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Hydrology and Earth System Sciences Discussions

Interactive comment on "Irrigation enhances precipitation at the mountains downwind" *by* J. Jódar et al.

J. Jódar et al.

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Specific comments 1. p3113, line 2: "irrigation started in 1963": was that immediately over the full 121000 ha or was there a gradual expansion over a number of years? If the latter is the case the classification before/after irrigation might be adapted to get a clearer signal

Author's Response: Irrigation in the Upper and Lower Vegas began in 1963 as a result of a rural development plan called "Plan Badajoz". Irrigation was gradually applied. It directly depended on the field implementation of the different measures considered in the development plan (such as irrigation channels, dams, etc) which were officially completed in 1976.

2. p3113, line16: "Irrigated agriculture had been traditionally practiced for hundred of years". If so, then how is before/after irrigation defined? Where is the cut in the data set

Author's Response: Irrigated Agriculture has been practiced for hundred of years at the lower Guadalquivir basin is meant as traditional irrigation practices (small area and allowance). Nevertheless there are some zones such as the called "Lower Guadalquivir Irrigated Land" that have experienced a change towards intensive agricultural practices. In this case the high water demand for irrigation begins in 1971 and hence the cut in the data set as well. We have included this information in the manuscript.

3. p3113: the criteria for the choice of the reference stations seems very ambiguous. It seems to be that a station qualifies as 'reference' when it is not in the mountains. I would suggest the additional criterion that it should also be upwind of the irrigated area. Then _ for ULV choosing L as reference seems unjustified as it is downwind and in the mountains _ for LG also stations h and j are not in the mountains but they area downwind though

Author's Response: During the firsts steps of this work we adopted the reviewer's criterion regarding the geographical location of the reference station. Nevertheless, given the scarcity of meteorological stations having large enough observed meteorological time series we decided to accept reference stations located downwind respect to the irrigated land. While these stations do not inform about the effect of irrigation, they allow ruling out climate change effects. In this case, the two necessary conditions to be achieved by a meteorological station to be considered as a reference station are 1) to be located at zones with similar altitude than the irrigated land, and 2) to have a long enough time series of meteorological measurements before and after the irrigation transition. We modify the paper to include this explanation.

4. p3115, line 8 and following can be omitted as indeed the t_test is a very well known test. It suffices to say something like "We tested whether the means of ïĄĎP, ïĄĎr and

ïĄĎPmin differ statistically between the periods before and after the irrigation started using a standard t_test (refs) and a 95% confidence level". Pleas do mention this threshold value for Pc/tc as it is missing in the present paper.

Author's Response: Indeed, the t_test is a very well known test and we only included a brief summary of it, but it can be omitted by adding the sentence provided by the reviewer. We have rephrased the whole paragraph the in the manuscript. The confidence level for Pc/tc is 95% as well. We have included this information in the manuscript.

5. p3116, line 7. What significance level? (see previous comment)

Author's Response: The 95%. We have included this information in the manuscript.

6. p3122 tables 1 and 2: "NB and NA stand for the number of meteorological stations with available data used in the analysis before and after the Irrigation Transition Period, respectively." should read (I assume) something like: "NB and NA stand for the number of months of available data for this meteorological station used in the analysis before and after the Irrigation Transition Period, respectively" .

Author's Response: Indeed. We have corrected the mistake.

7. p3116, line 25 or in section 4 Conclusions: how do the summertime trends related to the total summertime precipitation, i. e. magnitude of (Pafter _ Pbefore) / Pbefore ? Is that a substabtial amount ? Is that relevant for rain fed summer crops? Combining the table with fig 2 one sees that for ULV _P is 8.5, 5.4 and 1.1mm (table 1) on totals of about 20, 4 and 5mm respectively (fig2 left), implying changes of approx 40, 100 and 20% respectively!

Author's Response: Indeed, the observed increments are in some cases larger than 100%. In table A1 we present the mean value of ΔP(%)= (Pafter _ Pbefore) / Pbefore, averaged for both MSs and RSs in June, July and August, for both ULV (upper zone A1) and LG (lower zone A2) irrigated lands. Mean rainfall increments are always positive in MSs and negative in RSs regardless the irrigation fields, that is ULV and LG. In July the

mean increments in MSs are 170% and 196% for ULV and LG, corresponding to 3.5mm and 3.7mm, respectively. These increments are large in relative terms, but modest in absolute terms. They may help shrubs and other plants to survive in this mountain and semiarid zone, where mean annual rainfall hardly arrives to their subsistence level. On the contrary, the negative increments measured in RSs which are located at the planes or valleys may consolidate the semiarid conditions in such zones.

