

Visualization and communication of environmental data and information

First Meeting of the Steering Committee and
Inception Workshop for the GEF project on PRTR
26-28 Nov 2015
Madrid, Spain

The PRTR Protocol requires each Party:

- **publicly accessible** through Internet, free of charge
- **searchable** according to separate parameters
- **user-friendly** in its structure and provide links to other relevant registers
- presents **standardized, timely data** on a structured, computerized database
- covers releases and transfers **of at least 86 pollutants**
- covers releases and transfers from certain types **of major point sources**
- accommodates available data on **releases from diffuse sources**
- has **limited confidentiality** provisions and
- allows for **public participation** in its development and modification

Players of PRTRs process:

- “...The dissemination of PRTR data is a powerful tool for communicating information about the environment. Everyone benefits from available information:
 - **Government** may use them to evaluate progress towards achieving their environmental policy goals
 - **Industry** may use PRTR data to improve environmental management efforts
 - **NGOs** have played a substantial role in bringing PRTR data to the public and making them more understandable. Public access to PRTR data may also constitute a basis for dialog with individual facilities and can help the public better understand local conditions ...”

Why open and available information is so important?

Important trends:

- **access** to information is highly prioritized (and not only “upon request”)
- increasing environmental legislation - **reporting** is more demanding

Good and timely information needed to:

- support policy development and implementation
- guide allocation of financial and human resources
- support environmental democracy
- implement international agreements
- take right decision at the different levels

7 Shared Environmental Information System (SEIS) principles:

Information should be:

- managed as **close** as possible to its source
- collected **once**, and shared with others for many purposes
- readily **available** to easily fulfil reporting obligations
- easily **accessible** to all users
- accessible to enable **comparisons** at the appropriate geographical scale, and citizen participation
- fully available to the **general public**, and at the national level in the relevant national language(s)
- supported through common, free **open** software standards

As practice shows...

Information should be:

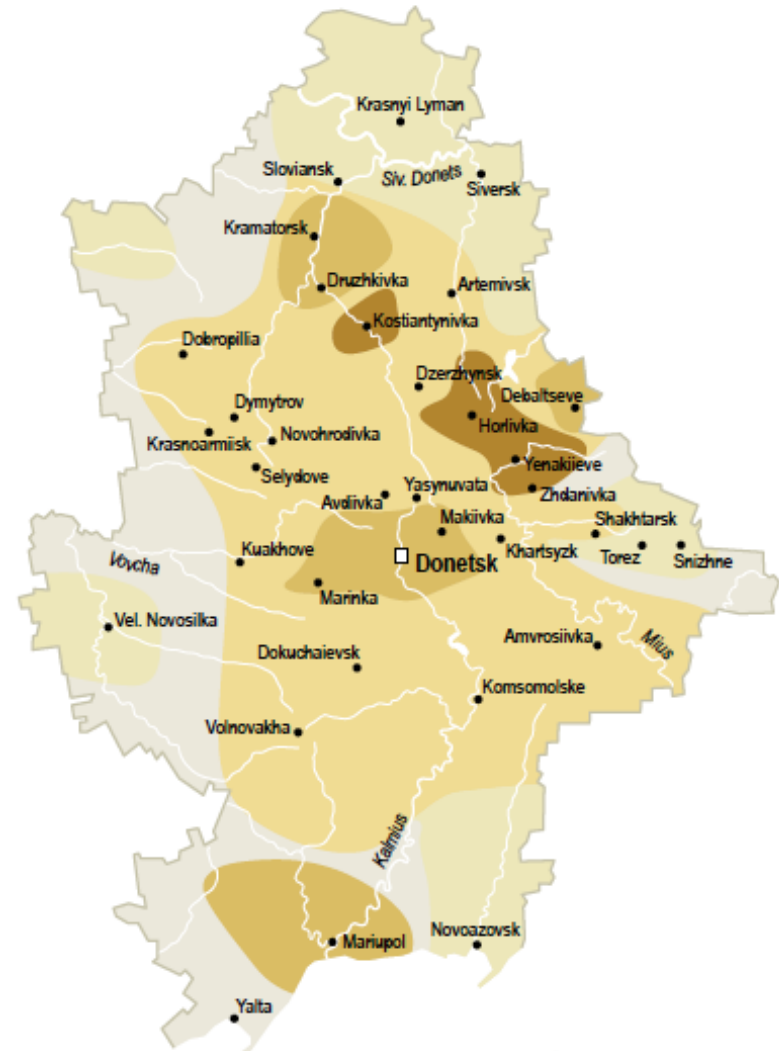
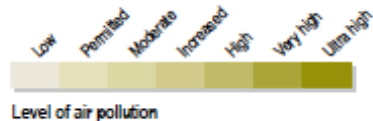
- Easy communicated
- Well visualised with less text
- Interpreted and explained in simple manner for better understanding
- Presented in a creative way

Air and soil pollution in Donetsk area



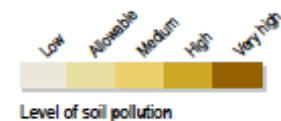
Air pollution in Donetsk Oblast

Map produced for ENVSEC by ZOI Environment Network, September 2010
 Source: The Land of our Concern, Ministry of Environmental Protection of Ukraine, Donetsk 2010



Soil pollution in Donetsk Oblast

Map produced for ENVSEC by ZOI Environment Network, September 2010
 Source: The Land of our Concern, Ministry of Environmental Protection of Ukraine, Donetsk 2010



Environmental impacts from pollution

Environmental impacts from pollution

| Parameter | Chemistry | Environmental impact |
|------------------------|---|---|
| Low pH | H ⁺ | Degradation and death of animals and plants, reduction in drinking water quality, mobilization of metal ions, corrosion of man made structures. |
| Iron precipitates | Fe ³⁺ , Fe ²⁺ , Fe(OH) ₃ | Discoloration and turbidity, clogging up of fish gills, encrustation of man made-structures. |
| Trace metals | Cu, Pb,Zn,Cd,Co,Ni,Hg,As,Sb | Degradation and death of animals and plants, bioaccumulation, reduction in drinking water quality, soil and sediment contamination |
| Total dissolved solids | Ca, Mg,K,Na, Fe, Al, Mn,Si, SO ₃ | Reduction in drinking water quality, soil and sediment contamination. |

Source: Mine wastes: characterization, treatment, and environmental impacts by Bernd G. Lottermoser, 2007

