



GOBIERNO
DE ESPAÑA

MINISTERIO
DE AGRICULTURA Y PESCA,
ALIMENTACIÓN Y MEDIO AMBIENTE

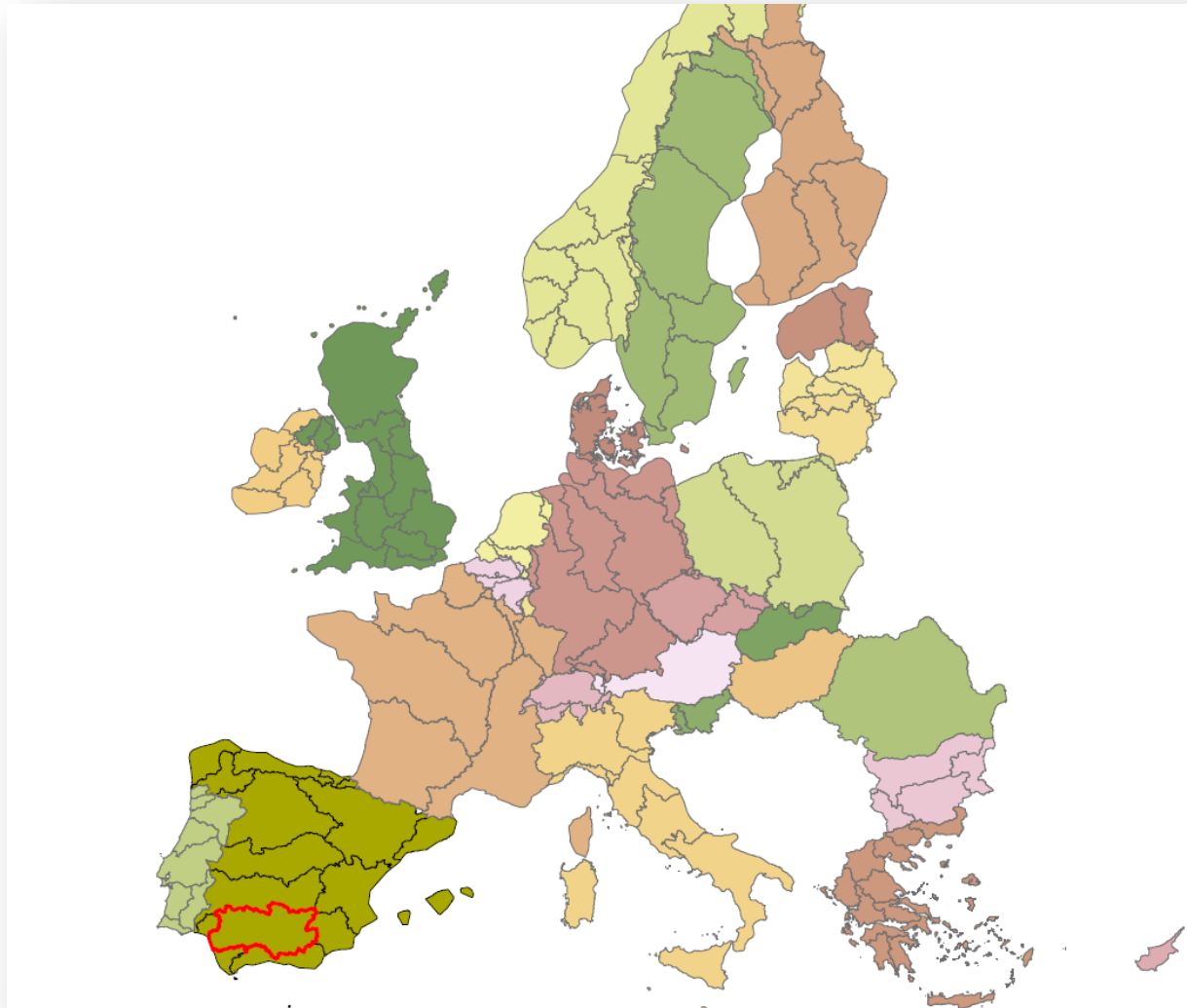
CONFEDERACIÓN
HIDROGRÁFICA
DEL GUADALQUIVIR

Water data management organization and electronic reporting in the Guadalquivir River Basin

