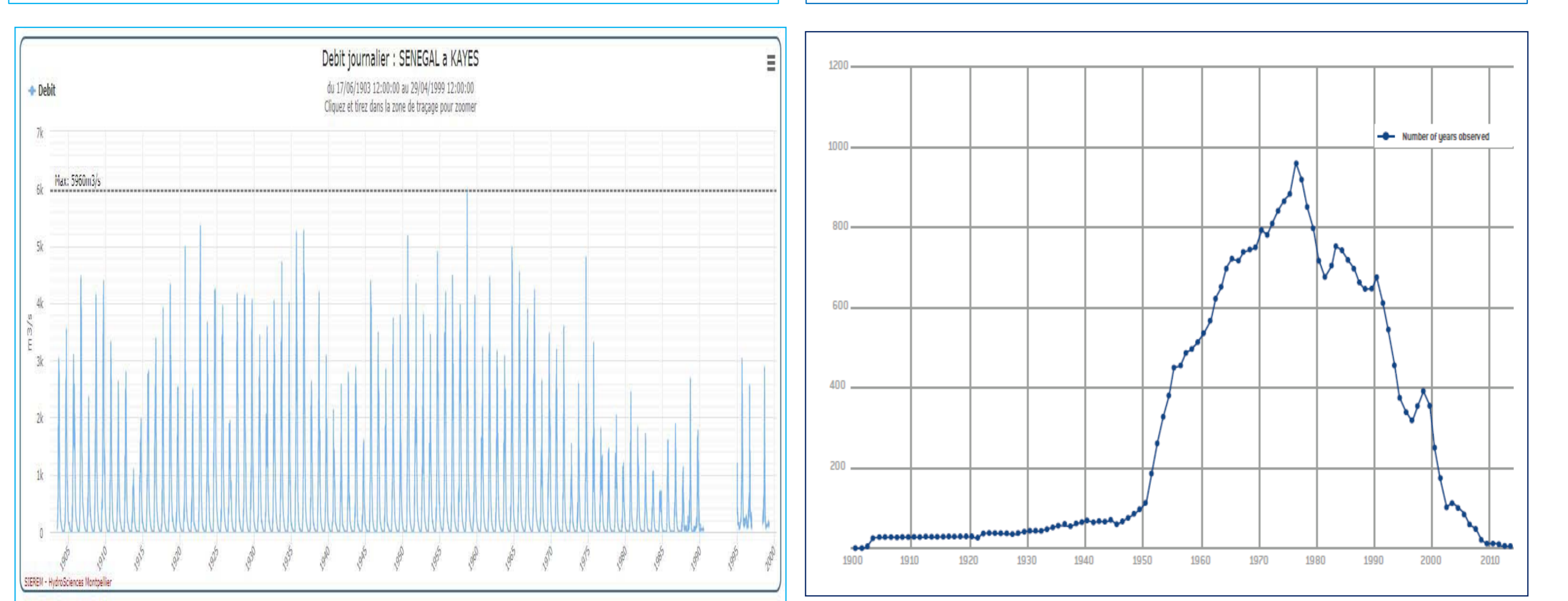
### 1. General inventory of Environmental Information System SIEREM

Different Type of data can be managed :  
 Hydrological discharges, water level,  
 Climatological : rainfall, temperature, humidity, evaporation piche measured



### 2. Hydrometric data recorded in Sierem database

Graphic of a long series of daily discharges : Senegal at Kayes from 1905 to 2000 gaps after 1990s  
 Number of daily and monthly hydrometric series. Less observations after 1990s, loss of know-how, lack of human and financial resources



### 3. Catchment basins – Photos – Book Map Library

Hydro-climatic data is combined with spatial data : 201 contours of catchment basins and 2,962 rivers. SIEREM has also been enriched with data recovered from historical hydrological archives. More than 1,342 photos have been brought together in 391 geo-referenced albums.

GIS layers of the basin of Western and Central Africa : Nyong Watershed, hydrometric stations - Cameroon

Historical dossier file

Bani at Douna  
 lat 13.21, long -5.90  
 Mali G. Mahé 02/2001

Nyabarongo at Kanzenze  
 lat -2.06, long 30.11  
 Rwanda JP. Bricquet 11/2015

Nywarungu at Nemba  
 Lat -1.93 long 30.3  
 Rwanda JP. Bricquet 11/2015

Book Map Library  
 -Hydrological monograph  
 -Yearbooks  
 -Student reports  
 -Data and network reports  
 -Maps Atlas  
 -Handbooks Guidebooks

Environmental data base

RÉFÉRENCES  
 -BOYER JF, DIEULIN C, ROUCHÉ N, et al. / SIEREM an environmental information system for water resources. 5th World FRIEND Conference, La Havana - Cuba, Nov. 2006 in Climate Variability and Change - Hydrological Impacts. IAHS Publ. 308, p.19-25, 2006.  
 -LOUVET S, PATUREL JE, MAHÉ G, ROUCHÉ N, KOITE M / Comparison of the spatiotemporal variability of rainfall from four different interpolation methods on the result of GR2M hydrological modeling - case of Bani River in Mali, West Africa. Theoretical and Applied Climatology, 2016, 123 (1-2), p. 303-319.  
 -MAHÉ G, BARBIER B, DIEULIN C, DEZETTER A, DIELO P, et al. / Impact climatique et anthropique sur les écoulements en milieu semi-aride : cas du Sahel et du Burkina-Faso. UNESCO 2012, p. 256-264. International Conf. : Integrated Water Resources Management and Challenges of the Sustainable Development  
 -MAHÉ G, ROUCHÉ N, DIEULIN C, BOYER JF, IBRAHIM B, CRÈS A, SERVAT E, et al. / Carte annuelle en Afrique = Annual rainfall map of Africa. Montpellier (FRA) : IRD, 2012