Mercury and human health

Mercury and human health

GENERAL EXPOSURE



Large predatory fish



Vegetables from contaminated soils



Cosmetics, Soaps



Use and damage of products containing mercury (e.g. compact fluorescent lamps, batteries, medical devices)



Waste

OCCUPATIONAL EXPOSURE



Manufacturing of products containing mercury (e.g. compact fluorescent lamps, batteries, medical devices)



Artisanal and small-scale gold mining



Industry
(e.g. Chlor-alkali industry, cement production, metal production)

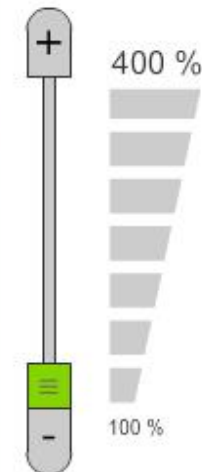


Mining in the Balkans






Mining and Environment in the Western Balkans



Zoom level



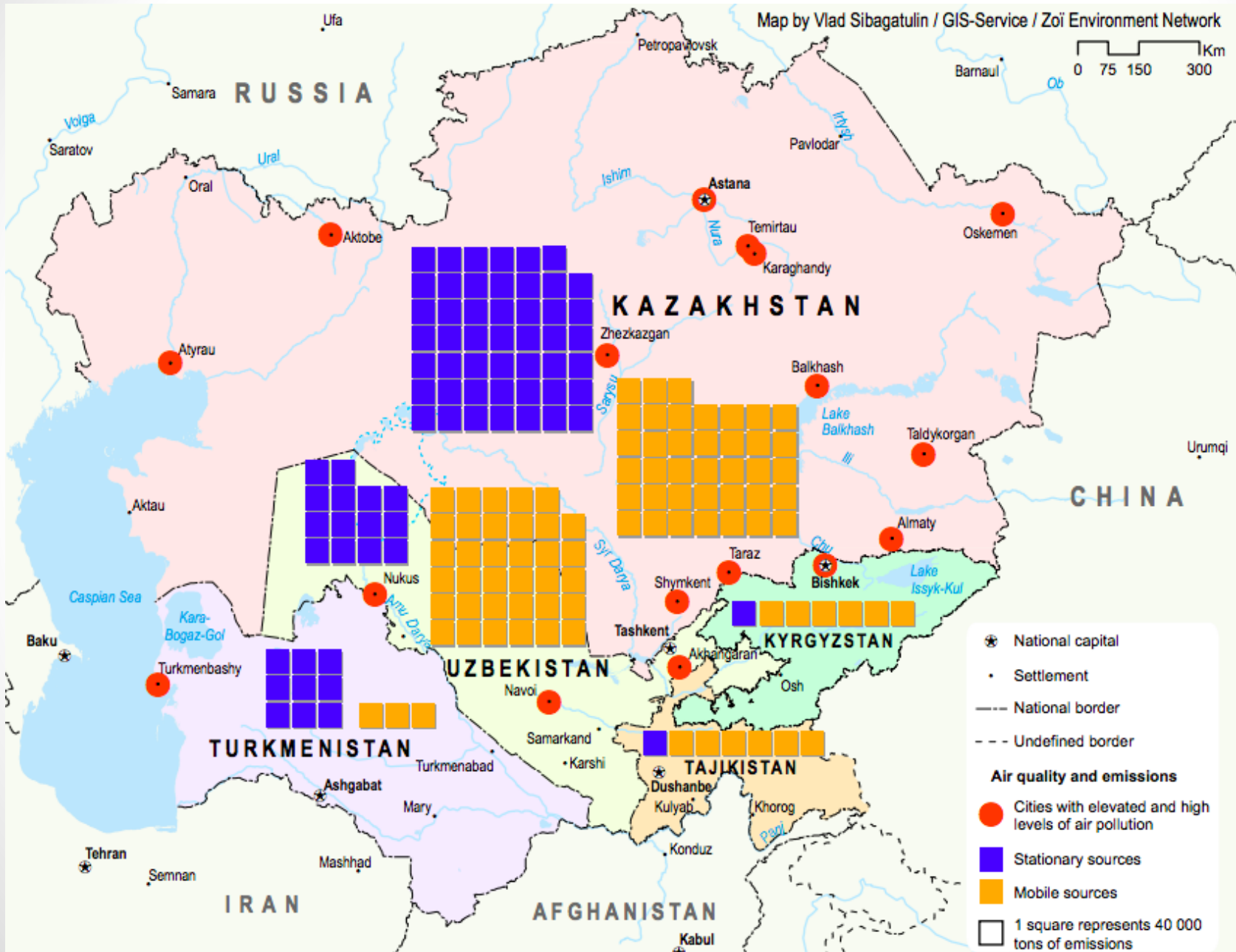
Visible layers

-  Prioritized mining site
-  Assessed mining site
-  Place names
-  Serious water pollution
-  National boundary
-  River
-  Watershed boundary

