Monitoring dynamics of water surface and wetlands areas in the Southern Priaralie

The water surface and wetlands areas in the Southern Priaralie in November 2011 were determined using satellite images in the SIC ICWC (Fig. 1, Table 1, 2).

Table 1 contains wetlands with water surface area which could be assessed by using satellite images. Table 2 contains wetland's areas in the Southern Priaralie in November 2011.

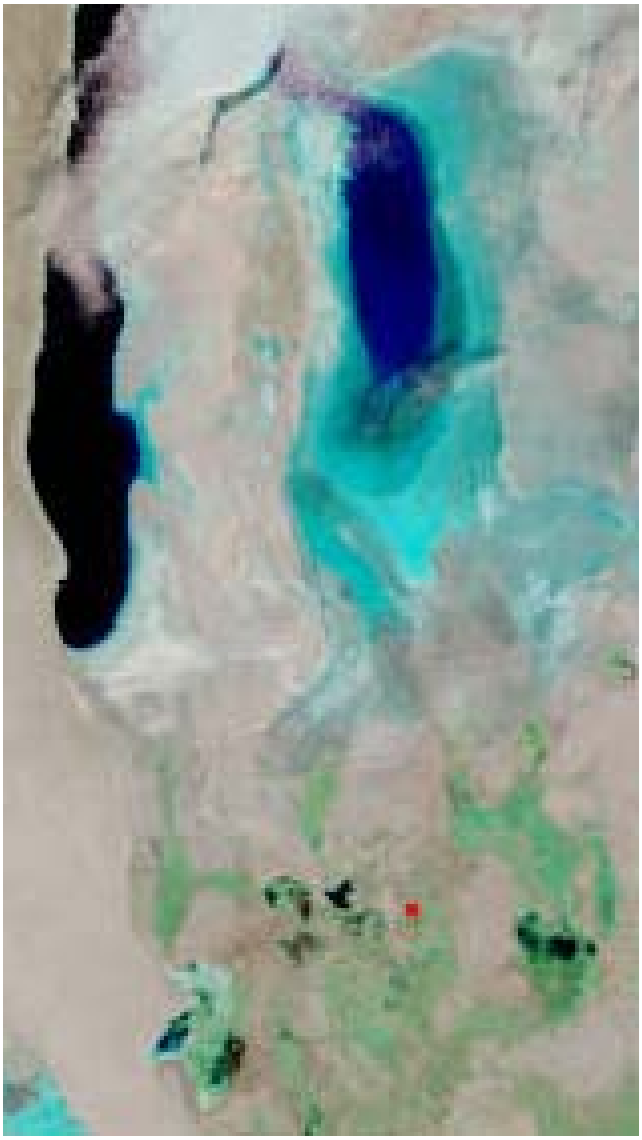

Fig. 1. Southern Priaralie and Big Aral Sea - November 2011

Water surface areas have decreased almost by 86 thousand hectares for the period from April till September 2011, and have increased by 12 thousand hectares for the period from September to November (Table 1). If comparing data from March (the beginning of vegetation period in the Southern Priaralie) till November 2011, the biggest area of lake's overflow is observed in April, but a maximal area of wetlands - from August till October. Fig. 2 demonstrates relation between water surface area and wetland's areas in the Southern Priaralie.

