

Drought Management in the Ebro River Basin

06 May 2014

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DE ESPAÑA

MINISTERIO
DE AGRICULTURA, ALIMENTACIÓN
Y MEDIO AMBIENTE

CONFEDERACIÓN
HIDROGRÁFICA
DEL EBRO

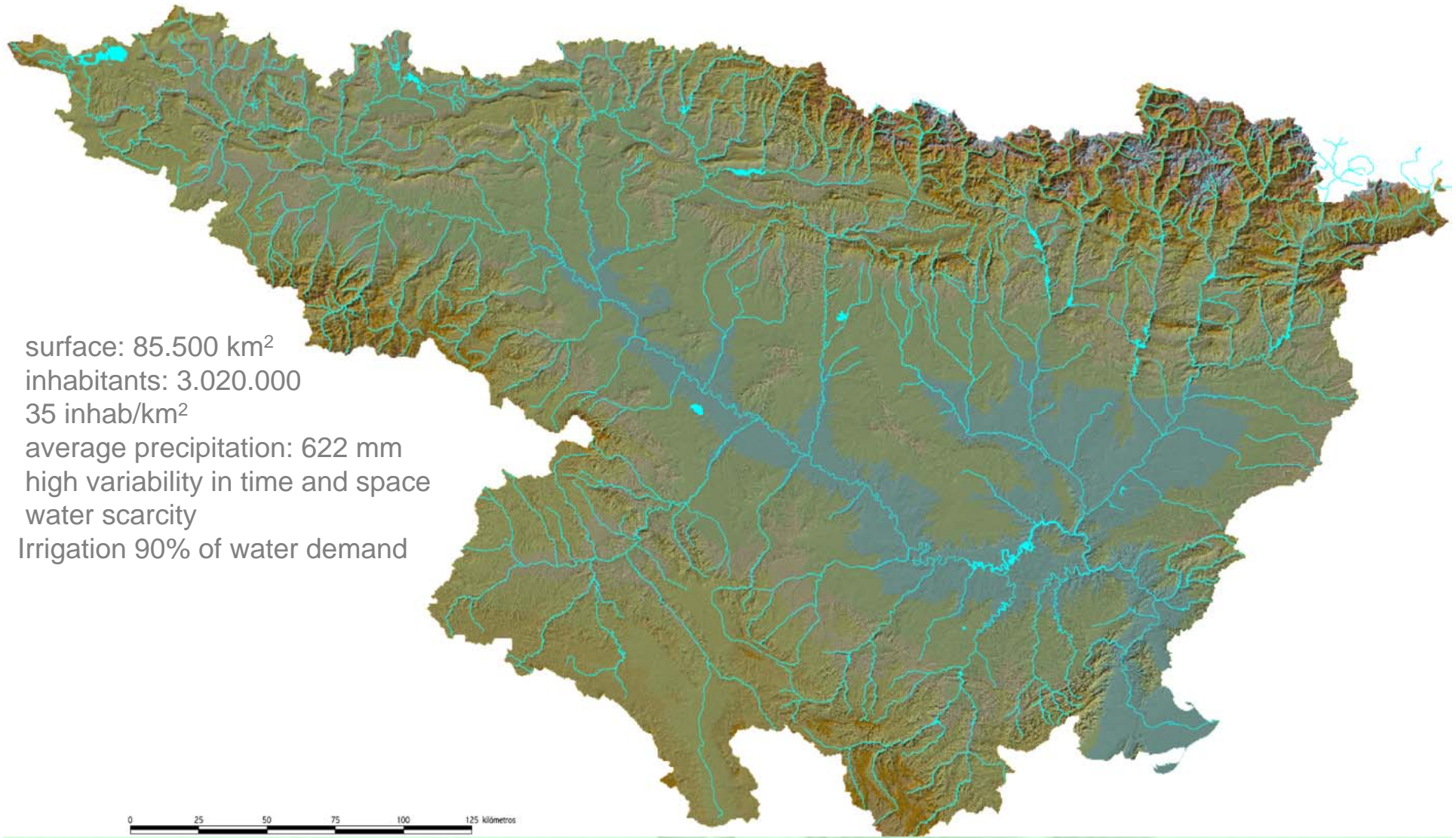
Demarcaciones hidrográficas



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surface: 85.500 km²
inhabitants: 3.020.000
35 inhab/km²
average precipitation: 622 mm
high variability in time and space
water scarcity
Irrigation 90% of water demand



