SVENSKA ARALSJÖSÄLLSKAPET
Swedish Aral Sea Society

Swedish Aral Sea Society

Master of Science level Academic Course "Sustainable Development and Sustainability Science"

Part 2 – Water and Sustainability

The Aral Sea Disaster –How did it Happen and what's there Today?

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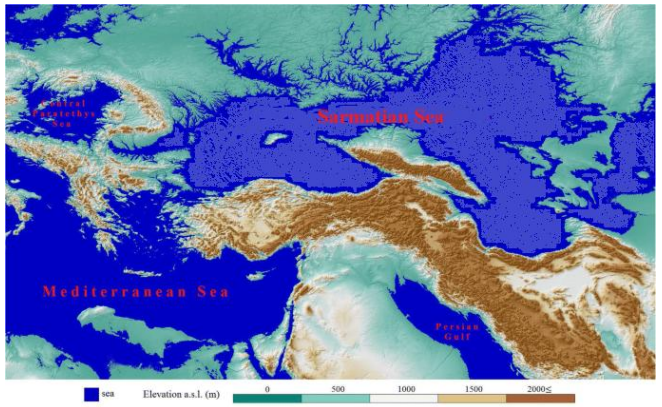
Manager of Agency for Project Implementation of the International Fund for Aral Sea Saving in Uzbekistan

Sweden - Uzbekistan

April 2026

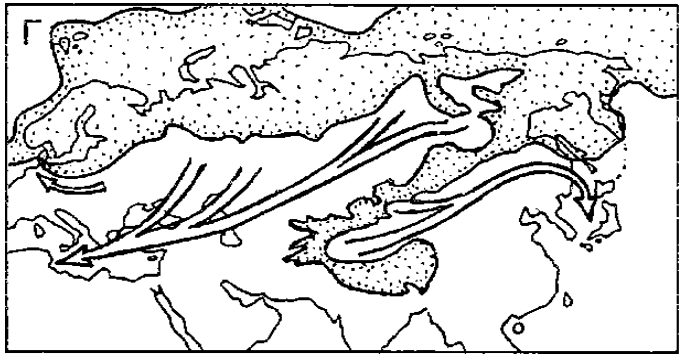
About starting point of the Aral Sea – how the Sea was forming



The Aral Sea was originally part of the ancient Paratethys Ocean, and its basin, part of the Sarmatian Sea (a remnant of that Ocean), began to form during the Neogene period, which ended 2.6 million years ago.

The modern Aral Sea depression finally formed approximately 17,600 years ago.

The modern Aral Sea basin was subjected to water erosion approximately 14,000-12,000 years ago under the influence of Middle Pleistocene rivers carrying the runoff from melting glaciers of the Eurasian glaciation and flowing south through the Turgai Depression.



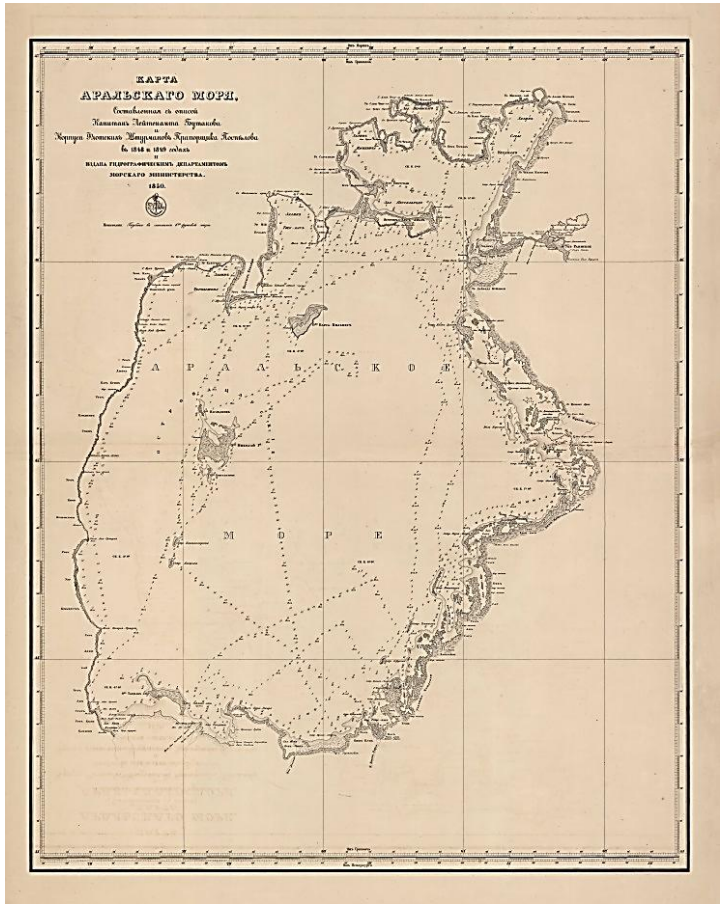
Grosval'd, M. G. Eurasian Hydrospheric Catastrophes and Arctic Glaciation. Moscow: Nauchny Mir, 1999, 120p.
https://www.geokniga.org/books/1064

During history, significant fluctuations in the Aral Sea's water level have occurred due to changes in the direction of the Amu Darya River's flow. Diversion of the Amu Darya toward the Aral Sea or along the Uzboy River toward the Caspian Sea was controlled by periodic uprising and dropping occurring along tectonic ruptures in the Turan Plate.

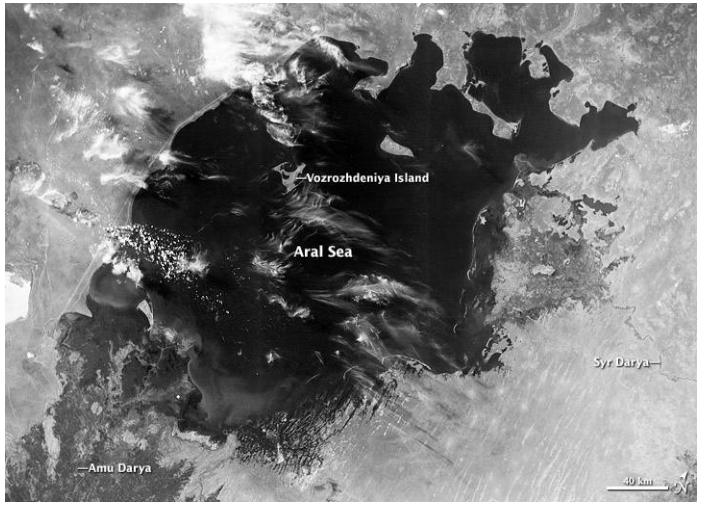
In the 15th century, the Aral Sea as a single water body did not yet exist; **it only became relatively full-flowing after 1573.**

The constant influx of water into the modern basin (over the past 400 years) began after the Amu Darya River's flow shifted toward the Aral

The Aral Sea – What it was before 1960?



First Map of the Aral Sea,
compiled based on the results of very first scientific field expedition in the history of the Aral Sea of Alexei Butakov (1848-1849)



First Image of the Aral Sea by NASA Reconnaissance Satellite 22 August 1964
https://earthobservatory.nasa.gov/images

The area of the Sea surface in 1957 was 67,499 km^2
Water volume 1089 km^3
Water level - 53.4 m
The maximum depth reached 69 m
The transparency of the water was up to 25 m

Role of the Aral Sea for Economy and Nature in the Past

Having a significant water surface and volume of water, the Aral Sea served until the mid-1960s as a climate-regulating water body and softened severe weather fluctuations in the Central Asian region

The Aral Sea zone was well-known by a unique diversity of flora and fauna, only the number of Saigas reached 1 million heads, the floristic composition was 638 species of higher plants

Until 1960s, the Aral Sea was the largest fishery basin in Central Asia with an annual catch of up to 40 thousand tons of fish (mainly Carp, but also Sturgeon). The Aral Sea was used as a transport corridor from Central Asia to Russia and farther to the Europe

Products of the Fish factory in Muynak

Salt mining in the Aral region in Kazakhstan

Port in the city of Aralsk

Fishing boat "Buiny".
Now it is located on a pedestal in the city of Muynak

Origins of the Aral Sea Ecological Crisis

Unimportance of nature, stemming from human moral devastation, has become intertwined with a postponed awareness of climate change. Until the mid-20th century, humanity was blinded by the mirage of unlimited natural resources and imagined itself as the supreme ruler of the Earth, becoming a greedy consumer of its gifts.

This delusion lies at root of the environmental tragedies darkening the face of our planet. The Aral Sea disaster, the death agony of California's Salton Sea, the death pain of Iran's Urmia, and the degradation of countless other aquatic ecosystems—this is a mournful list of victims of human egoism and an insatiable thirst for the "sweet life".

Humanity begins to remember about the environment only when nature begins to take revenge on it for its ignorance.

The slogan "take from nature" is credited to the scientist Ivan Vladimirovich Michurin: *"We cannot wait for favors from nature. To take them from it is our task."*

In reality, Ivan Michurin's famous saying doesn't at all call for taking an axe and chopping down trees in the garden to make it easier to pick their fruit, or using a chainsaw to fell cedars in the taiga to quickly fill bags with cones, or using bulldozer tracks on permafrost of the tundra... Ivan Michurin was referring to a scientific approach to harnessing and improving the plant wealth of forests, fields, and gardens through the power of human reason. Michurin's instrument in this process was not violence, but painstaking human development through long-term selective breeding methods of new, unprecedented varieties of fruit and ornamental plants, unavailable in nature.

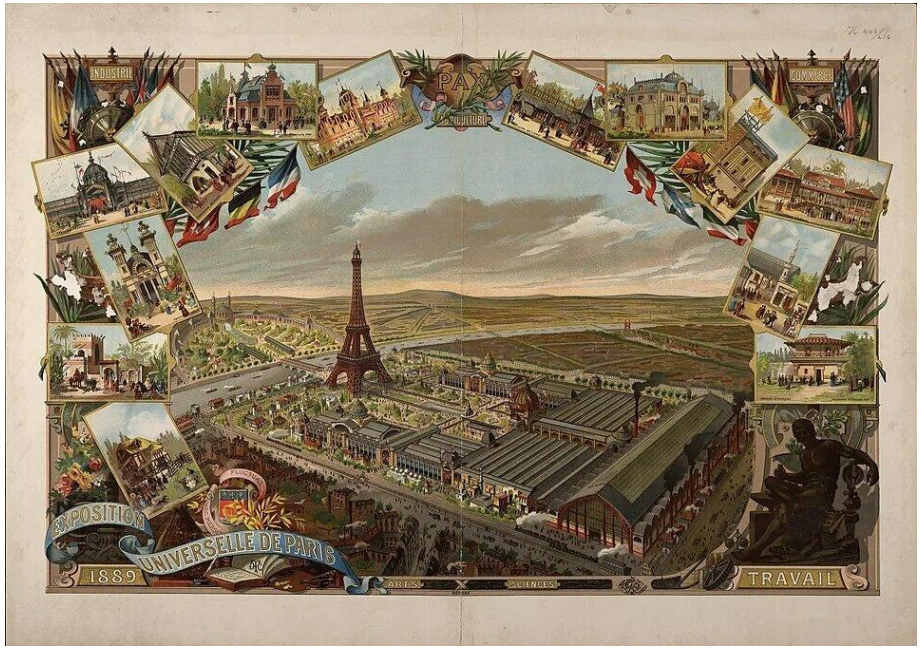
His full statement is as follows: ***"We cannot wait for favors from nature. To take them from her is our task. Humanity can and should create new forms of plants better than nature"***

И. В. Мичурин. Итоги шестидесятилетних трудов по выведению новых сортов плодовых растений. Изд. 3-е. М., 1934

Michurin, I. V., Results of Sixty Years of Efforts to Breed New Varieties of Fruit Plants. 3rd ed. Moscow, 1934.