8. p3117, line 17 and following: Here conclusions are drawn too easily in my opinion: "This result indicates that the positive variation in ïĄĎP during the summer results from a net increase in ïĄĎPmin rather than sporadic large rainfall episodes." We cannot tell this from the table as ïĄĎP is given in absolute mm and ïĄĎPmin in relative percentages. E.g. is the average ïĄĎPmin for downwind stations in June in table 1 of 8.3% a substantial fraction of the 8.5mm ïĄĎP ? I cannot easily tell therefore I need also ïĄĎPmin in absolute numbers, either in the table or just for the overall summer differences in the text.

Author's Response: In table A3 (added as a sepated image file) we present the values of Pmin1 (percentage of minimum rainfall episodes respect to the total rainfall episodes registered before the Irrigation Transition Period (ITP)), Pmin2 (percentage of minimum rainfall episodes respect to the total rainfall episodes registered after ITP), ïĄĎpmin_dif = Pmin2- Pmin1 , and ïĄĎPmin=(Pmin2- Pmin1)/ Pmin1. The values of ïĄĎPmin are in a number of cases larger than 100%, mostly in July for both irrigation lands; in the case of ULV the maximum increment corresponds to MS "El Helechal", being the percentage of minimum rainfall episodes before and after ITP 13% and 47%, respectively. This gives a net difference ïĄĎpmin_dif 34%, that is an increase of 253% respect to Pmin1. In the case of LG the maximum increment corresponds to MS "Fuenteobejuna", being the percentage of minimum rainfall episodes before and after ITP 8% and 35%, respectively, thus giving a net increase ïĄĎpmin_dif 27%, that is an increase of 326% respect to Pmin1. The monthly averaged ïĄĎPmin in ULV are 13.9%, 87.1% and 58.0% for June, July and August, respectively, being the mean summertime value 53%.

This value corresponds to a value of ïĄĎpmin_dif = 11.6% Analogously, the monthly ïĄĎPmin values for LG are -2.4% in June, 123.3% in July and 37.8%, being the mean summertime value 53%. In this case this ïĄĎPmin corresponds to a value of ïĄĎpmin_dif = 8.3%. These values indicate that the minimum rainfall episode frequency has grown after the ITP. This result should have a direct influence in the increase of precipitated volume after ITP which is shown in Table A1. We will include this information (and also Tables A1, A2 and A3) in the manuscript.

9. p3118, first paragraph and tables 1 and 2: are the mean increments averaged over all stations not significant or not tested ? If the first is true the conclusions need to be down graded. If the latter then please add this information.

Author's Response: The monthly averaged ïĄĎP values showed in p3118, first paragraph and tables 1 and 2 in tables 1 and 2 are computed taking into account the increments in all the tested meteorological stations.

10. p3118, second paragraph. These rainfall increase may not lead to enhance runoff but they may be important for the productivity of rain fed natural vegetation or crops. May be the authors can say something on this

Author's Response: Indeed, we will comment something on this topic in line with the authors' comment in question 7 of this document

11. p3119, line2_3 see comment 8 above

Author's Response: indeed

Technical comments

1. p3113, line 7 and line 19: please use 106 m3 instead of hm3

Author's Response: We will change the units

2. p3117, line 13: "larger" must be "smaller"

Author's Response: A minimum rainfall event is that event with a daily cumulated precipitation larger than 2 mm

3. p3126 fig 3 caption please add code letter to station names (Badajoz_K and Barcarrota_A) to facilitate easy reference to the map in fig 1. Same in p3114 line 9 and 10 and other instances.

Author's Response: We will add the code letter to station names

4. At some places small English grammar errors occur. Please check the whole document carefully. Examples (not comprehensive): p3113, line16: "practised" should be "practiced" p3113, line 17/18 this sentence has no verb... p3116, line 19: replace "than" with "as" etc

Author's Response: We will check

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 3109, 2010.

