WATER QUALITY ACCOUNTING: WQA CASE STUDY IN MOLDOVA LG/11/B/3

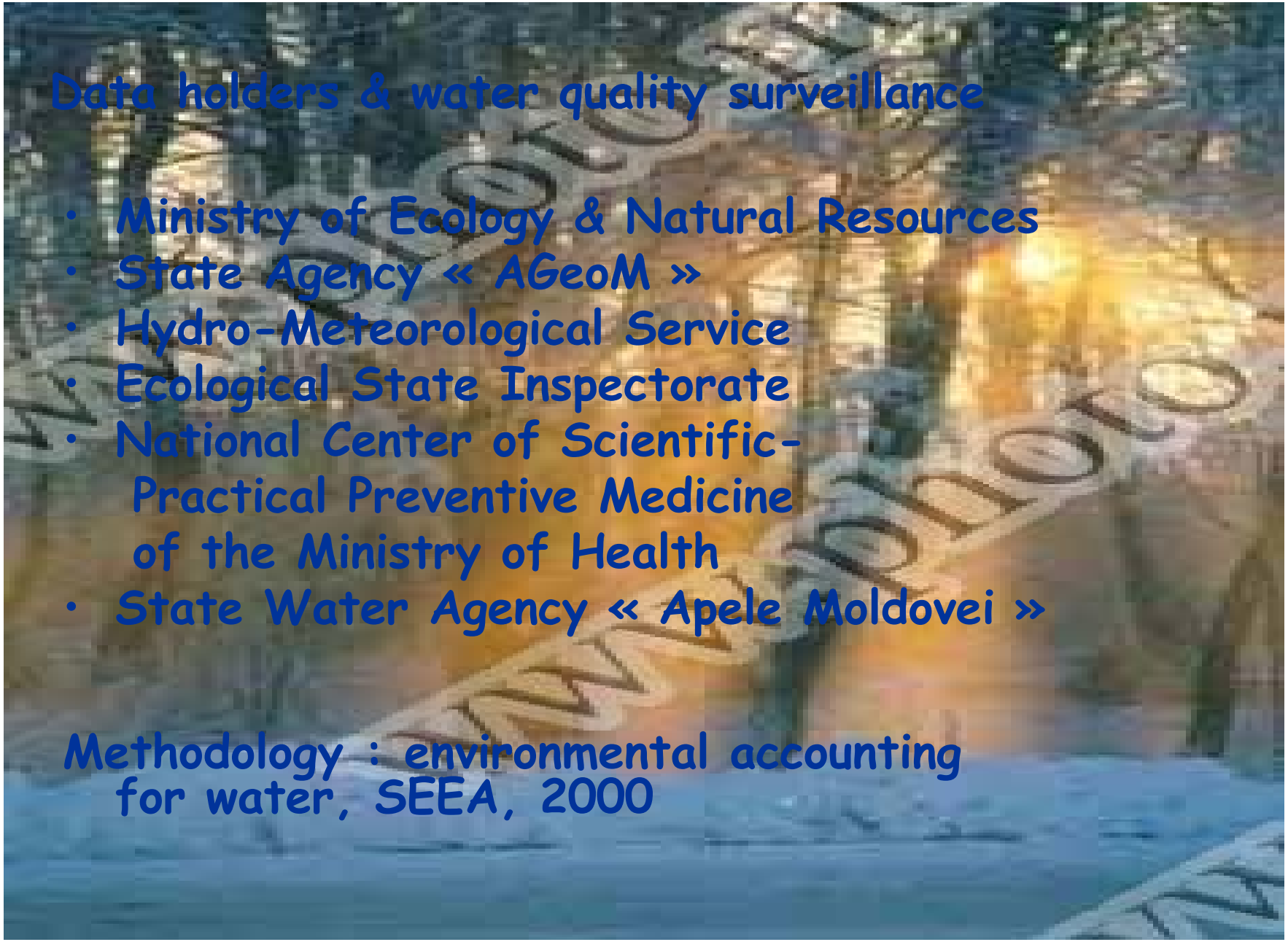
Jana TAFI and WDC team

"Consolidation WDC in Moldova" project Ministry of Ecology Moldova & BETURE-CEREC, France
The 11th London Group Meeting on Environmental Accounting, Pretoria, South Africa, 26 to 30 March 2007

Context & objects

- National : The Parliament and the Government of Moldova has adopted Framework of national policy in the water resources domain 2003-2010 (N 325-XV din 18.07.2003)
- European: Action Plan Moldova-EU & WFD
- International= two trans boundaries rivers Nistru (Ukraine) & Prut (Romania) = Conventions: The Protection and Use of Transboundary Watercourses and International Lakes , The Transboudary Effects of Industrial accidents, On Environmental Impact Assessment in a Transboundary Context ….