This "shortened" phrase from Michurin was used by the so-called builders of a new life, who described wilderness as a wasteland, a useless and ethically worthless place that must be utilized, conquered, improved, cultivated, and beautified. This was the dominant idea in the end of 19th century and in the first half of the 20th century.

To present days, for most people, wilderness, unfortunately, is that very "other" that must be conquered and transformed. Even in conservation, an anthropocentric approach still prevails, the essence of which is well captured by the well-known slogan: ***"Everything for the good of human, everything in the name of human."***

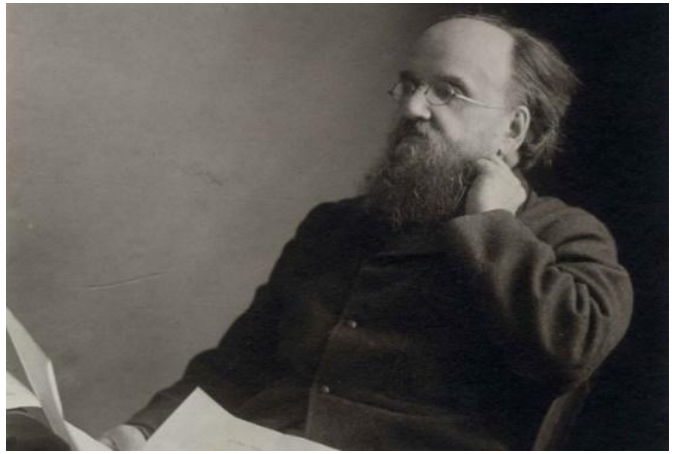


The starting point for this trend to gain traction was the **World's Fair in Paris, held from May 6 to October 31, 1889,** which was timed to coincide with the centenary of the French Revolution – the storming of the Bastille (its main exhibit was the Eiffel Tower).

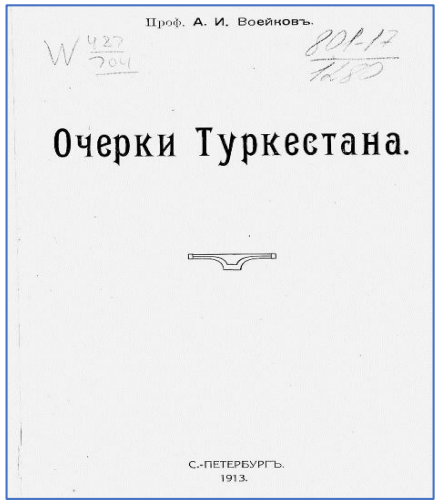
It became a platform for discussing pressing issues related to the engineering, sanitary, and technological achievements of the time.

The **first International Congress on Water Utilization** was held as part of the Paris World's Fair. A well-known hydraulic engineer at the time, Cotard, proposed that irrigation practice and science should mutually contribute to a broader understanding of the future of agriculture.

Eng. Cotard said: *"After the enormous improvement and development of communication routes, which have so greatly facilitated the exchange of products between countries, and in view of the future further development of these means of communication, has not the time come to return to the sole source of all wealth—the land—to increase its productivity and, at the same time, to more effectively combat the competition created by a larger market under new conditions?* ***Shouldn't at least some of the water currently wasted be utilized for agriculture?"***

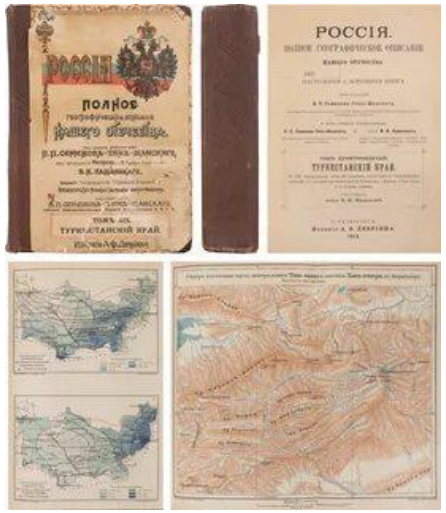


One of the first advocates of exploiting the Aral Sea's natural resources for the "benefit" of humanity was **Alexander Ivanovich Voeikov** (1842-1916), a distinguished Russian climatologist, geographer, traveler, and full member of the St. Petersburg Academy of Sciences (Russia).



Here is the quote from His book "Essays on Turkestan," published by the "Sel'skiy Vestnik" printing house. St. Petersburg, 1913, pp. 9-11 :

"In view of huge amount of water in the Aral Sea and its numerous tributaries, especially in the Amu Darya river, there is no doubt that irrigation can and should be increased over the region . As we increase irrigation, evaporation from cropping surface will increase and less water will reach the Aral Sea. Then we will have to deal with a decrease in its waters and a reduction in its area, but no longer depending on natural conditions, but depending on activity of humanity which will be able to use water in the best possible way, that is, make it evaporate from irrigation surface that provide products useful for people, instead of uselessly evaporating from surface of the Aral Sea. Such a reduction in the area and a decrease water of the Aral, in any case, will have to be welcomed as a victory for human knowledge and wisdom".



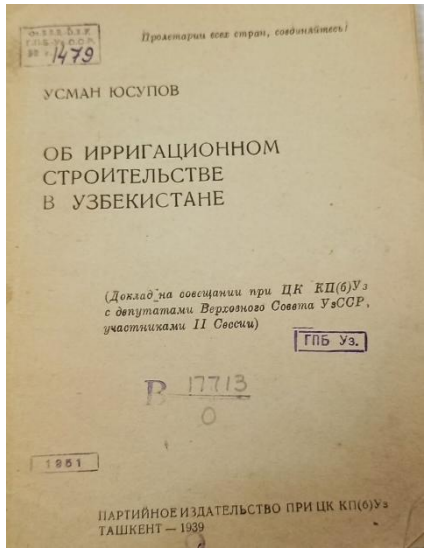
A similar idea was voiced in Volume 19 of the multi-volume publication "A Complete Geographical Description of Our Fatherland," published in 1913 under the editorship of **Veniamin Petrovich Semenov Tien-Shansky** (son of the world well-known traveler and geographer Pyotr Petrovich Semenov Tien-Shansky) Handbook and Travel Guide for Russians, vols. 1-19. Turkestan Region / compiled by Prince V.I. Masal'skiy; [Preface by V. Semenov-Tyan-Shanskiy and L. Berg]. — 1913. — 10th, 861p.

"... Water here (in the Turkestan region) revives the land and transforms wild shrubs into fertile fields and blooming gardens. With irrigation, even sand is covered with lush vegetation; without water, the best lands lie idle and worthless. Within the irrigated oases lie all the valuable crops, gardens, populations, and cities; beyond them lies a barren steppe or a dead desert." ... ***It is necessary to work tirelessly, without hesitation or doubt, with faith in success and remembering that the crown of our efforts will be not only the cultivation of millions of acres of new land and the provision of Russian industry with the cotton it needs****, with complete liberation from foreign dependence, but the creation of a huge branch of the agricultural industry, a colossal increase in the national wealth ... Having revived dead lands with the water of rivers now lost in the ocean of air, and having given our fatherland a new vast and rich country, we will have the right to say, paraphrasing the words of the legendary queen: "We forced the rivers to flow where we wish and turned barren land into fertile, irrigating it from our rivers"* (introduction by the author – H.E. **Prince Vladislav Ivanovich Masalsky** - p. VII).

Of course, while developing the Central Asian region in the 1930s-80s, the leadership of the republics and the entire Soviet Union understood that the Aral Sea would disappear if all the waters were taken from the rivers

An example is report of the First Secretary of the Central Committee of Communist Party of Uzbekistan **Usman Yusupov** during meeting at the Central Committee of Communist Party of the Uzbek SSR with deputies of the Supreme Soviet of the Uzbek SSR in Tashkent in 1939:

https://search.rsl.ru/ru/record/01005208872



"We cannot watch the Amu Darya uselessly carrying its waters to the Aral Sea, when our lands in the Samarkand and Bukhara regions are insufficiently irrigated. And our task, as true Bolsheviks, is to change the existing situation, smashing to pieces all kinds of harmful theories, to catch the Syr Darya and Amu Darya, to hold them firmly in our hands, to make their waters serve the interests of socialism, the growth of the population's standard of living and the development of the country."

The first predictions of the possible death of the Aral Sea were published in 1927 by **V. V. Tsinzerling** (1884–1954) in his book, **"Irrigation on the Amu Darya"**

Vladimir Vladimirovich Tsinzerling (1884–1954) — Russian and Soviet traveler, explorer, scientist, and professor. From 1913, he led hydrological research in the Amu Darya Delta and participated in the Main Turkmen Canal project. In 1927, he predicted the destruction of the Aral Sea.

In this book, the author described scenarios for decline of the Aral Sea level and its impact on society, depending on the volume of water withdrawn from the Amu Darya River. The scientist provided a scientifically substantiated forecast of inevitable decline in the Aral Sea level if the Amu Darya's waters were used to develop irrigated agriculture over large areas. **In 1927, he predicted that the Aral Sea would completely disappear within 115 years, and its decline as a result of irrigation development would begin in 40–50 years (that is, somewhere in the mid-1960s – an accurate prediction!**).

