



Caspian Environment
Programme

Modeling of Monthly Sea Levels on Water Balance Equation for 1925-1998

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Consultants Report
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1. MODELING OF MONTHLY SEA LEVELS ON WATER BALANCE EQUATION FOR 1925 - 1998th

Mean water level of the Caspian Sea is it important characteristics to adding of water. At the State Institute for Oceanography of the Russian Federation (SOI) the water level of the Caspian Sea is computed as mean from observed level states on four stations: Baku, Machachkala, Krasnovodsk (Turkmen Barshy) and Fort-Shevchenko. At the Hydrometcenter of the Russian Federation (HMC RF) in addition one uses level data of three stations: Island Gyloj, Coolly Beacon, Cara-Bogaz-Gol in order to compute the mean water level of the Sea. The sea level change when one's calculating it average state on four stations is cited in Appendix 1-2.

Change of the Caspian Sea level in a time unit may be calculated according to the equation of water balance:

$$\Delta Z = W / \omega(Z) + W_g / \omega(Z) + P - W_{kg} / \omega(Z) - E \quad (1)$$

Where ΔZ - change of the sea level;

W - volume of river runoff to the sea;

W_g - volume of underground water runoff to the sea;

P - layer of precipitation that are dropping to the surface of the sea;

W_{kg} - volume of sea water runoff to the Kara-Bogaz-Gol gulf;

E - water layer evaporated from the surface of the sea;

$\omega(Z)$ - sea area determined on the basis of its level.

Components to modeling of the sea level in monthly time interval were defined according to a method, elaborated by Smirnova K. [5] at the HMC RF.

1.1. Runoff to the Caspian Sea

Runoff is main inflow component in Caspian Sea water balance. Main volume of runoff incomes to the Sea by the rivers: Volga, Kura, Oral, Terek, Sulark and Sarmure. Besides, runoff of Iran coast rivers and small rivers of East and West coast incomes to the Caspian Sea too.

The Volga river. Runoff data at the Dubovka village and Upper - Lebirge village were used by the considered method to 1958th. From 1959th the runoff calculation was carried out on information about water spill over Volga Hydro-Electric station to a tail-water. Direct runoff of the Volga to the Sea was defined in following way: one subtracts loss of water in the river delta from runoff value for each showed stations. Calculating of the loss was carried out under the formula:

$$Q_p = 0,034 + 0.22, \quad (2)$$

Where Q_p - is water loss in the Volga delta, km^3 per a month,

Q - is runoff volume in the lower reach of Volgograd HES, km^3 per a month.

The Oral river. Calculation of Oral river runoff to the Sea was carried out with the use of observed data and data of hydrometric measuring at the Kushumsky settlement and Topoly village.

The Kura river. Runoff of this river to the Caspian Sea was calculated by data of observations and hydrometric measuring at Saljany city. If observations at the city were absent, runoff in this gauge line was retrieved under the formula:

$$Q_c = 0.99 (Q_k + Q_a), \quad (3)$$

Where Q_c - is volume of runoff at the Saljany city, km^3 per a month;

Q_k - is volume of Kura river runoff according to information about water skill over the Mingechaursky Hydro-Electric station in tail-water, km^3 per a month;

Q_a - is volume of Araks river runoff by observed data at Kubektyl gauge line, km^3 per a month.

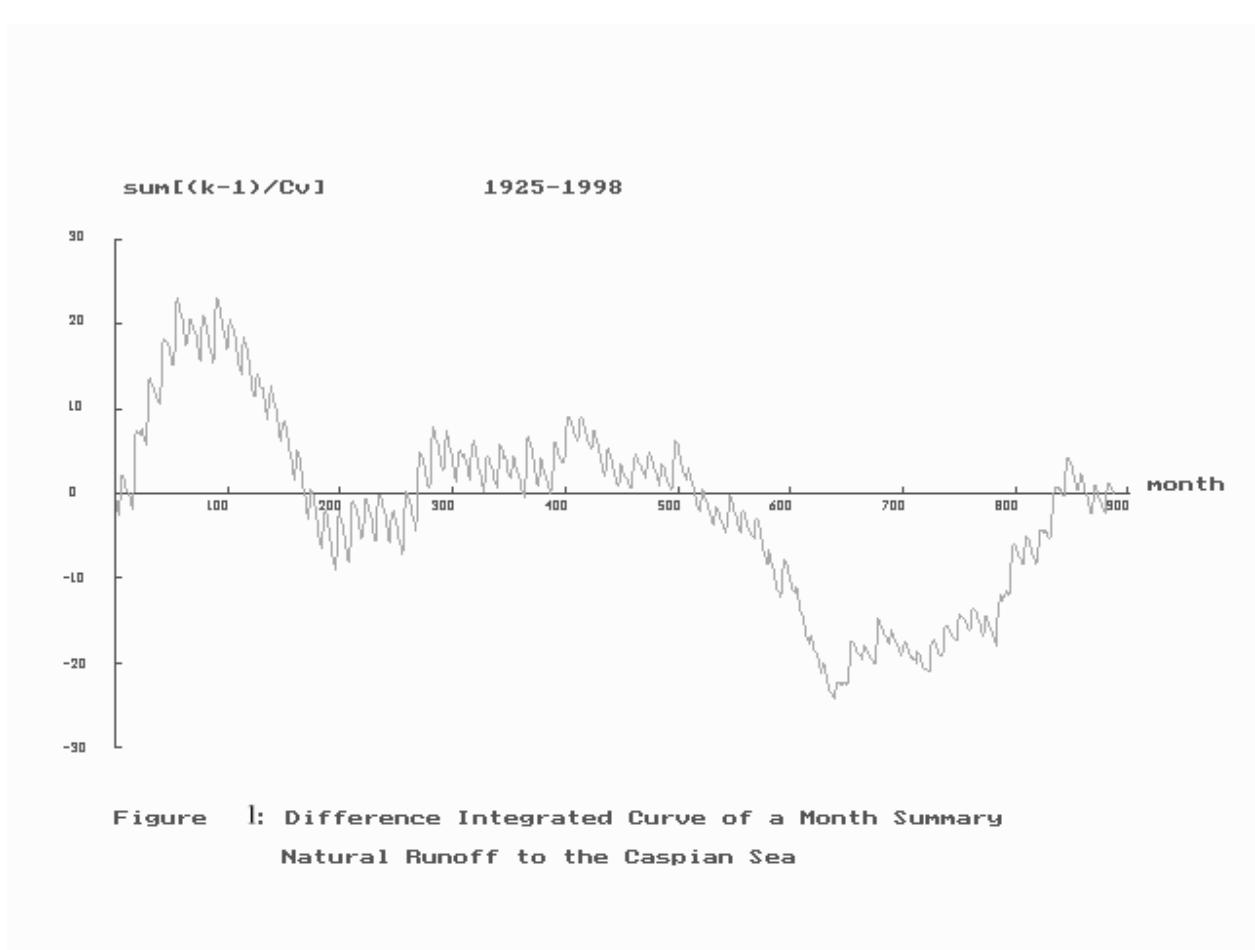
The Terek river. Terek river runoff to the Sea was calculated by data of observations and hydrometric measuring at the Kargalinsky station.

The Sulark river. Runoff of the river was calculated by data of observations and the hydrometric measuring at the Miatly village.

The Samure river. Runoff of the river to the Sea was calculated by data of observations and hydrometric measuring at the Usuke village.

Runoff of Iran coast rivers to the Sea was took as constant value and it was calculated by Remisova's investigations [4] data for seven rivers. It is 14 km^3 per a year. Volume of runoff of interrivers was took according to Zaykov's data [3]. Appendix 3 contains information about total runoff to the Sea for some months and years (1925 - 1998th). Figure 1 shows the change of these data in time.

Figure 1. Difference Integrated Curve of a Month Summary Natural Runoff to the Caspian Sea



1.2. Precipitation

Precipitation falling on sea surface were calculated according to the K. Smirnova's method [5] by observed data of ten seashore and island stations: Island Tjuleni, Island Kulaly, Island Svynoi, Island Ogurchynski, Fort-Shevchenko, Neftearny Stones, Izberbash, Machachkala, Baku, Krasnovodsk (Turkmen Bashy). The transition from monthly precipitation on these stations to mean monthly precipitation on the Caspian Sea was made under the formula:

$$P_m = 0,98P_c + 1,7(T_a - T_w - 1), \quad (4)$$

Where P_m - is total precipitation falling on sea surface, mm per a month;

P_c - is total precipitation on data of observations at ten stations, mm per a month;

$T_a - T_w$ - is mean difference between temperatures of air and water at a station, $^{\circ}\text{C}$.

Calculation of precipitation was corrected by correction for measuring instrument defects. It is 14 % from precipitation value. Calculated monthly means of precipitation falling on Caspian Sea surface are presented on Fig.2 and they are gave in Appendix 4.

Figure 2. Difference Integrated Curve of a Month Sums of Precipitation on the Caspian Sea Surface

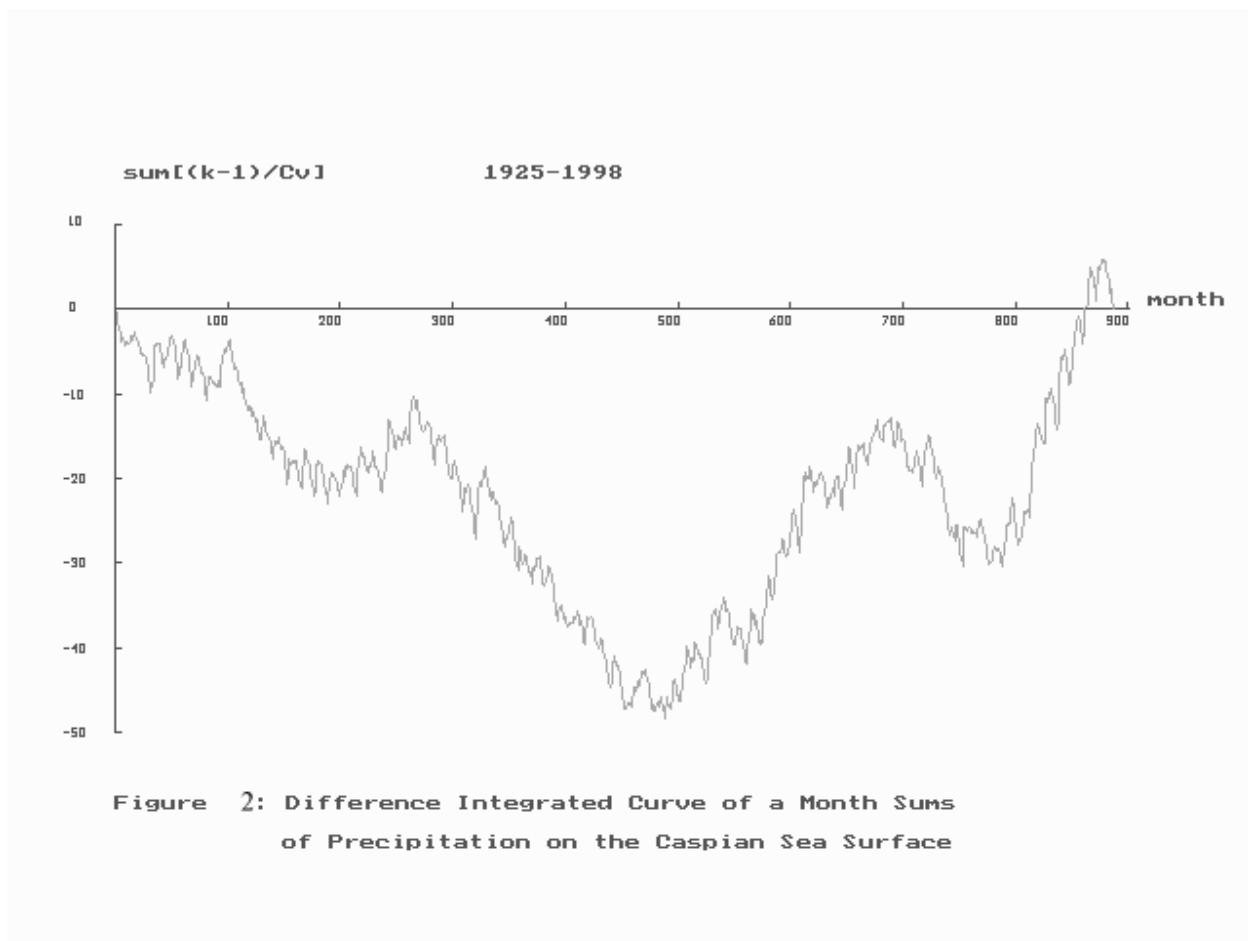


Figure 2: Difference Integrated Curve of a Month Sums of Precipitation on the Caspian Sea Surface

1.3. Evaporation from the Caspian Sea Surface

Evaporation from sea surface is main expense component of Sea water balance. It was determined according to K. Smirnova's method [5]. Evaporation from the Caspian Sea was calculated in dependence on monthly water temperature as mean quantity of monthly temperatures on four stations (Mahachkala, Fort-Shevchenko, Baku, Krasnovodsk) under the formula:

$$E = 4,6T + 20, \quad (5)$$

Where E - is evaporation from sea surface, mm per a month;

T - is average equality of water temperatures on four stations for a preceding month, $^{\circ}\text{C}$.