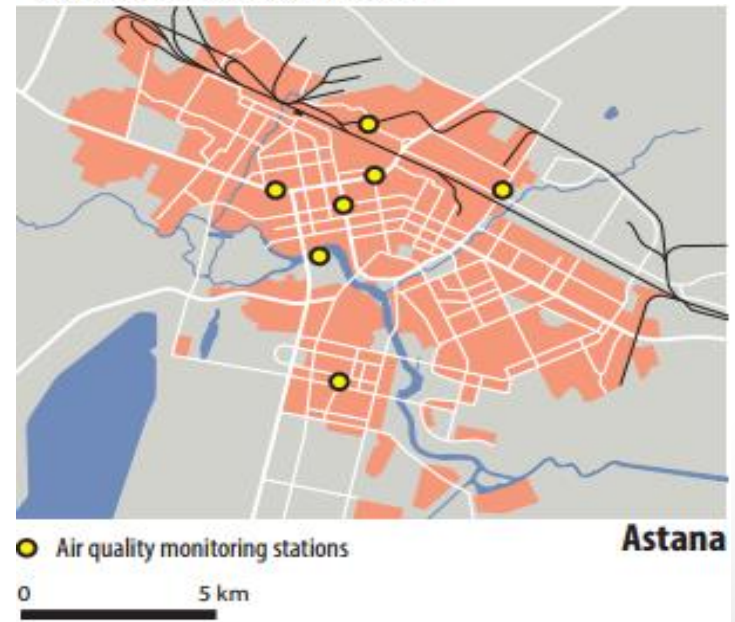
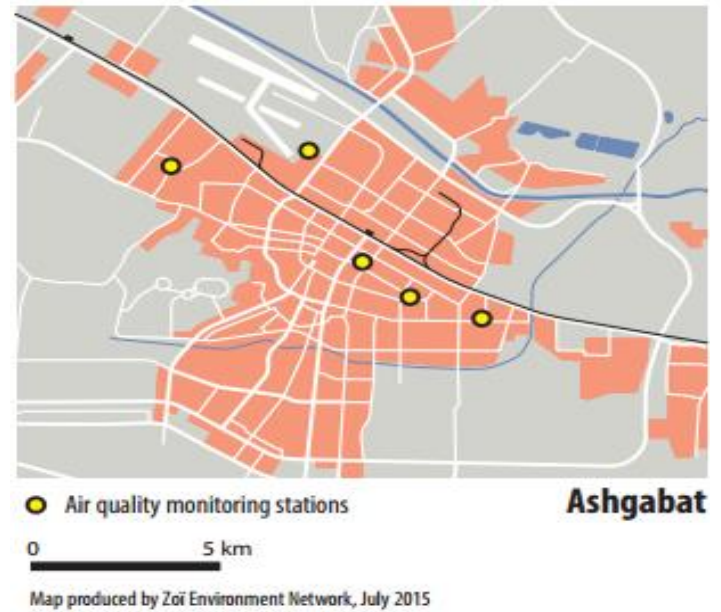
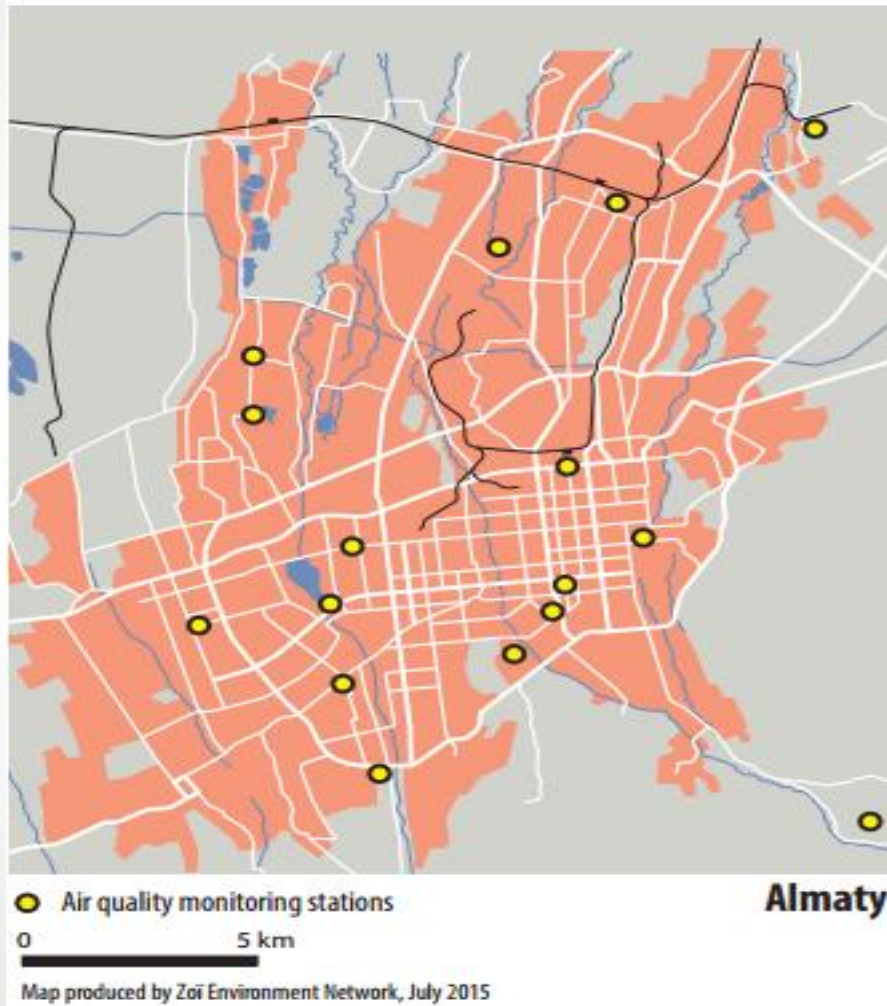
Financed by
Austrian
Development Cooperation