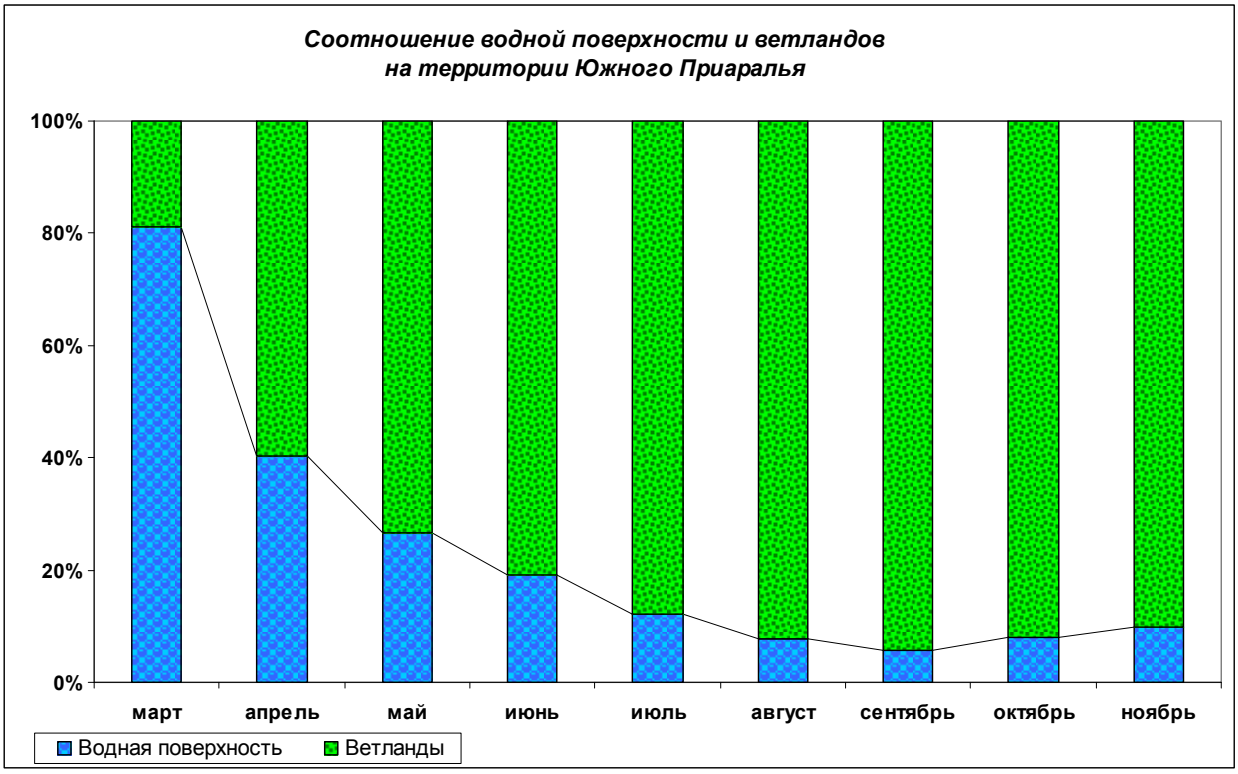

Fig. 2.

The regular monitoring (data in Tables 1,2) of water bodies in the Southern Priaralie give possibility to assess the within-year variability of water-surface area and wetlands' area (data for 2011 is given on figures 3-11).