Dublin, 20 september 2017



Territorial scope



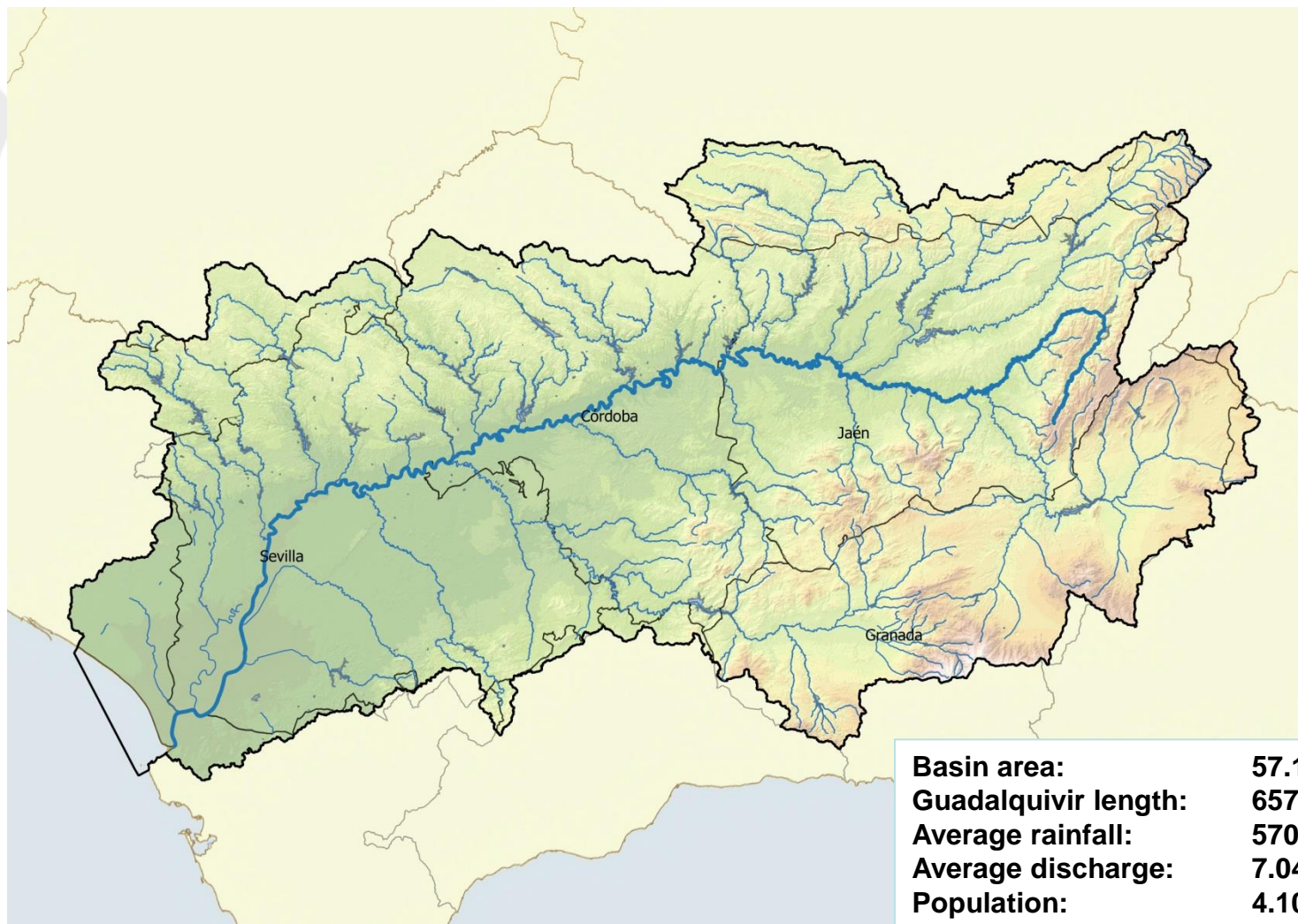


Territorial scope



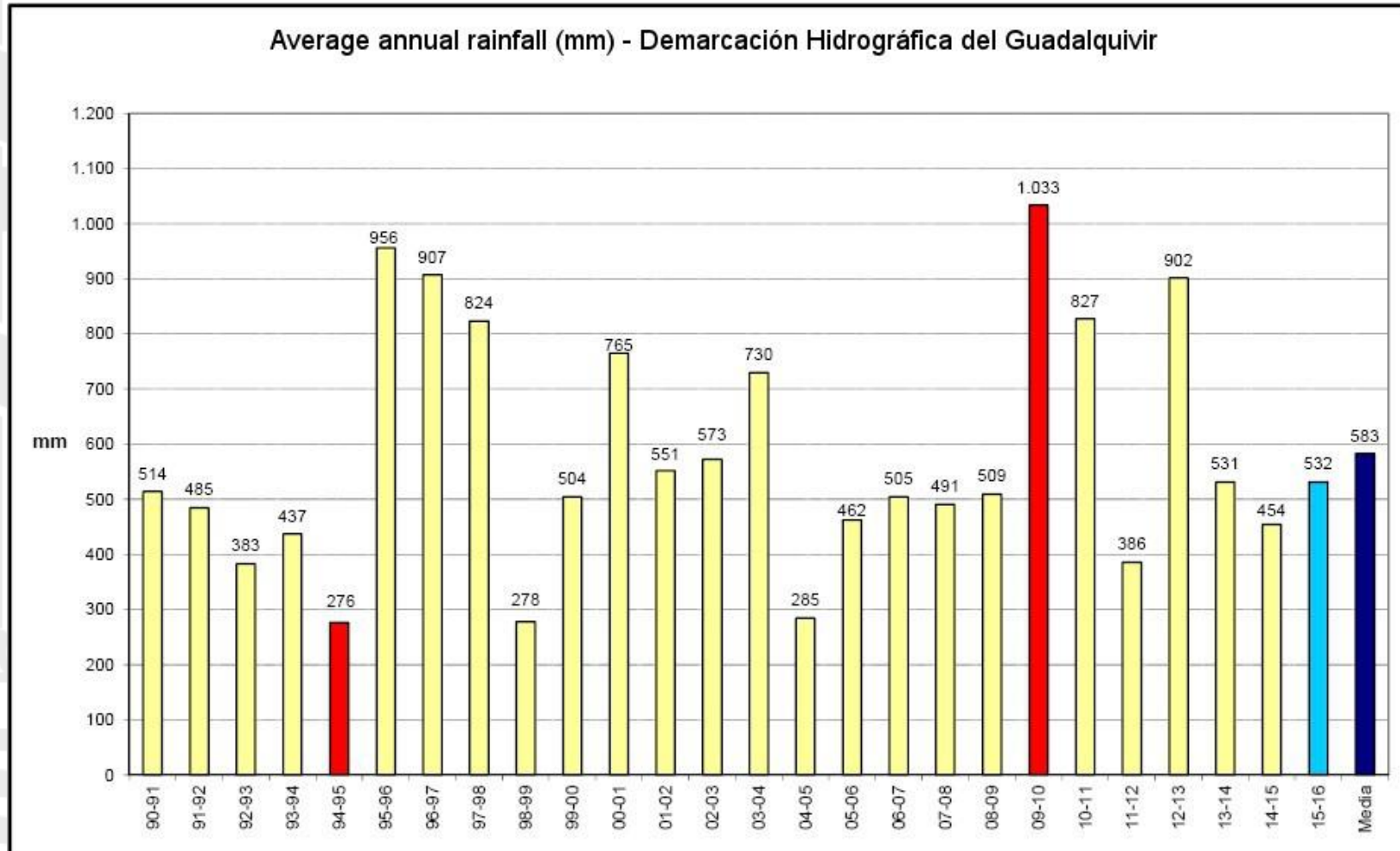


Guadalquivir River Basin