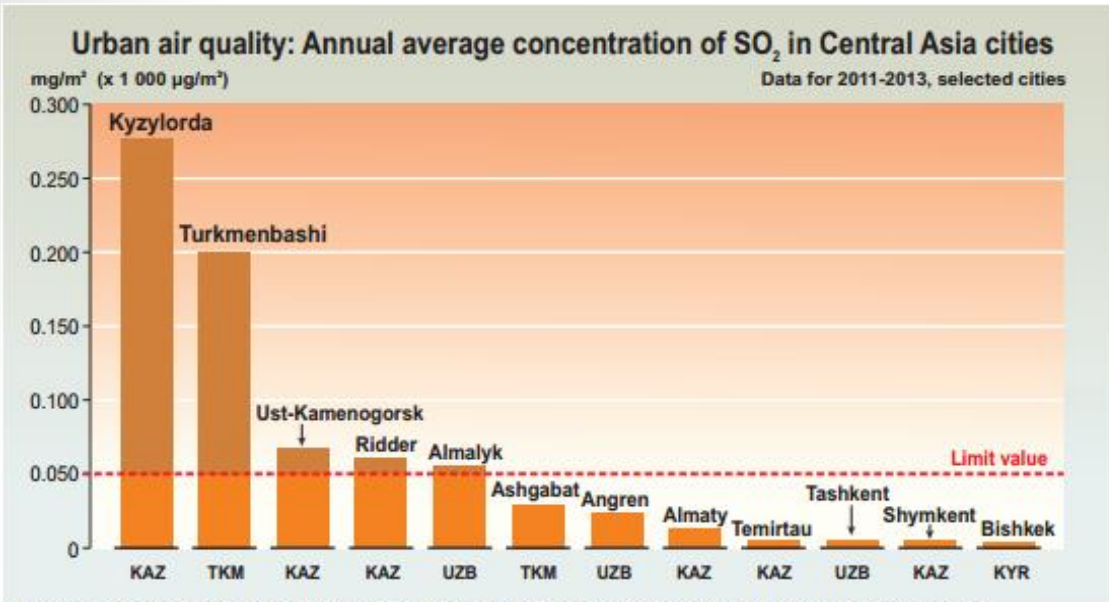
Air pollution in Central Asia



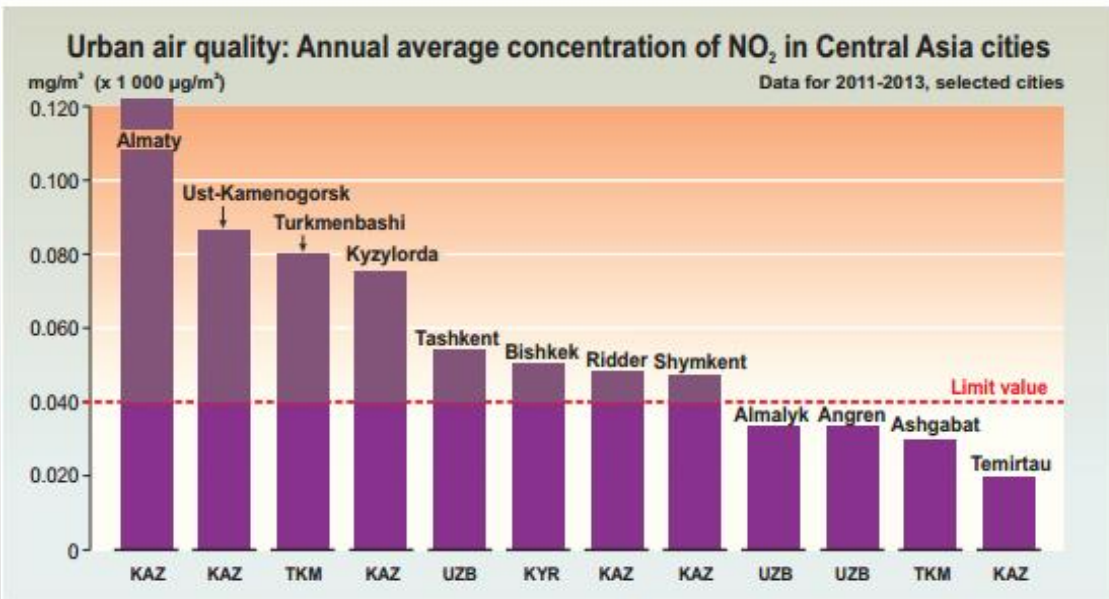
Air quality monitoring



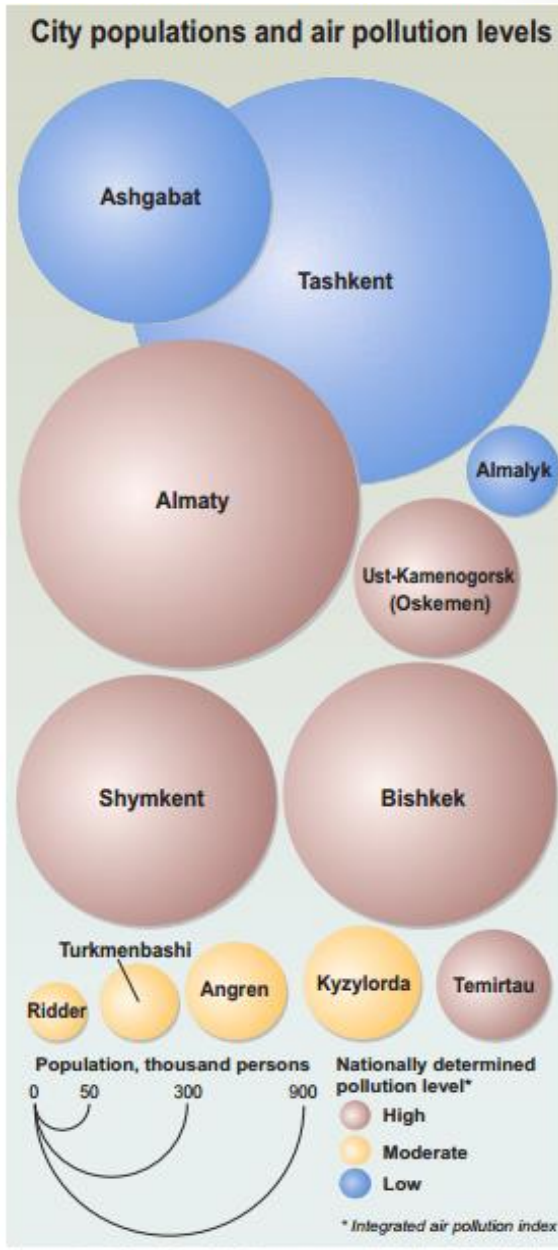
Air quality in Central Asia



Sources: Latest National State of the Environment reports and statistics (2010-2014), FLERMONCEA project reports (2015). Data are for the most recent available year.



Sources: Latest National State of the Environment reports and statistics (2010-2014), FLERMONCEA project reports (2015). Data are for the most recent available year.

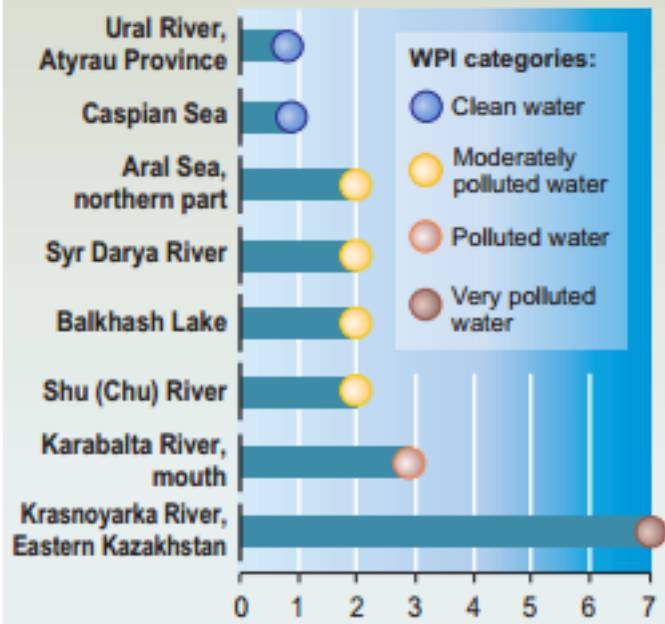


Sources: Latest National State of the Environment reports (2010-2015), FLERMONCEA project reports (2015), Kazhydromet. Data are for the most recent available year: 2011-2013