Calculated monthly means of evaporation from Caspian Sea surface are presented on Fig.3 and also they are cited in Appendix 5. Means of effective evaporation, i.e. evaporation minus precipitation, are presented on Fig.4 and in Appendix 6.

Figure 3. Difference Integrated Curve of a Month Sums of Evaporation from the Caspian Sea Surface

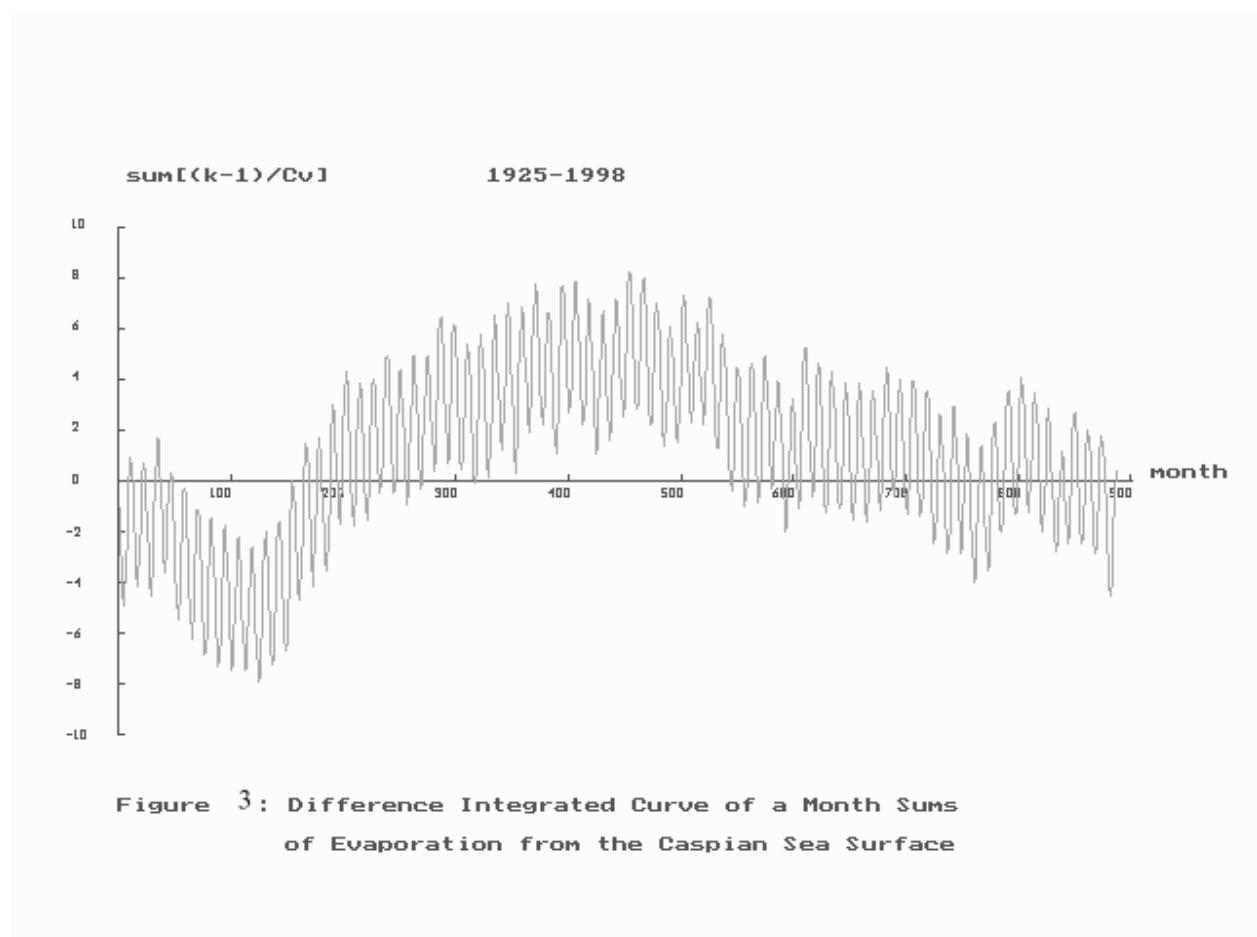
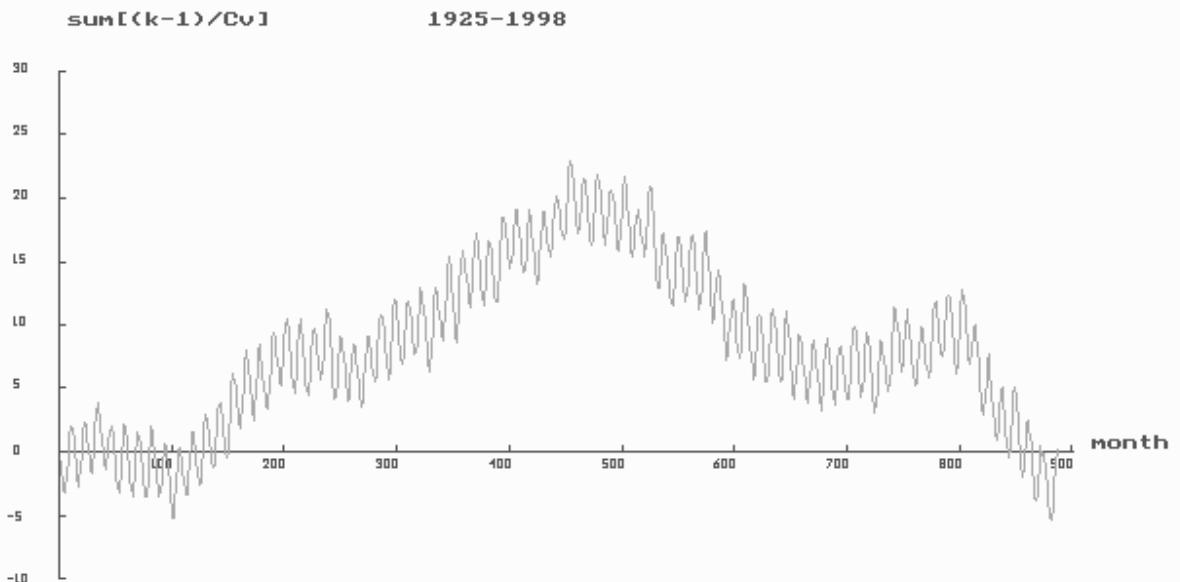


Figure 4. Difference Integrated Curve of a Month Sums of Effective Evaporation from the Caspian Sea Surface



**Figure 4: Difference Integrated Curve of a Month Sums
of Effective Evaporation from the Caspian Sea Surface**

1.4. Sea Water Runoff to the Kara-Bogaz-Gol Bay

It was determined by data of direct measuring in the Kara-Bogaz-Gol sound. The runoff value is limited by a Caspian Sea level and discharge capacity of the sound too. Information about average monthly sea water runoff is cited in Appendix 7. The change of it means in time one can see on Fig.5.

Figure 5 Chronological Graph of a Month Runoff of Sea Water to the Kara-Bogaz-Gol Bay

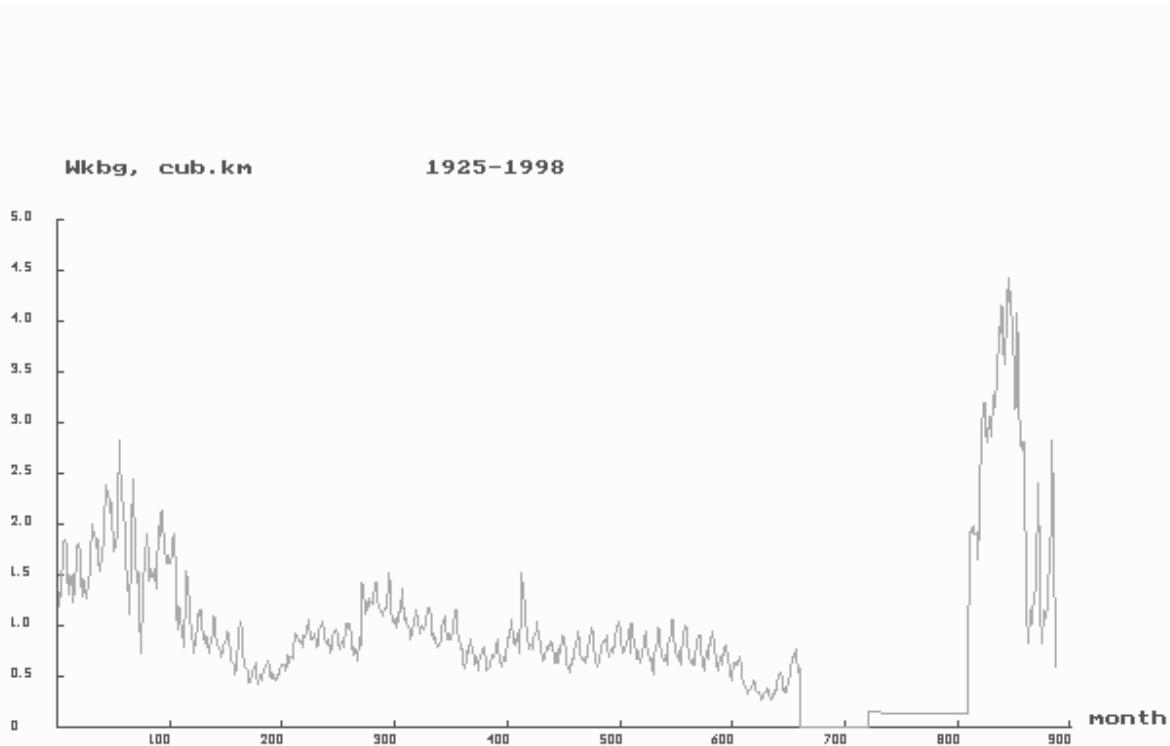


Figure 5: Chronological Graph of a Month Runoff of Sea Water to the Kara-Bogaz-Gol Bay

1.5. Underground Flow to the Caspian Sea

It is insufficiently studied and least reliable component of water balance. It is 2-6 km³ per year for Caspian Sea basin. K. Smirnova [5] took underground flow to the Caspian Sea as constant value and it is 0,46 km³ per a month or 5,5 km³ per a year.

1.6. Statistic Characteristics of the Caspian Sea Water Balance Main Components

It is interesting the comparison of means of sea water balance components was determined by GMC and SOI. Tables 1-3 contain statistic characteristics (average equality, standart deviation, variability index C_v) of Caspian Sea main water balance components (runoff, precipitation, evaporation) by data of GMC and SOI and there are coefficient of correlation for given means too. One can see essential difference between means under examination and statistic characteristics calculated according to the GMC and SOI methods. The difference is especially large to calculated means of precipitation and evaporation. Maximum coefficients of correlation was got for means of runoff to the Caspian Sea. Evaporation from the Sea has minimum means of the coefficient of correlation. One can see necessity to further development of methods to determination of water balance components and precipitation and evaporation especially.