Tsinserling V.V. Irrigation on the Amu Darya. Publication of the Central Asian Water Management Department. Moscow, 1927. 3 parts, 808p.
Part 1 https://cawater-info.net/library/rus/hist/zinserling1/index.htm
Part 2 https://cawater-info.net/library/rus/hist/zinserling2/index.htm
Part 3 https://cawater-info.net/library/rus/hist/zinserling3/index.htm

The possible demise of the Aral Sea was announced loudly later - in 1949

Full member of the Academy of Sciences of the Uzbek SSR Alexander Askochensky in the jubilee collection dedicated to the twenty-fifth anniversary of the Uzbek SSR he wrote about "the grandiose tasks of the radical redistribution of water resources in space and time":

"*As a result of such redistribution of water across the Aral lowland, over time,* ***the Aral Sea will disappear*** *and be replaced by huge irrigated areas. The sea mirror, which has uselessly evaporated water in the western part of the lowland, will move to the east, closer to the mountains, which should undoubtedly humidify the climate of the foothill zone.*

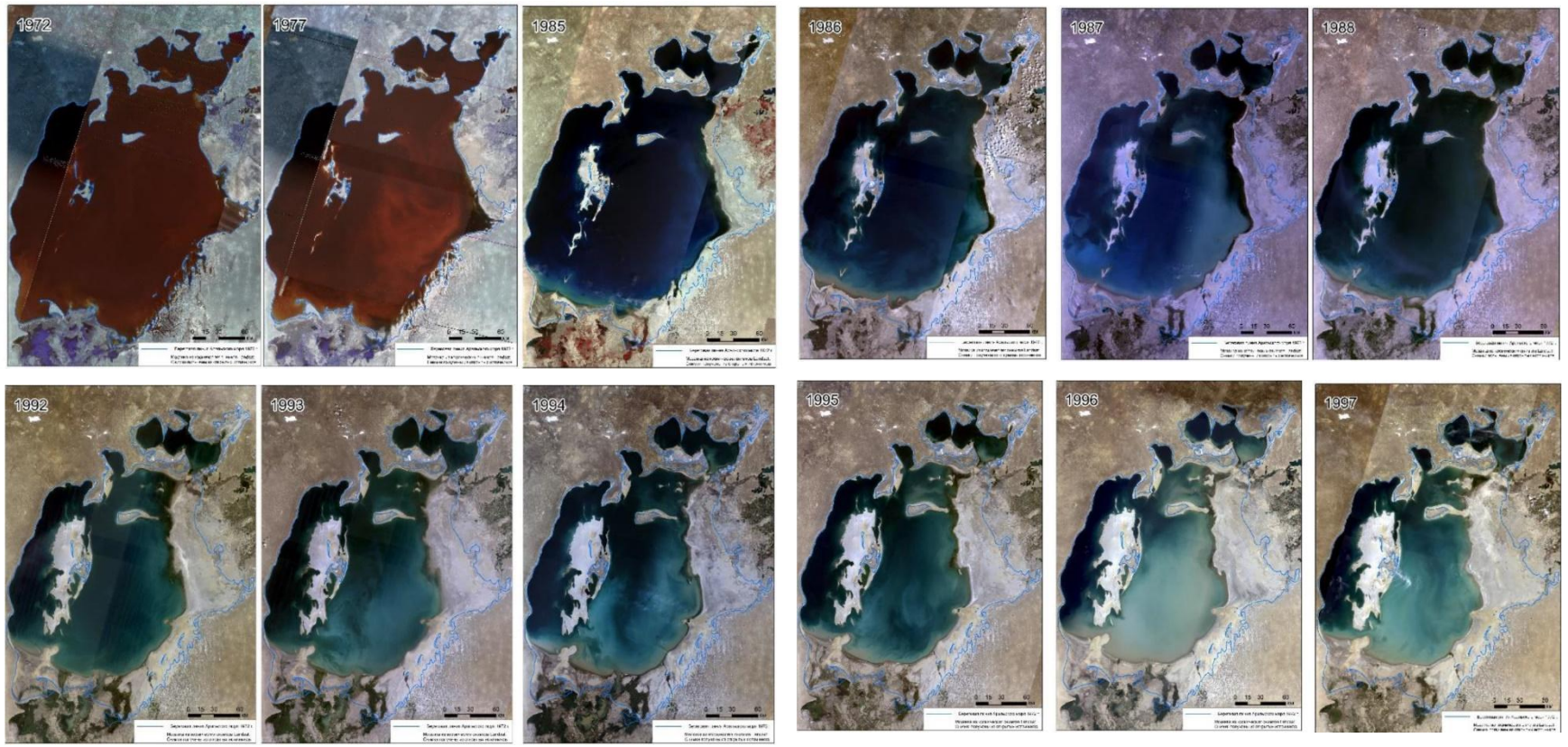
The regime of water sources will also be changed with the help of reservoirs, which, located in the upper and middle reaches of rivers, will have a positive effect on the climate.

As a result of those largest hydraulic engineering works, the geography of Central Asia will be changed".

Askochensky, A.N. "Hydraulic Engineering Construction in Uzbekistan Over 25 Years" // Jubilee Collection Dedicated to the 25th Anniversary of the Uzbek SSR - Tashkent: "Fan," 1949. - pp. 272-295 https://rusist.info/book/8195072

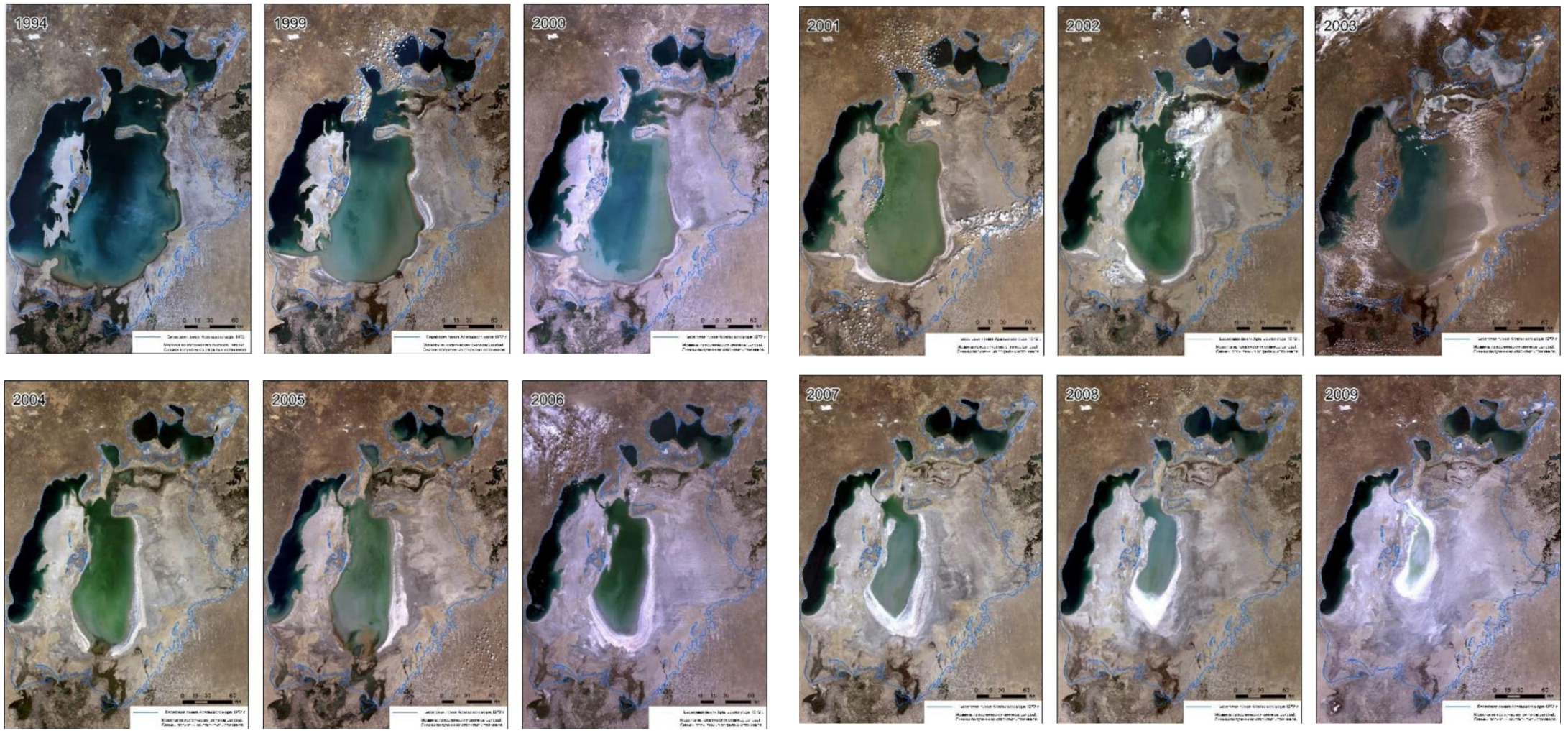
HOW the ARAL SEA DRIED

Anthropogenic factors (the main of which are intensive industrial, irrigation and hydropower developments) together with natural factors (climate aridity - a combination of high air temperatures, high evaporation and significant small amount of precipitation) led to the death of the Aral Sea. The less water flowed into the sea along the Amudarya and Syrdarya rivers, its depth and volume of water became less, the faster it warmed up - evaporation was bigger, which accelerated its drying.



The Aral Sea was divided into North and South in 1989 as a result of a decrease of water levels and drying up of the Berg Strait. By the end of the 1990s, the Big (Southern) Aral Sea turned into a hyperhaline (saline) body of water. Salinity in 1997 was 57 ‰ (ppm). In 1997 the island of Barsakelmes merged the coastal land, in 2001 - the island of Vozrozhdenie also stopped to be an island.

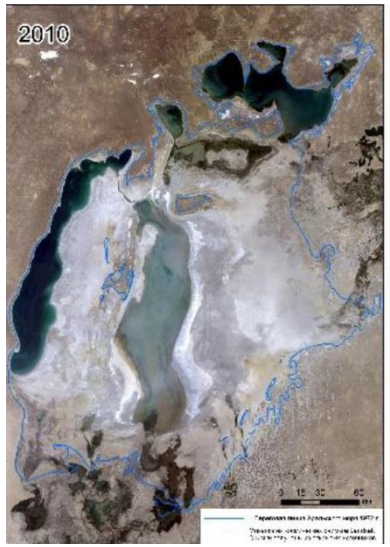
In 2003, the South Aral Sea was divided into Eastern and Western parts, which are connected by the narrow Uzun-Aral strait, located at an altitude of 29 m above sea level. This configuration does not allow water of those two bodies to mix. In 2004, a small lake Tushchibas, which was previously the bay of the Aral Sea - separated from the Eastern part.



In 2005, the Small Aral Sea was cut off from the Big Sea by the Kokaral Dam - on the territory of Kazakhstan. Both Sea bodies were finally separated.