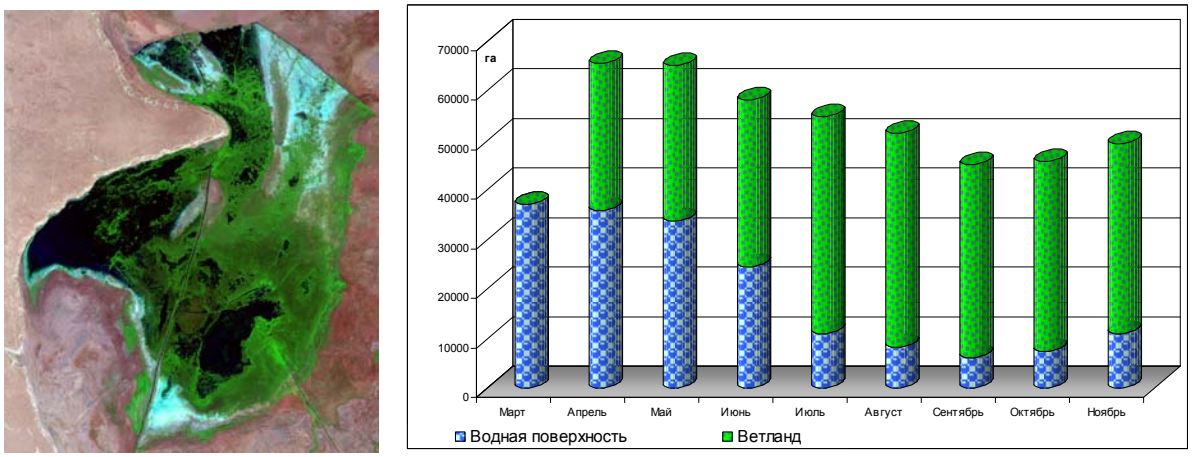

Fig. 3. Within-year variability of water area and wetland area - Sudochie

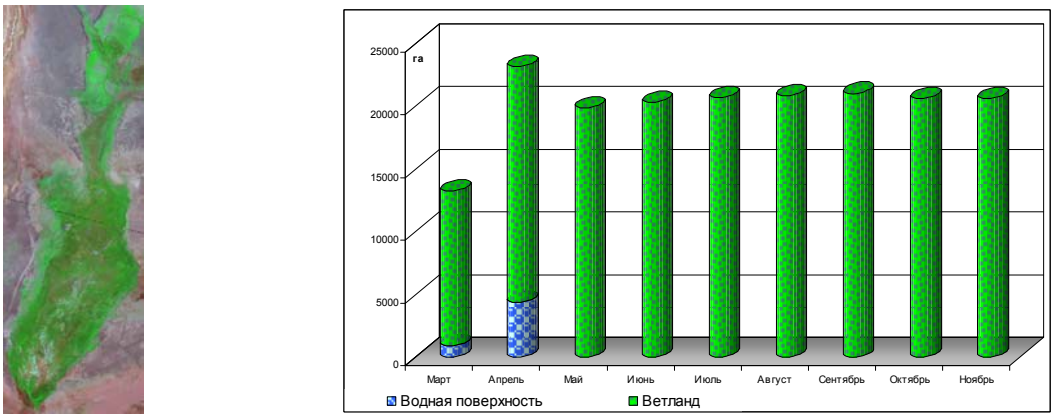

Fig. 4. Within-year variability of water area and wetland area - Former Adjibay gulf

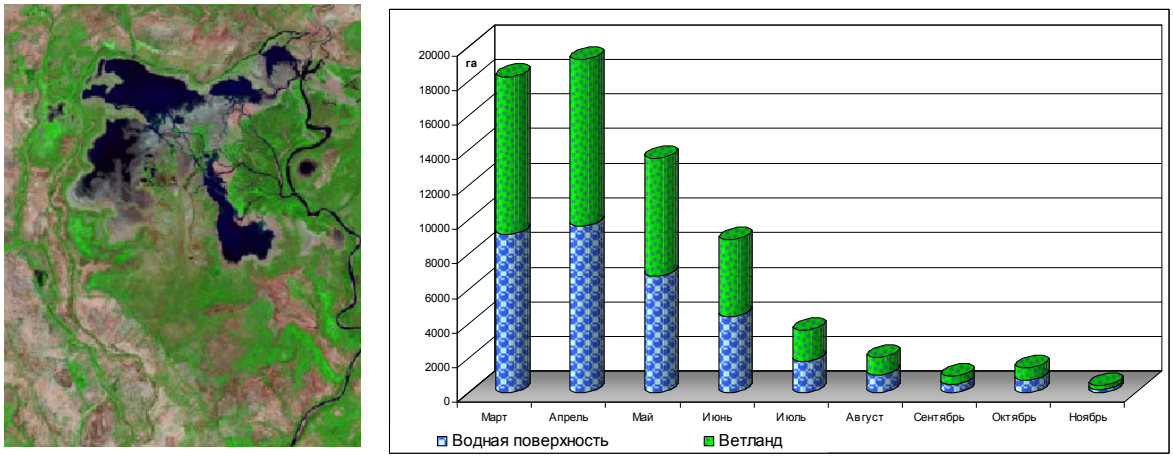

Fig. 5. Within-year variability of water area and wetland area - Mejdurechenskoe reservoir