Table 1 Runoff in the Caspian Sea

Par-r	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
GMC												
Cp.	20.1	18.7	21.8	31.7	64.0	33.0	22.4	19.7	18.1	19.4	20.6	21.0
σ	2.87	3.54	4.66	13.6	15.0	10.3	5.20	3.32	2.74	4.66	4.77	2.77
C_v	0.14	0.19	0.21	0.43	0.23	0.31	0.23	0.17	0.15	0.24	0.21	0.13
SOI												
Cp.	19.7	18.9	22.4	24.6	52.9	39.3	22.6	19.7	17.7	18.6	19.7	21.5
σ	3.01	4.18	5.81	8.36	16.5	13.8	5.21	3.61	2.58	3.35	4.57	4.07
C_v	0.15	0.22	0.26	0.34	0.31	0.35	0.23	0.18	0.14	0.18	0.23	0.19
r	0.83	0.81	0.85	0.94	0.69	0.95	0.92	0.96	0.96	0.95	0.97	0.91

Table 2: Precipitation on the Caspian Sea Surface

Par-r	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
GMC												
Cp.	21.9	22.6	22.7	19.5	17.9	8.36	5.54	6.82	17.4	32.7	33.5	28.4
σ	10.1	10.3	11.1	10.4	12.7	5.88	6.32	5.19	17.4	20.3	20.1	10.8
C_v	0.46	0.46	0.49	0.53	0.71	0.70	1.14	0.76	1.00	0.62	0.60	0.38
SOI												
Cp.	22.0	19.0	23.5	19.6	17.3	10.4	6.46	16.2	17.6	29.1	29.7	21.6
σ	12.1	9.47	15.7	11.5	14.3	7.02	5.63	14.6	12.2	21.3	15.1	7.18
C_v	0.55	0.50	0.67	0.59	0.83	0.68	0.87	0.90	0.69	0.73	0.51	0.33
r	0.44	0.16	0.82	0.83	0.88	0.68	0.59	0.61	0.25	0.50	0.66	0.54

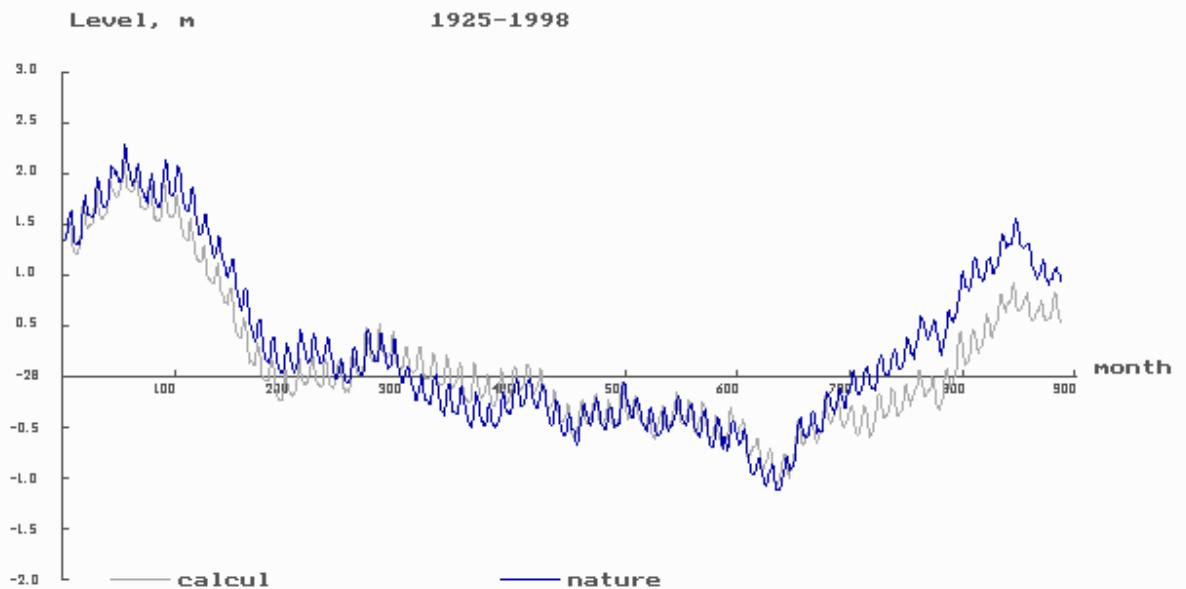
Table 3: Evaporation from the Caspian Sea Surface

Par-r	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
GMC												
Cp.	46.9	41.9	42.2	50.3	71.5	95.5	122	140	135	113	82.4	59.5
σ	3.75	3.07	4.24	7.89	9.69	8.98	7.88	7.25	10.6	11.5	8.53	6.58
C_v	0.08	0.07	0.10	0.16	0.14	0.09	0.06	0.05	0.08	0.10	0.10	0.11
SOI												
Cp.	54.1	51.7	36.0	37.4	51.5	73.2	91.6	132	153	130	92.2	67.2
σ	15.0	16.3	9.46	6.94	10.5	15.5	21.6	16.2	27.0	17.5	21.5	16.1
C_v	0.28	0.32	0.26	0.19	0.20	0.21	0.24	0.12	0.18	0.13	0.23	0.24
r	0.42	0.41	0.12	0.05	0.38	0.29	0.03	0.28	0.22	-0.3	0.07	0.11

1.7. Sea level

Calculating of a sea level after author's model [1,2] based on the use of water balance equation is carried out in monthly intervals. In order to the purpose it was used monthly means of Caspian Sea water balance components determined according to the K. Smirnova's method (HMC RF).

Figure 6 Chronological Graph of the Caspian Sea Level on a Month End ("0"- gr = - 28.00m)



**Figure 6: Chronological Graph of the Caspian Sea Level
on a Month End ("0"-gr = -28.00m)**

Comparison of observed level means and level calculated under water balance equation is presented on Fig. 6. Standard deviation for the calculated sea levels from observed means is 0,08 m. On Fig. 7 one can see certain divergence between the calculated and observed sea level means. Analysis shows the calculated levels slightly forestall (in time) the observed levels. It is bound up with some delay of forming of sea level under runoff influence. The delay is limited by lag-time of river runoff from stations when the level was measured to seashore in the downstream of river or its delta. It also depends from time to water mass spreading on sea surface. As main runoff (more than 80 %) incomes to the Caspian by the Volga river the water mass spreading on sea surface have direction from the North to the South. Moreover, redistribution of water mass in this direction depends on different means of evaporation from Northern and Southern parts of the Caspian Sea. That is why sea surface has inclination from the North to the South. The overfall of altitudes between Northern and Southern parts of Sea is fluctuated from some centimeters to thirty centimeters. Therefore, lag-time of water in the reaches of rivers and time to the water mass spreading on sea surface exert influence on result of sea level calculation under the water balance equation for short time periods (for example months). Analysis shows forestalling of the calculated sea level means as compared with the observed means. Calculations show that forestalling makes up about two months. Therefore, it

is necessary make a displacement of the calculated sea level means till two months forward or carry out a transformation to runoff to the Sea in the first place for the Volga river to further adequate description of the sea level changes for short time periods (months) (Fig. 8). It permits successfully to use the Caspian Sea level modeling in month intervals when one's calculating it

**Figure 7 Chronological Graph of the Caspian Sea Level on a Month End
("0"- gr = - 28.00m) T=0**

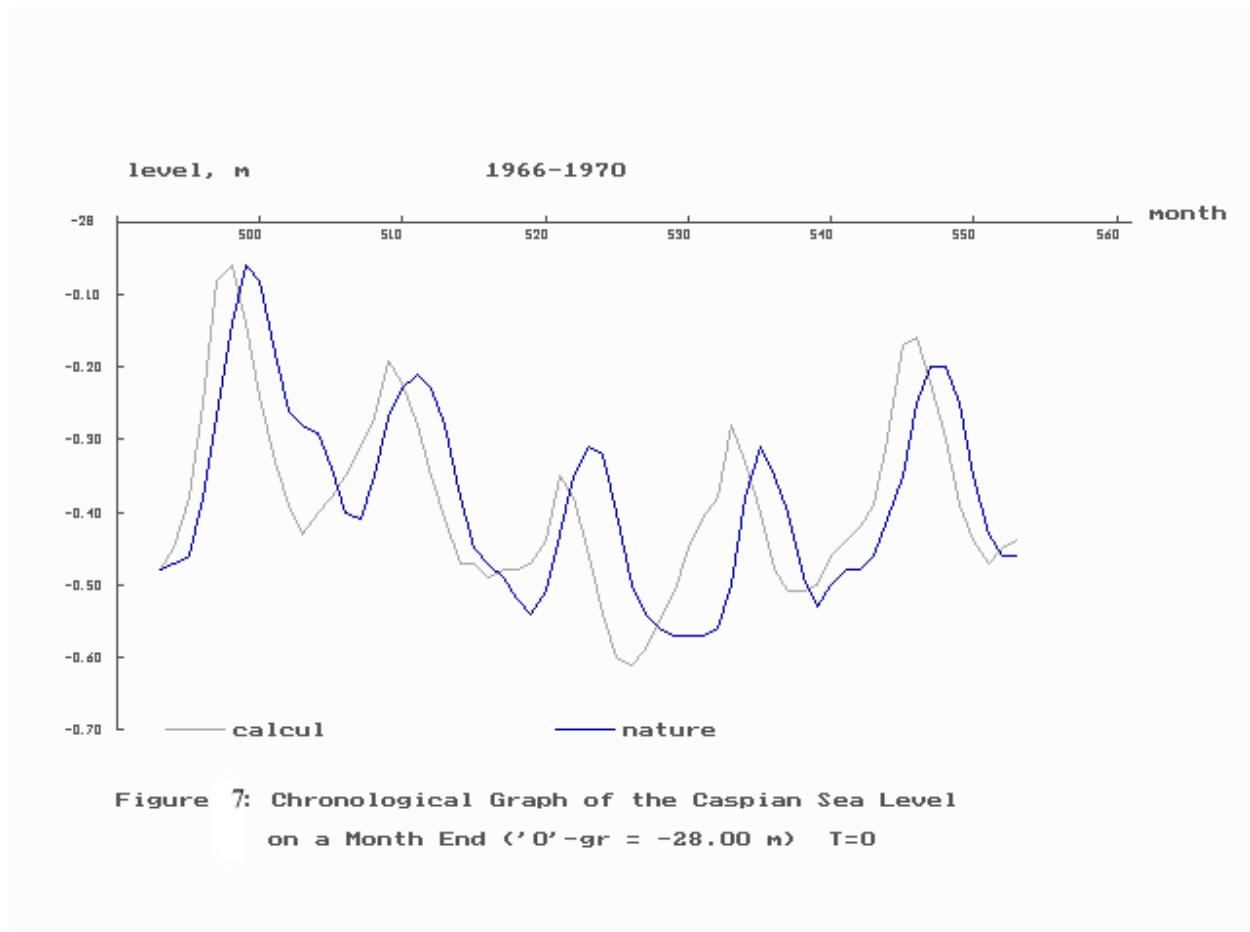
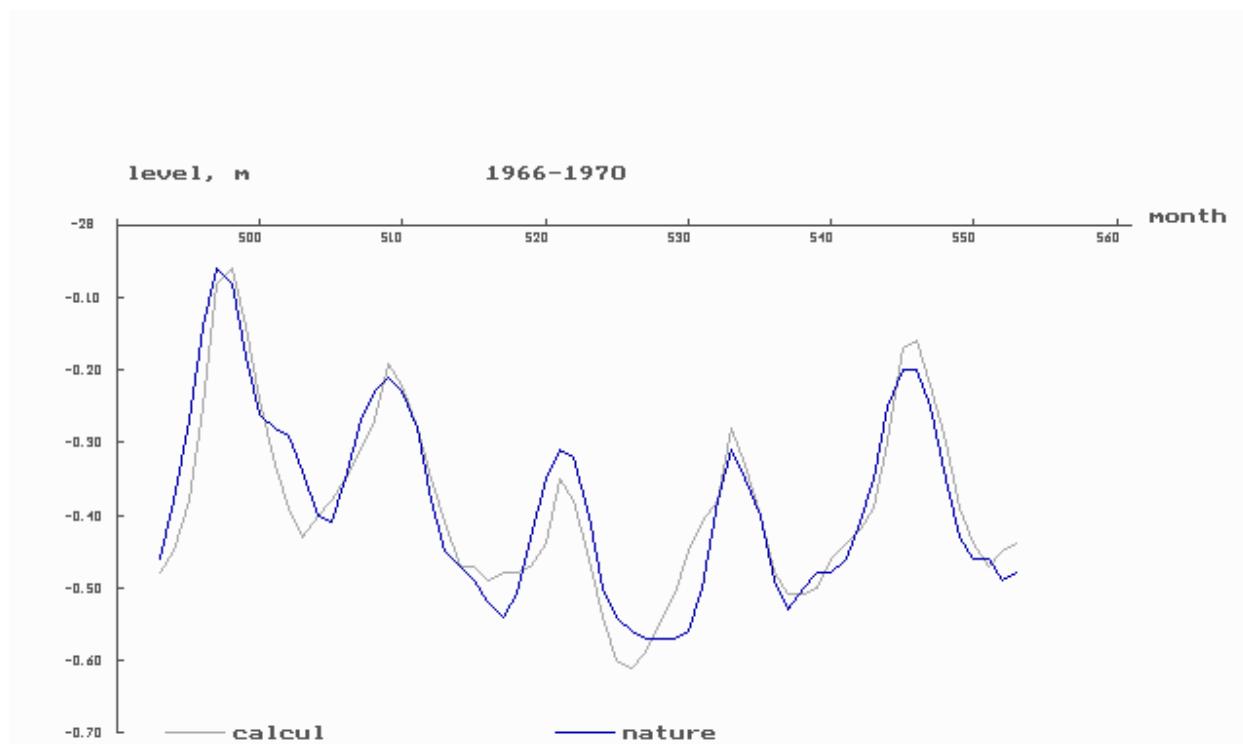


Figure 8 Chronological Graph of the Caspian Sea Level on a Month End (“0”- gr = - 28.00m) T=2



**Figure 8: Chronological Graph of the Caspian Sea Level
on a Month End ('0'-gr = -28.00 m) T=2**

means on nearest and more distant perspective. Moreover, a good co-ordination for calculated and observed levels can be received by determination of effective evaporation under water balance equation. Appendix 8 contains the effective evaporation means. Means of evaporation calculated under water balance equation there are in Appendix 9. These means permit completely to co-ordinate the calculated and observed sea level means.