Kokaral Dam - a structure that crosses the Berg Strait between the North Aral Sea (Small Sea) and the South Aral Sea (Big Sea)

The dam was designed to regulate the water level in the Small Sea. The length of the dam is 13,034 m, the width is up to 100-150 m. The height of the top of the dam is 6 m (45.5 m abs), the level of the Small Sea is supposed to be up to 42.2 m abs. A duct was built on the dam with nine spillways with water discharge of 600 m^3 /sec, designed to protect dam against destruction by high water level in the South Aral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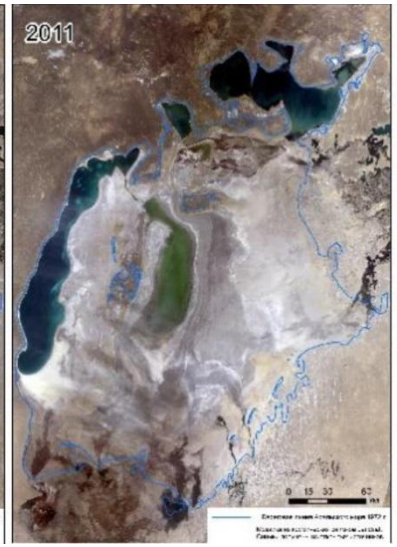
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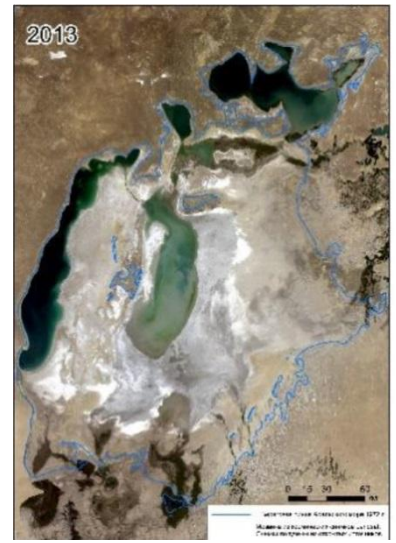
2012


2013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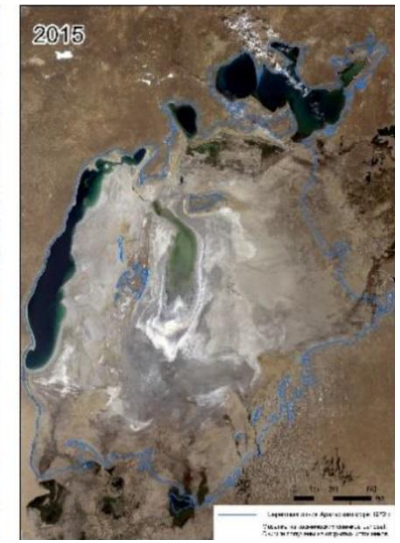
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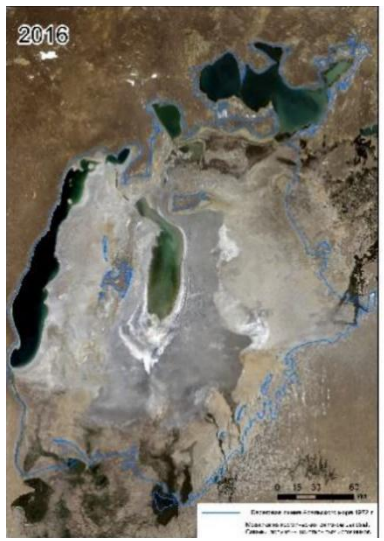
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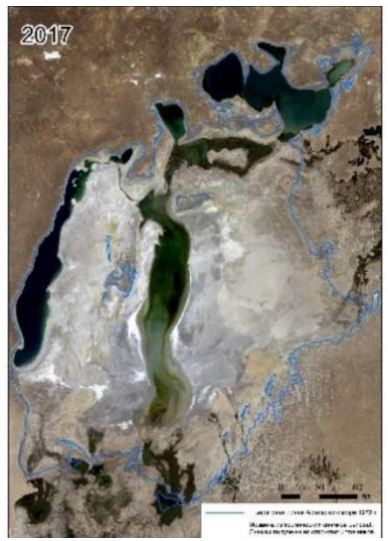
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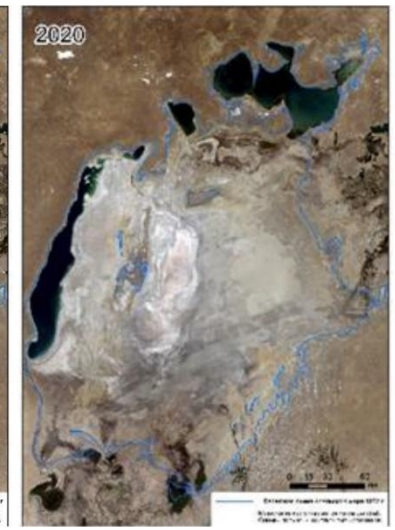
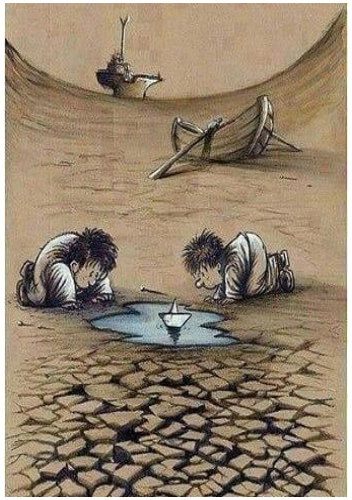

2020

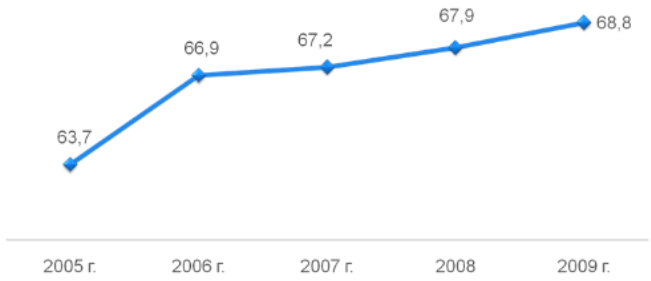

2021



IMPACT TO HUMAN HEALTH AND ECOSYSTEMS

The drying up of the Aral Sea caused a process of desertification in the center of the belt of the great deserts Kyzylkum and Karakum, where another new desert, "Aralkum", was formed (over 5 million hectares, of which 3.34 million hectares in Uzbekistan). The danger of the Aralkum desert is in the fact that the dried bottom heats up like a frying pan, throwing into the atmosphere huge masses of salts and fine dust, which remained in the upper layers of the soil after the evaporation of the sea.

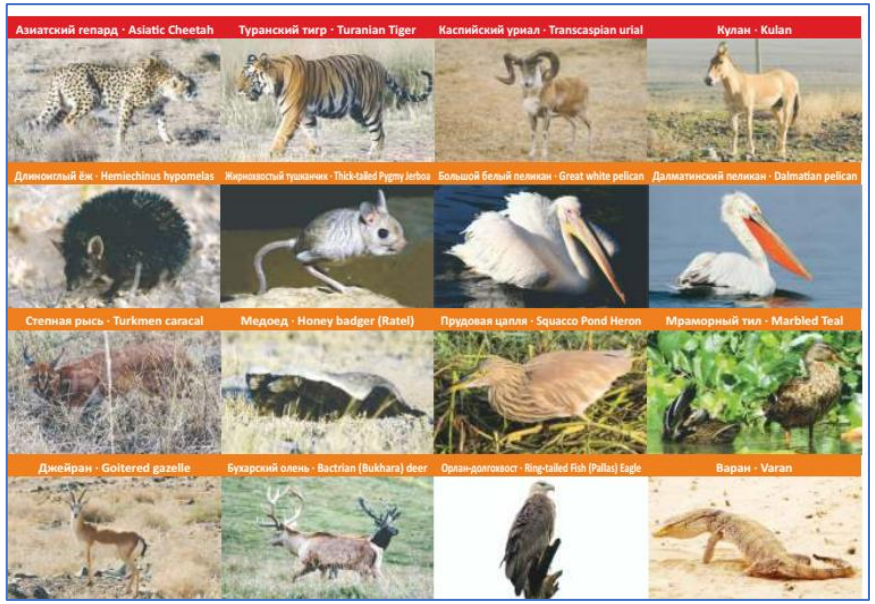
Dynamics of cancer (per 100 thousand population)



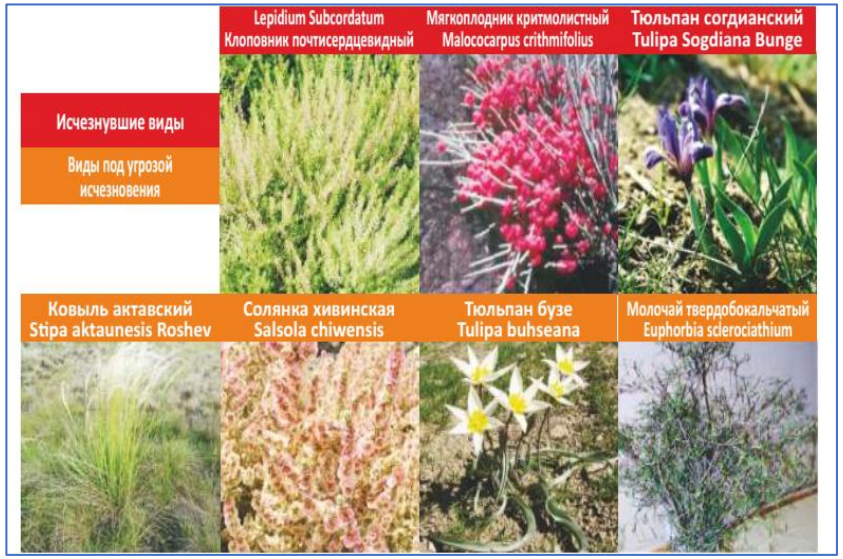
The effect is enhanced due to the fact that the Aralkum Desert is located on the route of a powerful air stream (mainly from west to east). This contributes to the formation of frequent dust storms (up to 100 days a year) and the spread of the Aral salt in the Earth's atmosphere.

Dynamics of lung diseases (per 100 thousand population)

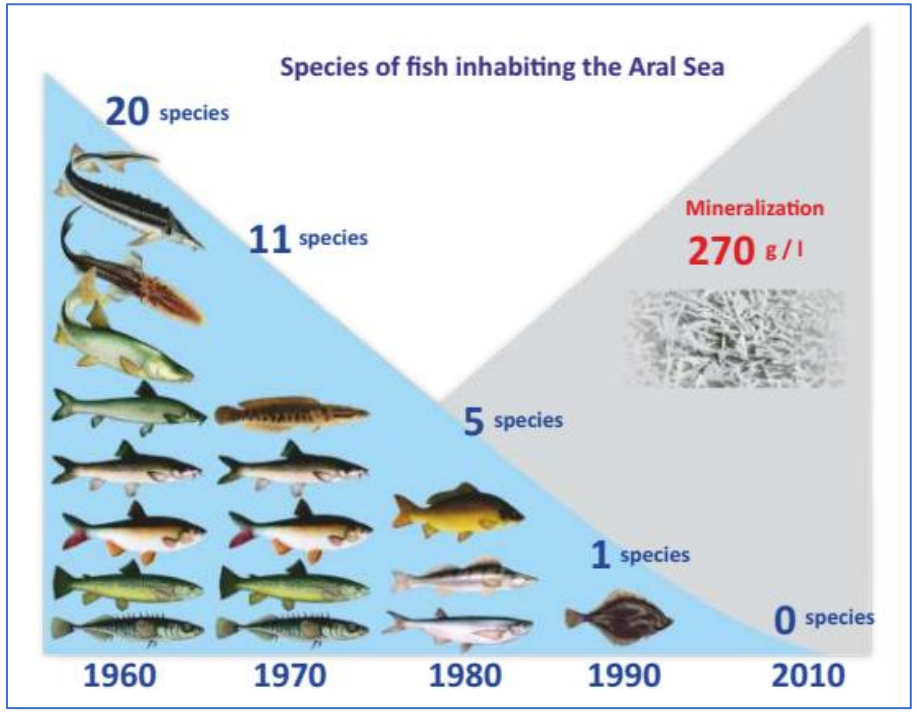
Water pollution and a large amount of dust and salt carried from the bottom of the dried Aral Sea play a decisive role in the growth of human health in general and child mortality. They resulted in high rates of a number of diseases: anemia, kidney disease, gastrointestinal tract, an increase in the level of respiratory diseases, blood diseases, cholelithiasis, cardiovascular and oncological diseases.