Table A1. Monthly averaged values of precipitation before (P1) and after (P2) the Irrigation Transition Period (ITP), precipitation diference ΔP_{dif} and precipitation increment ΔP with respect to P_1, measured in MSs and RSs for both ULV and LG irrigation lands. *NB and NA stand for the number of meteorological stations with available data used in the analysis before and after the ITP, respectively. Code is the meteorological station identifying letter used in Fig. 1. Grey shaded cell mean that the variation is statistically significant.*

			P_1(mm) Before Irrigation Transition			P_2(mm) Before Irrigation Transition			ΔP_{dif}(mm)=P_2-P_1			ΔP_{dif}(mm)=ΔP_{dif}/P_1		
	Code	(NB/NA)	June	July	August	June	July	August	June	July	August	June	July	August
ULV MSs														
Barcarrota	A	(24/37)	17.7	1.9	11.1	28.0	3.9	7.0	10.3	2.0	-4.1	58%	105%	-37%
Cabeza del Buey	B	(25/35)	23.7	4.6	5.9	30.2	9.2	5.7	6.5	4.6	-0.2	27%	100%	-3%
Fregenal de la Sierra	C	(17/38)	19.9	2.7	13.5	24.2	6.2	6.5	4.3	3.5	-7.0	22%	130%	-52%
Helechal	D	(14/34)	21.3	3.1	2.7	34.1	5.0	7.2	12.8	1.9	4.5	60%	61%	167%
Los Santos de Maimona	E	(19/34)	17.2	5.1	6.4	24.3	8.0	3.7	7.1	2.9	-2.7	41%	57%	-42%
Malpartida de la Serena	F	(14/38)	23.4	1.0	5.3	27.3	8.7	6.0	3.9	7.7	0.7	17%	770%	13%
Monterrubio de la Serena	G	(14/39)	20.0	2.3	3.3	32.2	8.0	5.6	12.2	5.7	2.3	61%	248%	70%
Puerto Hurraco	H	(20/38)	22.3	4.5	4.2	32.3	8.4	11.8	10.0	3.9	7.6	45%	87%	181%
Valle Serena	I	(14/39)	18.1	2.6	4.2	20.9	7.2	5.7	2.8	4.6	1.5	15%	177%	36%
Valverde de Llerena	J	(18/37)	15.2	5.3	3.6	28.7	3.4	3.3	13.5	-1.9	-0.3	89%	-36%	-8%
Mean value			*19.9*	*3.3*	*6.0*	*28.2*	*6.8*	*6.3*	*8.3*	*3.5*	*0.2*	*43.5%*	*169.9%*	*32.4%*
									4.0			81.9%		
ULV RSs														
Badajoz	K	(73/39)	22.7	3.8	5.1	19.5	2.8	4.9	-3.2	-1.0	-0.2	-14.1%	-26.3%	-3.9%
Usagre	L	(23/39)	28.7	6.2	13.4	28.3	4.8	6.1	-0.4	-1.4	-7.3	-1.4%	-22.6%	-54.5%
Mean value			*25.7*	*5.0*	*9.3*	*23.9*	*3.8*	*5.5*	*-1.8*	*-1.2*	*-3.8*	*-7.7%*	*-24.4%*	*-29.2%*

			P_1(mm) Before Irrigation Transition			P_2(mm) Before Irrigation Transition			ΔP_{dif}(mm)=P_2-P_1			ΔP_{dif}(mm)=ΔP_{dif}/P_1		
	Code	(NB/NA)	June	July	August	June	July	August	June	July	August	June	July	August
LG MSs														
Bélmez	a	(26/28)	23.9	3.8	7.6	27.6	5.6	5.5	3.7	1.8	-2.1	15.5%	47.4%	-27.6%
Espiel	b	(24/29)	23.0	1.9	7.2	24.5	7.3	6.4	1.5	5.4	-0.8	6.5%	284.2%	-11.1%
Fuenteobejuna	c	(26/31)	25.6	1.1	3.2	29.6	9.1	7.5	4.0	8.0	4.3	15.6%	727.3%	134.4%
Hinojosa del Duque	d	(28/28)	21.7	4.2	7.3	25.8	10.2	5.4	4.1	6.0	-1.9	18.9%	142.9%	-26.0%
Pantano Guadalmellato	e	(56/23)	18.7	1.2	3.3	20.6	2.4	3.5	1.9	1.2	0.2	10.2%	100.0%	6.1%
Peñarroya	f	(53/9)	23.2	3.5	5.4	29.5	1.7	13.2	6.3	-1.8	7.8	27.2%	-51.4%	144.4%
Pozoblanco	g	(48/29)	28.6	4.6	6.7	29.5	10.2	5.4	0.9	5.6	-1.3	3.1%	121.7%	-19.4%
Mean value			*23.5*	*2.9*	*5.8*	*26.7*	*6.6*	*6.7*	*3.2*	*3.7*	*0.9*	*13.9%*	*196.0%*	*28.7%*
									2.6			79.5%		
LG RSs														
Córdoba	h	(15/23)	24.5	4.4	2.7	18.7	3.1	2.8	-5.8	-1.3	0.1	-24%	-30%	4%
San Fernando	i	(108/23)	12.6	1.2	2.6	9.1	0.2	1.6	-3.5	-1.0	-1.0	-28%	-83%	-38%
Sevilla	j	(23/27)	21.4	0.4	6.1	12.6	2.6	4.8	-8.8	2.2	-1.3	-41%	550%	-21%
Mean value			*19.5*	*2.0*	*3.8*	*13.5*	*2.0*	*3.1*	*-6.0*	*0.0*	*-0.7*	*-31%*	*146%*	*-19%*