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Appendix 1: The Caspian Sea Level on a Month End, (m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65	-26,65
1926	-26,78	-26,76	-26,74	-26,71	-26,5	-26,32	-26,34	-26,42	-26,49	-26,53	-26,53	-26,51
1927	-26,5	-26,5	-26,49	-26,45	-26,25	-26,14	-26,2	-26,29	-26,38	-26,44	-26,43	-26,44
1928	-26,44	-26,41	-26,38	-26,35	-26,2	-26,06	-26,08	-26,12	-26,17	-26,21	-26,22	-26,23
1929	-26,23	-26,21	-26,19	-26,16	-26,03	-25,86	-25,88	-25,97	-26,05	-26,14	-26,16	-26,17
1930	-26,18	-26,18	-26,18	-26,15	-26,04	-26,03	-26,09	-26,18	-26,27	-26,32	-26,32	-26,34
1931	-26,34	-26,34	-26,34	-26,32	-26,18	-26,08	-26,14	-26,26	-26,37	-26,44	-26,43	-26,46
1932	-26,46	-26,47	-26,46	-26,4	-26,2	-26,1	-26,14	-26,23	-26,33	-26,38	-26,4	-26,43
1933	-26,42	-26,42	-26,42	-26,36	-26,25	-26,21	-26,27	-26,38	-26,48	-26,54	-26,58	-26,62
1934	-26,63	-26,64	-26,65	-26,65	-26,52	-26,45	-26,51	-26,62	-26,72	-26,79	-26,82	-26,84
1935	-26,85	-26,86	-26,86	-26,84	-26,74	-26,72	-26,79	-26,88	-26,98	-27,04	-27,03	-27,05
1936	-27,07	-27,08	-27,08	-27,07	-26,94	-26,88	-26,96	-27,07	-27,14	-27,19	-27,23	-27,27
1937	-27,27	-27,27	-27,28	-27,23	-27,13	-27,14	-27,21	-27,32	-27,44	-27,52	-27,55	-27,6
1938	-27,61	-27,61	-27,61	-27,58	-27,45	-27,42	-27,5	-27,62	-27,72	-27,82	-27,86	-27,85
1939	-27,86	-27,88	-27,88	-27,85	-27,7	-27,67	-27,75	-27,85	-27,96	-28,02	-28,01	-28,04
1940	-28,04	-28,04	-28,04	-27,99	-27,85	-27,82	-27,86	-27,98	-28,1	-28,15	-28,2	-28,22
1941	-28,23	-28,24	-28,24	-28,21	-28,07	-27,95	-27,95	-28,03	-28,11	-28,17	-28,18	-28,2
1942	-28,18	-28,17	-28,16	-28,14	-27,94	-27,8	-27,83	-27,92	-28,02	-28,08	-28,05	-28,07
1943	-28,06	-28,05	-28,02	-27,99	-27,83	-27,78	-27,83	-27,91	-27,99	-28,03	-28,07	-28,09
1944	-28,08	-28,09	-28,09	-28,07	-27,94	-27,83	-27,88	-27,96	-28,03	-28,08	-28,1	-28,12
1945	-28,1	-28,08	-28,03	-28,01	-27,91	-27,84	-27,88	-27,97	-28,06	-28,12	-28,12	-28,15
1946	-28,14	-28,15	-28,13	-28,07	-27,88	-27,73	-27,78	-27,87	-27,96	-27,97	-27,98	-27,99
1947	-27,97	-27,97	-27,96	-27,83	-27,63	-27,52	-27,56	-27,66	-27,74	-27,8	-27,83	-27,85
1948	-27,85	-27,84	-27,82	-27,77	-27,59	-27,49	-27,58	-27,68	-27,74	-27,78	-27,79	-27,82
1949	-27,81	-27,8	-27,78	-27,74	-27,62	-27,55	-27,63	-27,74	-27,84	-27,91	-27,93	-27,93
1950	-27,92	-27,91	-27,91	-27,88	-27,71	-27,72	-27,79	-27,86	-27,93	-27,94	-27,95	-27,97

Continue of the Appendix 1: The Caspian Sea Level on a Month End, (m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	-27,95	-27,94	-27,93	-27,85	-27,72	-27,72	-27,79	-27,9	-27,98	-27,99	-28,01	-28,01
1952	-28,02	-28,01	-28	-27,97	-27,85	-27,77	-27,81	-27,91	-28,01	-28,07	-28,07	-28,08
1953	-28,07	-28,07	-28,05	-28,01	-27,83	-27,79	-27,87	-27,98	-28,08	-28,1	-28,11	-28,1
1954	-28,09	-28,06	-28,02	-27,97	-27,86	-27,86	-27,94	-28,06	-28,17	-28,24	-28,22	-28,25
1955	-28,25	-28,25	-28,23	-28,17	-27,99	-27,86	-27,89	-27,97	-28,07	-28,15	-28,17	-28,2
1956	-28,21	-28,2	-28,18	-28,15	-28,03	-27,99	-28,06	-28,15	-28,24	-28,27	-28,28	-28,28
1957	-28,25	-28,23	-28,19	-28,14	-27,97	-27,93	-27,99	-28,08	-28,18	-28,24	-28,26	-28,25
1958	-28,22	-28,2	-28,15	-28,1	-27,98	-27,9	-27,93	-28	-28,07	-28,12	-28,14	-28,12
1959	-28,11	-28,08	-28,03	-27,98	-27,89	-27,88	-27,96	-28,06	-28,15	-28,19	-28,17	-28,16
1960	-28,13	-28,1	-28,07	-28,03	-27,93	-27,95	-28,03	-28,12	-28,21	-28,27	-28,3	-28,3
1961	-28,3	-28,3	-28,29	-28,23	-28,14	-28,15	-28,23	-28,33	-28,41	-28,44	-28,44	-28,45
1962	-28,45	-28,42	-28,4	-28,37	-28,27	-28,31	-28,38	-28,47	-28,55	-28,59	-28,59	-28,58
1963	-28,55	-28,52	-28,48	-28,43	-28,25	-28,23	-28,27	-28,33	-28,41	-28,46	-28,47	-28,46
1964	-28,43	-28,39	-28,35	-28,32	-28,21	-28,18	-28,26	-28,33	-28,41	-28,46	-28,47	-28,47
1965	-28,45	-28,43	-28,42	-28,39	-28,26	-28,23	-28,29	-28,39	-28,46	-28,48	-28,5	-28,5
1966	-28,48	-28,45	-28,38	-28,25	-28,08	-28,06	-28,14	-28,24	-28,33	-28,39	-28,43	-28,4
1967	-28,38	-28,35	-28,31	-28,27	-28,19	-28,22	-28,28	-28,35	-28,41	-28,47	-28,47	-28,49
1968	-28,48	-28,48	-28,47	-28,44	-28,35	-28,38	-28,46	-28,54	-28,6	-28,61	-28,59	-28,55
1969	-28,51	-28,45	-28,41	-28,38	-28,28	-28,33	-28,4	-28,48	-28,51	-28,51	-28,5	-28,46
1970	-28,44	-28,42	-28,39	-28,3	-28,17	-28,16	-28,22	-28,3	-28,39	-28,44	-28,47	-28,45
1971	-28,44	-28,42	-28,39	-28,36	-28,24	-28,25	-28,31	-28,41	-28,49	-28,53	-28,56	-28,52
1972	-28,48	-28,45	-28,41	-28,39	-28,25	-28,27	-28,35	-28,45	-28,53	-28,6	-28,64	-28,62
1973	-28,59	-28,57	-28,53	-28,47	-28,38	-28,42	-28,5	-28,59	-28,66	-28,7	-28,7	-28,67
1974	-28,64	-28,61	-28,57	-28,51	-28,36	-28,3	-28,34	-28,41	-28,47	-28,54	-28,57	-28,58
1975	-28,56	-28,52	-28,48	-28,47	-28,43	-28,48	-28,58	-28,69	-28,78	-28,8	-28,76	-28,74

Continue of the Appendix 1: The Caspian Sea Level on a Month End, (m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	-28,73	-28,7	-28,69	-28,68	-28,61	-28,62	-28,68	-28,77	-28,87	-28,9	-28,91	-28,89
1977	-28,84	-28,83	-28,8	-28,78	-28,72	-28,76	-28,85	-28,94	-29,03	-29,07	-29,08	-29,06
1978	-29,01	-28,97	-28,94	-28,9	-28,77	-28,77	-28,82	-28,89	-28,96	-29	-28,96	-28,91
1979	-28,87	-28,81	-28,73	-28,67	-28,5	-28,44	-28,49	-28,57	-28,65	-28,66	-28,67	-28,65
1980	-28,61	-28,58	-28,54	-28,51	-28,42	-28,42	-28,49	-28,57	-28,62	-28,65	-28,64	-28,62
1981	-28,59	-28,56	-28,5	-28,47	-28,23	-28,19	-28,25	-28,33	-28,41	-28,47	-28,46	-28,45
1982	-28,43	-28,39	-28,36	-28,33	-28,22	-28,26	-28,32	-28,41	-28,48	-28,5	-28,48	-28,46
1983	-28,44	-28,43	-28,41	-28,33	-28,28	-28,31	-28,37	-28,46	-28,52	-28,56	-28,58	-28,56
1984	-28,53	-28,47	-28,41	-28,37	-28,28	-28,32	-28,39	-28,48	-28,56	-28,59	-28,57	-28,52
1985	-28,48	-28,42	-28,37	-28,33	-28,19	-28,17	-28,21	-28,28	-28,37	-28,41	-28,41	-28,39
1986	-28,38	-28,35	-28,32	-28,25	-28,12	-28,13	-28,18	-28,26	-28,34	-28,39	-28,38	-28,37
1987	-28,35	-28,33	-28,26	-28,22	-28,11	-28,08	-28,13	-28,2	-28,28	-28,23	-28,23	-28,2
1988	-28,18	-28,15	-28,11	-28,06	-27,95	-27,94	-27,99	-28,07	-28,15	-28,19	-28,19	-28,17
1989	-28,15	-28,14	-28,13	-28,1	-28	-28,02	-28,09	-28,18	-28,26	-28,31	-28,32	-28,3
1990	-28,26	-28,24	-28,22	-28,1	-27,97	-27,93	-27,98	-28,05	-28,11	-28,09	-28,06	-28,03
1991	-28	-27,97	-27,92	-27,78	-27,57	-27,56	-27,62	-27,71	-27,79	-27,86	-27,89	-27,86
1992	-27,84	-27,8	-27,75	-27,65	-27,54	-27,53	-27,58	-27,67	-27,72	-27,76	-27,75	-27,72
1993	-27,69	-27,65	-27,59	-27,53	-27,4	-27,39	-27,44	-27,51	-27,59	-27,62	-27,55	-27,54
1994	-27,52	-27,49	-27,44	-27,37	-27,23	-27,2	-27,2	-27,25	-27,33	-27,36	-27,33	-27,29
1995	-27,27	-27,26	-27,23	-27,16	-27,07	-27,11	-27,19	-27,28	-27,34	-27,34	-27,35	-27,33
1996	-27,3	-27,28	-27,26	-27,23	-27,18	-27,22	-27,31	-27,4	-27,44	-27,44	-27,45	-27,43
1997	-27,4	-27,36	-27,35	-27,34	-27,25	-27,25	-27,32	-27,41	-27,4	-27,44	-27,45	-27,42
1998	-27,42	-27,42	-27,38	-27,34	-27,26	-27,17	-27,21	-27,29	-27,38	-27,4	-27,46	-27,46