Water quality in selected rivers of Central Asia

Water quality in Kazakhstan

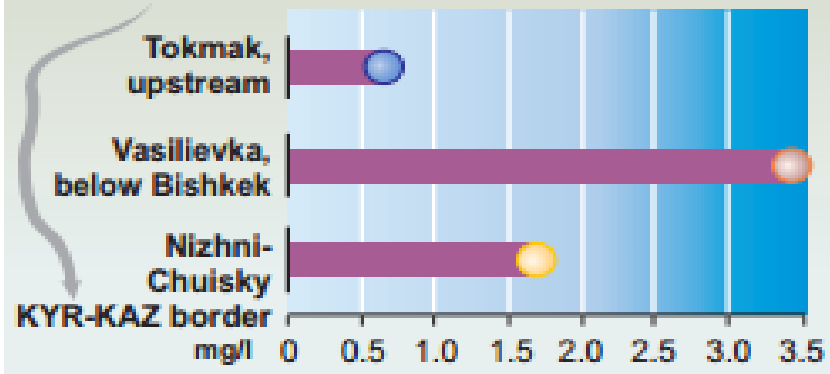
Water Pollution Index (WPI)



Source: Kazhydromet (<http://www.kazhydromet.kz>). Data for 2014.

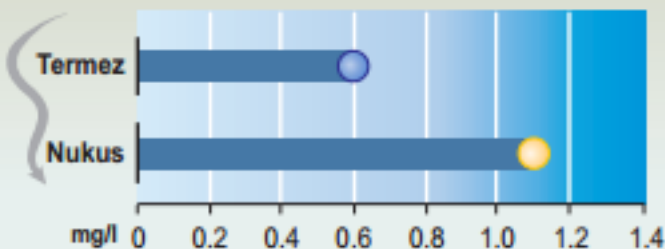
Water quality: Chu River, Kyrgyzstan

Biological oxygen demand (BOD)



Sources: FLERMONECA project reports (2015), Kyrgyzhydromet. Data for 2013.

Salt content in the Amu Darya River



Sources: FLERMONECA project reports (2015), Uzhydromet. Data for the years 2010-2011.

Water quality: Chu and Talas Rivers



Sources: Latest National State of the Environment reports and statistics (2010-2014), FLERMONECA project reports (2015), SIC ICWC-UNECE web-portal "Water quality in Central Asia". This map reflects and generalizes the situation in 2010-2014.

SEIS for Seven Lake, Armenia

Home / Environmental Impact Monitoring Center SNCO of the Ministry of Nature Protection - Statistics

Table

Chart

Map

Water quality indicator, by observation points and years / BOD5 (mg O/l)

Search:

Copy

CSV

Excel

PDF

Print

| Station | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|-------|-------|-------|-------|-------|-------|
| 115*. peninsula 3.5 km to the east of the peninsula | | | | | 2.3 | |
| 115. peninsula 3.5 km to the east of the peninsula | 2.502 | 2.512 | 2.411 | 2.85 | | |
| 116*. peninsula 700 Azimuth from Peninsula | | | | | 1.1 | |
| 116. peninsula 700 Azimuth from Peninsula | 2.59 | 2.338 | 2.244 | 2.833 | 2.667 | |
| 117*. vertical 121 Dzknaget 1 km from the river mouth | 2.468 | 2.6 | 2.2 | 2.76 | 2.95 | |
| 117. vertical 121 Dzknaget 1 km from the river mouth | 2.503 | 2.55 | 2.344 | 2.957 | 3.05 | |
| 118*. Shorja 0.5 km from the village to the south-west | | | | | 2.267 | 2.675 |
| 118. Shorja 0.5 km from the village to the south-west | 2.523 | 2.388 | 2.156 | 2.967 | 2.95 | 3.02 |
| 119*. Shorja 6.6 km to the south-west of Azimuth 225 degrees from Shorja village | 2.392 | 2.462 | 2.256 | 3.167 | 2.9 | |
| 119. Shorja 6.6 km to the south-west of Azimuth 225 degrees from Shorja village | 2.402 | 2.512 | 1.922 | 2.867 | 3.533 | |
| 120*. Artanish 2 135 km Artanish settlement here. azimuth | 2.367 | 2.225 | 2.044 | 2.717 | 2.275 | 2.1 |
| 120. Artanish 2 km from Artanish settlement of 135 degrees. Azimuth | 2.45 | 2.6 | 2.411 | 2.733 | 2.575 | 1.8 |
| 121*. Pambak 10 km from Pambak 270 degrees. azimuth | 2.268 | 2.062 | 1.889 | 2.633 | 3.1 | 1.5 |