The number of plants growing here and population of wild animals are rapidly decreasing – we are observing bio-diversity degradation.



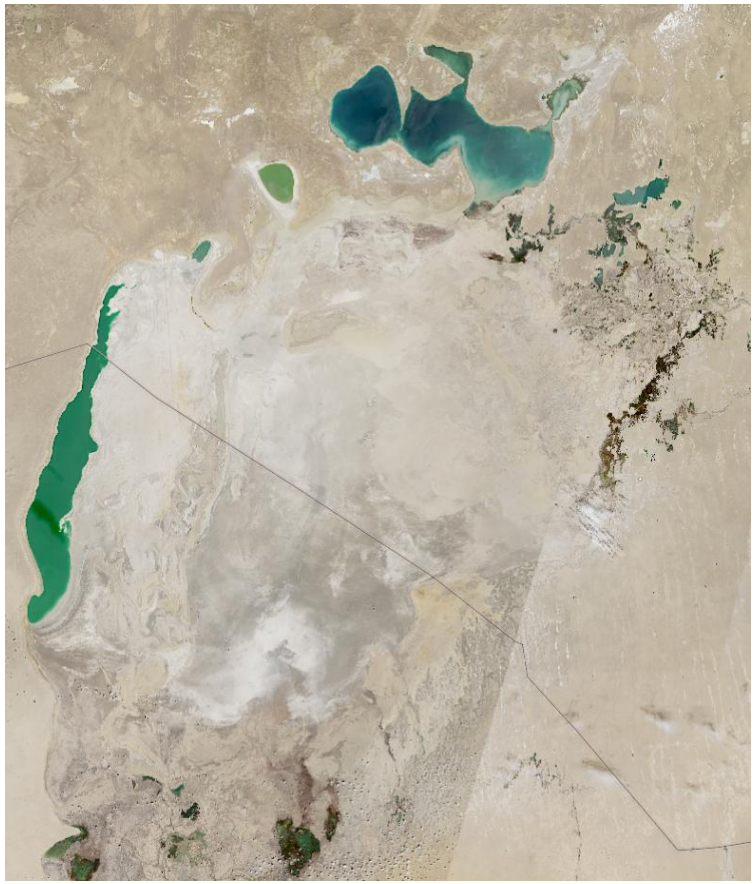
Since 1980, the Big Aral has completely lost its fishery worth.



As a result of loss of the transport importance of the sea, the decline of fishing, livestock and other types of farming, the reduction of pastures and decline in land productivity, many of thousands of people have lost their traditional sources of livelihood.

WHAT is the Aral Sea TODAY (2026)

the Aral Sea as seen on **5 May 2024**,
captured by a Copernicus Sentinel-2 L2A satellite



Today, water surface area of remains of the Aral Sea is less than 10% of the 1960 level. The rest is distributed between few water bodies: Western Sea; Eastern (Central) Sea; Small (Northern) Aral and some lakes in deltas of the Amudarya and Syrdarya rivers.

The REAL NEEDS OF PEOPLE LIVING IN THE ARAL REGION

According to the results of the UN survey in 2018, among the social risks of high tension there were identified:
https://mptf.undp.org/sites/default/files/documents/30000/20181203_tors_and_annexes-aral_sea.pdf

UN MULTI-PARTNER HUMAN SECURITY TRUST FUND
FOR THE ARAL SEA REGION IN UZBEKISTAN

The first place in the rating (dissatisfaction 49.8%) is occupied by the employment of the population. The main reasons are the lack of permanent jobs (76.2%) and low salaries (21.6%).

The second place in the rating is occupied by the environmental situation (46.9%). The main reasons for this situation are soil salinity (70.6%), air pollution (12.7%), water pollution (9.5%), drought (6.7%).

In third place in the ranking is dissatisfaction with conditions of the transport infrastructure (43.2%). The main reason is the need to repair local roads which were constructed during Soviet times (79.4%).

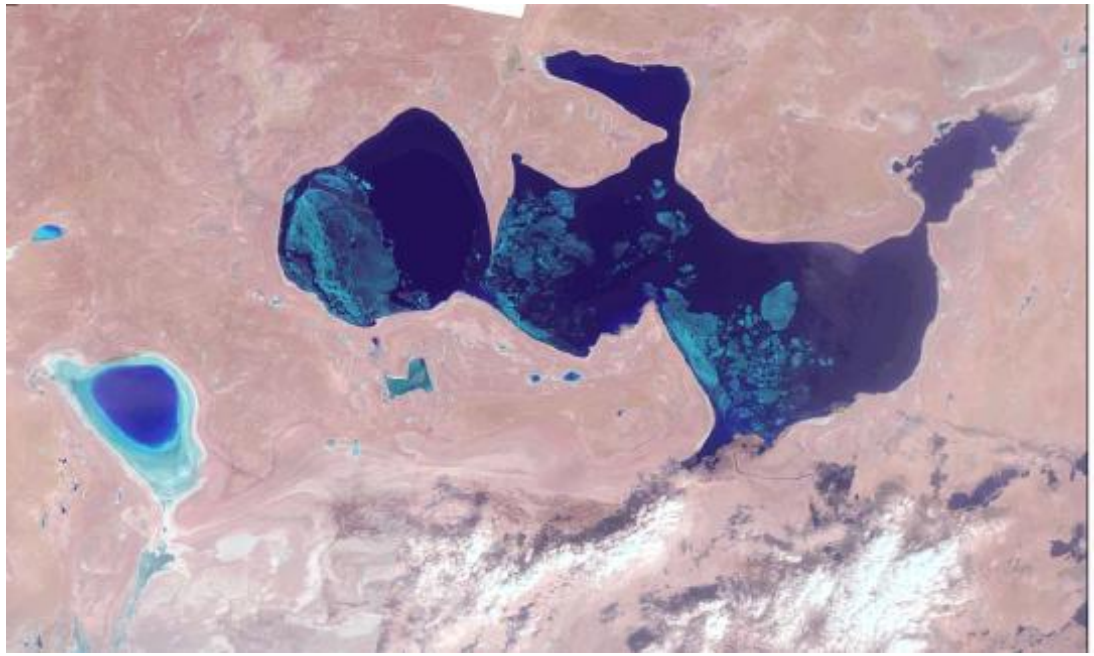
The fourth place is occupied by the dissatisfaction of the population with the provision of medical services (41.3%). The situation is aggravated by the inaccessibility of pharmacies (57.5%) and the high cost of medicines (37.6%).

The fifth place in the rating is occupied by preschool education services (40.3%). The main reasons for dissatisfaction are the lack of kindergarten facilities and their capacities (53.3%), absence in many settlements (16.5%), high tariffs (6.7%), lack of appropriate conditions (material and technical base, etc.) (7,1%).

The sixth place is the dissatisfaction with the drinking water supply (33.9%). The main reasons are poor quality (salty) water (42.6%), irregular water supply (30.4%), long distance to the water source (21.4%).

The seventh place in the rating is taken by communal (housing) services (30.9%). The main reason for dissatisfaction is the long distance to the offices (96.0%). In terms of districts according to the rating, the first three places are occupied by Takhtakupyr (10.80 points), Kanlykulsky (12.05) and Chimbay (12.61) districts.

The Northern Aral Sea - based on a Landsat-8 image



The water surface area as of March 28, 2025, was 323,126 hectares. The water level in the upper stream of the Kokaral Dam is 41.5 meters (1 meter below the absolute maximum).

The water surface area as of November 23, 2025, was 299,410 hectares. The water level in the upper stream of the Kokaral Dam is 40.5 meters (2 meters below the absolute maximum).

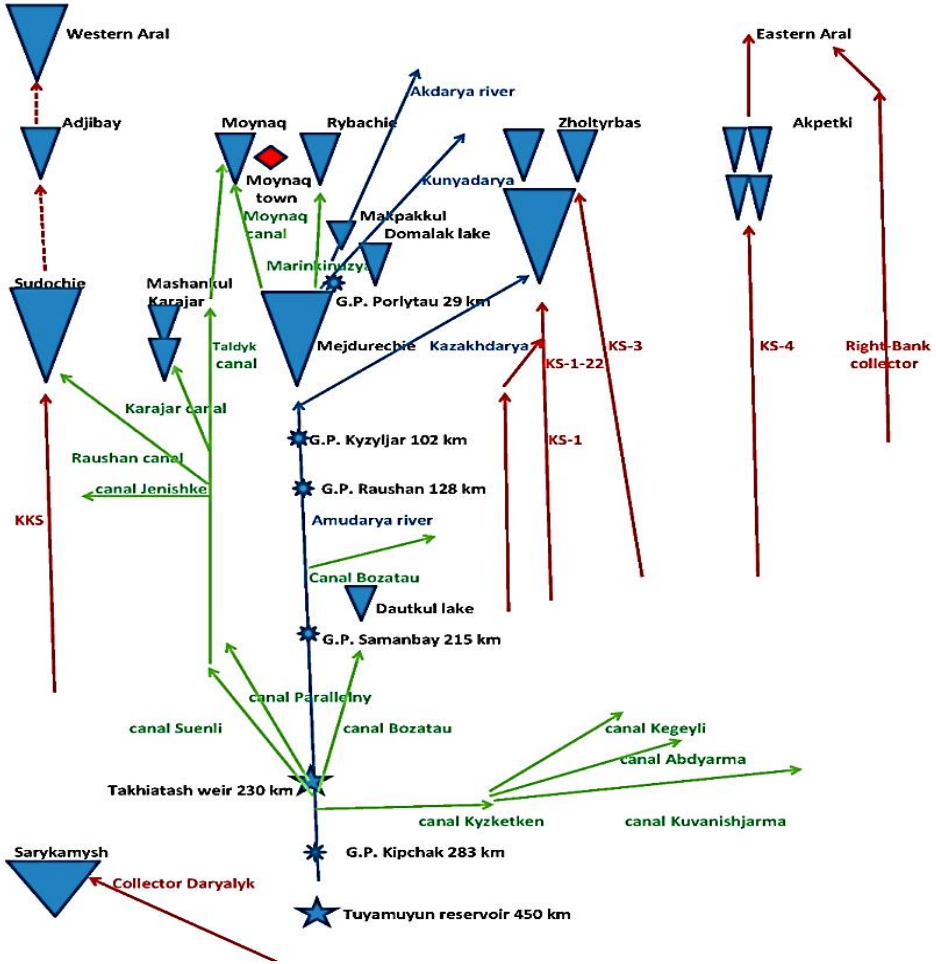
Water inflow to the North Aral Sea (Syrdarya River, hydropost Karateren)