Appendix 2: Mean Month Level of the Caspian Sea, (m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	-26,66	-26,64	-26,64	-26,6	-26,51	-26,42	-26,38	-26,35	-26,54	-26,64	-26,7	-26,68
1926	-26,67	-26,71	-26,68	-26,68	-26,6	-26,39	-26,22	-26,21	-26,32	-26,39	-26,42	-26,39
1927	-26,43	-26,43	-26,44	-26,42	-26,32	-26,12	-26, 3	-26, 6	-26,18	-26,25	-26,31	-26,32
1928	-26,32	-26,32	-26,3	-26,27	-26,2	-26, 5	-25,93	-25,94	-25,95	-26, 2	-25,99	-26
1929	-26, 3	-26, 7	-26, 9	-26, 8	-25,97	-25,89	-25,7	-25,71	-25,82	-25,9	-25,98	-26, 2
1930	-26, 9	-26,12	-26,11	-26, 6	-25,99	-25,92	-25,89	-25,96	-26, 7	-26,16	-26,2	-26,21
1931	-26,25	-26,24	-26,3	-26,26	-26,18	-26, 5	-25,96	-26, 8	-26,16	-26,27	-26,26	-26,32
1932	-26,32	-26,32	-26,3	-26,23	-26,12	-25,9	-25,87	-25,87	-25,97	-26, 6	-26,16	-26,22
1933	-26,22	-26,21	-26,2	-26,15	-26, 6	-25,91	-25,94	-26	-26, 8	-26,2	-26,25	-26,32
1934	-26,34	-26,37	-26,37	-26,35	-26,29	-26,22	-26, 8	-26,2	-26,33	-26,44	-26,48	-26,51
1935	-26,58	-26,6	-26,6	-26,56	-26,5	-26,42	-26,39	-26,43	-26,55	-26,63	-26,64	-26,69
1936	-26,78	-26,8	-26,82	-26,81	-26,74	-26,64	-26,59	-26,67	-26,79	-26,87	-26,9	-26,91
1937	-26,99	-27, 2	-27, 2	-26,99	-26,92	-26,86	-26,82	-26,86	-26,99	-27, 9	-27,16	-27,24
1938	-27,29	-27,32	-27,35	-27,32	-27,22	-27,15	-27,12	-27,21	-27,32	-27,44	-27,52	-27,53
1939	-27,61	-27,64	-27,64	-27,65	-27,56	-27,47	-27,43	-27,46	-27,63	-27,74	-27,76	-27,79
1940	-27,84	-27,86	-27,87	-27,84	-27,76	-27,63	-27,59	-27,65	-27,79	-27,83	-27,89	-27,91
1941	-27,95	-27,97	-27,96	-27,95	-27,9	-27,78	-27,64	-27,7	-27,77	-27,84	-27,87	-27,91
1942	-27,94	-27,94	-27,97	-27,9	-27,81	-27,68	-27,52	-27,55	-27,67	-27,74	-27,75	-27,79
1943	-27,84	-27,88	-27,85	-27,84	-27,74	-27,63	-27,54	-27,6	-27,69	-27,75	-27,79	-27,85
1944	-27,87	-27,87	-27,86	-27,85	-27,79	-27,69	-27,6	-27,62	-27,69	-27,79	-27,83	-27,93
1945	-27,99	-28, 2	-28, 2	-28, 2	-28	-27,88	-27,81	-27,84	-27,91	-27,99	-28, 1	-28, 4
1946	-28, 8	-28, 5	-28, 1	-28, 3	-27,92	-27,76	-27,71	-27,71	-27,82	-27,89	-27,94	-27,95
1947	-28	-27,99	-27,96	-27,93	-27,82	-27,63	-27,52	-27,57	-27,68	-27,75	-27,76	-27,77
1948	-27,84	-27,84	-27,85	-27,85	-27,75	-27,6	-27,55	-27,61	-27,66	-27,79	-27,83	-27,9
1949	-27,92	-27,93	-27,89	-27,86	-27,8	-27,67	-27,59	-27,68	-27,76	-27,95	-27,97	-27,98

1950	-28, 6	-28, 6	-28, 4	-28	-27,93	-27,9	-27,91	-27,95	-28, 3	-28, 5	-28,1	-28,15
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Continue of the Appendix 2: Mean Month Level of the Caspian Sea, (m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	-28,23	-28,25	-28,23	-28,18	-28,11	-27,99	-28	-28, 8	-28,2	-28,24	-28,22	-28,26
1952	-28,27	-28,27	-28,25	-28,21	-28,12	-28, 4	-27,96	-28, 1	-28,11	-28,17	-28,22	-28,31
1953	-28,34	-28,37	-28,39	-28,3	-28,24	-28,1	-28, 6	-28,1	-28,26	-28,35	-28,36	-28,34
1954	-28,35	-28,37	-28,36	-28,28	-28,17	-28, 8	-28,11	-28,19	-28,29	-28,38	-28,36	-28,41
1955	-28,47	-28,52	-28,49	-28,44	-28,41	-28,26	-28,15	-28,16	-28,25	-28,33	-28,4	-28,44
1956	-28,45	-28,45	-28,5	-28,45	-28,38	-28,28	-28,27	-28,31	-28,4	-28,47	-28,48	-28,5
1957	-28,5	-28,48	-28,48	-28,4	-28,31	-28,2	-28,15	-28,18	-28,23	-28,33	-28,36	-28,37
1958	-28,34	-28,38	-28,3	-28,27	-28,17	-28, 8	-28	-28, 1	-28,13	-28,19	-28,28	-28,29
1959	-28,27	-28,25	-28,25	-28,17	-28, 6	-28, 1	-28	-28, 9	-28,16	-28,26	-28,24	-28,29
1960	-28,31	-28,29	-28,25	-28,2	-28,16	-28, 9	-28, 6	-28,13	-28,23	-28,32	-28,34	-28,4
1961	-28,46	-28,49	-28,5	-28,44	-28,34	-28,23	-28,25	-28,25	-28,41	-28,47	-28,55	-28,54
1962	-28,57	-28,59	-28,56	-28,47	-28,43	-28,37	-28,35	-28,48	-28,53	-28,52	-28,6	-28,66
1963	-28,67	-28,65	-28,61	-28,5	-28,39	-28,31	-28,25	-28,28	-28,33	-28,41	-28,46	-28,47
1964	-28,51	-28,45	-28,43	-28,36	-28,26	-28,19	-28,23	-28,28	-28,34	-28,44	-28,48	-28,48
1965	-28,53	-28,52	-28,5	-28,47	-28,38	-28,31	-28,3	-28,31	-28,43	-28,51	-28,49	-28,49
1966	-28,47	-28,47	-28,44	-28,33	-28,21	-28, 8	-28, 5	-28,11	-28,25	-28,26	-28,3	-28,29
1967	-28,38	-28,42	-28,39	-28,3	-28,25	-28,2	-28,22	-28,24	-28,33	-28,44	-28,46	-28,49
1968	-28,5	-28,54	-28,54	-28,47	-28,38	-28,32	-28,29	-28,36	-28,45	-28,54	-28,55	-28,58
1969	-28,56	-28,58	-28,57	-28,54	-28,46	-28,3	-28,33	-28,37	-28,44	-28,54	-28,52	-28,48
1970	-28,48	-28,48	-28,43	-28,4	-28,3	-28,2	-28,19	-28,21	-28,3	-28,39	-28,47	-28,44
1971	-28,48	-28,49	-28,47	-28,41	-28,32	-28,26	-28,25	-28,34	-28,44	-28,52	-28,56	-28,54
1972	-28,6	-28,58	-28,56	-28,5	-28,4	-28,33	-28,32	-28,4	-28,52	-28,59	-28,67	-28,68
1973	-28,71	-28,68	-28,64	-28,54	-28,48	-28,4	-28,42	-28,46	-28,62	-28,69	-28,73	-28,45
1974	-28,75	-28,74	-28,72	-28,66	-28,59	-28,49	-28,44	-28,44	-28,48	-28,56	-28,61	-28,63

1975	-28,68	-28,67	-28,64	-28,57	-28,5	-28,51	-28,55	-28,65	-28,77	-28,85	-28,95	-28,95
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Continue of the Appendix 2: Mean Month Level of the Caspian Sea, (m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	-28,96	-28,98	-28,94	-28,91	-28,86	-28,81	-28,8	-28,82	-28,91	-29, 2	-29, 6	-29, 6
1977	-29, 8	-29, 5	-29, 2	-28,97	-28,91	-28,87	-28,87	-28,94	-29, 4	-29,12	-29,12	-29,12
1978	-29,1	-29,11	-29, 6	-29, 1	-28,93	-28,83	-28,79	-28,79	-28,86	-28,97	-28,9	-28,93
1979	-28,86	-28,87	-28,77	-28,66	-28,56	-28,46	-28,38	-28,41	-28,53	-28,57	-28,57	-28,59
1980	-28,59	-28,6	-28,55	-28,49	-28,43	-28,35	-28,32	-28,41	-28,48	-28,51	-28,61	-28,48
1981	-28,55	-28,54	-28,52	-28,43	-28,31	-28,2	-28,13	-28,16	-28,21	-28,28	-28,3	-28,3
1982	-28,37	-28,35	-28,32	-28,25	-28,15	-28,12	-28,12	-28,17	-28,25	-28,31	-28,31	-28,31
1983	-28,17	-28,14	-28,13	-28, 9	-28, 1	-27,94	-27,94	-28, 1	-28, 7	-28,14	-28,19	-28,17
1984	-28,15	-28,12	-28,1	-28, 1	-27,95	-27,9	-27,92	-27,98	-28, 3	-28,13	-28,12	-28,1
1985	-28,14	-28,14	-28, 8	-27,98	-27,88	-27,8	-27,76	-27,82	-27,89	-27,97	-27,98	-27,97
1986	-27,98	-27,97	-27,97	-27,89	-27,82	-27,74	-27,72	-27,77	-27,84	-27,92	-27,94	-27,92
1987	-27,92	-27,9	-27,85	-27,79	-27,72	-27,62	-27,61	-27,67	-27,78	-27,75	-27,78	-27,78
1988	-27,86	-27,7	-27,66	-27,61	-27,54	-27,42	-27,4	-27,45	-27,5	-27,54	-27,58	-27,61
1989	-27,65	-27,63	-27,52	-27,51	-27,53	-27,43	-27,45	-27,48	-27,58	-27,65	-27,7	-27,78
1990	-27,78	-27,71	-27,71	-27,64	-27,55	-27,41	-27,34	-27,37	-27,4	-27,49	-27,45	-27,41
1991	-27,42	-27,39	-27,33	-27,31	-27,13	-27, 3	-27, 2	-26,92	-27, 4	-27,1	-27,12	-27,1
1992	-27,16	-27,14	-27, 9	-27, 5	-26,96	-26,81	-26,83	-26,87	-26,94	-27, 1	-27, 3	-26,99
1993	-27, 8	-27, 5	-27, 2	-26,98	-26,91	-26,87	-26,82	-26,81	-26,9	-27, 1	-26,97	-26,98
1994	-26,96	-26,9	-26,9	-26,82	-26,74	-26,65	-26,61	-26,58	-26,69	-26,74	-26,73	-26,7
1995	-26,69	-26,7	-26,68	-26,65	-26,57	-26,49	-26,44	-26,46	-26,59	-26,68	-26,72	-26,72
1996	-26,72	-26,74	-26,72	-26,71	-26,69	-26,69	-26,71	-26,75	-26,86	-26,93	-26,96	-26,98
1997	-27, 1	-27, 4	-27, 3	-26,96	-26,99	-26,89	-26,82	-26,87	-26,98	-27, 2	-27,1	-27,1
1998	-27, 6	-27, 2	-27, 5	-27, 3	-26,97	-26,94	-26,93	-26,99	-26,98	-27	-27, 4	-27, 6

Appendix 3: Summary Month Runoff to the Caspian Sea (cub, km)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	7	8	15	30	70	57	26	13	11	19	24	14
1926	16	16	18	24	96	108	37	21	22	24	30	29
1927	17	12	16	29	105	79	29	18	13	17	21	17
1928	17	19	21	27	84	88	37	25	22	22	24	13
1929	14	14	15	25	75	105	37	18	13	14	16	6
1930	8	8	12	29	62	40	24	19	15	18	21	10
1931	12	9	11	22	76	69	22	14	13	14	19	7
1932	11	10	13	37	102	75	22	14	12	13	15	10
1933	10	9	10	28	65	43	22	13	14	19	14	7
1934	10	8	10	14	74	55	20	13	11	10	15	6
1935	8	8	9	24	60	38	17	17	15	20	23	10
1936	9	9	11	15	70	54	15	11	19	11	13	8
1937	9	9	10	32	56	30	19	15	12	12	9	5
1938	8	7	9	25	70	44	16	11	8	8	9	5
1939	7	6	8	23	68	47	20	13	9	10	12	6
1940	8	8	9	33	76	42	28	13	9	9	9	8
1941	8	9	11	24	73	81	46	17	12	13	12	11
1942	10	9	13	17	89	85	34	22	14	16	20	10
1943	12	11	12	29	79	53	22	18	17	18	15	7
1944	11	11	17	22	71	76	28	21	17	15	12	7
1945	11	9	11	19	58	53	30	17	13	14	18	6
1946	13	11	14	35	85	87	26	17	14	20	18	9
1947	13	11	15	59	102	78	28	18	16	14	16	11
1948	12	14	21	35	95	75	20	17	16	16	19	9
1949	12	12	14	25	69	61	19	14	13	12	14	8