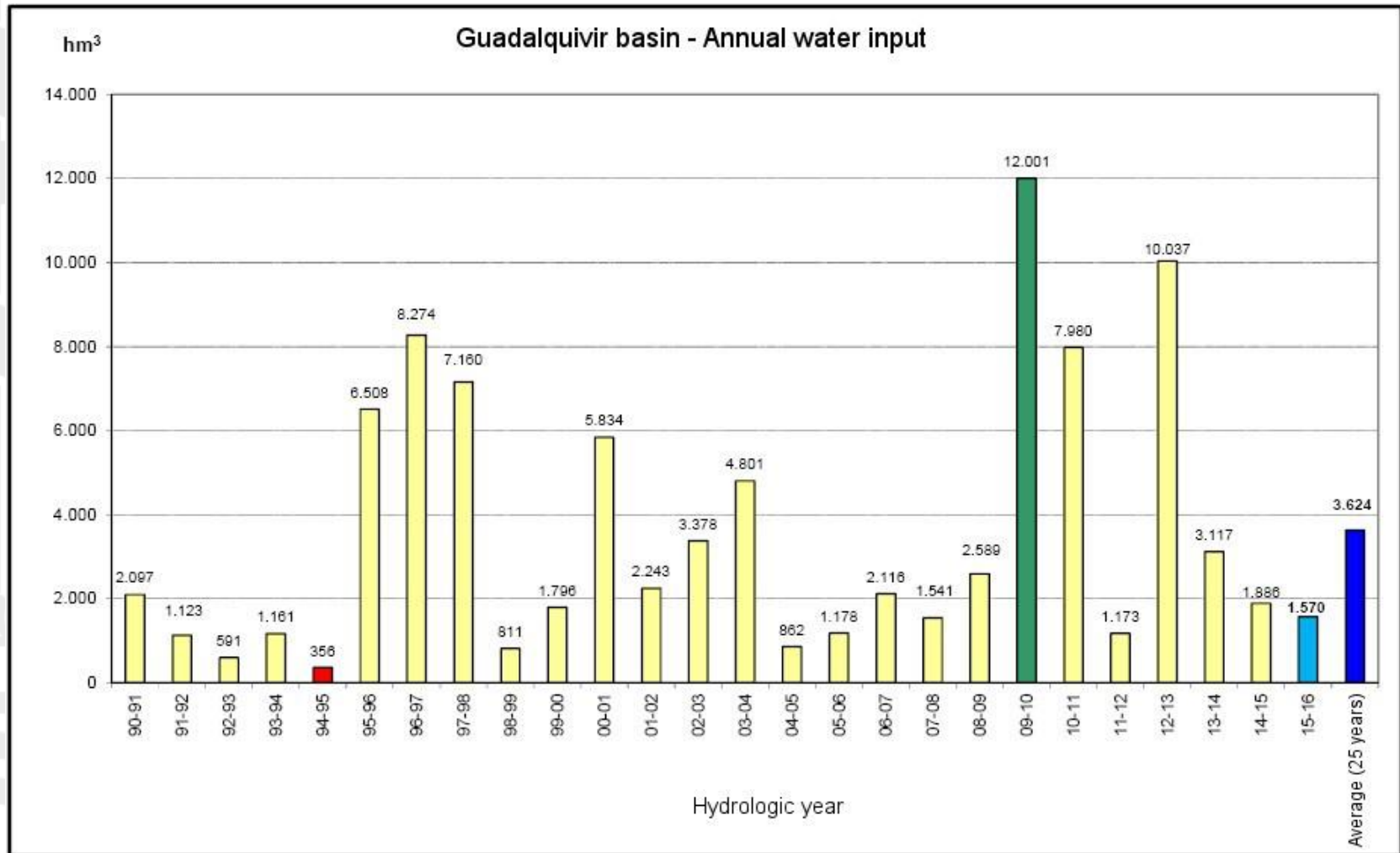


Rainfall (Last 25 years)



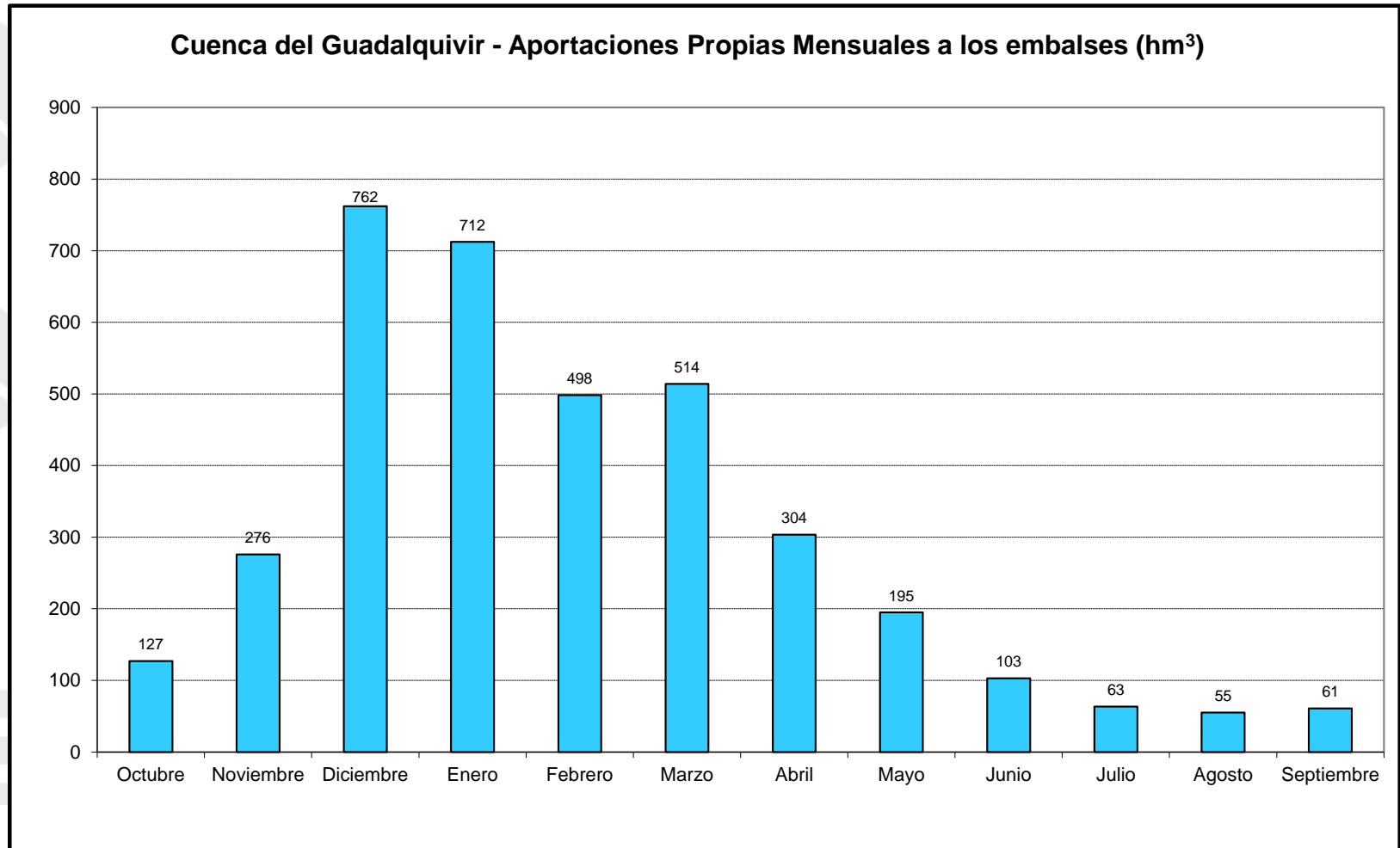


Annual reservoir water input (last 25 years)