Fig. 1. Table A1

Table A2. Monthly to annual precipitation ratio before (r_1) and after (r_2) the Irrigation Transition Period (ITP), ratio diference Δr_{dif} and ratio increment Δr with respect to r_1, measured in MSs and RSs for both ULV and LG irrigation lands. NB and NA stand for the number of meteorological stations with available data used in the analysis before and after the ITP, respectively. Code is the meteorological station identifying letter used in Fig. 1. Grey shaded cell mean that the variation is statistically significant.

			r_1(-) Before Irrigation Transition			r_2(-) Before Irrigation Transition			Δr_{dif}(-)=r_2-r_1			Δr(%)=Δr_{dif}/r_1		
	Code	(NB/NA)	June	July	August	June	July	August	June	July	August	June	July	August
ULV MSs														
Barcarrota	A	(24/37)	2.4	0.2	2.2	4.9	0.6	1.2	2.5	0.4	-1.0	104.2%	200.0%	-45.5%
Cabeza del Buey	B	(25/35)	5.0	1.0	0.8	6.9	1.6	0.9	1.9	0.6	0.1	38.0%	60.0%	12.5%
Fregenal de la Sierra	C	(17/38)	2.8	0.4	2.1	4.0	0.9	1.2	1.2	0.5	-0.9	42.9%	125.0%	-42.9%
Helechal	D	(14/34)	4.2	0.6	0.4	7.0	0.9	1.4	2.8	0.3	1.0	66.7%	50.0%	250.0%
Los Santos de Maimona	E	(19/34)	2.9	1.0	1.1	5.6	1.4	0.9	2.7	0.4	-0.2	93.1%	40.0%	-18.2%
Malpartida de la Serena	F	(14/38)	3.8	0.2	1.1	6.3	1.4	1.3	2.5	1.2	0.2	65.8%	600.0%	18.2%
Monterrubio de la Serena	G	(14/39)	3.4	0.4	0.6	6.6	1.3	1.0	3.2	0.9	0.4	94.1%	225.0%	66.7%
Puerto Hurraco	H	(20/38)	3.4	1.0	1.0	7.3	1.2	1.8	3.9	0.2	0.8	114.7%	20.0%	80.0%
Valle Serena	I	(14/39)	4.0	0.5	1.1	5.7	1.4	1.4	1.7	0.9	0.3	42.5%	180.0%	27.3%
Valverde de Llerena	J	(18/37)	2.6	0.9	0.6	5.7	0.6	0.7	3.1	-0.3	0.1	119.2%	-33.3%	16.7%
Mean value			*3.5*	*0.6*	*1.1*	*6.0*	*1.1*	*1.2*	*2.6*	*0.5*	*0.1*	*78.1%*	*146.7%*	*36.5%*
ULV RSs														
Badajoz	K	(73/39)	4.3	0.7	1.0	4.2	0.5	1.1	-0.1	-0.2	0.1	-2.3%	-28.6%	10.0%
Usagre	L	(23/39)	4.0	0.9	2.3	5.1	0.8	1.3	1.1	-0.1	-1.0	27.5%	-11.1%	-43.5%
Mean value			*4.2*	*0.8*	*1.7*	*4.7*	*0.7*	*1.2*	*0.5*	*-0.2*	*-0.5*	*12.6%*	*-19.8%*	*-16.7%*
			2.2											