1950	11	11	13	27	85	33	20	22	21	26	19	12
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Continue of the Appendix 3: Summary Month Runoff to the Caspian Sea (cub, km)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	11	13	16	46	76	36	20	14	12	15	12	11
1952	12	10	13	19	60	61	30	18	16	21	24	11
1953	14	15	16	30	87	49	19	13	14	27	25	9
1954	13	14	17	25	60	37	18	14	11	16	23	11
1955	14	13	16	32	86	85	30	19	11	14	12	7
1956	11	10	12	21	60	49	16	15	14	20	18	10
1957	16	18	21	39	90	56	24	18	16	18	16	19
1958	22	25	30	35	64	66	27	21	19	16	16	20
1959	14	19	24	34	57	32	17	18	15	16	16	16
1960	20	19	21	28	59	25	15	14	14	14	13	12
1961	15	13	18	39	60	34	16	14	13	14	16	17
1962	15	16	22	33	62	16	18	21	20	20	20	19
1963	22	21	25	30	77	37	24	19	18	18	17	20
1964	21	22	21	22	60	44	20	19	17	18	17	18
1965	17	16	15	20	60	38	20	14	16	16	18	18
1966	20	22	29	54	85	37	18	16	13	14	14	14
1967	19	16	21	20	49	15	16	18	15	15	13	14
1968	15	13	19	27	70	26	18	17	15	16	16	18
1969	19	17	18	21	62	23	22	19	17	17	16	18
1970	19	18	25	46	71	38	21	20	14	15	14	14
1971	14	18	19	21	66	30	19	16	15	15	15	21
1972	21	22	22	22	64	29	18	16	13	12	12	13
1973	14	12	18	24	52	16	14	12	11	12	12	16
1974	20	17	21	32	64	53	29	20	14	14	14	15

1975	17	18	19	20	37	17	15	12	11	12	16	13
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Continue of the Appendix 3: Summary Month Runoff to the Caspian Sea (cub, m)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	15	15	12	14	38	28	17	16	15	18	17	20
1977	21	12	14	20	45	17	15	14	14	15	15	22
1978	22	20	23	21	61	26	24	24	20	26	28	25
1979	25	23	29	27	83	53	22	23	21	18	20	20
1980	23	21	23	19	49	30	18	19	20	19	23	22
1981	22	20	26	23	100	46	19	18	17	16	22	21
1982	21	19	20	20	54	20	20	18	17	20	21	22
1983	19	15	22	39	43	21	22	18	18	19	18	21
1984	23	24	24	20	50	19	17	18	16	17	21	25
1985	25	24	24	24	72	42	27	21	17	20	19	21
1986	20	23	24	41	67	31	24	22	21	22	20	20
1987	22	19	24	24	62	46	24	20	20	24	23	22
1988	18	18	18	31	63	31	24	19	16	17	21	21
1989	16	14	17	30	58	25	19	19	16	16	20	21
1990	20	15	18	60	70	50	27	20	20	33	33	27
1991	22	22	27	61	86	35	23	19	17	18	20	22
1992	18	19	25	41	61	31	21	18	16	16	16	17
1993	18	19	27	36	72	34	27	23	22	27	26	19
1994	21	21	25	46	77	41	40	30	25	21	22	24
1995	20	19	25	52	74	30	23	21	19	15	14	15
1996	16	17	16	24	56	27	18	16	15	14	16	17
1997	16	13	16	24	67	43	23	19	16	15	18	19
1998	17	17	22	24	52	60	24	20	22	20	20	22

Appendix 4: Precipitation on the Caspian Sea Surface, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	13	2	6	20	8	9	24	6	18	20	23	14
1926	23	27	14	18	30	13	16	9	14	14	11	14
1927	23	13	14	15	7	3	1	10	30	26	72	26
1928	16	21	18	9	7	10	9	32	18	28	20	38
1929	20	25	16	16	0	8	0	0	39	4	38	50
1930	20	24	8	10	4	8	0	4	29	24	37	32
1931	20	15	7	15	7	21	5	3	0	26	50	19
1932	18	8	23	15	16	13	30	10	16	46	38	18
1933	34	16	18	35	13	26	8	0	0	19	21	18
1934	8	7	11	22	3	22	7	6	11	16	18	26
1935	13	8	24	3	21	17	5	4	14	20	56	19
1936	2	10	11	18	12	13	4	7	29	35	19	15
1937	30	12	6	17	22	8	0	1	4	32	45	11
1938	19	22	18	16	21	12	0	4	21	12	29	72
1939	14	7	16	15	12	5	3	9	7	29	60	17
1940	25	17	11	8	12	6	8	0	14	59	14	31
1941	24	10	12	18	14	12	5	23	31	25	35	10
1942	31	24	14	20	19	12	12	1	6	13	64	22
1943	30	24	33	2	18	8	9	16	16	28	18	33
1944	31	2	7	20	18	4	6	6	15	29	38	28
1945	38	31	66	12	11	16	0	8	15	22	38	15
1946	19	4	29	18	29	28	14	2	14	65	25	31
1947	30	8	10	30	9	2	10	4	15	20	20	27
1948	20	21	17	5	0	12	0	6	44	29	31	11

1949	19	15	27	21	7	4	0	9	8	10	18	38
1950	28	16	9	8	14	4	2	6	7	41	33	13

Continue of the Appendix 4: Precipitation on the Caspian Sea Surface, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	31	18	5	2	5	6	1	0	31	74	30	35
1952	11	26	23	30	26	9	1	6	9	12	33	17
1953	16	3	22	14	14	5	2	0	6	26	6	37
1954	15	29	36	23	7	0	2	0	3	12	55	10
1955	8	9	25	28	13	7	12	14	16	0	45	20
1956	14	26	30	18	21	3	9	0	14	19	25	31
1957	31	10	25	0	0	1	11	5	6	32	25	22
1958	15	2	22	16	14	8	25	13	22	19	20	28
1959	15	26	23	7	8	24	0	0	16	30	48	24
1960	15	22	18	12	12	5	8	10	16	13	29	24
1961	13	4	11	9	5	7	8	11	29	44	34	11
1962	9	26	9	3	5	13	4	6	10	18	28	9
1963	19	14	18	20	47	19	13	35	8	20	39	22
1964	19	15	24	12	9	6	4	10	6	13	29	10
1965	30	15	16	23	29	12	8	2	21	50	8	12
1966	19	15	39	44	20	18	0	4	26	14	13	54
1967	21	35	26	46	9	19	4	9	34	13	49	14
1968	16	6	11	25	6	12	8	6	14	26	41	40
1969	30	47	30	33	22	11	9	2	35	31	21	37
1970	19	9	8	20	10	3	5	10	6	22	15	49
1971	17	16	17	19	7	4	3	5	16	48	24	54
1972	38	8	16	4	36	3	2	4	21	14	20	51
1973	39	24	34	49	23	9	0	7	33	26	49	38

1974	24	20	22	20	35	12	7	7	30	12	37	29
1975	31	36	33	0	10	11	0	3	13	71	76	35

Continue of the Appendix 4: Precipitation on the Caspian Sea Surface, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	13	30	11	16	38	8	15	1	9	34	14	21
1977	33	13	29	16	6	11	0	11	7	29	24	19
1978	32	20	6	38	32	19	1	4	2	10	44	38
1979	21	32	43	35	12	8	0	0	6	66	23	31
1980	25	12	20	22	23	6	0	13	30	26	30	29
1981	19	24	30	14	38	7	7	13	14	14	45	21
1982	18	25	18	17	26	2	5	4	13	42	38	12
1983	16	10	4	22	10	11	2	4	19	13	16	19
1984	15	33	26	26	26	2	1	8	2	40	48	38
1985	16	28	26	15	8	2	5	3	8	24	22	27
1986	5	14	9	1	12	1	2	2	7	17	34	16
1987	5	12	43	19	4	1	2	11	4	84	16	21
1988	13	18	25	16	12	19	16	20	12	23	31	26
1989	23	10	8	4	14	8	5	6	20	19	20	29
1990	33	18	12	18	21	8	7	10	19	51	33	38
1991	23	15	21	29	51	0	4	1	9	3	15	29
1992	23	33	21	42	15	19	26	6	45	38	46	50
1993	34	34	35	15	14	16	3	13	17	20	93	17
1994	12	29	31	9	15	11	5	1	1	36	78	55
1995	25	16	32	14	4	8	2	7	22	60	29	34
1996	36	21	28	31	5	9	4	9	43	54	22	21
1997	43	51	21	11	7	8	10	3	74	17	16	33
1998	17	17	23	11	9	9	4	4	23	1	9	13

Appendix 5: Evaporation from the Caspian Sea Surface, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	43	35	40	53	66	98	120	141	147	122	91	67
1926	53	44	41	48	62	95	121	136	141	107	84	67
1927	53	39	38	47	65	90	125	143	146	126	107	78
1928	52	38	37	39	59	87	117	132	118	114	83	72
1929	47	40	35	40	55	91	110	133	144	126	90	74
1930	44	38	38	46	44	92	114	138	150	114	83	71
1931	46	38	37	44	58	86	117	150	136	124	89	64
1932	39	38	38	42	64	95	123	134	143	122	93	67
1933	42	38	40	44	61	93	116	139	137	123	90	71
1934	43	38	42	53	61	89	114	142	140	114	85	65
1935	44	38	42	47	70	91	117	132	153	129	102	67
1936	47	43	43	48	63	88	123	146	150	115	90	71
1937	49	39	42	48	65	94	117	147	156	140	99	70
1938	50	45	45	48	69	96	119	148	145	129	96	76
1939	46	41	41	47	44	101	140	143	138	114	79	65
1940	51	40	39	46	73	91	125	152	160	130	89	69
1941	52	40	43	52	72	104	130	150	139	122	80	63
1942	42	38	38	41	57	92	130	145	140	116	91	68
1943	48	39	38	43	66	98	120	144	144	112	93	68
1944	50	43	47	58	71	98	125	144	131	120	87	70
1945	45	38	40	44	64	86	115	138	140	117	88	64
1946	42	40	42	51	68	101	128	136	141	132	84	62
1947	41	40	39	52	72	90	124	148	136	116	86	72

1948	53	49	47	48	64	101	140	148	141	114	86	66
1949	42	37	38	44	61	90	130	152	144	109	76	62
1950	48	36	37	46	69	103	118	130	130	115	90	61

Continue of the Appendix 5: Evaporation from the Caspian Sea, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	43	40	37	46	75	102	125	148	142	120	77	59
1952	47	42	44	45	63	92	122	149	155	125	100	58
1953	43	43	46	48	68	97	133	141	147	116	82	49
1954	39	37	36	39	56	96	124	160	146	123	98	69
1955	44	44	49	50	64	97	123	142	143	118	96	64
1956	48	42	39	42	63	90	119	134	138	101	86	59
1957	44	36	42	49	67	104	130	142	148	136	89	60
1958	48	44	47	54	64	99	122	141	138	112	84	56
1959	44	43	39	43	68	93	120	142	140	110	75	52
1960	39	42	43	43	65	92	129	140	146	113	94	52
1961	51	43	44	51	72	106	130	143	140	108	77	67
1962	52	43	46	57	74	100	124	153	140	114	80	60
1963	45	41	44	47	70	93	114	141	138	119	90	64
1964	43	37	40	44	59	88	132	133	134	112	83	63
1965	45	39	41	47	59	86	120	139	135	114	78	61
1966	52	48	48	56	75	91	127	149	154	112	87	66
1967	52	43	40	56	61	89	104	123	132	113	87	69
1968	42	42	50	68	106	115	132	136	117	81	67	47
1969	37	35	43	56	85	120	141	130	111	78	58	50
1970	50	41	43	49	71	98	116	146	132	108	83	63
1971	47	42	41	48	62	95	115	143	140	127	91	69
1972	54	36	35	41	67	95	126	148	141	116	92	65

1973	46	37	41	49	70	93	120	131	135	99	81	56
1974	45	41	40	43	58	94	120	134	131	117	104	77
1975	57	43	41	49	75	104	144	147	138	123	83	51