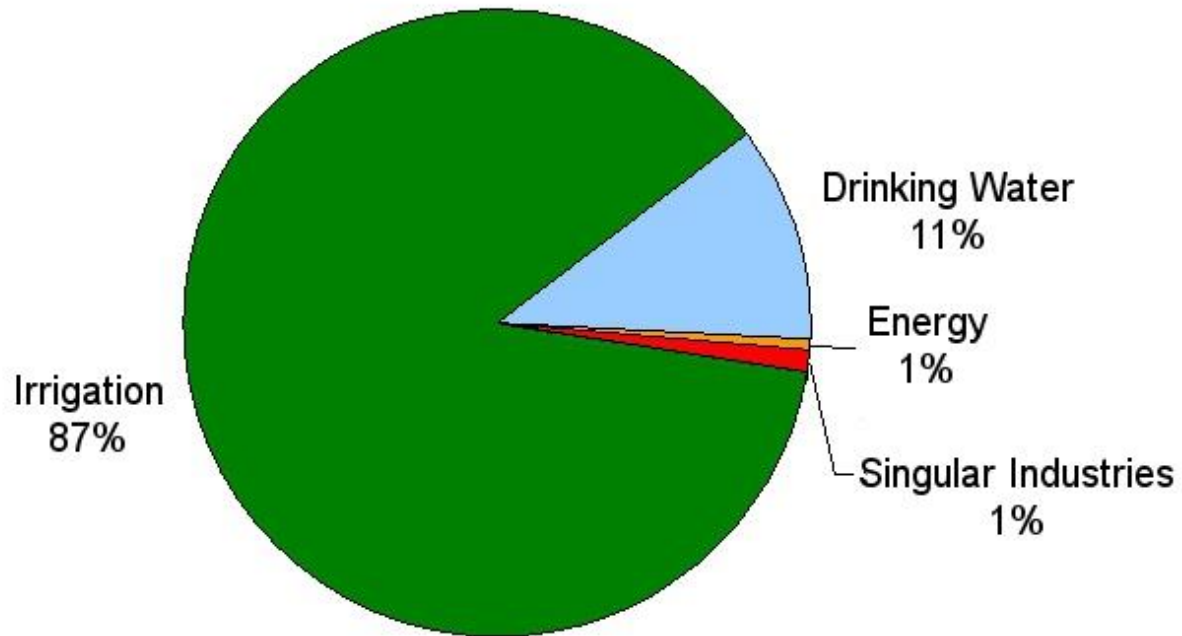


Reservoir water input (monthly distribution)