Project « Consolidation Water Data Centre in Moldova » COCOOP France & BETURE-CEREC (France) to Ministry of Ecology and Natural Resources of the Republic of Moldova, April 2005, 20 Th Euro

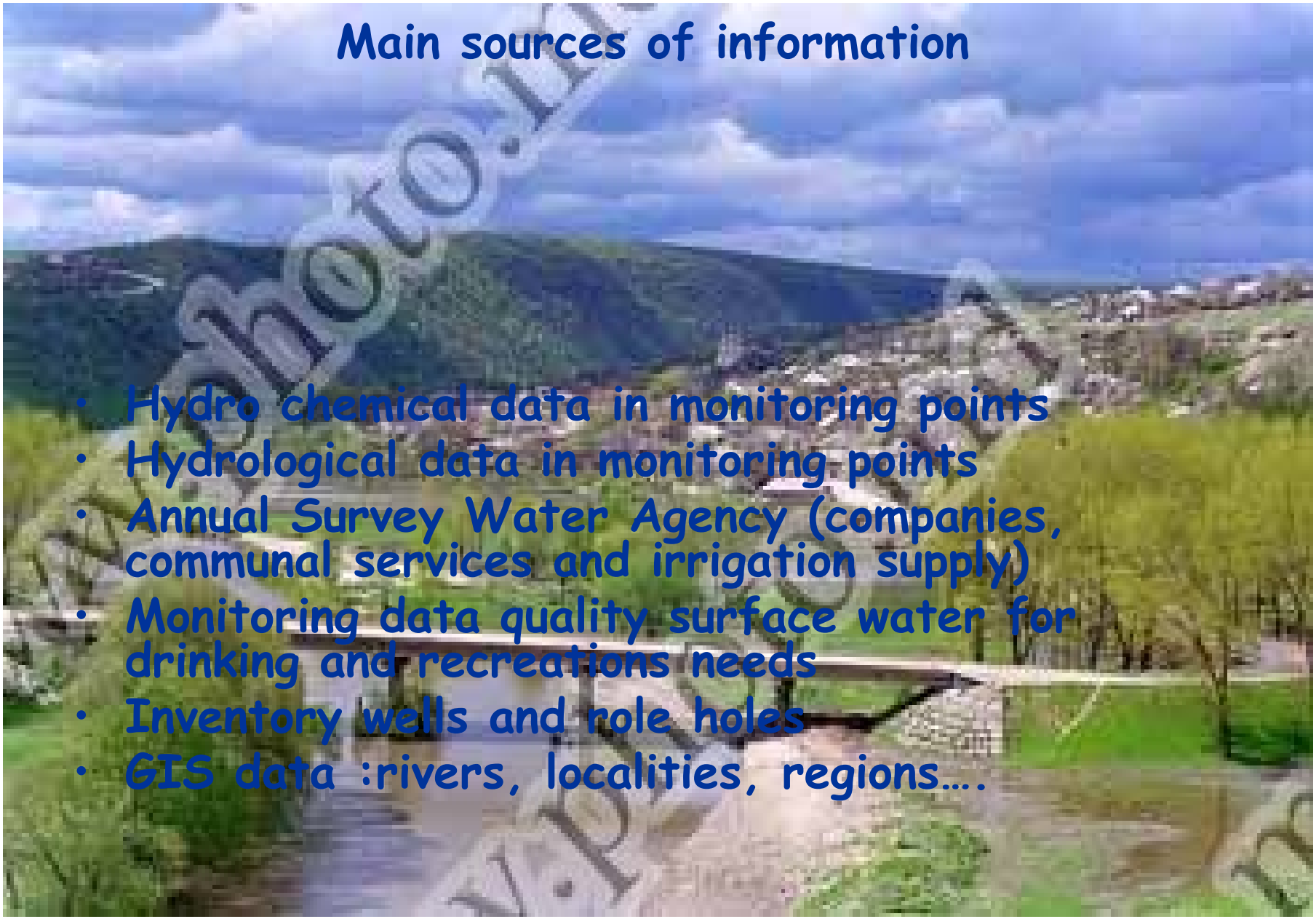

Data holders & water quality surveillance
• Ministry of Ecology & Natural Resources
• State Agency « AGeoM »
• Hydro-Meteorological Service
• Ecological State Inspectorate
• National Center of Scientific-Practical Preventive Medicine of the Ministry of Health
• State Water Agency « Apele Moldovei »
Methodology : environmental accounting for water, SEEA, 2000

Why water quality account?

WQA path to water price policy!!!