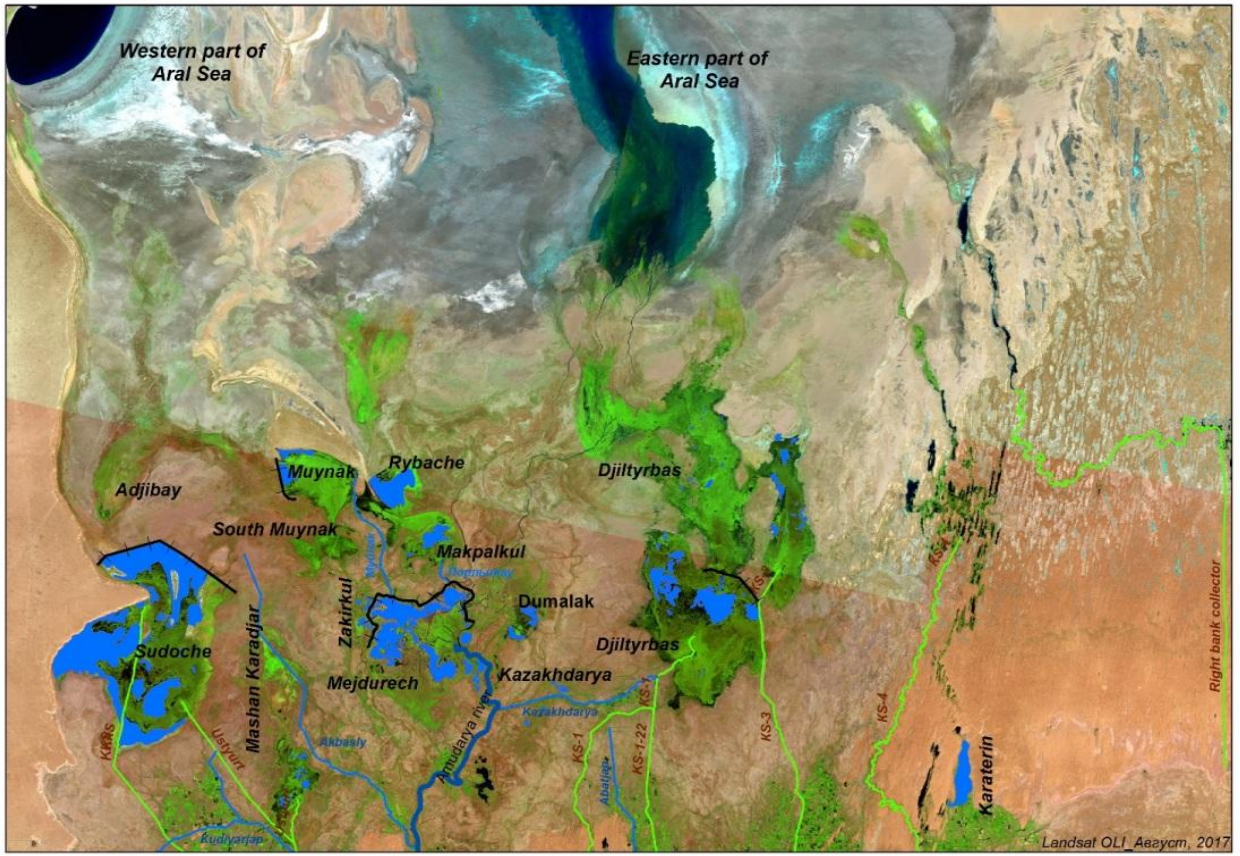
http://www.cawater-info.net/aral/data/syr_water_delivery_aral_nonveg.htm

Years	Oct	Nov	Dec	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Non-Vegetation	Vegetation	Hydrological year
	Water discharge, m^3/s												Water flow, Million m^3		
2000-2001	20	139	252	240	190	210	264	66	12	5	5	10	**2754**	**946**	**3700**
2001-2002	27	68	247	210	98	109	261	265	213	161	205	272	**1998**	**3623**	**5621**
2002-2003	274	228	238	290	320	300	367	324	194	171	192	285	**4317**	**4035**	**8352**
2003-2004	307	366	376	400	380	477	486	514	181	158	151	179	**6047**	**4398**	**10445**
2004-2005	216	280	509	430	380	510	485	434	147	48	118	323	**6106**	**4083**	**10189**
2005-2006	355	418	420	360	370	450	550	291	66	23	41	136	**6223**	**2899**	**9122**
2006-2007	148	238	400	250	270	330	343	325	63	22	106	129	**4292**	**2597**	**6889**
2007-2008	268	300	297	300	300	373	290	154	33	9	5	6	**4821**	**1303**	**6124**
2008-2009	15	18	37	130	145	163	130	160	109	60	97	326	**1321**	**2313**	**3634**
2009-2010	293	114	125	196	241	300	335	301	281	306	198	267	**3328**	**4443**	**7771**
2010-2011	308	319	356	357	320	309	219	124	54	25	19	19	**5162**	**1205**	**6368**
2011-2012	33	97	133	182	301	238	323	142	54	21	96	155	**2550**	**2074**	**4624**
2012-2013	130	103	153	196	267	301	247	91	41	23	20	84	**3003**	**1325**	**4328**
2013-2014	64	116	220	220	220	291	206	138	59	78	79	154	**2963**	**1875**	**4837**
2014-2015	118	110	216	332	316	345	178	100	46	21	30	95	**3757**	**1232**	**4988**
2015-2016	51	132	298	358	265	170	77	47	53	79	70	246	**3352**	**1500**	**4853**
2016-2017	139	161	240	288	270	274	394	363	261	217	227	215	**3591**	**4416**	**8007**
2017-2018	216	420	353	284	241	259	220	76	34	11	15	86	**4649**	**1150**	**5799**
2018-2019	63	150	226	260	283	156	89	107	21	16	75	100	**2960**	**1077**	**4037**
2019-2020	78	67	165	200	161	71	134	113	70	75	26	66	**1952**	**484**	**2436**
2020-2021	49	70	107	158	150	170	134	116	11	23	17	20	**704**	**321**	**1025**
2021-2022	17	23	33	38	47	44	130	128	44	50	70	0	**202**	**422**	**624**
2022-2023	22	105	183	308	350	570	300	60	26	20	11	17	**1538**	**434**	**1972**
2023-2024	40	125	160	310	256	273	158	44	72	223	276	201	**1164**	**974**	**2138**
2024 - 2025	**140**	**251**	**308**	**319**	**341**	**433**	**314**	**118**	**38**	**44**	**44**	**37**	**1792**	**595**	**2387**

TOTAL WATER INFLOW to the Southern ARAL SEA ZONE

Includes the sum of the flow along the Amudarya river below Takhiatash, water intakes to the Suenli, Parallel and Kyzketken canals, flow through drainage collectors KKS (to Sudochye), KS-1, KS-1-22, KS-3 (to Dzhiltyrbas), KS-4 (to Akpetki, Eastern Sea) and Right-Bank collector to the Eastern Aral





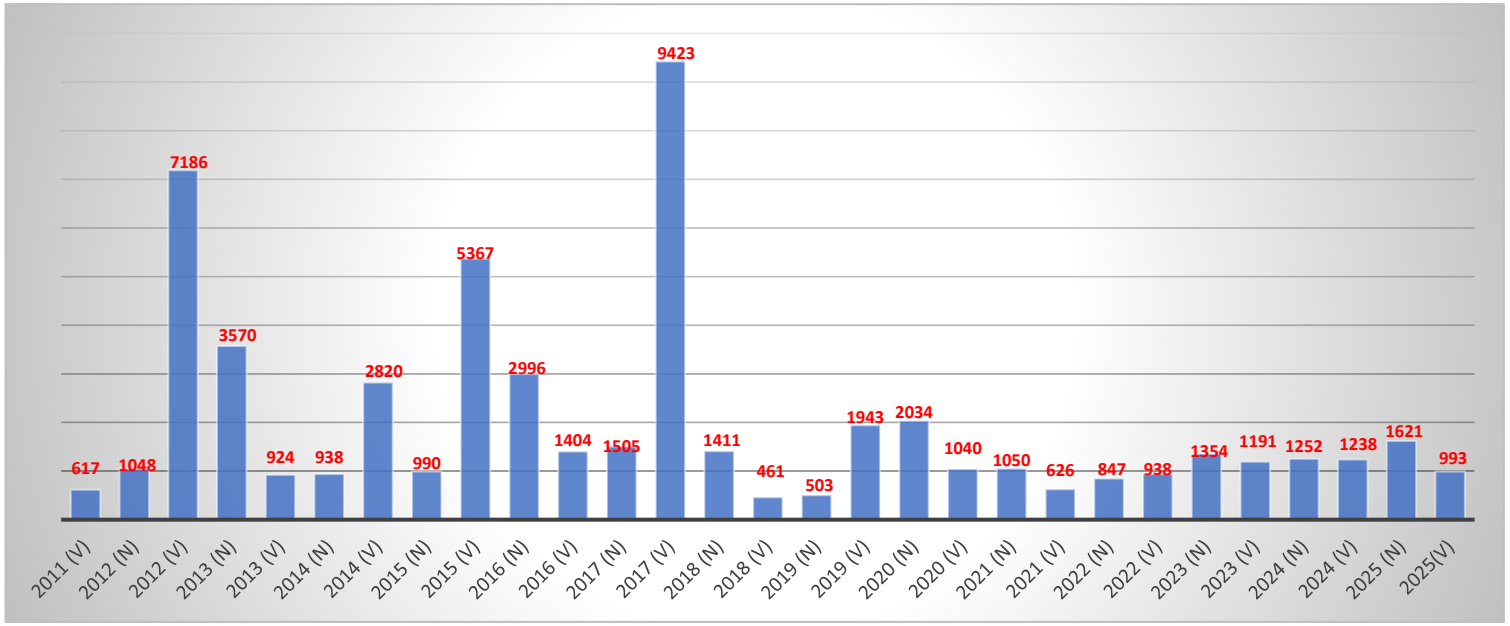
Assessment of real water demand for a stable conditions of water bodies in the Southern Aral Sea region

(assessment was conducted by the Agency of IFAS and the UNDP office in Uzbekistan in 2020)