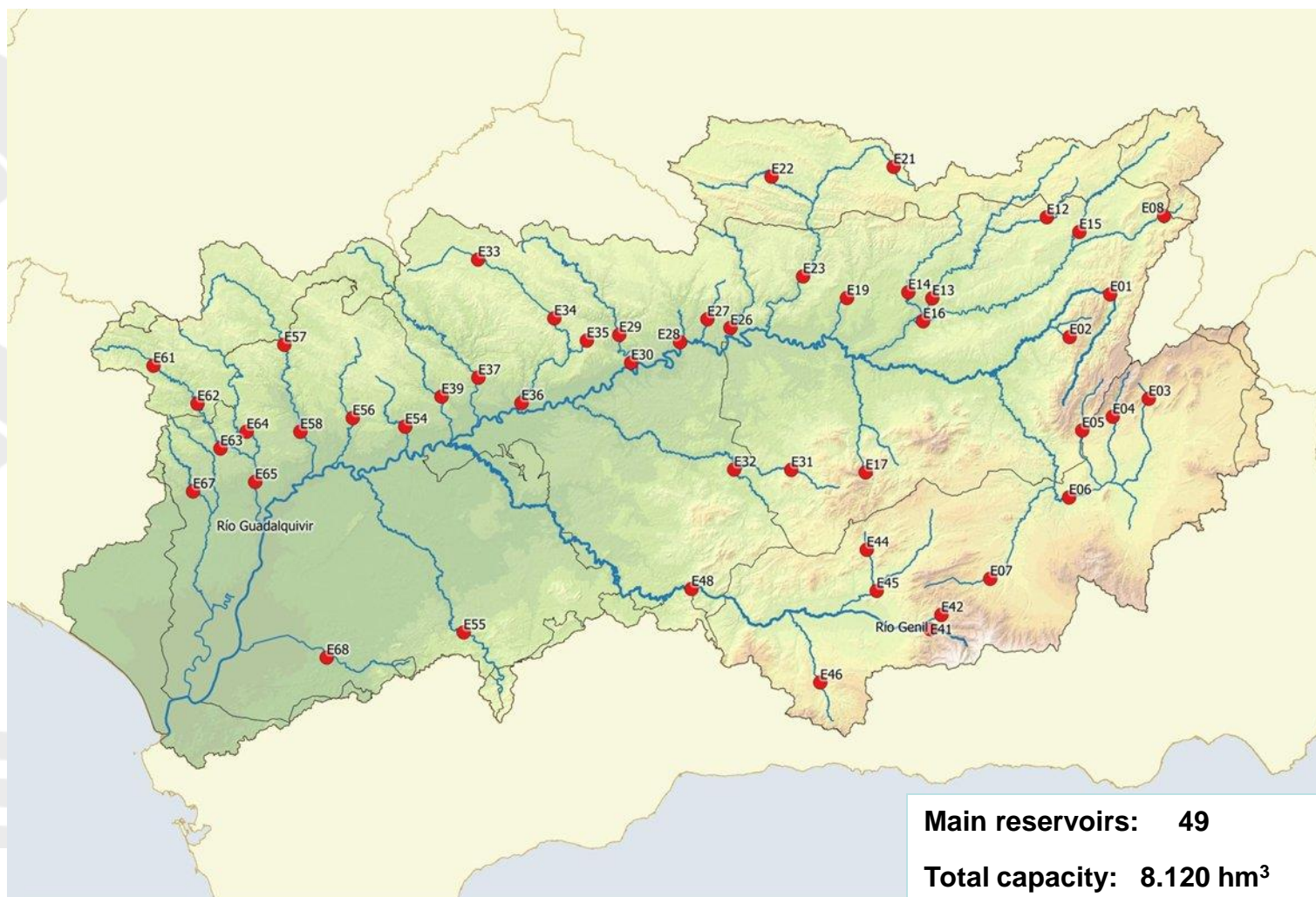


Water consumption



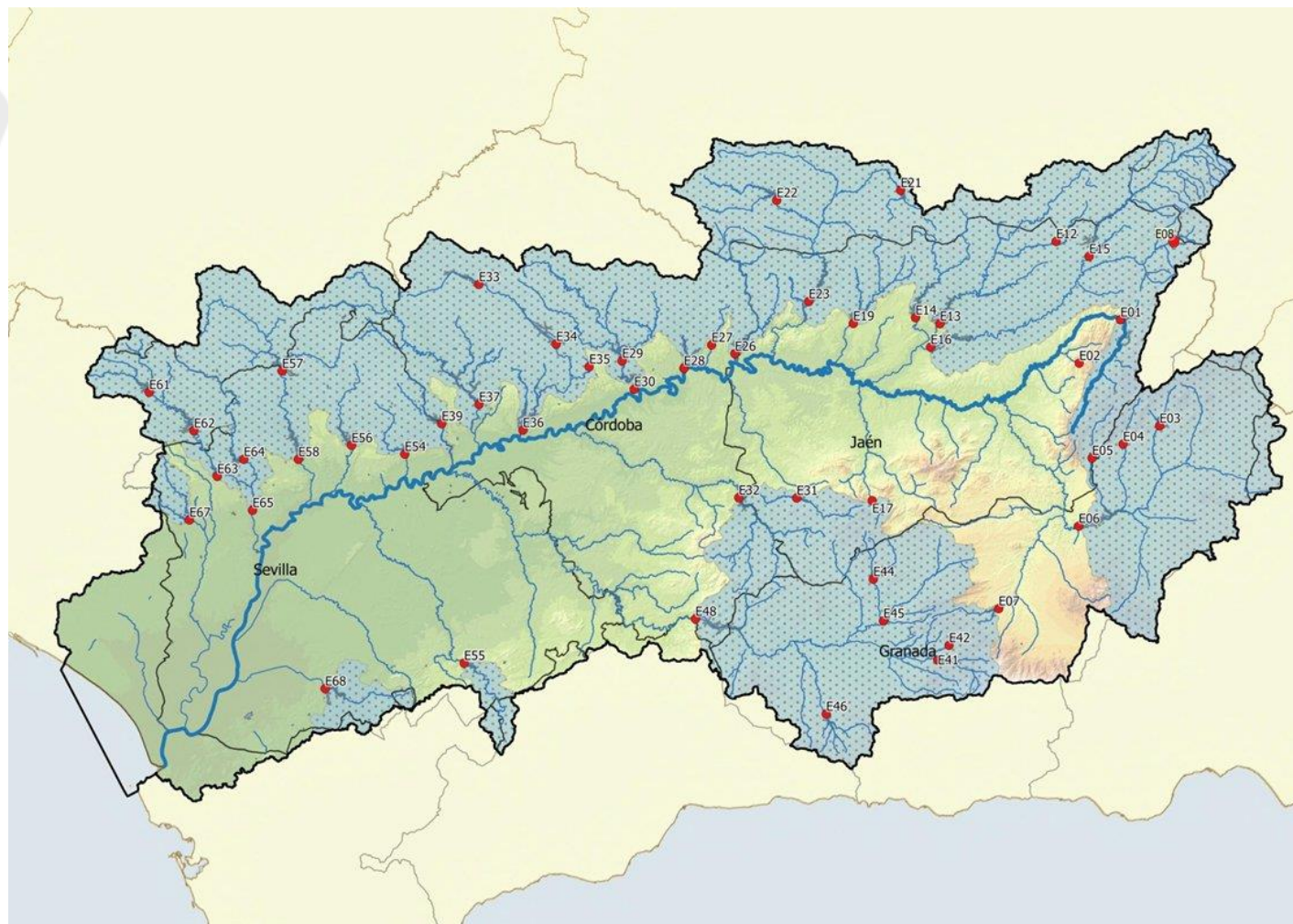


Reservoirs





Regulated catchment





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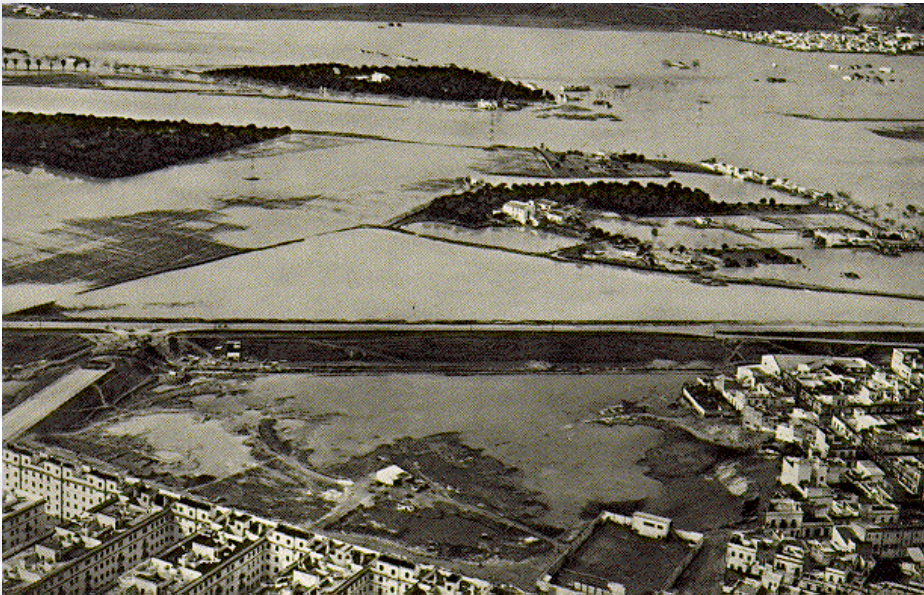
CONFEDERACIÓN
HIDROGRÁFICA DEL
GUADALQUIVIR

Automatic Hydrological Information System (A.H.I.S. = S.A.I.H.)



Origin

- ➔ Severe flooding in eastern Spain (1982-1983).
- ➔ Framework: Safety of dams.





Initial objectives

- ➔ Flood prevention.
- ➔ Water resources management.





Definition

➔ Remote system control covering:

📁 Measuring hydrological and hydraulic variables

📁 Transmission

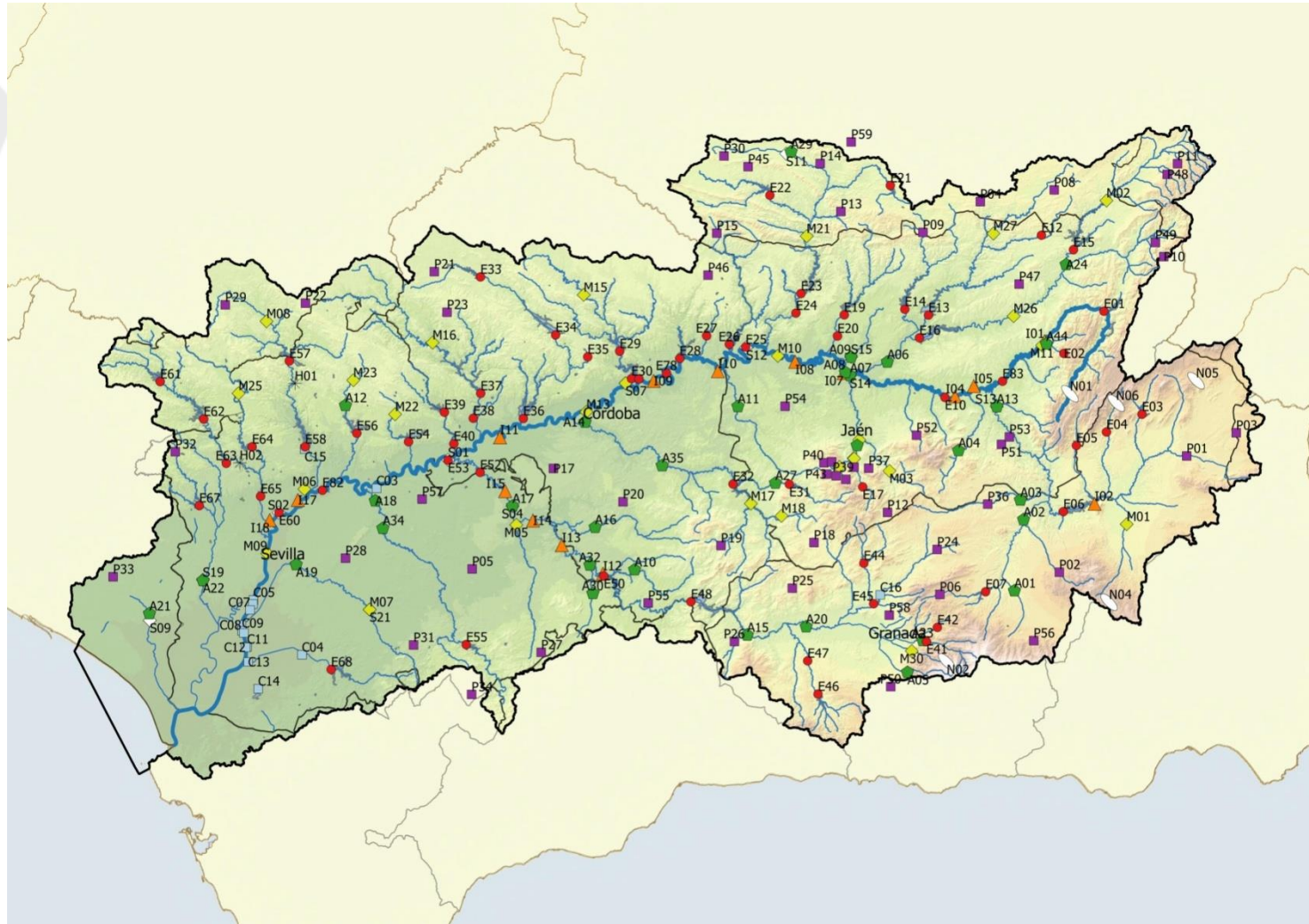
📁 Processing

📁 Display

- *All in real time*



Telemetry network





Control points

Reservoirs	56	
Pluviometers	58	(Total 202)
Gauging stations in rivers	73	
Gauging stations in channels	13	(Total 52)
Pumping stations	29	
Hydroelectric power stations	10	(Total 37)
SAICA stations (water quality)	12	
Total control points	251	



Control points



José Torán dam



Alcalá del Río. Run-of-the-river power station



Iznájar hydroelectric power station



Gauging station in Genil River (Écija)