Continue of the Appendix 5: Evaporation from the Caspian Sea, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	44	42	38	42	69	95	119	135	149	117	71	53
1977	44	35	40	52	73	101	132	139	141	114	73	61
1978	47	41	41	52	71	89	113	139	132	127	87	55
1979	48	40	41	51	68	93	113	144	142	121	90	61
1980	50	39	40	44	67	92	122	149	138	110	83	66
1981	55	48	46	49	65	90	122	146	142	123	92	67
1982	54	42	39	44	67	94	117	140	126	115	79	56
1983	45	42	46	48	74	100	121	147	134	110	86	62
1984	47	44	37	46	69	92	115	147	129	115	89	62
1985	40	37	38	40	63	93	123	130	144	119	79	61
1986	46	45	40	44	67	92	122	144	147	132	84	58
1987	43	42	42	45	58	92	122	138	138	104	74	56
1988	44	41	38	48	69	89	133	147	136	112	86	60
1989	50	40	44	54	71	94	124	150	148	117	90	63
1990	50	41	45	61	82	102	128	139	131	122	89	76
1991	50	42	39	47	67	87	120	144	139	118	97	63
1992	48	41	42	47	64	92	127	135	129	111	78	63
1993	48	42	40	47	66	90	120	134	143	114	80	54
1994	44	46	42	48	66	81	100	119	138	115	95	65
1995	46	48	54	72	96	118	131	143	119	88	73	49
1996	41	41	46	60	92	110	132	133	118	87	69	48
1997	48	43	50	65	89	115	132	141	107	91	68	50

1998	60	57	36	33	59	73	106	134	170	73	119	70
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Appendix 6: Effective Evaporation from the Caspian Sea Surface, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	30	33	34	33	58	89	96	135	129	102	68	53
1926	30	17	27	30	32	82	105	127	127	93	73	53
1927	30	26	24	32	58	87	124	133	116	100	35	52
1928	36	17	19	30	52	77	108	100	100	86	63	34
1929	27	15	19	24	55	83	110	133	105	122	52	24
1930	24	14	30	36	40	84	114	134	121	90	46	39
1931	26	23	30	29	51	65	112	147	136	98	39	45
1932	21	30	15	27	48	82	93	124	127	76	55	49
1933	8	22	22	9	48	67	108	139	137	104	69	53
1934	35	31	31	31	58	67	107	136	129	98	67	39
1935	31	30	18	44	49	74	112	128	139	109	46	48
1936	45	33	32	30	51	75	119	139	121	80	71	56
1937	19	27	36	31	43	86	117	146	152	108	54	59
1938	31	23	27	32	48	84	119	144	124	117	67	4
1939	32	34	25	32	32	96	137	134	131	85	19	48
1940	26	23	28	38	61	85	117	152	146	71	75	38
1941	28	30	31	34	58	92	125	127	108	97	45	53
1942	11	14	24	21	38	80	118	144	134	103	27	46
1943	18	15	5	41	48	90	111	128	128	84	75	35
1944	19	41	40	38	53	94	119	138	116	91	49	42
1945	7	7	-26	32	53	70	115	130	125	95	50	49
1946	23	36	13	33	39	73	114	134	127	67	59	31

1947	11	32	29	22	63	88	114	144	121	96	66	45
1948	33	28	30	43	64	89	140	142	97	85	55	55
1949	23	22	11	23	54	86	130	143	136	99	58	24
1950	20	20	28	38	55	99	116	124	123	74	57	48

Continue of the Appendix 6: Effective Evaporation from the Caspian Sea, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	12	22	32	44	70	96	124	148	111	46	47	24
1952	36	16	21	15	37	83	121	143	146	113	67	41
1953	27	40	24	34	54	92	131	141	141	90	76	12
1954	24	8	0	16	49	96	122	160	143	111	43	59
1955	36	35	24	22	51	90	111	128	127	118	51	44
1956	34	16	9	24	42	87	110	134	124	82	61	28
1957	13	26	17	49	67	103	119	137	142	104	64	38
1958	33	42	25	38	50	91	97	128	116	93	64	28
1959	29	17	16	36	60	69	120	142	124	80	27	28
1960	24	20	25	31	53	87	121	130	130	100	65	28
1961	38	39	33	42	67	99	122	132	111	64	43	56
1962	43	17	37	54	69	87	120	147	130	96	52	41
1963	26	27	26	27	23	74	101	106	130	99	51	42
1964	24	22	16	32	50	82	128	123	128	99	54	53
1965	15	24	25	24	30	74	112	137	114	64	70	49
1966	33	33	9	12	55	73	127	145	128	98	74	12
1967	31	8	14	10	52	70	100	114	98	100	38	55
1968	26	36	39	43	100	103	124	130	103	55	26	7
1969	7	-12	13	23	63	109	132	128	76	47	37	13
1970	31	32	35	29	61	95	111	136	126	86	68	14
1971	30	26	24	29	55	91	112	138	124	79	67	15

1972	16	28	19	37	31	92	124	144	120	102	72	14
1973	7	13	7	0	47	84	120	124	102	73	32	18
1974	21	21	18	23	23	82	113	127	101	105	67	48
1975	26	7	8	49	65	93	144	144	125	52	7	16

Continue of the Appendix 6: Effective Evaporation from the Caspian Sea, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	31	12	27	26	31	87	104	134	140	83	57	32
1977	11	22	11	36	67	90	132	128	134	85	49	42
1978	15	21	35	14	39	70	112	135	130	117	43	17
1979	27	8	-2	16	56	85	113	144	136	55	67	30
1980	25	27	20	22	44	86	122	136	108	84	53	37
1981	36	24	16	35	27	83	115	133	128	109	47	46
1982	36	17	21	27	41	92	112	136	113	73	41	44
1983	29	32	42	26	64	89	119	143	115	97	70	43
1984	32	11	11	20	43	90	114	139	127	75	41	24
1985	24	9	12	25	55	91	118	127	136	95	57	34
1986	41	31	31	43	55	91	120	142	140	115	50	42
1987	38	30	-1	26	54	91	120	127	134	20	58	35
1988	31	23	13	32	57	70	117	127	124	89	55	34
1989	27	30	36	50	57	86	119	144	128	98	70	34
1990	17	23	33	43	61	94	121	129	112	71	56	38
1991	27	27	18	18	16	87	116	143	130	115	82	34
1992	25	8	21	5	49	73	101	129	84	73	32	13
1993	14	8	5	32	52	74	117	121	126	94	-13	37
1994	32	17	11	39	51	70	95	118	137	79	17	10
1995	21	32	22	58	92	110	129	136	97	28	44	15
1996	5	20	18	29	87	101	128	124	75	33	47	27

1997	5	-8	29	54	82	107	122	138	33	74	52	17
1998	43	40	13	22	50	64	102	130	147	72	110	57

Appendix 7: Runoff of Sea Water into the Kara-Bogaz-Gol Bay, (cub. km)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	1,33	1,2	1,35	1,41	1,7	1,81	1,84	1,76	1,43	1,5	1,31	1,48
1926	1,5	1,23	1,37	1,38	1,66	1,77	1,8	1,72	1,39	1,46	1,28	1,44
1927	1,35	1,26	1,44	1,4	1,55	1,65	2	1,99	1,89	1,86	1,77	1,84
1928	1,62	1,54	1,72	1,68	1,86	1,98	2,39	2,38	2,27	2,23	2,12	2,21
1929	2,08	1,76	1,73	1,76	1,92	2,19	2,82	2,57	2,39	2,32	2,12	1,94
1930	1,68	1,42	1,53	1,12	1,69	1,94	2,44	2,28	1,82	1,68	1,43	1,51
1931	1,12	0,74	0,96	1,08	1,38	1,66	1,91	1,91	1,65	1,45	1,5	1,56
1932	1,49	1,45	1,56	1,37	1,62	1,87	2,11	1,88	2,13	2,04	1,79	1,76
1933	1,62	1,62	1,7	1,62	1,64	1,7	1,85	1,9	1,47	1,14	0,96	1,2
1934	1,17	1,03	0,97	0,79	0,88	1,25	1,53	1,43	1,17	1,06	0,95	0,9
1935	0,79	0,74	0,87	1	1,12	1,09	1,16	1,15	1	0,88	0,82	0,9
1936	0,88	0,81	0,74	0,77	0,87	0,93	1,1	1,06	0,92	0,8	0,77	0,78
1937	0,7	0,7	0,75	0,78	0,85	0,86	0,94	0,93	0,82	0,77	0,66	0,63
1938	0,6	0,52	0,58	0,71	0,78	0,93	1,04	0,93	0,72	0,65	0,59	0,58
1939	0,55	0,44	0,44	0,46	0,51	0,54	0,58	0,63	0,51	0,42	0,47	0,49
1940	0,51	0,47	0,57	0,56	0,59	0,6	0,65	0,58	0,5	0,53	0,48	0,49
1941	0,51	0,46	0,52	0,49	0,52	0,54	0,61	0,61	0,61	0,62	0,56	0,62
1942	0,72	0,63	0,69	0,69	0,67	0,75	0,9	0,93	0,89	0,86	0,85	0,82
1943	0,85	0,78	0,91	0,89	0,94	0,94	1,06	1,02	0,86	0,89	0,87	0,9
1944	0,92	0,82	0,79	0,81	0,94	0,98	1,04	1,02	0,94	0,88	0,82	0,81
1945	0,86	0,77	0,74	0,76	0,88	0,92	0,97	0,96	0,88	0,82	0,77	0,76

1946	0,85	0,79	0,86	0,9	1,02	1,02	0,98	1,01	0,87	0,79	0,71	0,79
1947	0,76	0,66	0,73	0,77	0,89	0,81	1,43	1,4	1,12	1,15	1,15	1,2
1948	1,26	1,19	1,24	1,21	1,27	1,39	1,43	1,43	1,23	1,2	1,13	1,14
1949	1,12	1,09	1,17	1,17	1,27	1,35	1,52	1,38	1,16	1,04	1,02	1,05
1950	1,08	0,98	1,05	1,13	1,13	1,37	1,17	1,17	1,05	1,07	1,01	0,99

Continue of the Appendix 7: Runoff of Sea Water into the Kara-Bogaz-Gol Bay, (cub. km)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	0,97	0,86	0,93	0,94	1,01	1,13	1,15	1,06	1	0,96	0,92	1
1952	0,98	0,96	1	1,04	1,18	1,17	1,18	1,08	0,91	0,93	0,86	0,89
1953	0,85	0,79	0,83	0,8	0,87	0,98	1,03	1,09	0,94	0,9	0,86	0,87
1954	0,93	0,87	0,94	1	1,14	1,15	1,16	0,98	0,84	0,8	0,76	0,77
1955	0,64	0,58	0,65	0,69	0,81	0,73	0,86	0,87	0,73	0,69	0,61	0,69
1956	0,68	0,56	0,64	0,67	0,76	0,77	0,78	0,74	0,65	0,55	0,58	0,6
1957	0,61	0,71	0,71	0,7	0,75	0,81	0,86	0,79	0,65	0,63	0,6	0,69
1958	0,68	0,66	0,73	0,8	0,88	0,88	1,05	1,02	0,88	0,83	0,8	0,8
1959	0,93	0,74	0,91	1,04	1,51	1,33	1,19	1,05	0,91	0,89	0,79	0,77
1960	0,8	0,76	0,84	0,93	0,91	0,95	1,03	0,87	0,84	0,77	0,66	0,68
1961	0,71	0,67	0,79	0,81	0,77	0,8	0,85	0,81	0,68	0,63	0,63	0,69
1962	0,76	0,64	0,78	0,84	0,91	0,89	0,84	0,74	0,62	0,6	0,53	0,56
1963	0,67	0,61	0,71	0,73	0,83	0,86	0,95	0,84	0,71	0,68	0,65	0,66
1964	0,7	0,64	0,74	0,77	0,87	0,97	0,98	0,92	0,77	0,7	0,66	0,59
1965	0,66	0,67	0,75	0,78	0,84	0,85	0,85	0,9	0,78	0,7	0,71	0,75
1966	0,79	0,73	0,83	0,89	0,96	0,98	1,03	0,95	0,81	0,79	0,74	0,75
1967	0,76	0,82	0,88	0,97	0,73	1,01	1,01	0,93	0,8	0,74	0,68	0,75
1968	0,67	0,64	0,71	0,73	0,83	0,86	0,95	0,84	0,71	0,68	0,65	0,68
1969	0,55	0,52	0,68	0,79	0,84	0,98	0,96	0,83	0,71	0,69	0,65	0,71
1970	0,66	0,61	0,78	0,87	0,93	1,06	1,05	0,9	0,76	0,74	0,69	0,75

1971	0,67	0,62	0,76	0,83	0,89	1	0,99	0,84	0,71	0,68	0,63	0,68
1972	0,62	0,61	0,74	0,62	0,61	0,74	0,62	0,61	0,74	0,62	0,61	0,74
1973	0,75	0,68	0,8	0,81	0,87	0,93	0,95	0,78	0,66	0,62	0,56	0,59
1974	0,69	0,62	0,71	0,71	0,76	0,8	0,81	0,67	0,56	0,52	0,46	0,49
1975	0,64	0,57	0,64	0,62	0,66	0,68	0,7	0,57	0,48	0,44	0,38	0,4