- water quality & cost water supply-sewerage
- cost water supply-sewerage & price water supply-sewerage users/consumers (households & business entities)
- price water supply-sewerage households & income households (vulnerability to low income households correlating to unemployment rate)
- water quality & investment in water supply – sewerage

Main sources of information



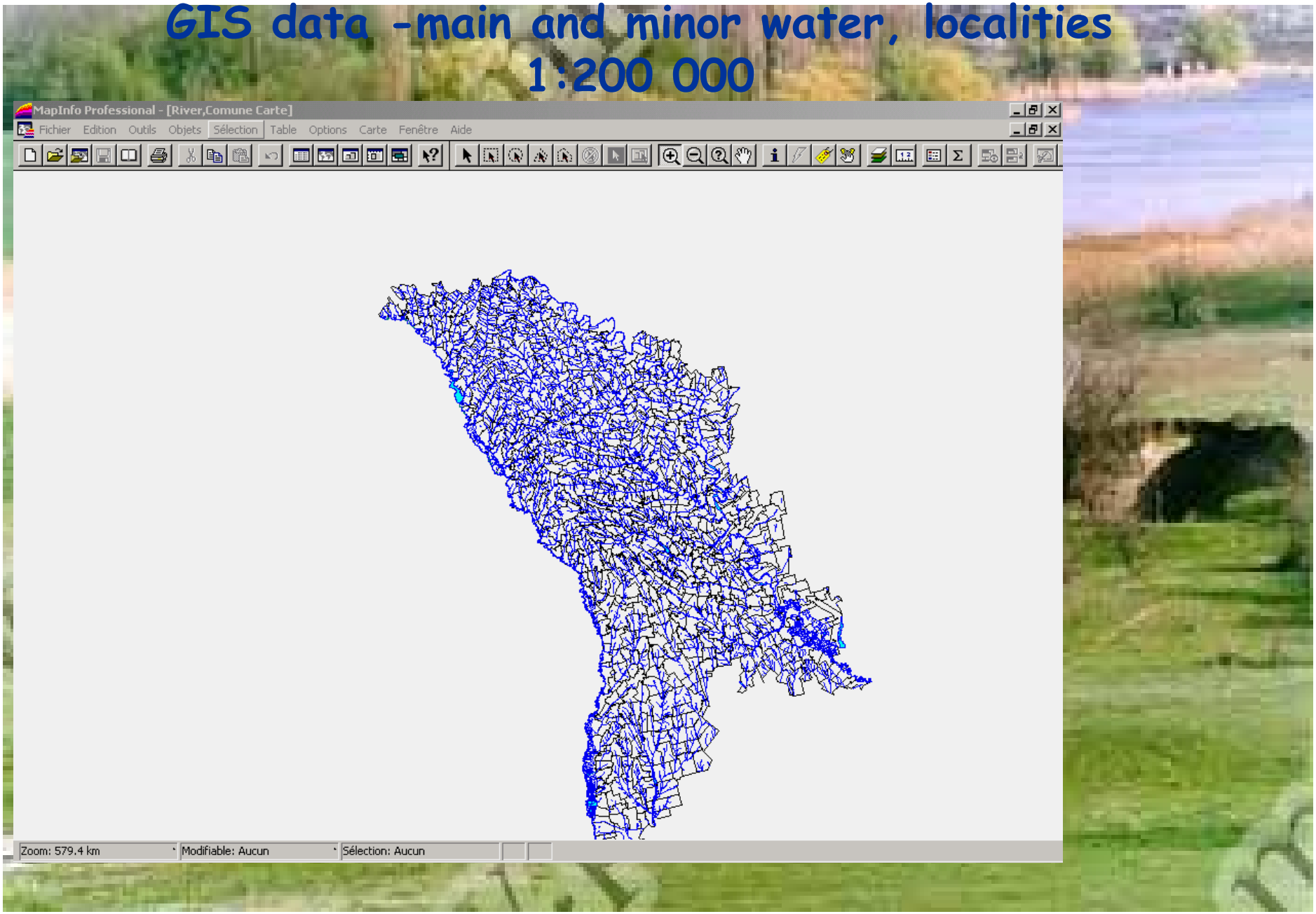
- Hydro chemical data in monitoring points
- Hydrological data in monitoring points
- Annual Survey Water Agency (companies, communal services and irrigation supply)
- Monitoring data quality surface water for drinking and recreations needs
- Inventory wells and role holes
- GIS data :rivers, localities, regions….