Instrumentation



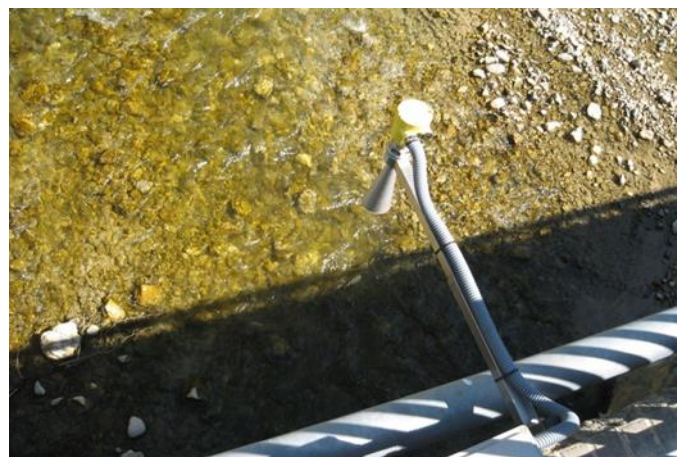
Pluviometer



Evaporation tank



Reservoir level measurement system



Radar



Instrumentation



Flowmeter



Linear position sensors



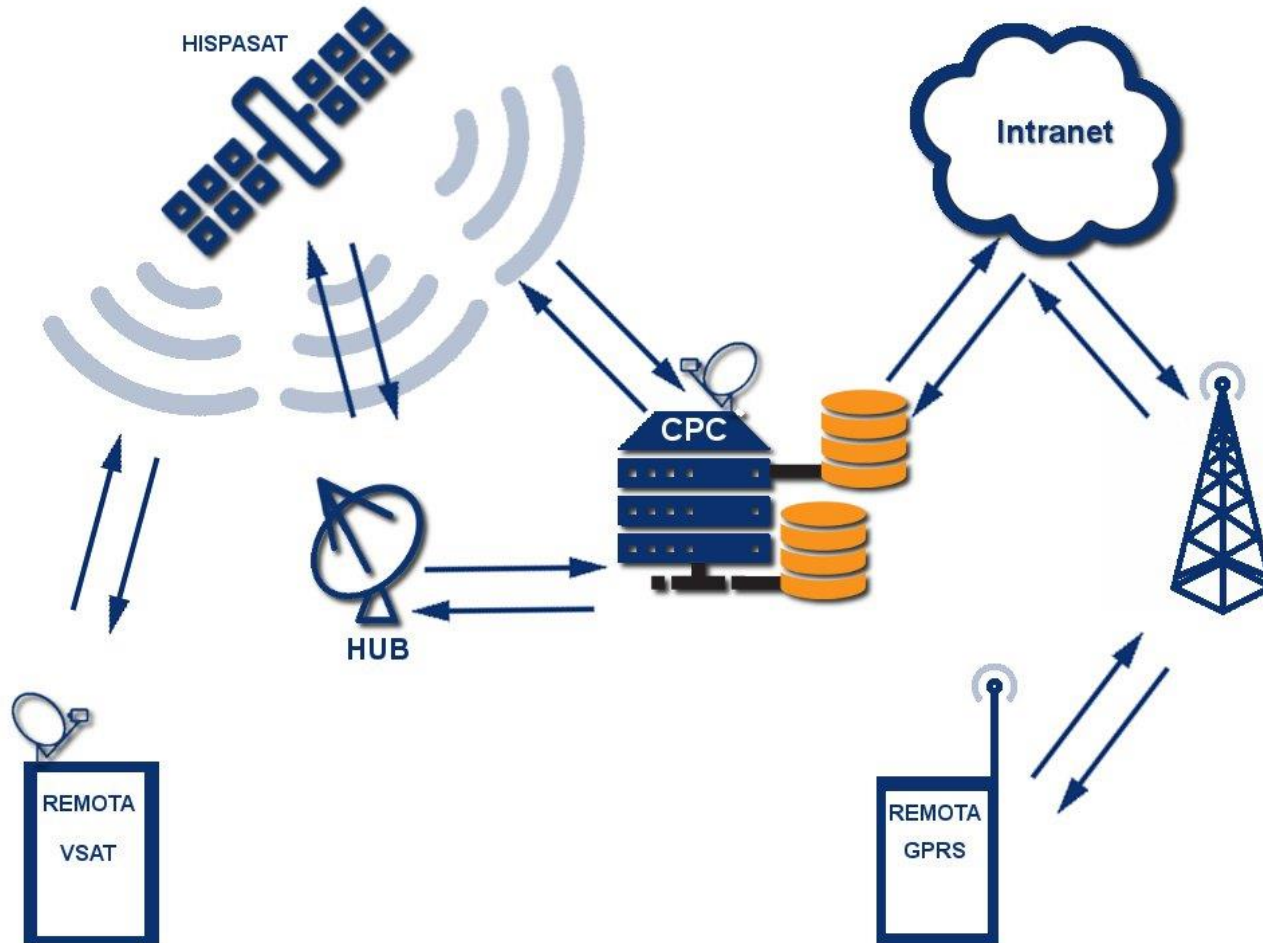
Remote station



SAIH stall



Communications scheme





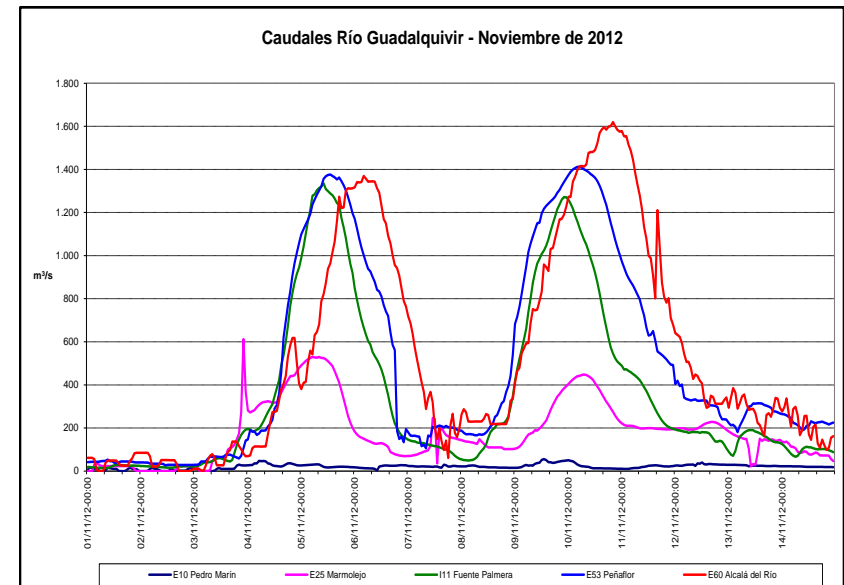
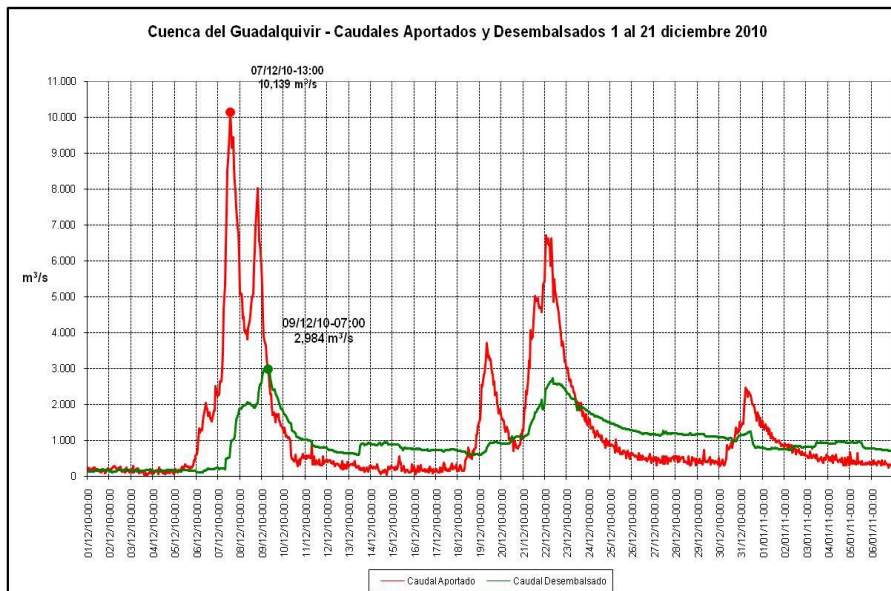
S.A.I.H. Control Center (Seville)





Current utility of the S.A.I.H.

- Prevention and management of floods (extraordinary situations)
 - Early warning to Civil Protection services and population
 - Dams management
 - Forecasting discharge and level evolution
 - Hydrological data collection





Current utility of the S.A.I.H.

- **Water resources management (ordinary operation)**
 - Management of water release from reservoirs (resource management)
 - Management and control of water supplies
 - Recording and storing historic data
 - Information to the public, users and researchers
 - Website (<http://www.chguadalquivir.es/saih/>)
 - Monitoring and controlling water quality
 - Electronic reporting
 - Etc.



Electronic reports provided by S.A.I.H.

- Current reservoirs situation
- Maps of accumulated rainfall
- Evolution of flows
- Water consumption
- Historic data
 - All reports are available on our website:
<http://www.chguadalquivir.es/saih/>



Electronic report: current reservoirs situation

INFORME DIARIO DE SITUACIÓN DE EMBALSES

DATOS EN TIEMPO REAL; CONTRASTADOS Datos a Fecha: 18-9-17 8:00

EMBALSE	COTA	CAPAC.	VOLUMEN EMBALSADO		APORTACIÓN en 24 h.	DESEMBALSE en 24 h.	EVAPOR. en 24 h.	LLUVIA en 24 h.	
	m.s.n.m.	hm ³	hm ³	% S/CAPAC.	hm ³	hm ³	hm ³	l/m ²	
1 TRANCO DE BEAS (JA) (*)	614,886	498,194	160,757	32,27	0,179	0,958	0,049	0,0	C=0,958
2 AGUASCEBAS (JA)	1001,800	6,374	2,681	42,07	0,001	0,007	0,001	0,0	A=0,007
3 GUADALMENA (JA) (*)	577,177	346,501	115,262	33,26	0,001	0,390	0,033	0,0	C=0,284 R=0,076 T(A)=0,004 P=0,026
4 DAÑADOR (JA)	706,988	4,136	1,562	37,76	0,001	0,003	0,001	0,0	A=0,003
5 GUADALÉN (JA) (*)	334,148	167,958	34,830	20,74	0,001	0,037	0,016	0,0	C=0,037
6 SILES (JA)	679,130	30,169	3,579	11,86	0,021	0,177	0,002	0,0	DF=0,127 P=0,05
7 GIRIBAILE (JA) (*)	321,037	475,073	99,676	20,98	0,731	0,263	0,046	0,0	TM=0,263
8 LA FERNANDINA (JA) (*)	431,372	244,494	81,205	33,21	0,001	0,380	0,030	0,0	A=0,016 C=0,343 E=0,005 P=0,017
9 QUIEBRAJANO (JA)	757,233	31,622	7,591	24,00	0,010	0,025	0,001	0,0	TM=0,007 P=0,018
10 VÍBORAS (JA)	535,260	19,114	8,094	42,35	0,019	0,033	0,004	0,0	A=0,003 DF=0,03
11 RUMBLAR (JA)	322,956	126,033	30,723	24,38	0,001	0,215	0,011	0,0	A=0,001 C=0,182 P=0,032
12 JÁNDULA (JA) (*)	325,255	321,993	80,630	25,04	0,020	0,324	0,016	0,0	C=0,324
13 YEGUAS (CO) (*)	220,162	228,704	52,313	22,87	0,001	0,012	0,012	0,0	P=0,012
14 MARTÍN GONZALO (CO)	274,609	17,840	10,333	57,92	0,001	0,014	0,003	0,0	A=0,012 P=0,002
15 ARENOSO(CO) (*)	178,360	166,967	31,417	18,82	0,035	0,513	0,009	0,0	R=0,005 DF=0,508
16 GUADALMELLATO (CO)	199,959	146,570	72,963	49,78	0,001	0,072	0,022	0,0	A=0,072
17 S. RAFAEL NAVALLANA(CO) (*)	144,730	156,465	57,541	36,78	0,134	0,245	0,037	0,0	R=0,244 P=0,001
18 VADOMOJÓN (CO) (*)	339,360	163,243	38,450	23,55	0,000	0,220	0,012	0,0	C=0,164 R=0,023 P=0,033
19 GUADANUÑO (CO)	510,260	1,637	1,018	62,16	0,000	0,001	0,002	0,0	A=0,001
20 SIERRA BOYERA (CO)	494,085	40,913	17,730	43,34	0,001	0,030	0,014	0,0	A=0,024 R=0,006 P=0
21 PUENTE NUEVO (CO) (*)	434,000	281,734	109,399	38,83	0,001	0,134	0,051	0,0	A=0,001 C=0,024 P=0,109
22 BREÑA (CO) (*)	131,365	823,400	187,315	22,75	0,070	0,003	0,028	0,0	DF=0,003