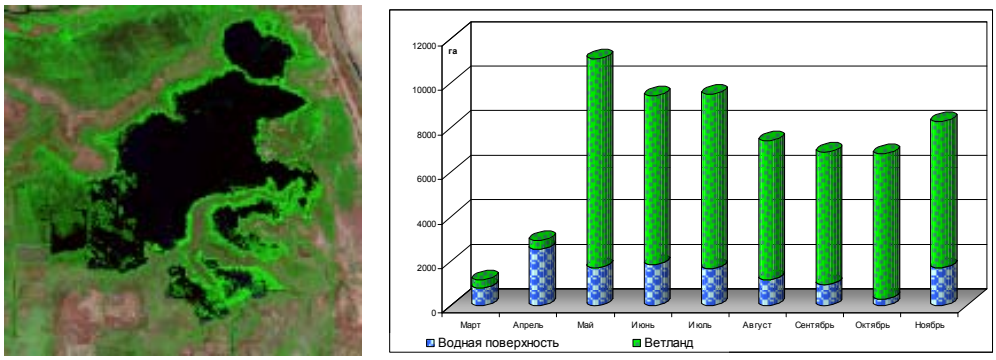

Fig. 6. Within-year variability of water area and wetland area - Makpalkol lake

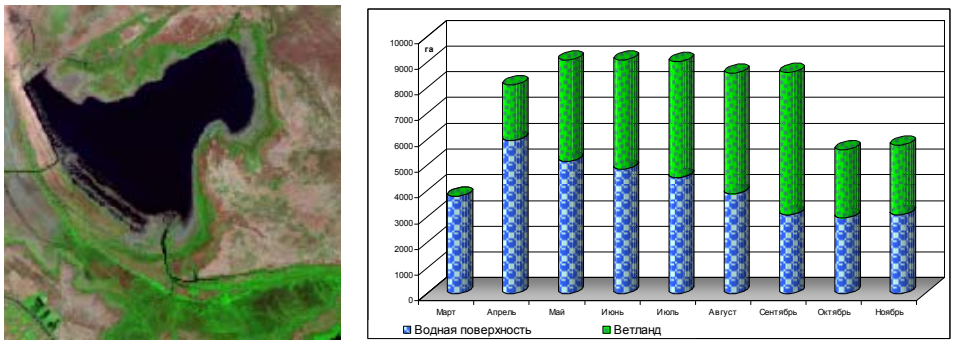

Fig. 7. Within-year variability of water area and wetland area – Rybachie reservoir

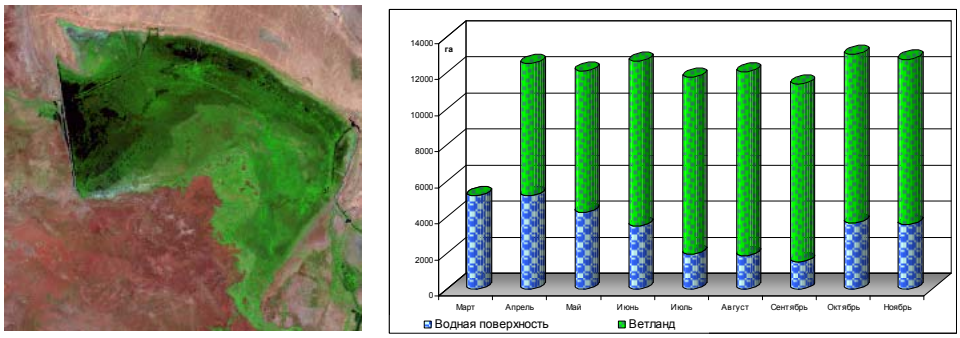

Fig. 8. Within-year variability of water area and wetland area - Muinakskoe reservoir

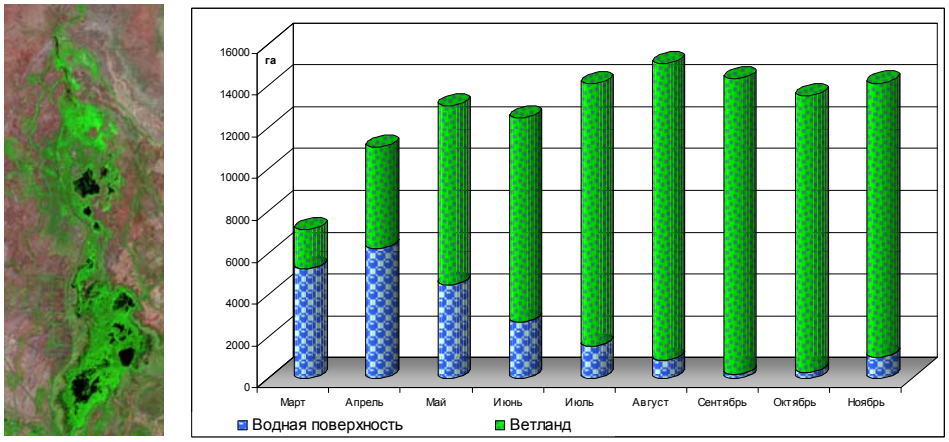

Fig. 9. Within-year variability of water area and wetland area - Mashan-Karadjar lakes