Results obtained from the WQA study

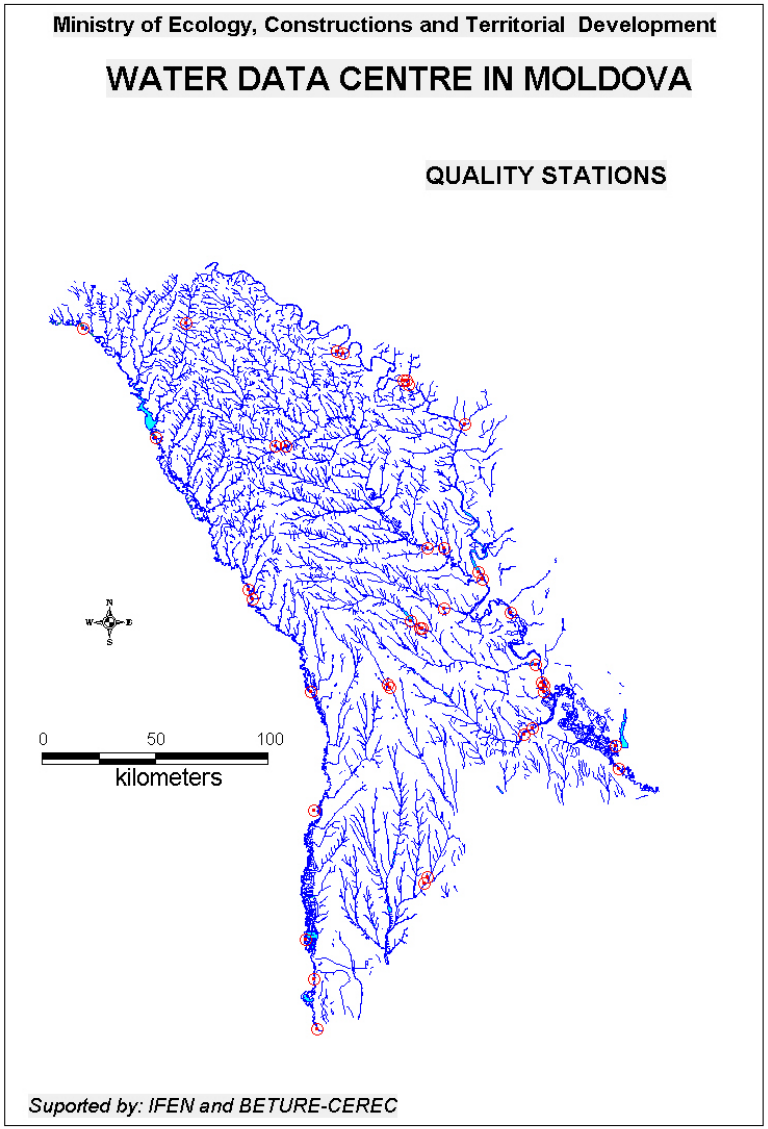
- Database on water quality, ACCESS, 1993-2003 :
  1. common principal in design C_qual & V_qual
  2. common principal in codification parameters
  3. common use GIS data
- Modern way data management: compute indicator process, update, fast response to policy demand

Preliminary results quality account water resource (French SEQ-l'eau)