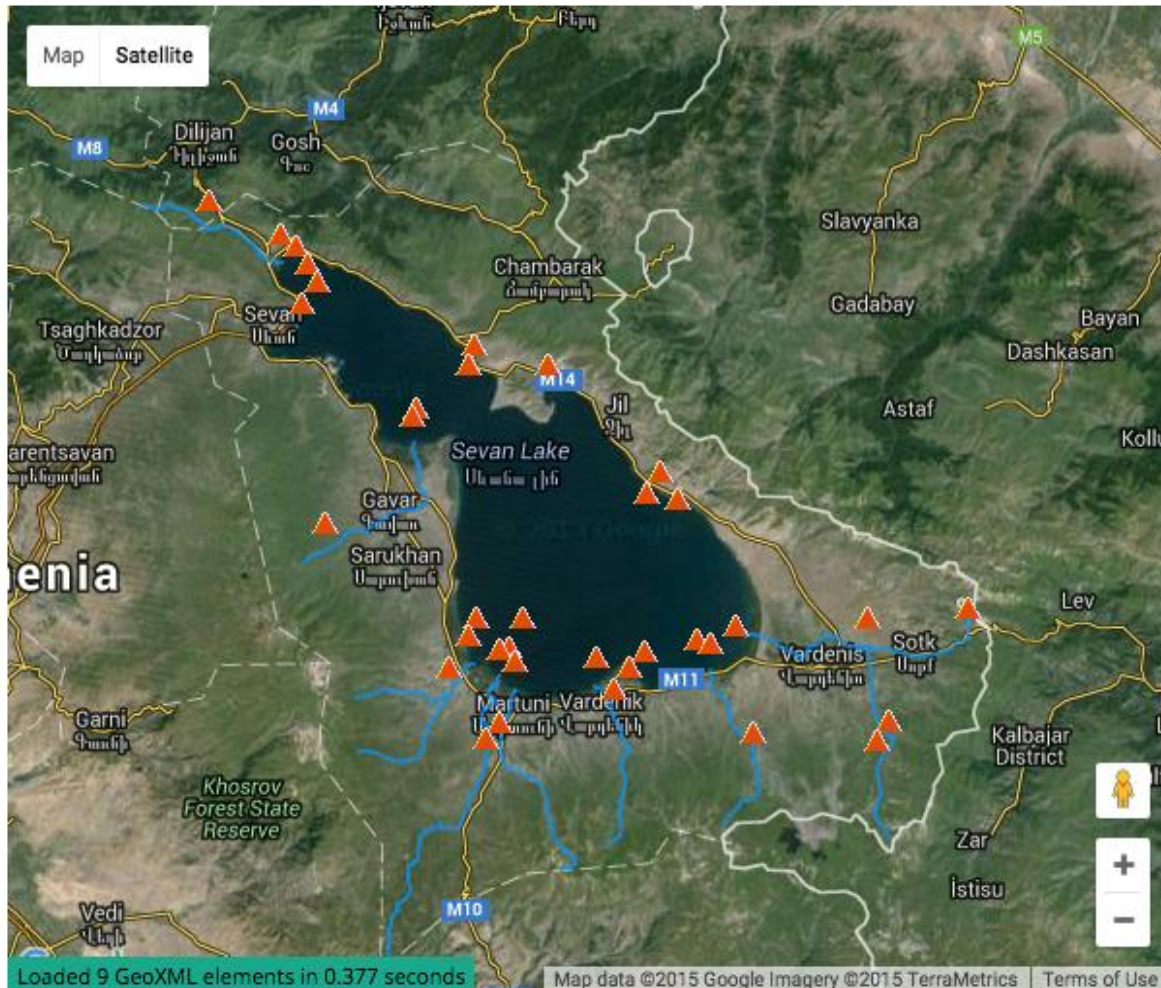
All Stations



- 60. Semyonovka 0.5 km up from the village
- 61. Semyonovka Estuarine
- 62. Verin Shorja 0.5 km up from the village
- 63. Verin Shorja Estuarine
- 64. mine 0.5 km up the mine
- 65. mine Estuarine
- 66. Aghbyuradzor 0.5 km up from the village
- 67. Aghbyuradzor Estuarine
- 68. Tsovinar 0.7 km up from the village
- 69. Vardenik 0.5 km up from the village
- 70. Vardenik Estuarine
- 71. Geghhovit 0.5 km up from the village
- 72. Geghhovit Estuarine
- 73. Lernakert 0.5 km up from the village
- 74. Lernakert Estuarine
- 75. Dzknagyugh 0.01 km down from Shorbulakh river discharge point

SEIS for Seven Lake, Armenia

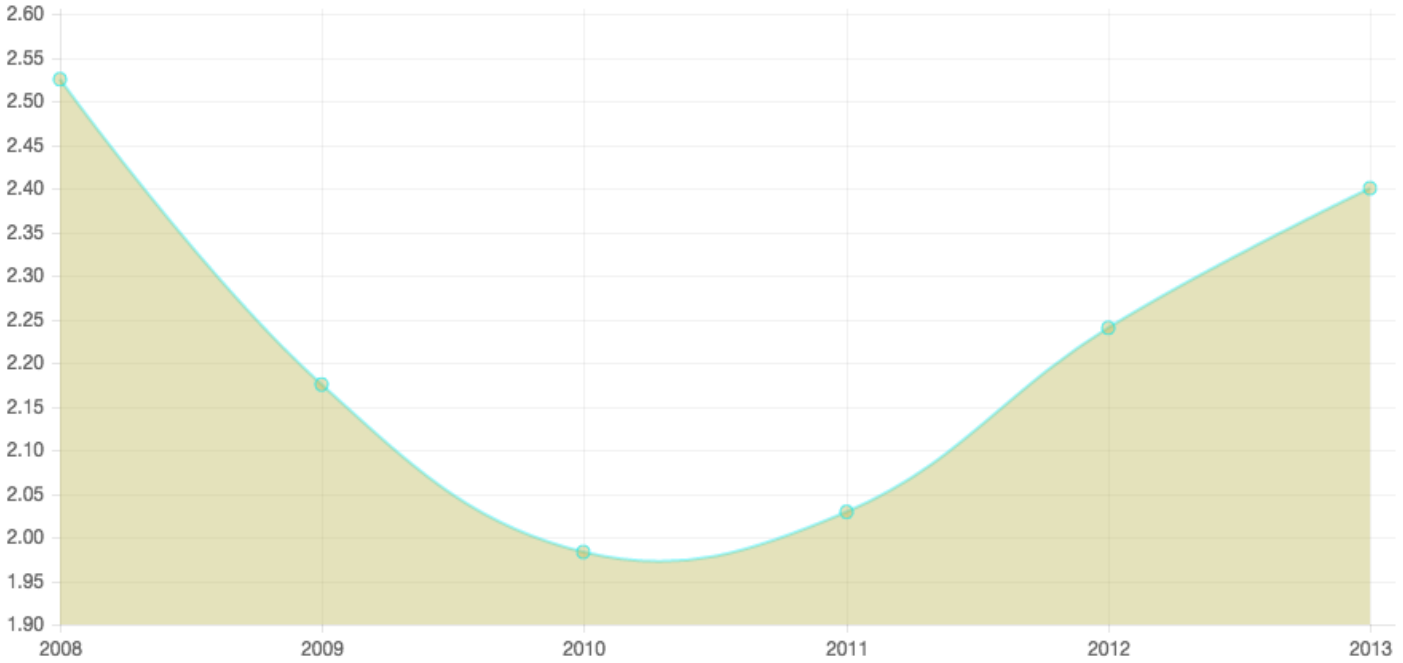
Water quality indicator, by observation points and years / BOD5 (mg O/l)