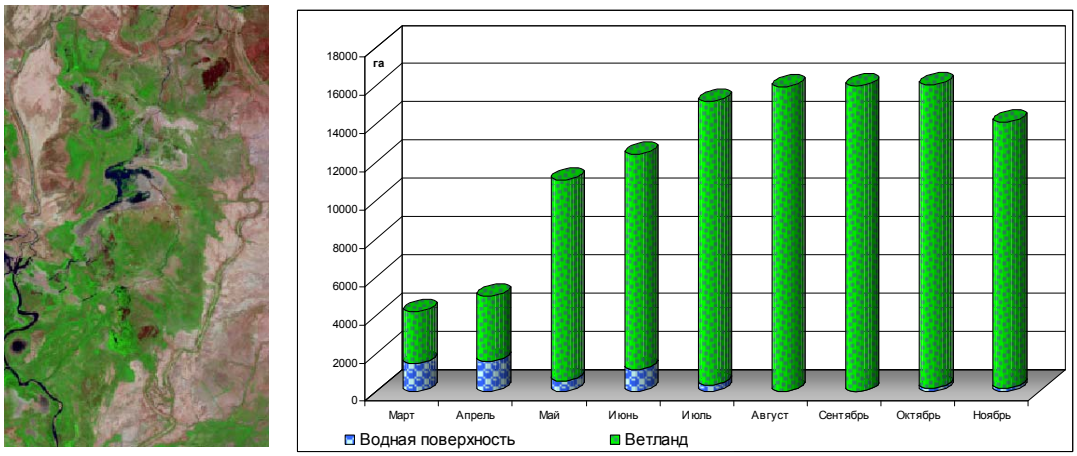

Fig. 10. Within-year variability of water area and wetland area – Dumalak

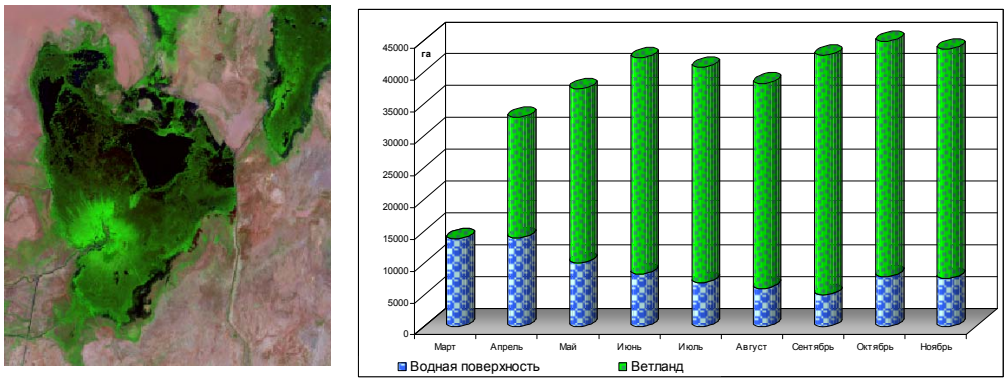

Fig. 11. Within-year variability of water area and wetland area - Djyltyrbas bounded by dam