GIS data -main and minor water, localities 1:200 000

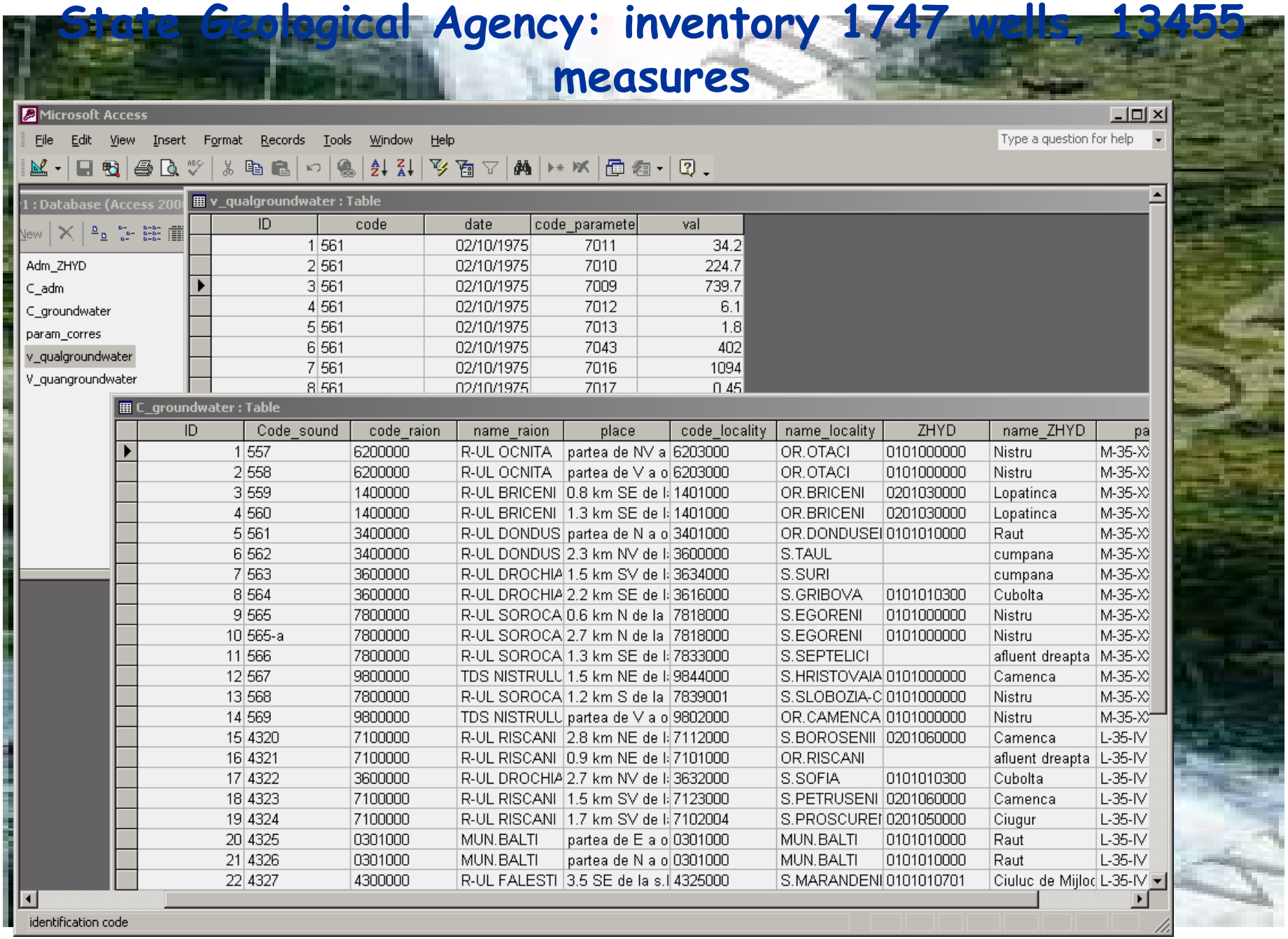


Monitoring stations "Hydrometeo Service"

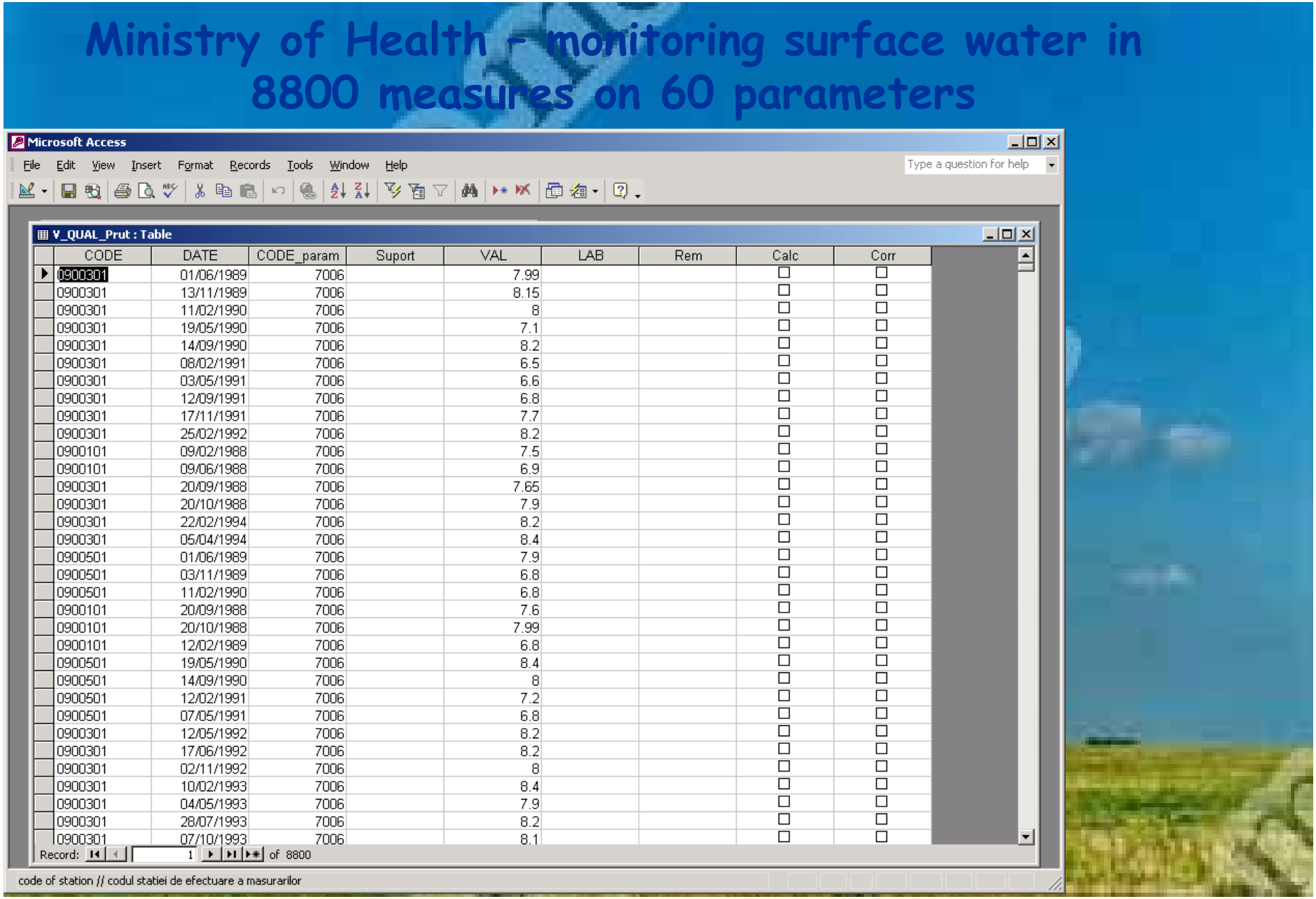


- Surface water in major and minor rivers and lakes
- 40 stations
- 60 parameters