Continue of the Appendix 7: Runoff of Sea Water into the Kara-Bogaz-Gol Bay, (cub. km)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	0,34	0,33	0,36	0,38	0,41	0,43	0,46	0,44	0,37	0,35	0,33	0,34
1977	0,28	0,27	0,29	0,31	0,34	0,35	0,38	0,36	0,3	0,29	0,27	0,28
1978	0,36	0,33	0,39	0,45	0,5	0,53	0,54	0,46	0,37	0,38	0,34	0,35
1979	0,46	0,44	0,52	0,57	0,65	0,69	0,69	0,76	0,66	0,59	0,53	0,58
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,15
1986	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13
1987	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13
1988	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13
1989	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13
1990	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13
1991	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13	0,13
1992	0,13	0,13	0,13	0,13	0,13	0,48	1,9	1,97	1,92	1,98	1,9	1,9
1993	1,93	1,65	2,01	2,41	2,76	2,9	3,19	3,19	2,9	2,81	2,83	3,05
1994	3	2,86	3,27	3,16	3,24	3,16	3,46	3,62	3,73	4,15	3,89	4,13
1995	3,75	3,58	4,1	4,2	4,42	4,2	4,23	4,29	3,78	3,54	3,13	3,16

1996	4,07	3,69	3,27	2,76	2,73	2,81	2,81	2,3	1,56	1,13	0,83	1,15
1997	1,1	1,02	1,15	1,24	1,45	1,71	2,09	2,41	1,56	1,13	0,83	1,15
1998	1,04	1,08	1,1	1,18	1,37	1,63	2,12	2,83	2,2	1,65	0,9	0,6

Appendix 8: Effective Evaporation from the Caspian Sea Surface, Calculated on the Water Balance Equation, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	27	17	25	52	112	49	-9	-2	106	184	139	52
1926	28	49	43	47	200	128	-100	-48	103	156	125	70
1927	39	47	38	70	200	44	-81	10	109	129	120	79
1928	40	44	40	36	165	95	-42	-2	70	90	65	17
1929	49	70	64	60	123	167	-43	-50	76	130	117	71
1930	66	66	36	39	90	37	6	62	113	150	110	50
1931	47	30	56	63	129	58	-59	49	128	122	94	44
1932	54	22	20	41	170	13	-81	23	75	117	134	102
1933	50	10	22	36	78	-8	-9	67	100	145	124	75
1934	63	37	44	24	144	75	-64	18	147	143	116	52
1935	60	68	32	37	97	23	-9	41	115	150	106	54
1936	92	74	48	48	126	56	-35	35	148	126	82	40
1937	72	72	44	62	102	8	-2	38	108	150	102	94
1938	80	69	55	64	110	22	-11	58	120	138	122	52
1939	69	65	41	69	129	31	-8	22	123	167	103	47
1940	61	51	34	77	150	10	-16	44	125	115	75	61
1941	53	53	29	63	165	125	-10	4	102	92	81	68
1942	66	34	54	16	156	112	-52	-12	116	140	82	56
1943	82	68	42	56	148	28	-33	25	124	116	88	68
1944	68	38	38	48	156	118	-19	13	84	128	100	88

1945	108	64	48	50	144	70	-13	13	94	106	96	46
1946	64	28	6	82	185	89	-33	13	88	152	106	54
1947	64	38	20	126	210	54	-90	14	119	125	91	27
1948	69	75	63	91	199	74	-60	52	89	141	129	71
1949	79	49	15	35	131	68	-62	34	123	169	135	39
1950	67	67	23	41	163	34	41	87	113	117	79	81

Continue of the Appendix 8: Effective Evaporation from the Caspian Sea, Calculated on the Water Balance Equation, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	97	84	41	91	133	5	-9	85	131	119	42	37
1952	51	37	23	19	89	81	-1	37	112	136	124	88
1953	98	70	72	50	154	29	-41	33	135	202	106	24
1954	33	48	45	25	71	-13	17	95	118	142	92	40
1955	98	84	52	46	204	140	-50	-10	88	116	102	78
1956	60	26	62	56	102	42	-18	60	98	135	98	36
1957	52	38	46	66	154	60	-16	28	92	118	102	70
1958	48	76	60	34	112	76	-9	25	110	132	122	104
1959	27	30	54	49	60	2	13	77	120	132	82	52
1960	94	50	26	34	108	5	-11	66	116	136	84	72
1961	100	74	68	86	82	-8	-8	46	114	148	112	76
1962	60	64	50	30	108	-8	8	116	144	64	95	122
1963	100	48	38	2	110	0	-7	30	88	118	106	84
1964	86	50	16	10	82	37	33	100	96	128	116	68
1965	76	52	30	34	102	22	4	38	112	142	78	38
1966	44	50	68	66	119	-33	-33	61	134	116	56	48
1967	100	102	66	-7	52	-1	21	67	90	140	104	58
1968	60	64	72	44	110	-10	7	56	120	142	82	68
1969	62	47	48	46	108	-59	-13	90	96	136	82	18

1970	32	48	48	74	131	1	5	52	86	140	118	68
1971	38	78	42	16	108	-1	19	72	140	130	100	66
1972	76	80	40	20	94	-12	8	82	134	122	112	86
1973	48	32	18	-4	62	-29	7	62	130	142	92	-76
1974	64	186	48	48	106	64	-2	34	58	99	99	81
1975	76	78	32	4	30	16	60	102	141	133	135	87

Continue of the Appendix 8: Effective Evaporation from the Caspian Sea, Calculated on the Water Balance Equation, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	53	53	23	9	57	29	17	55	103	141	129	77
1977	69	25	9	17	77	-3	23	69	129	133	83	63
1978	53	47	45	19	101	-17	-3	47	85	163	99	51
1979	51	35	41	-36	128	44	-30	42	126	128	75	64
1980	74	68	34	4	74	12	2	82	136	104	124	42
1981	32	86	62	4	174	16	-38	30	76	104	110	68
1982	88	82	36	6	56	-16	44	80	106	126	88	60
1983	-18	-38	40	76	56	-12	20	88	110	122	110	68
1984	42	36	46	4	54	2	26	88	104	116	98	58
1985	78	86	36	-14	92	22	14	66	116	124	102	56
1986	54	62	54	70	108	2	14	68	116	140	104	54
1987	50	42	34	4	104	32	4	84	144	94	62	80
1988	88	8	-52	32	106	-8	-6	70	92	86	96	86
1989	84	48	-24	20	162	26	10	80	102	122	124	116
1990	94	0	18	128	104	12	-28	22	82	146	116	32
1991	48	48	22	118	122	-50	0	0	54	138	92	58
1992	68	70	36	56	86	-41	-11	71	87	117	77	29
1993	63	76	35	56	127	21	22	22	79	173	91	32
1994	36	7	26	70	108	6	33	27	95	124	76	32

1995	23	41	44	91	127	-15	-23	33	108	139	98	52
1996	32	45	34	35	125	53	49	66	106	123	90	71
1997	69	61	49	9	148	76	-25	34	118	107	106	87
1998	21	1	45	69	91	110	27	75	82	48	80	86

Appendix 9: Evaporation from the Caspian Sea Surface, Calculated on the Water Balance Equation, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1925	40	19	31	72	120	58	15	4	124	204	162	66
1926	51	76	57	65	230	141	-84	-39	117	170	136	84
1927	62	60	52	85	207	47	-80	20	139	155	192	105
1928	56	65	58	45	172	105	-33	30	88	118	85	55
1929	69	95	80	76	123	175	-43	-50	115	134	155	121
1930	86	90	44	49	94	45	6	66	142	174	147	82
1931	67	45	63	78	136	79	-54	52	128	148	144	63
1932	72	30	43	56	186	26	-51	33	91	163	172	120
1933	84	26	40	71	91	18	-1	67	100	164	145	93
1934	71	44	55	46	147	97	-57	24	158	159	134	78
1935	73	76	56	40	118	40	-4	45	129	170	162	73
1936	94	84	59	66	138	69	-31	42	177	161	101	55
1937	102	84	50	79	124	16	-2	39	112	182	147	105
1938	99	91	73	80	131	34	-11	62	141	150	151	124
1939	83	72	57	84	141	36	-5	31	130	196	163	64
1940	86	68	45	85	162	16	-8	44	139	174	89	92
1941	77	63	41	81	179	137	-5	27	133	117	116	78
1942	97	58	68	36	175	124	-40	-11	122	153	146	78
1943	112	92	75	58	166	36	-24	41	140	144	106	101

1944	99	40	45	68	174	122	-13	19	99	157	138	116
1945	146	95	114	62	155	86	-13	21	109	128	134	61
1946	83	32	35	100	214	117	-19	15	102	217	131	85
1947	94	46	30	156	219	56	-80	18	134	145	111	54
1948	89	96	80	96	199	86	-60	58	133	170	160	82
1949	98	64	42	56	138	72	-62	43	131	179	153	77
1950	95	83	32	49	177	38	43	93	120	158	112	94

Continue of the Appendix 9: Evaporation from the Caspian Sea, Calculated on the Water Balance Equation, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1951	128	102	46	93	138	11	-8	85	162	193	72	72
1952	62	63	46	49	115	90	0	43	121	148	157	105
1953	114	73	94	64	168	34	-39	33	141	228	112	61
1954	48	77	81	48	78	-13	19	95	121	154	147	50
1955	106	93	77	74	217	147	-38	4	104	116	147	98
1956	74	52	92	74	123	45	-9	60	112	154	123	67
1957	83	48	71	66	154	61	-5	33	98	150	127	92
1958	63	78	82	50	126	84	16	38	132	151	142	132
1959	42	56	77	56	68	26	13	77	136	162	130	76
1960	109	72	44	46	120	10	-3	76	132	149	113	96
1961	113	78	79	95	87	-1	0	57	143	192	146	87
1962	69	90	59	33	113	5	12	122	154	82	123	141
1963	119	62	56	22	157	19	6	65	96	138	145	106
1964	105	65	40	22	91	43	37	110	102	141	145	78
1965	106	67	46	57	131	34	12	40	133	192	86	50
1966	63	65	107	110	139	-15	-33	65	160	130	69	102
1967	121	137	92	39	61	18	25	76	124	153	153	72
1968	76	70	83	69	116	2	15	62	134	168	123	108

1969	92	94	78	79	130	-48	-4	92	131	167	103	55
1970	51	57	56	94	141	4	10	62	92	162	133	117
1971	55	94	59	35	115	3	22	77	156	178	124	120
1972	114	88	56	24	130	-9	10	86	155	136	132	137
1973	87	56	52	45	85	-20	7	69	163	168	141	-38
1974	88	206	70	68	141	76	5	41	88	111	136	110
1975	107	114	65	4	40	27	60	105	154	204	211	122

Continue of the Appendix 9: Evaporation from the Caspian Sea, Calculated on the Water Balance Equation, (mm)

Year	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1976	66	83	34	25	95	37	32	56	112	175	143	98
1977	102	38	38	33	83	8	23	80	136	162	107	82
1978	85	67	51	57	133	2	-2	51	87	173	143	89
1979	72	67	84	-1	140	52	-30	42	132	194	98	95
1980	99	80	54	26	97	18	2	95	166	130	154	71
1981	51	110	92	18	212	23	-31	43	90	118	155	89
1982	106	107	54	23	82	-14	49	84	119	168	126	72
1983	-2	-28	44	98	66	-1	22	92	129	135	126	87
1984	57	69	72	30	80	4	27	96	106	156	146	96
1985	94	114	62	1	100	24	19	69	124	148	124	83
1986	59	76	63	71	120	3	16	70	123	157	138	70
1987	55	54	77	23	108	33	6	95	148	178	78	101
1988	101	26	-27	48	118	11	10	90	104	109	127	112
1989	107	58	-16	24	176	34	15	86	122	141	144	145
1990	127	18	30	146	125	20	-21	32	101	197	149	70
1991	71	63	43	147	173	-50	4	1	63	141	107	87
1992	91	103	57	98	101	-22	15	77	132	155	123	79
1993	97	110	70	71	141	37	25	35	96	193	184	49

1994	48	36	57	79	123	17	38	28	96	160	154	87
1995	48	57	76	105	131	-7	-21	40	130	199	127	86
1996	68	66	62	66	130	62	53	75	149	177	112	92
1997	112	112	70	20	155	84	-15	37	192	124	122	120
1998	38	18	68	80	100	119	31	79	105	49	89	99