- ✓ Lake Sevan
- ✓ Environmental Impact Monitoring Center SNCO of the Ministry of Nature Protection
- ✓ ▲ 115*. peninsula 3.5 km to the east of the peninsula
- ✓ ▲ 115. peninsula 3.5 km to the east of the peninsula
- ✓ ▲ 116*. peninsula 700 Azimuth from Peninsula
- ✓ ▲ 116. peninsula 700 Azimuth from Peninsula
- ✓ ▲ 117*. vertical 121 Dzknaget 1 km from the river mouth
- ✓ ▲ 117. vertical 121 Dzknaget 1 km from the river mouth
- ✓ ▲ 118*. Shorja 0.5 km from the village to the south-west
- ✓ ▲ 118. Shorja 0.5 km from the village to the south-west
- ✓ ▲ 119*. Shorja 6.6 km to the south-west of Azimuth 225 degrees from Shorja village
- ✓ ▲ 119. Shorja 6.6 km to the south-west of Azimuth 225 degrees from Shorja village
- ✓ ▲ 120*. Artanish 2 135 km Artanish settlement here. azimuth
- ✓ ▲ 120. Artanish 2 km from Artanish settlement of 135 degrees. Azimuth
- ✓ ▲ 121*. Pambak 10 km from Pambak 270 degrees. azimuth
- ✓ ▲ 121. Pambak 10 km from Pambak 270 degrees. azimuth
- ✓ ▲ 122*. Pambak 10 km 255 degrees. azimuth

SEIS for Seven Lake, Armenia

Water quality indicator, by observation points and years / BOD5 (mg O/l)



60. Semyonovka 0.5 km up from the village



Water quality in the Dniester river

Figure 8 Monthly BOD₅ concentrations in the Dniester River at Belyaevka for the years 2004 and 2005 [mg O₂/l]

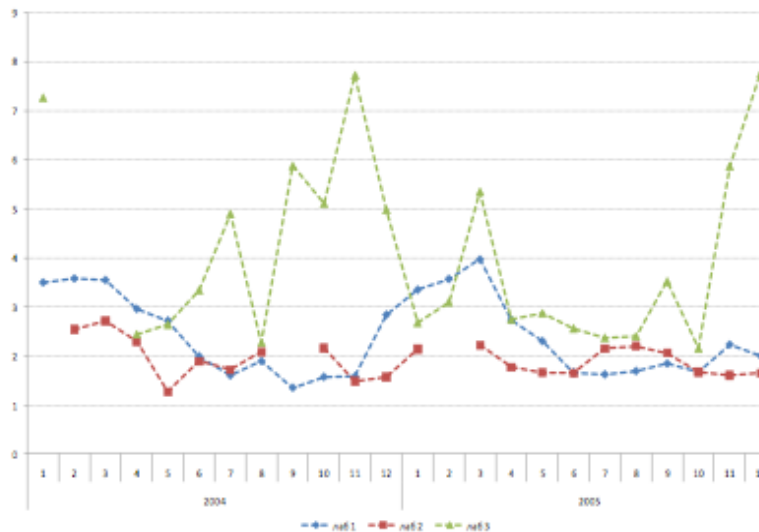


Figure 6 Monthly chloride concentrations in the Dniester River at Belyaevka for the years 2004 and 2005 [mg/l]

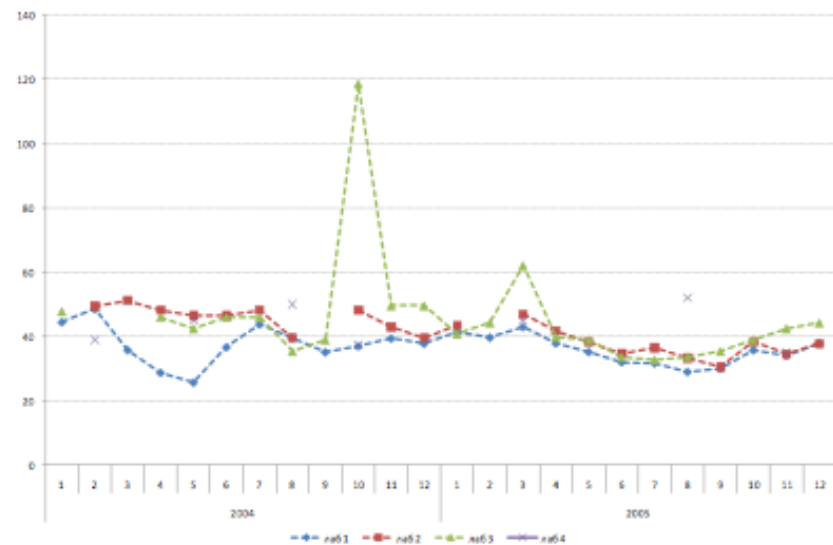


Table 9 Summary statistics for BOD₅ in the Dniester River at Belyaevka, years 2004 and 2005