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BASIN DROUGHT INDEX

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
OCT	0.496	0.350	0.549	0.485	0.614	0.300	0.415
NOV	0.554	0.283	0.648	0.495	0.602	0.401	0.464
DEC	0.538	0.232	0.616	0.625	0.682	0.371	0.502
JAN	0.465	0.246	0.702	0.731	0.650	0.343	0.568
FEB	0.560	0.234	0.675	0.789	0.686	0.328	0.578
MAR	0.538	0.275	0.662	0.792	0.731	0.298	0.701
APR	0.614	0.492	0.731	0.749	0.671	0.332	0.715
MAY	0.642	0.666	0.784	0.759	0.560	0.447	0.763
JUN	0.553	0.733	0.648	0.780	0.481	0.388	0.841
JUL	0.471	0.760	0.571	0.774	0.437	0.354	0.874
AUG	0.453	0.703	0.525	0.720	0.402	0.274	0.856
SEP	0.398	0.648	0.514	0.685	0.355	0.226	

Normality



Prealert



Alert



Emergency

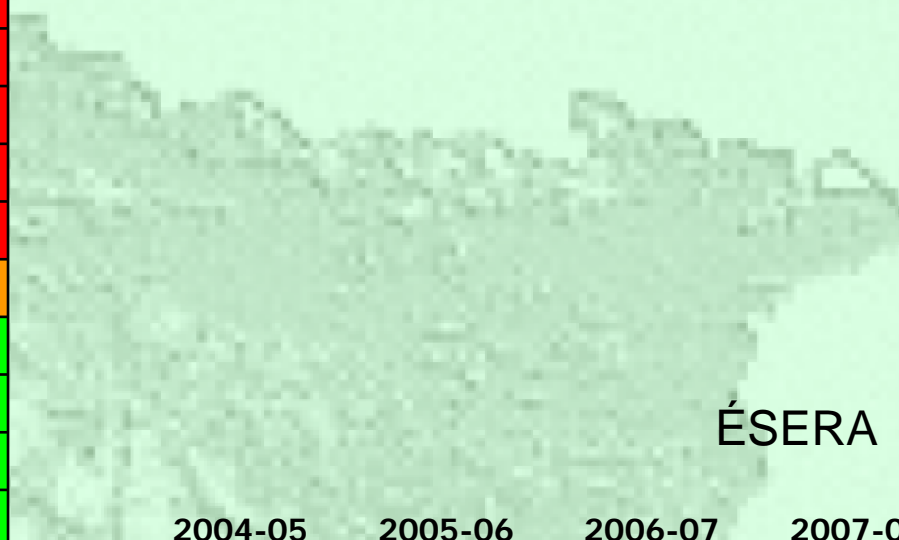


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	2004-05	2005-06	2006-07	2007-08
OCT	0,204	0,261	0,271	0,112
NOV	0,156	0,326	0,295	0,122
DIC	0,106	0,340	0,264	0,097
ENE	0,142	0,299	0,222	0,131
FEB	0,148	0,312	0,193	0,132
MAR	0,148	0,480	0,188	0,125
ABR	0,157	0,520	0,335	0,259
MAY	0,304	0,367	0,394	0,693
JUN	0,283	0,212	0,368	0,676
JUL	0,228	0,167	0,272	0,756
AGO	0,089	0,090	0,241	0,668
SEP	0,088	0,211	0,154	0,535



	2004-05	2005-06	2006-07	2007-08
OCT	0,207	0,282	0,624	0,055
NOV	0,202	0,330	0,571	0,030
DIC	0,188	0,306	0,467	0,029
ENE	0,136	0,227	0,320	0,040
FEB	0,100	0,231	0,345	0,076
MAR	0,057	0,303	0,209	0,100
ABR	0,049	0,308	0,524	0,484
MAY	0,103	0,175	0,496	0,592
JUN	0,159	0,062	0,440	0,636
JUL	0,138	0,059	0,269	0,603
AGO	0,139	0,020	0,141	0,491
SEP	0,076	0,585	0,048	0,261