Table 1

Water surface area, ha

Water body	March 2011	April 2011	May 2011	June 2011	July 2011	August 2011	September 2011	October 2011	November 2011
Sudochie	37092,19	35913,96	33648,61	24485,28	11069,20	8320,55	6185,61	7449,77	10948,91
Mejdurechenskoe	9129,81	9639,56	6782,32	4432,05	1810,49	1021,71	501,69	745,35	234,21
Rybachie	3794,98	5952,92	5147,21	4849,01	4506,62	3898,91	3069,57	2971,21	3082,60
Muinakskoe	5182,66	5184,01	4272,57	3509,57	1944,59	1853,53	1543,02	3690,91	3587,85
Djyltyrbas bounded by dam	13821,67	13976,22	10008,75	8317,50	6975,49	6079,45	5060,18	7969,06	7682,25
Djyltyrbas (with the former right and left channels)	34609,06	29308,85	14233,13	11588,28	7965,55	6774,74	-	-	-
Dumalak	1506,72	1579,32	578,25	1152,46	361,41	-	-	175,02	161,60
Makpalkol	811,85	2533,15	1723,48	1871,28	1679,98	1183,93	950,23	314,74	1699,16
Mashan-Karadjar	5269,31	6244,58	4472,06	2725,90	1541,69	906,57	215,70	331,52	1038,40
Wetland to the south from Muinak	2065,57	1562,82	853,12	-	-	-	-	712,53	1493,42
Wetlands along the bed of the Kazakhdarya river	2976,06	4885,01	3139,67	1720,04	1486,70	813,92	-	281,10	-
Zakirkol lake	546,38	1010,07	353,99	357,78	-	-	-	-	-
Total	***102984,59***	***103814,3***	***75204,41***	***56691,65***	***39341,72***	***24773,85***	***17526,01***	***24641,21***	***29928,4***

Table 2

Wetland area, ha (2011)

Water body	March	April	May	June	July	August	September	October	November
Sudochie	-	29707,42	31547,52	33782,09	43742,16	43212,64	38915,36	38378,50	38482,12
Mejdurechenskoe	-	1845,53	19181,39	18061,27	23174,17	23940,74	22464,96	21670,20	19872,56
Rybachie	-	2163,22	3931,89	4247,80	4529,71	4682,17	5531,11	2634,24	2701,52
Muinakskoe	-	7328,11	7830,41	9129,10	9793,37	10191,76	9832,71	9339,70	9152,43
Djyltyrbas bounded by dam	-	18898,65	27340,65	33854,90	33797,10	32166,29	37543,86	36850,68	35926,29
Djyltyrbas (with the former right and left channels)	-	46525,38	62930,40	84745,11	102958,17	105510,70	113097,43	112063,17	109572,41
Former Adjibay gulf	12299,19	18773,25	19852,74	20320,06	20716,32	20807,54	21023,07	20589,06	20637,91
Dumalak	2673,17	3403,11	10456,37	11247,56	14812,37	15926,23	15986,01	15879,23	13925,65
Adjibay 2*)	-	2954,82	10785,62	11020,14	9825,73	10269,62	10614,93	9967,45	9978,07
Makpalkol	375,91	415,89	9357,21	7548,23	7829,15	6227,70	5947,13	6518,23	6573,48
Mashan-Karadjar	1873,21	4838,41	8596,91	9753,42	12585,21	14141,98	14128,59	13207,71	13089,15
Wetland to the south from Muinak	-	6620,41	7216,25	7574,51	7783,69	8647,12	8917,52	7699,59	7601,72
Wetland to the North-West from Muinak	3284,16	3372,18	3723,05	4815,21	5407,45	6792,69	6107,01	5418,12	5382,57
Wetlands along the bed of the Kazakhdarya river	2784,36	5483,46	9634,70	14805,13	17289,13	18651,34	16508,04	17142,36	16048,26
Zakirkol lake	734,35	1236,08	2177,82	2345,17	3134,87	3241,65	3721,54	3689,24	3469,04
Total	***24024,35***	***153565,92***	***207222,28***	***239394,8***	***283581,5***	***292243,88***	***292795,4***	***284196,8***	***276486,89***

*)Adjibay 2 – Artificial structure to the north from the Rybachie and Muinakskoe reservoirs.

Comparison between data from "Analysis of water management situation in the Amudarya and Syrdarya river basins" (http://www.cawater-info.net/analsis/water/amu_water_delivery_aral_veg.htm, Fig. 12) and from "Monitoring of wetlands of Southern Priaralie for August 2007 has showed that considerable decrease of water delivery in 2008 resulted in decrease of wetland area in 2010 (Fig. 13).