Name of Water Body	Water level (The Baltic Sea level system), m	Area of bio-diversity zones, km^2	Volume of water, million m^3	Water supply source	Required water inflow (preliminary assessment) (million m^3 per year)
West Aral, Lake Sarykamysh and surrounding Ustyurt Plateau area					
West Aral and the adjacent Ustyurt plateau (January 2026)	18,15	5110 (including water surface 1866)	35700	Ground water inflow from the Ustyurt plateau, in high water years discharge from the Small (Northern Aral) via Uzun-Aral channel	2000 -3500
Lake Sarykamysh and adjacent plateau Ustyurt	8,0	959,7	70000	Collector-drainage water from irrigated systems of Khorezm and Dashoguz along collectors Daryalyk and Ozerny	2000 - 2500
Amudarya River Delta					
Left-bank (western) zone					
Wetland system of Lake Sudoch'e	52,5	464,7	982	Raushan canal system, drainage collectors KKS and GK	600 - 800
Complex of Mashankul-Karajar lakes	54,5	50,7	683	Karajar and Taldyk canals from Raushan canal	500 - 600
Central zone (Amudarya delta)					
Mezhdurechenskoye water reservoir	57,0	320	420	Amudarya River	1000 - 1500
Lake Rybachie	52,0	64,0	165	Marinkinuzyak canal from Mezhdurechensky reservoir	200 - 250
Lake Muynak	52,5	97,4	210	Muynak canal (Glavmyaso) from Mezhdurechensky reservoir and Taldyk canal (Kungrad-Munak)	250 - 300
Lake Makpalkol	53,0	12,0	63,0	Marinkinuzyak canal from Mezhdurechensky reservoir	100 - 150
Right-bank (eastern) zone					
Dzhiltyrbas Lake (including left and right ducts)	52,0	297,2	781	Channel of the Kazakhdarya, drainage collectors KS-1, KS-1.22, KS-3	750 - 850
System of Lakes Akpetki	53,0	391,5	100	Drainage collector KS-4 and channel of Kokdarya	200 - 300
Total in the Amudarya Delta		1057,5	3404		**3600-4750**
Total in Sothern Aral Sea region		2924,1	39104		**7600-10750**

The real inflow of water into the South Aral region http://www.cawater-info.net/aral/data/index

Time period (hydrological year)	Total inflow Million m^3
April - September 2011 (V)	617
October 2011 – March 2012 (N)	1048
April - September 2012 (V)	**7186**
October 2012 - March 2013 (N)	**3570**
April - September 2013 (V)	924
October 2013 - March 2014 (N)	938
April - September 2014 (V)	2820
October 2014 - March 2015 (N)	990
April - September 2015 (V)	5367
October 2015 - March 2016 (N)	2996
April - September 2016 (V)	1404
October 2016 - March 2017 (N)	1505
April - September 2017 (V)	**9423**
October 2017 - March 2018 (N)	**1411**
April - September 2018 (V)	**461**
October 2018 - March 2019 (N)	**503**
April - September 2019 (V)	1943
October 2019 - March 2020 (N)	2034
April –September 2020 (V)	1040
October 2020- March 2021 (N)	1050
April 2021 –August 2021 (V)	538
October 2021- March 2022 (N)	847
April – September 2022 (V)	938
October 2022 – March 2023 (N)	1354
April – September 2023 (V)	1191
October 2023 – March 2024 (N)	1252
April – September 2024 (V)	1238
October 2024 – March 2025 (N)	1621
April – September 2025 (V)	993

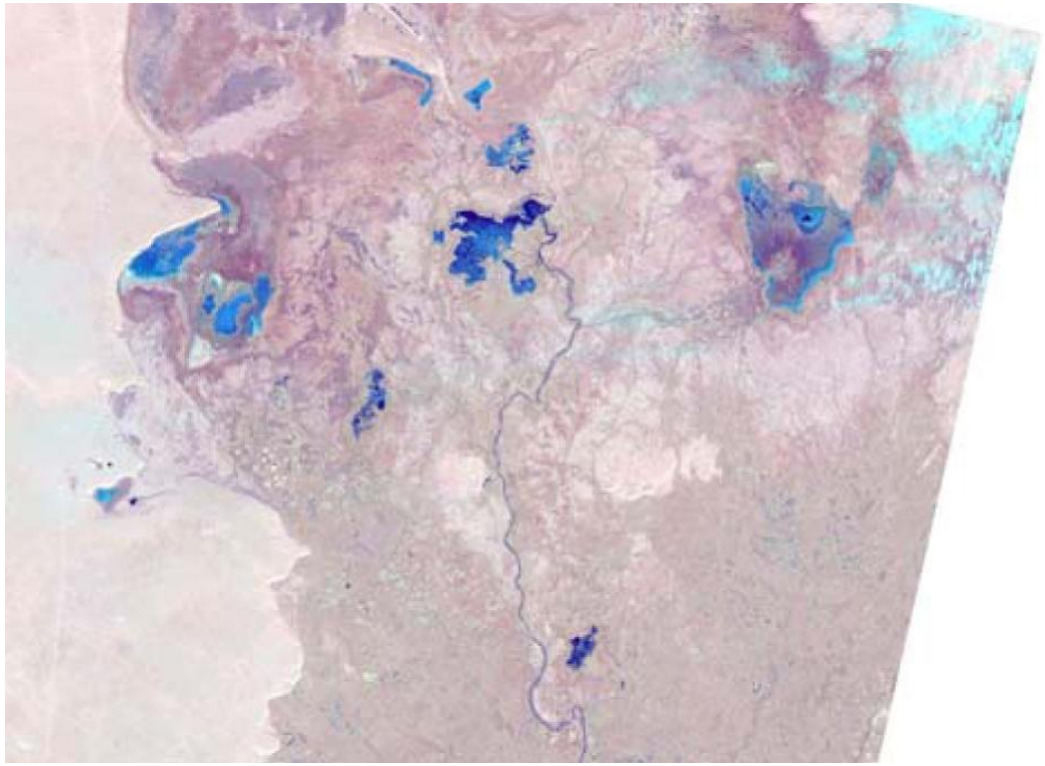


The total inflow of water into the South Aral Sea region for period 2011-2025 (14 hydrological years) amounted to 56.21 km^3 or an average of 4.015 km^3 per year. For individual years, the value varies from **0.96 km^3 per year** (2018-19) and 1.38 km^3 per year (2021-22) to 10.75 km^3 per year (2012-13) and **10.83 km^3 per year** (2017-18). Last 7 years (April 2018 – March 2025) average inflow was **2.287 km^3 per year**, or the only **55% of required water** for all delta lakes (average **annual demand is 4,175 km^3 per year**).

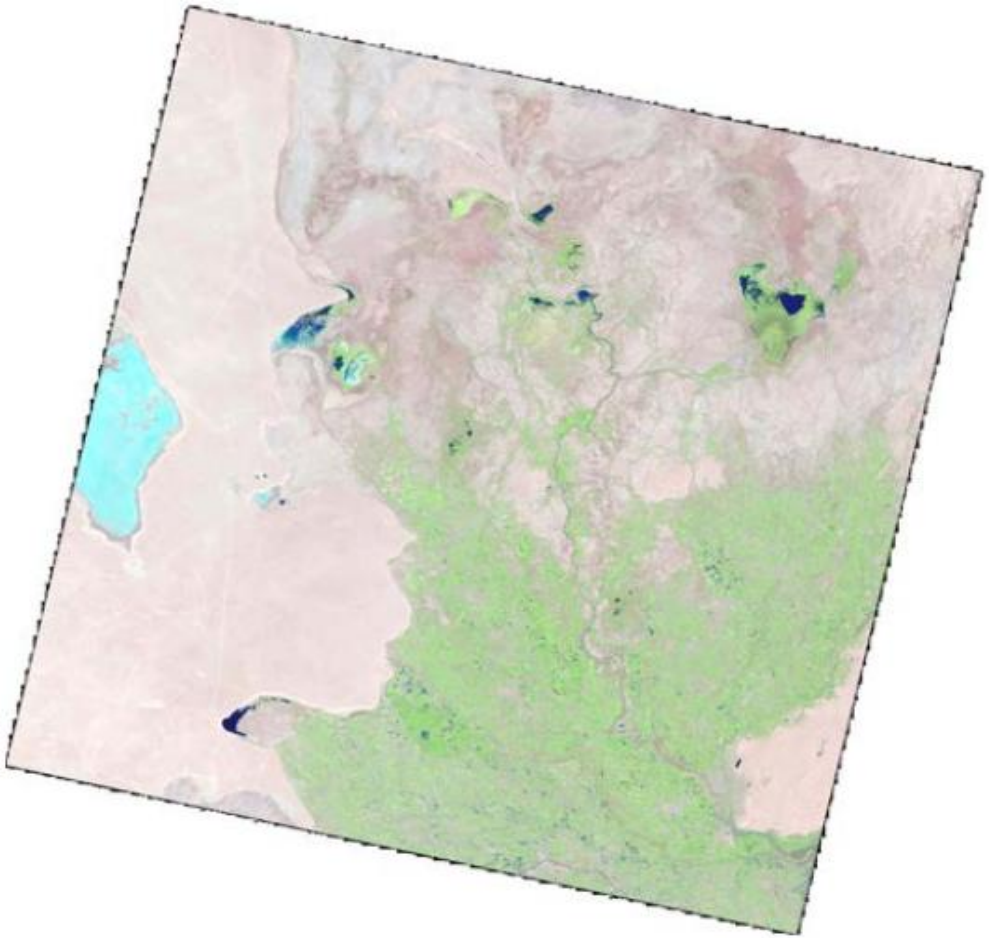
Such a large variation in annual inflow negatively affects hydrological stability of water bodies, which leads to destruction of ecology in the zone of individual water bodies, and violation of biodiversity. Therefore, fish, fauna and flora of these water bodies are unstable due to instability of water-salt regime, which is formed without any control, under influence of random factors.

Unfortunately, still there is no regular, systematic, instrumental monitoring of both remaining water bodies of the former Aral Sea and entire zone of dried sea bottom.