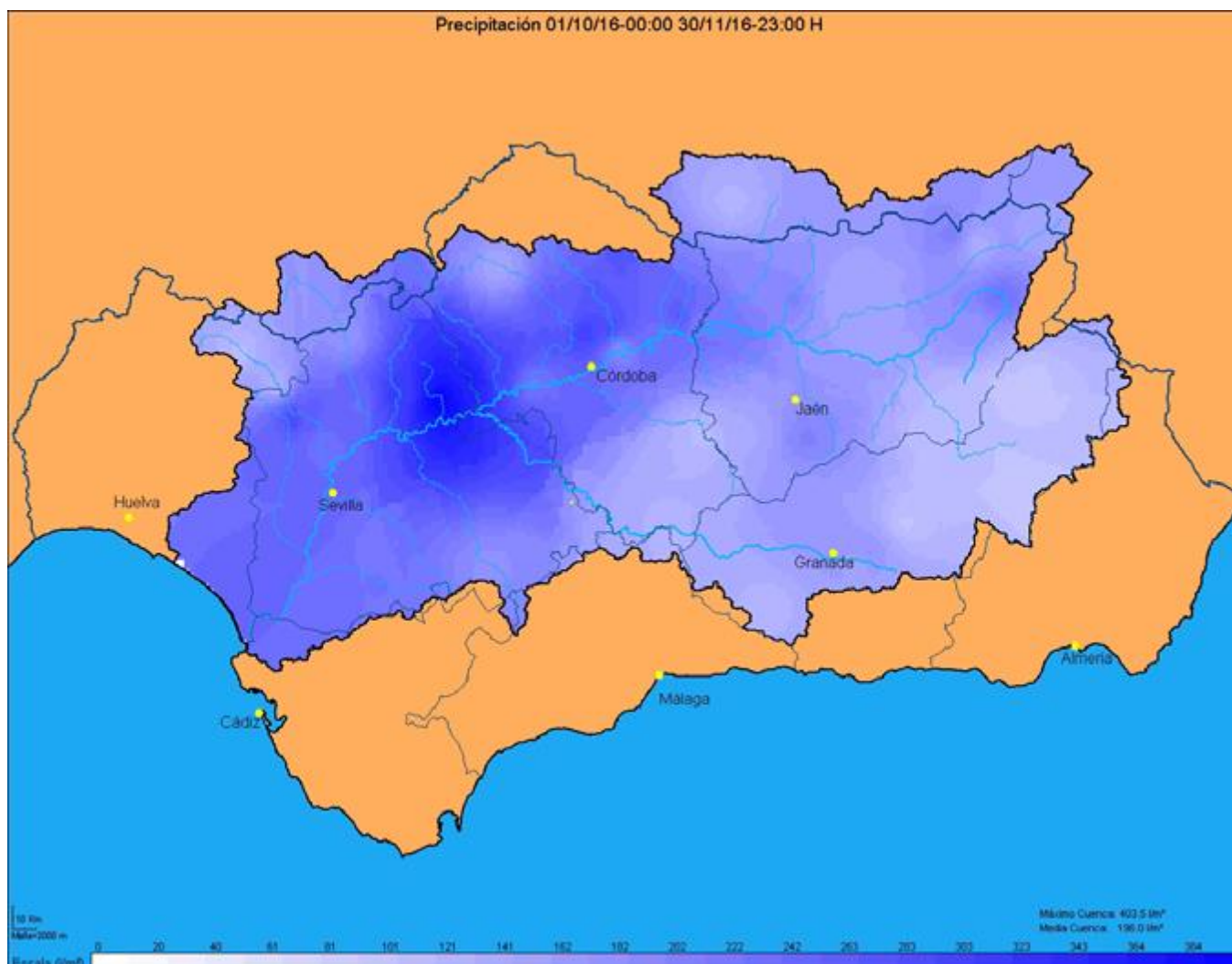
Electronic report: consumption of water in irrigated areas

INFORME DE ZONAS REGABLES
ZONA REGABLE DEL BAJO GENIL
Consumos Diarios (m³)

Día	Genil-Cabra	Riegos Herrera	Las Pilas	N° S° Gracia	Los Humosos	El Villar	Total
01/09/2017	107.016	5.956	6.480	3.786	3.020	0	126.257
02/09/2017	222.451	22.564	23.900	6.473	19.082	115.400	409.869
03/09/2017	221.811	26.591	26.050	9.670	17.770	0	301.892
04/09/2017	204.334	16.043	5.030	0	18.755	0	244.162
05/09/2017	183.267	30.598	23.300	4.023	20.744	0	261.931
06/09/2017	272.969	46.763	22.050	4.023	26.318	51.300	423.423
07/09/2017	253.161	52.794	12.080	7.868	30.134	51.500	407.537
08/09/2017	320.590	52.713	12.030	7.876	18.846	47.900	459.955
09/09/2017	352.520	61.810	30.230	24.054	30.125	156.000	654.739
10/09/2017	386.714	44.850	28.380	20.042	17.295	51.000	548.281
11/09/2017	155.517	36.203	6.050	0	10.449	0	208.219
12/09/2017	324.631	49.479	10.840	4.034	18.751	0	407.736
13/09/2017	328.211	31.448	23.630	4.064	21.026	0	408.379
14/09/2017	319.824	41.998	11.740	4.050	19.967	0	397.579
15/09/2017	320.436	41.635	10.920	4.043	24.095	0	401.129
16/09/2017	337.233	50.232	42.280	23.847	15.070	47.600	516.262
17/09/2017	349.330	48.015	26.240	14.351	10.507	44.000	492.443
18/09/2017	192.594	12.089	2.280	7.992	9.779	0	224.734
Consumo (m³)	4.852.608	671.781	323.510	150.196	331.733	564.700	6.894.528
Superficie (ha)	23.946,00	1.898,00	1.896,00	1.120,00	2.576,00	2.726,00	34.162,00
Dotación (m³/ha)	203	354	171	134	129	207	202



Electronic report: precipitation maps





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Photo report



José Torán dam





Guadalquivir. Mengíbar gauging station





Guadalquivir Mengíbar gauging estation (February 2010)





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CONFEDERACIÓN
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Bembézar River





Guadalquivir River (Córdoba, December 2010)





Guadalquivir River (Palma del Río, December 2010)





Seville





Thank you



Sistema Automático de Información Hidrológica
de la Cuenca del Guadalquivir



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