Water delivery to the Aral Sea and the Amudarya river delta for growing season, mln. m^3

Years	Apr	May	Jun	Jul	Aug	Sep	Plan	Actual	% %
1992	428	3620	5480	6203	4830	2620	7000	23181	331,2
1993	664	1496	4371	3940	1482	1642	7000	13595	194,2
1994	1175	527	977	4607	4100	2604	7000	13990	199,9
1995	202	133	131	250	316	380	5000	1412	28,2
1996	227	319	623	1762	1067	873	5000	4871	97,4
1997	100	172	213	144	141	152	5000	922	18,4
1998	350	3430	5770	4719	4163	1745	3000	20177	672,6
1999	206	191	312	436	625	804	3000	2574	85,8
2000	195	141	137	62	42	37	3000	614	20,5
2001	31	19	18	20	15	23	2550	126	4,9
2002	13	31	1435	1686	450	658	2550	4273	167,6
2003	754	2034	2869	2750	306	421	2000	9134	456,7
2004	359	543	1704	1216	223	256	6600	4301	65,2
2005	1173	1034	1148	5922	1774	1223	6100	12274	201,2
2006	296	217	246	238	248	283	6100	1528	25,0
2007	120	107	165	285	204	169	2400	1050	43,8
2008	132	81	61	67	29	23	1890	393,1	20,8
2009	29	44	127	361	1389	699	2100	2649,3	126,2
2010	682	3364	2833	3874	4428	1969	2100	17150	816,7
2011	221	94	78	82	66	76	2100	617	29,4

Note: including total discharge of Suenli and Kyzketken canals and discharge of collector drainage network

Fig. 12.

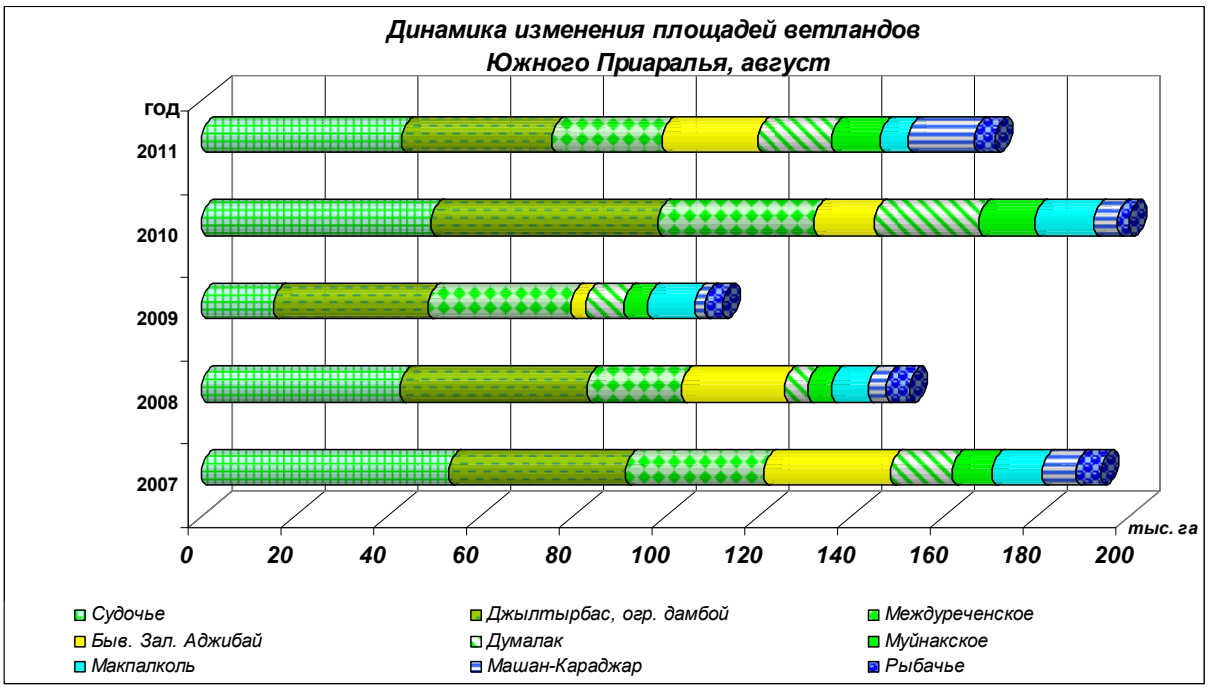

Fig. 13. Dynamics of wetland areas in the Southern Priaralie (August)