Delta of the Amudarya River – on the basis of satellite «Landsat 8» image

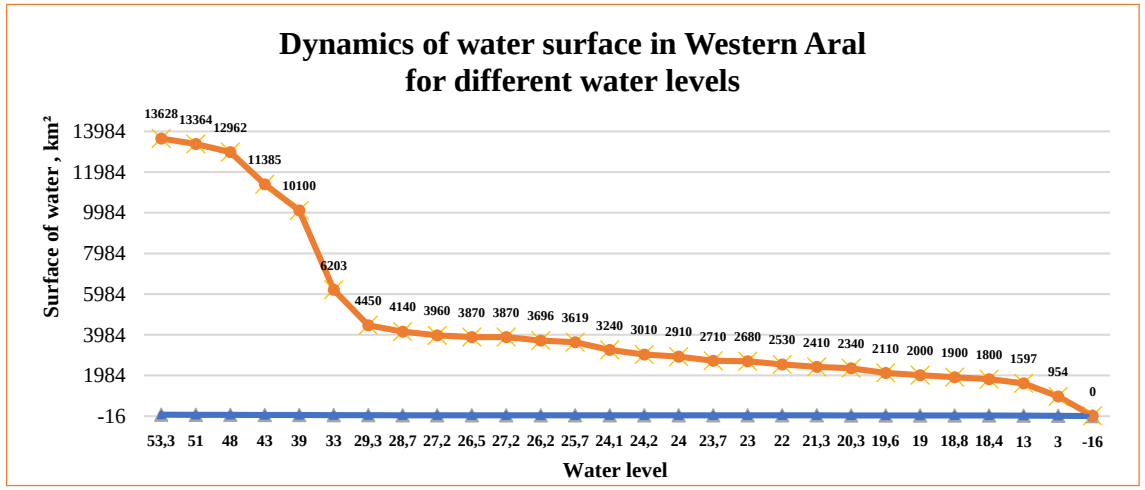


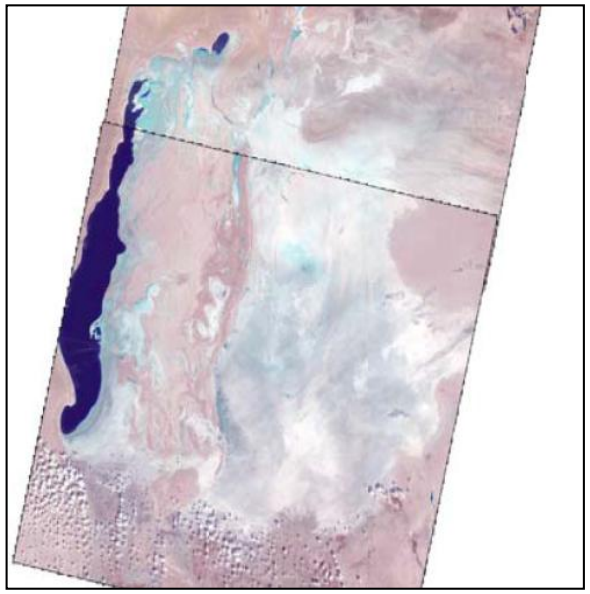
12 March 2025



23 November 2025

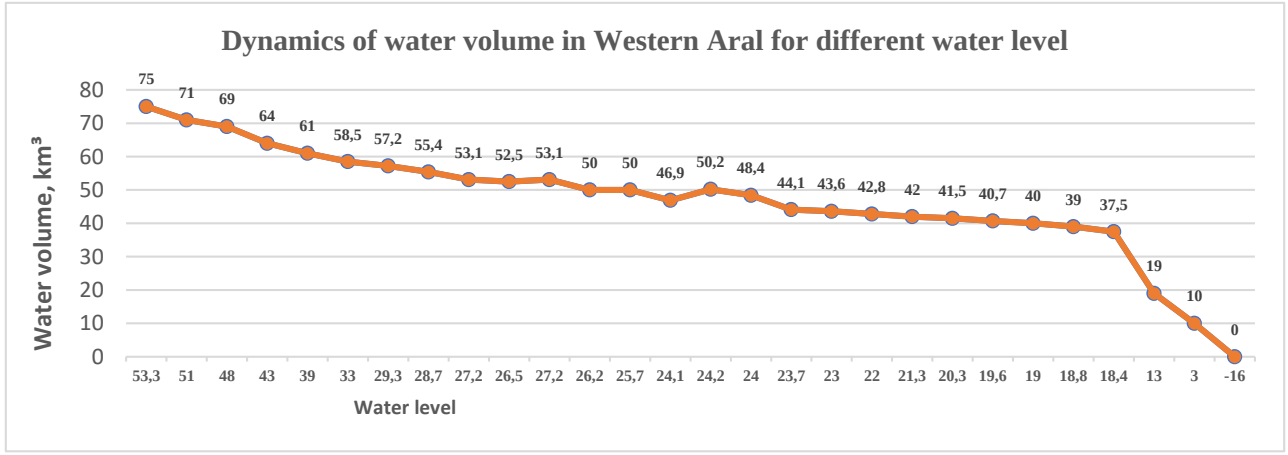
Western Aral

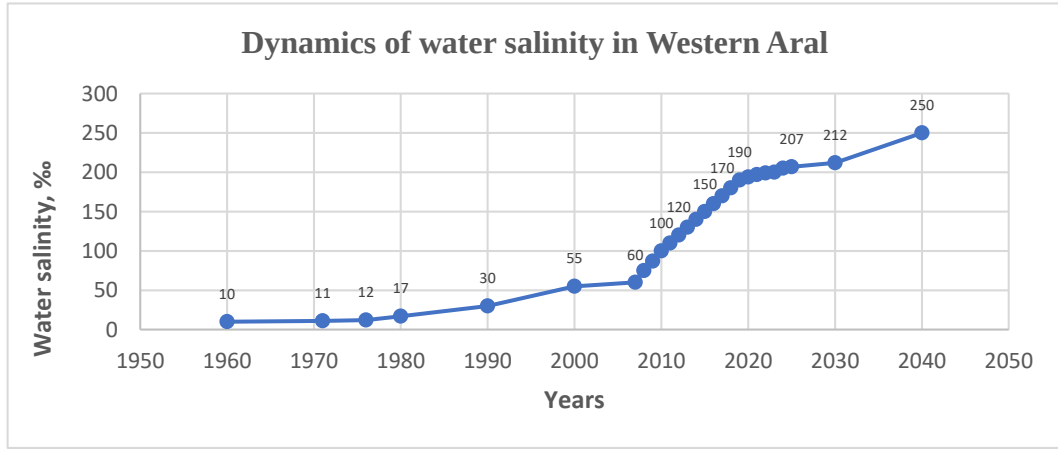




Western Aral and dried bottom area on the image of «Landsat 8» 28 March 2025

The Aral sea zone «Landsat 8» 23 November 2025





Parameters of the key remaining Water Bodies in the South of Aral Sea

http://www.cawater-info.net/aral/data/monitoring_amu

Date	Western Aral	Eastern Aral	System of the Sudochie lakes	Lake Rybachie	Lake Muynak	System of the Dzyltyrbas lakes
Water surface area, hectares						
November 2011	Not visible	Not visible	10948,9	3082,6	**3587,9**	**7682, 3**
October 2012	**369659,2**	215986,1	12002	**5231,8**	1161,9	4646,8
October 2013	361979	139963	10327,3	2673	1014	5920
November 2014	324003	96829	9183,4	1046,7	111,4	5509,8
October 2015	300707	313037	14645,5	3794,3	1698,9	7503,1
September 2016	291583	125457	**21987,3**	3137,2	1272,5	6247,3
October 2017	270788	**251351**	17466	3588,5	1018,4	6582,9
November 2018	268399,2	128291	9860	2740,6	395	5567
June 2019	264967	34965	12977	2332,9	295,5	5233,1
July 2020	255799	166507	14672,1	2601,2	606,2	5731,7
October 2020	253406	54962	12276,3	2186,2	431,3	6332,9
April 2021	291875	78369	13411	2383,7	602,5	6021,1
August 2021	241290	31469	9634,9	1263,3	151,3	5570
September 2021	235023	18113	8822	140	108	5125
6 October 2022	211800	Not visible	4325	0,18	5,31	213
18 January 2023	209 733	364	6906	1574	2754	451
26 May 2023	210294	2588	9473	1871	129	5300
13 July 2023	208318	406	3101	531	16	890
17 October 2023	200885	15	4981	0	12	2324,4
18 April 2024	199234	15	15293	1996	1382	14247
6 June 2024	199079	47	9521	1735	168	5522
22 December 2024	Not visible	Not visible	13821	1207	1273	**15742**
12 March 2024	Not visible	Not visible	18004	3228	2545	9164
16 June 2025	191657	Not visible	8057	1366	167	5662
23 November 2025	**186661**	**37**	**4806**	**1021**	**202**	**7374**
Water Level (Baltic system, m) **for West Aral** data from Hydromet station Aktumsuk (45,0809,8; 58,1732,4)						
2011 (31 May)	**27,74**	27,8				
2021 (31 May)	21,13	N/A	51,06	50,62	50,77	50,83
2022 (31 December) Delta Dept	19,57 (29.12.22)	N/A	49,85	49,0	49,9	47,8
2023 (30 June) Delta Dept	19,26	N/A	49,85	49,61	49,9	47,8
2024 (31 July) Delta dep	18,81	N/A	49,85	49,20	49,90	50,80
2025 (1 July) Delta dep	**18,34**	N/A	49,85	50,25	49,90	50,80
2025 (23 November) Delta dep	**18,19**	N/A	49,80	49,00	49,90	50,80
Mineralization (2021), G/L	180 (in 2025 = **207**)	60,0	7,5	10,0	10,0	15,0

As we can see from above demonstrated data, such high variability in annual water inflow has an extremely negative impact on the hydrological stability of the water bodies of the Southern Aral Sea region. This leads to:

- Ecological destruction in the area of individual water bodies.
- Disruption of biodiversity.
- Instability of the water regime, which develops uncontrollably, under the influence of random factors.
- Unstable salinity, which directly impacts fish populations and flora.

Until 2014, Uzbekistan attracted no more than $300 million per year to Karakalpakstan (primarily through the IFAS)—a rather modest amount given the scale of the environmental disaster. This indicates the low priority the region received in state budget policy during the first two decades of independence.

A breakthrough was the International Conference on Aral Sea Problems, held in Urgench in the fall of 2014 at the initiative of the IFAS. Resolution No. 255 of the Cabinet of Ministers of the Republic of Uzbekistan dated August 29, 2015, launched the **"Comprehensive Program for Mitigation of the Consequences of the Aral Sea Disaster, Restoration, and Socioeconomic Development of the Aral Sea Region for the Period 2015-2018“.**

The program included 235 projects totaling $1,920.8 million, of which $736.4 million was Uzbekistan's contribution from the state budget and $1,184.4 million was loans from international financial agencies.

This marked the beginning of a systemic approach. It is important to note that funding alone does not guarantee success. Key indicators of effective implementation are the availability and effectiveness of projects on water conservation, lake restoration, environmental monitoring, and community training.

After becoming President of the Republic of Uzbekistan in late 2016, Shavkat Mirziyoyev radically changed the situation. Since 2017, Uzbekistan's activities in the Aral Sea region have been carried out in four parallel areas:

State programs initiated by the Government of Uzbekistan

Activities of the International Fund for Saving the Aral Sea (IFAS) in Uzbekistan (https://aral.uz).

Activities within the framework of the Aral Sea UN Human Security Trust Fund for the Aral Sea in Uzbekistan (Aral Sea UN Human Security Trust Fund for the Aral Sea in Uzbekistan (undp.org).

4. Activities supported by international donors (GIZ, World Bank, ADB, UNDP-GEF, EIB, JICA, KOIKA, USAID-WAVE, CAREC, and many others).

INSTEAD OF CONCLUSION

The human right to a favorable environment is fixed in legislation of the Republic of Uzbekistan, in particular in the Law on Nature Protection (https://suvmap.uz/storage/open-data/November2023/qtSHNQynXfqqQCL3gjAw.pdf).

This law establishes the legal, economic, and organizational foundations for preserving the natural environment and rationally using natural resources. Its goal is to ensure balanced and harmonious development of relations between humans and nature, protection of ecological systems, natural complexes, and individual objects, and to guarantee the rights of citizens to a favorable environment.

Furthermore, Constitution of the Republic of Uzbekistan underlines that our country strives to preserve a healthy environment based on the generally recognized principles and norms of international law.

As we can see from the presentation, in relation to the Aral Sea, humans have violated these legal principles. Therefore, participants in this course are encouraged to consider the differences between the concepts of "human rights" and "human freedoms."Human rights are the ability to do and implement certain activities protected and ensured by the state. They are what is permitted by law and consistent with human nature.Human freedoms are the absence of any restrictions on activity and behavior.

Thank you for attention!
We are looking for productive cooperation

Savitsky Museum in Nukus:
The Art that Makes Us Better

«Viam supervadet vadens cunctim»

Walk together and you shall reach

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