State Geological Agency: inventory 1747 wells, 13455 measures



Ministry of Health - monitoring surface water in 8800 measures on 60 parameters



CODE	DATE	CODE_param	Suport	VAL	LAB	Rem	Calc	Corr
0900301	01/06/1989	7006		7.99			☐	☐
0900301	13/11/1989	7006		8.15			☐	☐
0900301	11/02/1990	7006		8			☐	☐
0900301	19/05/1990	7006		7.1			☐	☐
0900301	14/09/1990	7006		8.2			☐	☐
0900301	08/02/1991	7006		6.5			☐	☐
0900301	03/05/1991	7006		6.6			☐	☐
0900301	12/09/1991	7006		6.8			☐	☐
0900301	17/11/1991	7006		7.7			☐	☐
0900301	25/02/1992	7006		8.2			☐	☐
0900101	09/02/1988	7006		7.5			☐	☐
0900101	09/06/1988	7006		6.9			☐	☐
0900301	20/09/1988	7006		7.65			☐	☐
0900301	20/10/1988	7006		7.9			☐	☐
0900301	22/02/1994	7006		8.2			☐	☐
0900301	05/04/1994	7006		8.4			☐	☐
0900501	01/06/1989	7006		7.9			☐	☐
0900501	03/11/1989	7006		6.8			☐	☐
0900501	11/02/1990	7006		6.8			☐	☐
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0900101	20/10/1988	7006		7.99			☐	☐
0900101	12/02/1989	7006		6.8			☐	☐
0900501	19/05/1990	7006		8.4			☐	☐
0900501	14/09/1990	7006		8			☐	☐
0900501	12/02/1991	7006		7.2			☐	☐
0900501	07/05/1991	7006		6.8			☐	☐
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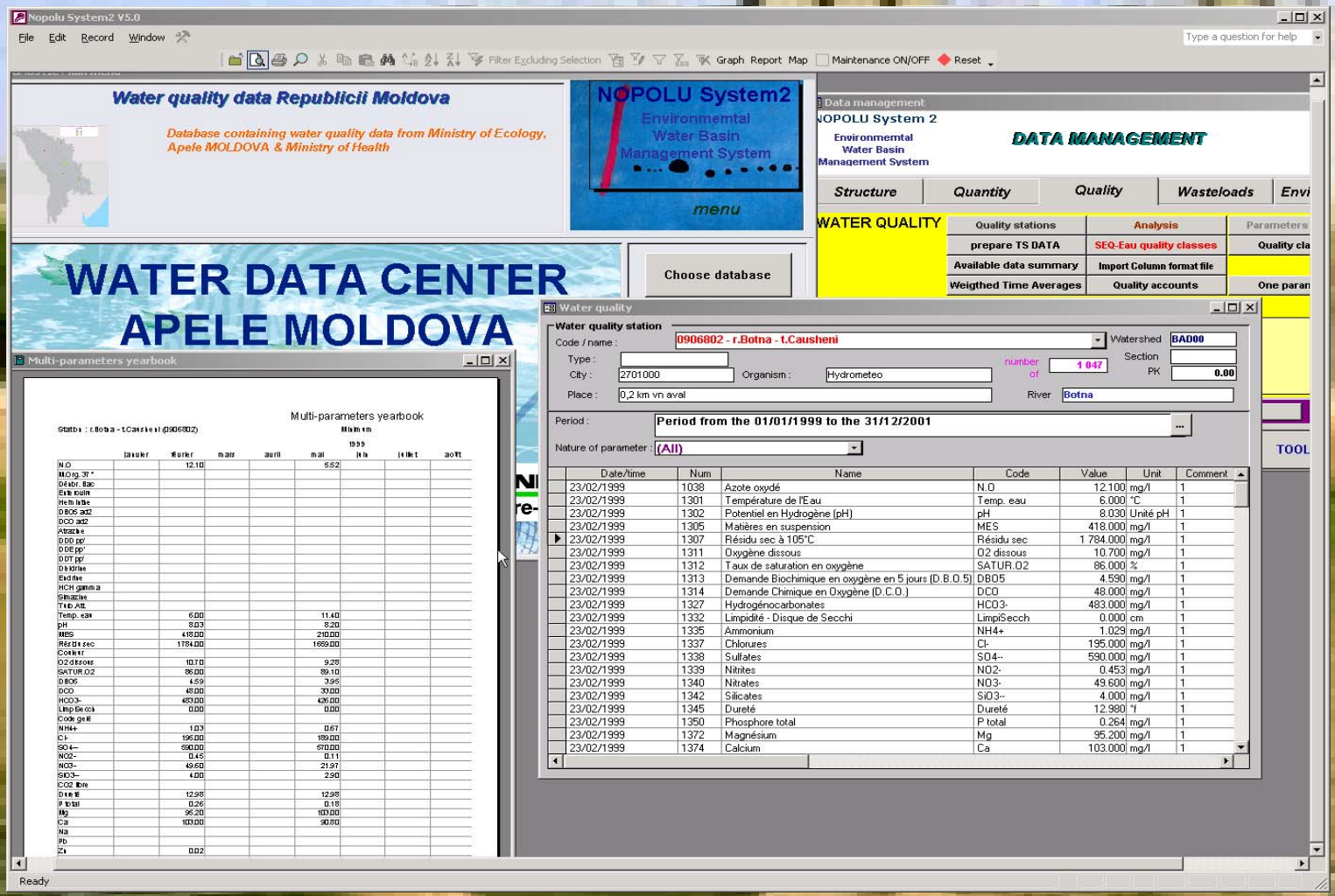
0900301	17/06/1992	7006		8.2			☐	☐
0900301	02/11/1992	7006		8			☐	☐
0900301	10/02/1993	7006		8.4			☐	☐
0900301	04/05/1993	7006		7.9			☐	☐
0900301	28/07/1993	7006		8.2			☐	☐
0900301	07/10/1993	7006		8.1			☐	☐