			r_1(-) Before Irrigation Transition			r_2(-) Before Irrigation Transition			Δr_{dif}(-)=r_2-r_1			Δr(%)=Δr_{dif}/r_1		
	Code	(NB/NA)	June	July	August	June	July	August	June	July	August	June	July	August
LG MSs														
Bélmez	a	(26/28)	4.3	0.5	1.1	5.7	0.9	0.9	1.4	0.4	-0.2	32.6%	80.0%	-18.2%
Espiel	b	(24/29)	4.1	0.2	1.0	4.8	1.1	1.1	0.7	0.9	0.1	17.1%	450.0%	10.0%
Fuenteobejuna	c	(26/31)	4.9	0.1	0.9	6.4	1.6	1.5	1.5	1.5	0.6	30.6%	1500.0%	66.7%
Hinojosa del Duque	d	(28/28)	5.4	1.1	1.5	6.2	2.2	1.2	0.8	1.1	-0.3	14.8%	100.0%	-20.0%
Pantano Guadalmellato	e	(56/23)	2.7	0.2	0.4	3.7	0.3	0.5	1.0	0.1	0.1	37.0%	50.0%	25.0%
Peñarroya	f	(53/9)	4.6	0.6	1.0	7.4	0.4	1.7	2.8	-0.2	0.7	60.9%	-33.3%	70.0%
Pozoblanco	g	(48/29)	5.7	0.7	1.2	5.8	1.8	1.1	0.1	1.1	-0.1	1.8%	157.1%	-8.3%
Mean value			*4.5*	*0.5*	*1.0*	*5.7*	*1.2*	*1.1*	*1.2*	*0.7*	*0.1*	*27.8%*	*329.1%*	*17.9%*
									0.7			124.9%		
LG RSs														
Córdoba	h	(15/23)	3.5	0.6	0.3	3.4	0.4	0.4	-0.1	-0.2	0.1	-2.9%	-33.3%	33.3%
San Fernando	i	(108/23)	2.1	0.2	0.5	2.0	0.1	0.4	-0.1	-0.2	-0.1	-4.8%	-75.0%	-20.0%
Sevilla	j	(23/27)	3.3	0.1	0.7	2.7	0.3	1.0	-0.6	0.2	0.3	-18.2%	200.0%	42.9%
Mean value			*3.0*	*0.3*	*0.5*	*2.7*	*0.3*	*0.6*	*-0.3*	*-0.1*	*0.1*	*-8.6%*	*30.6%*	*18.7%*

Fig. 2. Table A2

Table A3. Percentage of minimum rainfall episodes respect to the total rainfall episodes registered before (P_{min1}) and after (P_{min2}) the Irrigation Transition Period (ITP). The percentages P_{min1} and P_{min2} are reffered to their own period (i.e before and after ITP, respectively), diference in percentages ΔP_{min_dif} and increment of minimum rainfall episodes ΔP_{min} with respect to P_{min1}. NB and NA stand for the number of meteorological stations with available data used in the analysis before and after the ITP, respectively. Code is the meteorological station identifying letter used in Fig. 1. Grey shaded cell mean that the variation is statistically significant.