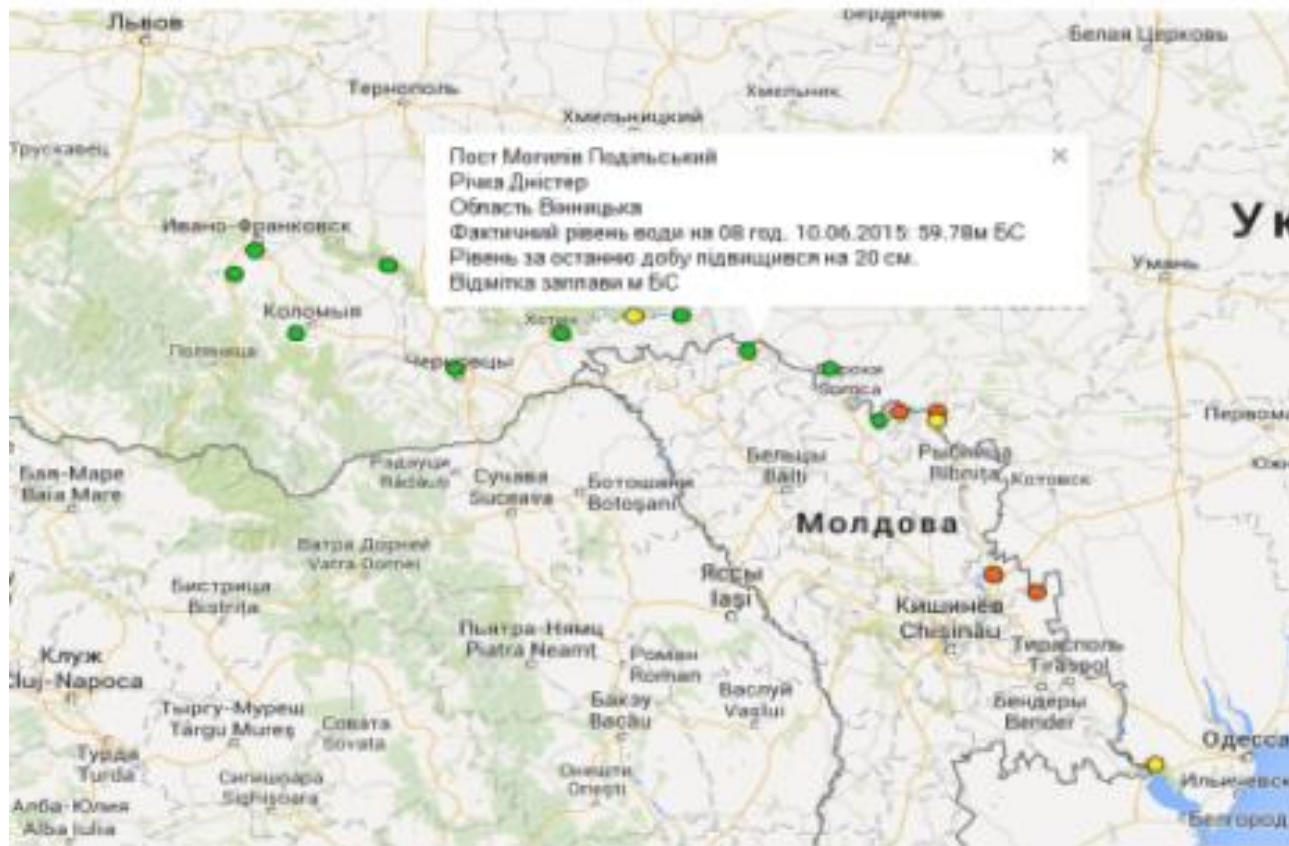
| year | statistic | unit | лаб 1 | лаб 2 | лаб 3 |
|------|-----------|--------|-------|-------|-------|
| 2004 | N | [-] | 12 | 10 | 10 |
| | minimum | [mg/l] | 1.4 | 1.3 | 2.3 |
| | maximum | [mg/l] | 3.6 | 2.7 | 7.7 |
| | average | [mg/l] | 2.4 | 2.0 | 4.7 |
| 2005 | N | [-] | 12 | 11 | 12 |
| | minimum | [mg/l] | 1.6 | 1.6 | 2.2 |
| | maximum | [mg/l] | 4.0 | 2.2 | 7.8 |
| | average | [mg/l] | 2.4 | 1.9 | 3.6 |

Table 7 Summary statistics for chloride in the Dniester River at Belyaevka, years 2004 and 2005

| year | statistic | unit | лаб 1 | лаб 2 | лаб 3 | лаб 4 |
|------|-----------|--------|-------|-------|-------|-------|
| 2004 | N | [-] | 12 | 10 | 10 | 4 |
| | minimum | [mg/l] | 26 | 40 | 35 | 37 |
| | maximum | [mg/l] | 49 | 51 | 119 | 50 |
| | average | [mg/l] | 38 | 46 | 52 | 43 |
| 2005 | N | [-] | 12 | 11 | 12 | 3 |
| | minimum | [mg/l] | 29 | 31 | 33 | 35 |
| | maximum | [mg/l] | 43 | 47 | 62 | 52 |
| | average | [mg/l] | 36 | 38 | 41 | 44 |

Hydrometeorological situation on the Dniester river

Оцінка небезпечності гідрологічної ситуації на річці Дністер у створах гідрологічних постів станом на 06 год. 04 червня 2015 р.



- Гідрологічна ситуація спокійна, рівні води знаходяться у межах русел річок
- Рівні води досягли і перевищили відмітки заплав річок, існує загроза затоплення заплавних територій, сільгоспугідь
- Рівні води досягли і перевищили небезпечні відмітки, при яких розпочинається часткове затоплення (підтоплення) територій і об'єктів, можливий небезпечний вплив на об'єкти і населені пункти
- Рівні води досягли і перевищили небезпечні відмітки, при яких відбуваються масові затоплення територій і об'єктів, можливі руйнування, порушення роботи секторів економіки, життєдіяльності

Штормові попередження

• Zoï Books •

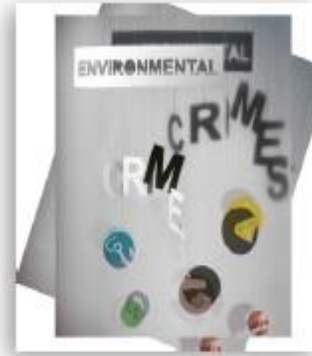


Available on www.zoinet.org

ebooks issuu.com/zoienvironment

films vimeo.com/user36611652/videos

maps & graphics flickr.com/photos/zoi



Better Mining
Brochure

Environmental Crimes
Brochure



• Zoï Videos •



Swiss International Coop CC
SDC & SECO



Disaster Risk Management
SDC



Khaidarkan video preview
Zoï

Chu and Talas rivers

Chu-Talas climate change cooperation
21 p. English & Russian
ENVSEC, UNEP, Zoï

Dniester without borders

Achievements of Cooperation
32 p. English & Russian
ENVSEC, UNCE, OSCE, UNEP

Mercury

Time to Act
44 p. English
UNEP, Zoï, GRID-Arendal

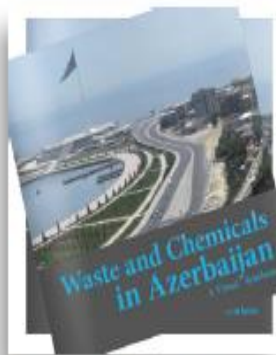
Ozone 3

Vital ozone graphics, third edition
46 p. English
UNEP, Zoï, GRID-Arendal



Occupied Palestinian Territory

Environment & Security
54 p. English
Zoï Report



Waste and Chemicals

In Azerbaijan, A visual synthesis
32 p. English
Switzerland, Zoï



Assessing Forest Restoration

Opportunities at the National Level
63 p. English, French, Portuguese, Spanish
IUCN, Zoï



Vital Waste Graphics 3

48 p. English & Russian
Basel Convention, Zoï, GRID-Arendal

More examples and publications are available at

www.zoinet.org

Zoi Environment Network

Lesya Nikolayeva

lesya.nikolayeva@zoinet.org