Data treatment: monitoring to publication



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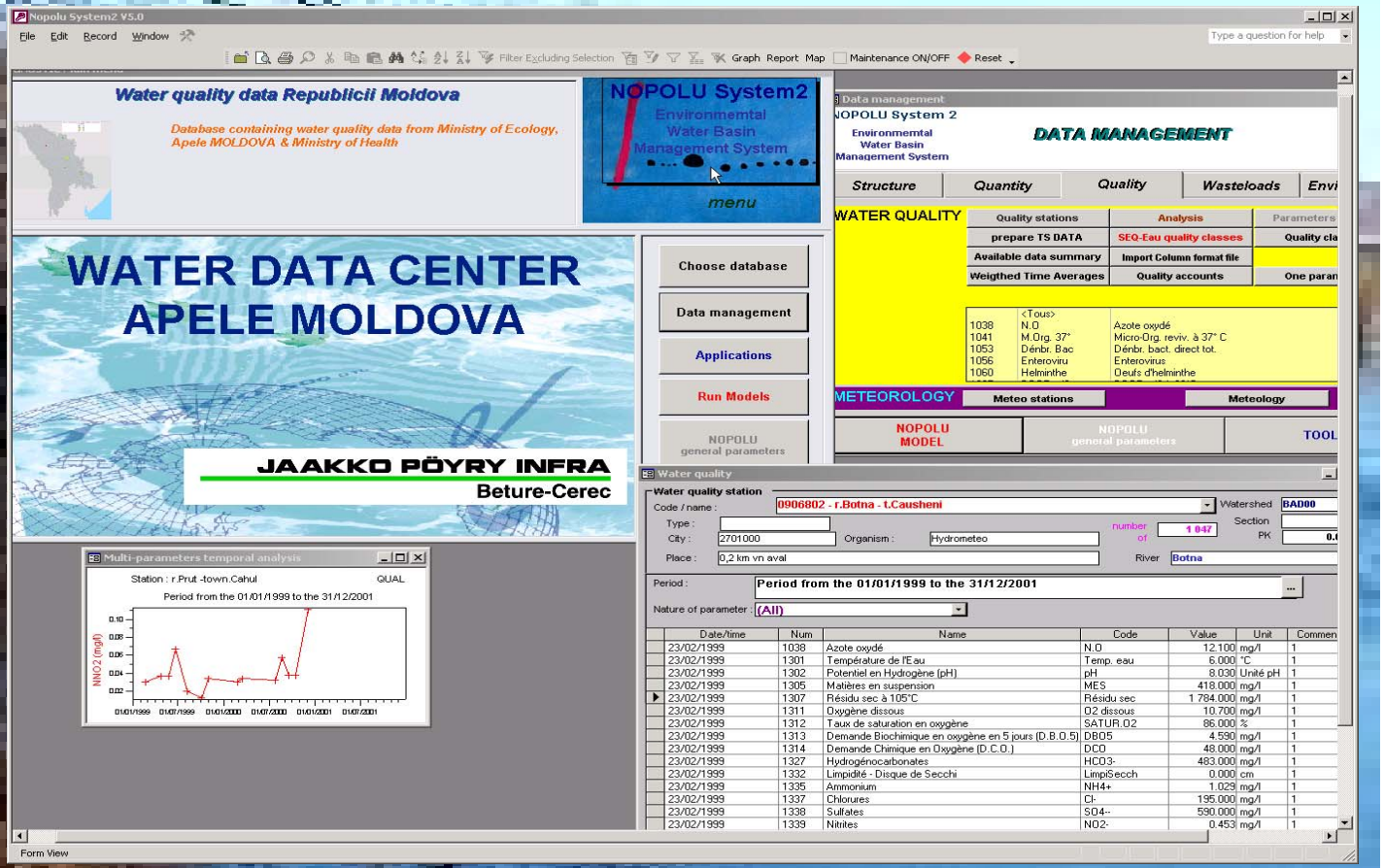