			P_{min1}(%) Before Irrigation Transition			P_{min2}(%) Before Irrigation Transition			$\Delta P_{min\_dif}(\%)=P_{min2}-P_{min1}$			$\Delta P_{min}(\%)=\Delta P_{min\_dif}/P_{min1}$		
	Code	(NB/NA)	June	July	August	June	July	August	June	July	August	June	July	August
ULV MSs														
Barcarrota	A	(24/37)	60.0	12.0	36.0	91.8	35.1	54.0	31.8	23.1	18.0	53.0%	192.5%	50.0%
Cabeza del Buey	B	(25/35)	80.0	45.0	40.0	62.3	40.0	40.1	-17.7	-5.0	0.1	-22.1%	-11.1%	0.3%
Fregenal de la Sierra	C	(17/38)	70.5	23.5	35.2	84.8	33.3	45.4	14.3	9.8	10.2	20.3%	41.7%	29.0%
Helechal	D	(14/34)	86.6	13.3	13.3	90.9	47.0	41.1	4.3	33.7	27.8	5.0%	253.4%	209.0%
Los Santos de Maimona	E	(19/34)	66.6	27.7	27.7	84.8	42.4	30.3	18.2	14.7	2.6	27.3%	53.1%	9.4%
Malpartida de la Serena	F	(14/38)	71.4	14.2	21.4	81.5	36.8	47.3	10.1	22.6	25.9	14.1%	159.2%	121.0%
Monterrubio de la Serena	G	(14/39)	69.2	30.7	23.0	84.2	39.4	42.1	15.0	8.7	19.1	21.7%	28.3%	83.0%
Puerto Hurraco	H	(20/38)	73.6	42.1	42.1	89.4	36.8	52.6	15.8	-5.3	10.5	21.5%	-12.6%	24.9%
Valle Serena	I	(14/39)	84.6	15.3	30.7	73.6	36.8	44.7	-11.0	21.5	14.0	-13.0%	140.5%	45.6%
Valverde de Llerena	J	(18/37)	70.5	23.5	35.2	78.3	29.7	37.8	7.8	6.2	2.6	11.1%	26.4%	7.4%
Mean value			*73.3*	*24.7*	*30.5*	*82.2*	*37.7*	*43.5*	*8.9*	*13.0*	*13.1*	*13.9%*	*87.1%*	*58.0%*
ULV RSs														
Badajoz	K	(73/39)	80.8	27.4	28.7	74.3	25.6	30.7	-6.5	-1.8	2.0	-8.0%	-6.6%	7.0%
Usagre	L	(23/39)	68.9	41.3	48.2	73.6	39.4	44.7	4.7	-1.9	-3.5	6.8%	-4.6%	-7.3%
Mean value			*74.9*	*34.4*	*38.5*	*74.0*	*32.5*	*37.7*	*-0.9*	*-1.9*	*-0.8*	*-0.6%*	*-5.6%*	*-0.1%*

			P_{min1}(%) Before Irrigation Transition			P_{min2}(%) Before Irrigation Transition			$\Delta P_{min\_dif}(\%)=P_{min2}-P_{min1}$			$\Delta P_{min}(\%)=\Delta P_{min\_dif}/P_{min1}$		
	Code	(NB/NA)	June	July	August	June	July	August	June	July	August	June	July	August
LG MSs														
Bélmez	a	(26/28)	76.9	19.2	20.8	80.0	29.0	40.0	3.1	9.8	19.2	4.0%	51.0%	92.3%
Espiel	b	(24/29)	79.1	13.0	40.0	75.0	45.1	45.1	-4.1	32.1	5.1	-5.2%	246.9%	12.8%
Fuenteobejuna	c	(26/31)	80.7	8.3	34.7	77.4	35.4	48.3	-3.3	27.1	13.6	-4.1%	326.5%	39.2%
Hinojosa del Duque	d	(28/28)	75.0	28.2	42.8	85.7	39.2	50.0	10.7	11.0	7.2	14.3%	39.0%	16.8%
Pantano Guadalmellato	e	(56/23)	57.8	12.5	19.6	60.8	30.4	30.4	3.0	17.9	10.8	5.2%	143.2%	55.1%
Peñarroya	f	(53/9)	71.7	28.3	35.8	44.4	22.2	44.4	-27.3	-6.1	8.6	-38.1%	-21.6%	24.0%
Pozoblanco	g	(48/29)	77.1	27.1	41.6	82.7	48.2	51.7	5.6	21.1	10.1	7.3%	77.9%	24.3%
Mean value			*74.0*	*19.5*	*33.6*	*72.3*	*35.6*	*44.3*	*-1.8*	*16.1*	*10.7*	*-2.4%*	*123.3%*	*37.8%*
LG RSs														
Córdoba	h	(15/23)	83.3	25.0	16.6	73.3	16.6	26.6	-10.0	-8.4	10.0	-12.0%	-33.6%	60.2%
San Fernando	i	(108/23)	75.9	10.1	18.5	65.2	0.0	17.4	-10.7	-10.1	-1.1	-14.1%	-100.0%	-5.9%
Sevilla	j	(23/27)	82.6	4.0	21.7	59.2	11.1	22.2	-23.4	7.1	0.5	-28.3%	177.5%	2.3%
Mean value			*80.6*	*13.0*	*18.9*	*65.9*	*9.2*	*22.1*	*-14.7*	*-3.8*	*3.1*	*-18.1%*	*14.6%*	*18.9%*

Fig. 3. Table A3