SEGRE



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	2004-05	2005-06	2006-07	2007-08
OCT	0,424	0,179	0,788	0,244
NOV	0,335	0,184	1,000	0,112
DIC	0,240	0,142	0,960	0,000
ENE	0,156	0,102	0,853	0,000
FEB	0,103	0,140	1,000	0,006
MAR	0,012	0,380	0,862	0,000
ABR	0,000	0,445	1,000	0,467
MAY	0,000	0,319	0,954	0,930
JUN	0,000	0,216	0,707	0,918
JUL	0,000	0,220	0,491	0,796
AGO	0,000	0,156	0,438	0,642
SEP	0,000	0,429	0,347	0,572

ARAGÓN

	2004-05	2005-06	2006-07	2007-08
OCT	0,363	0,199	0,801	0,304
NOV	0,288	0,206	0,956	0,214
DIC	0,276	0,232	1,000	0,150
ENE	0,291	0,321	0,868	0,265
FEB	0,255	0,313	0,953	0,246
MAR	0,174	0,677	0,865	0,294
ABR	0,284	0,804	0,834	0,763
MAY	0,329	0,514	0,741	0,620
JUN	0,195	0,380	0,647	0,818
JUL	0,141	0,396	0,526	0,699
AGO	0,123	0,389	0,517	0,621
SEP	0,123	0,725	0,385	0,566

GÁLLEGO-CINCA



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DROUGHT MANAGEMENT TOOLS. INSTITUTIONS AND RULES.

1- Water users associations – Users communities

- Allocation and distribution among farmers belonging to the community.
- Self-control
- Crops adaptation

2- Management participatory bodies in the Ebro River Basin Organization

Operation boards

- Coordinate operation of water infrastructure and water resources

Release from dams commission

- Way of filling and emptying the reservoirs.



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DROUGHT MANAGEMENT TOOLS. INSTITUTIONS AND RULES.

3- River Basin Organization

- Professional, integrated and coordinated management for the whole basin.
- A high capacity monitoring system (SAIH real time, hydrology, snow, groundwater)
- Surveillance of water rights and water police

Other institutions

- Town council, Urban supply communities and systems
- Provinces
- Autonomous communities (regions)



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DROUGHT MANAGEMENT TOOLS. INSTITUTIONS AND RULES.

4- Artº 58 Consolidated Water Act. Extreme situations

In the case of extraordinary drought...the Government, by means of Decree ..., having heard the basin organization, can adopt... the measures to be needed in relation to water and water public domain use, in spite of the existing water rights.

Royal Decree 1419/2005

Royal Decree 1265/2005 (no Ebro)

Royal Decree 233/2008

Royal Decree Law

(urgent legislation)

RDL 10/2005

RDL 8/2008



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DROUGHT MANAGEMENT TOOLS. INSTITUTIONS AND RULES.

Royal Decree 233/2008

- Special powers of Governing Board and President of River Basin Authority
 - Reduce uses allocation
 - Modify priority criteria
 - Substitute the sources of water resources for water rights
 - Modify waste water discharge parameters
 - Modify River Basin Management Plan allocations
 - Installation of counters and devices to impede the abstraction of water
 - Adapt the hydroelectricity operation
- These functions are performed by the **Drought Commission**
 - 4 representative Ebro RBO
 - 2 representatives Ministry
 - 1 representative of each Autonomous Community (9)
 - 3 representatives of users (urban, irrigation, energy)With voice but without vote:
 - 1 representative of environmental organizations
 - 2 representatives of unions and employers' organizations
 - 1 representative of towns and villages



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DROUGHT MANAGEMENT TOOLS. INSTITUTIONS AND RULES.

Drought Commission

Last meetings:

07/abr/2006

28/jun/2006

15/ene/2007

30/nov/2007

11/feb/2008



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5- Drought Plan

Artº 27, Law 10/2001 of the National Water Plan (Drought Plans and Emergency Plans for urban supply systems > 20.000 inhab)

I Action protocol (18 July 2005)

II Action protocol (26 April 2006)

DROUGHT PLAN

Reported favorably by the Water Board of the Ebro Basin
March 14, 2007

Approved by Ministerial Order of 21 March MAM/698/2007



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5- Drought Plan

Content:

- Drought characterization.
- Historical analysis.
- **Drought indicators and indices.**
- **Thresholds (normality, pre-alert, alert, emergency).**
- Measures to be taken.



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6- River Basin Management Plan

Strategic planning:

- Environmental objectives
- Water allocation
- Programme of measures (diminish vulnerability)



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DROUGHT DECISION MAKING AND MEASURES IN THE EBRO RBO