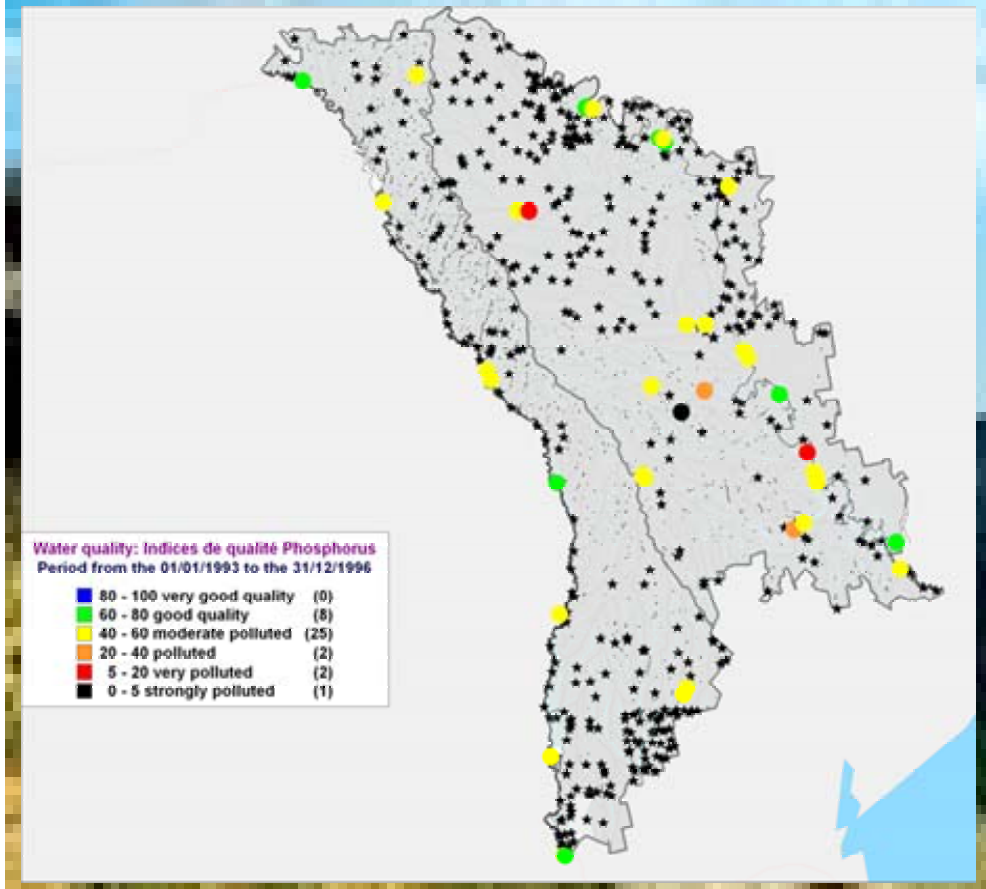
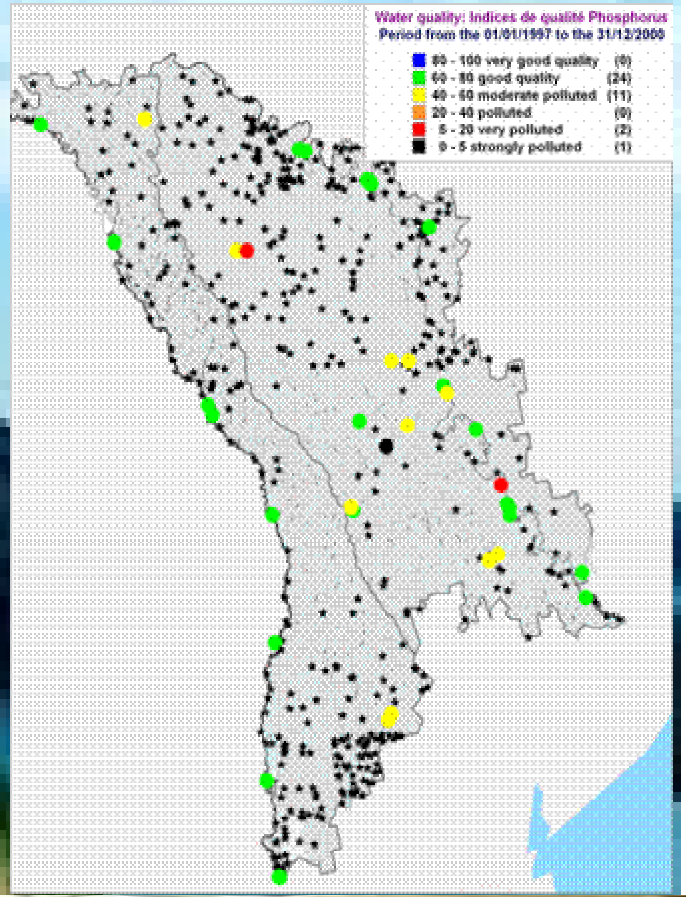
Data treatment: monitoring to graph



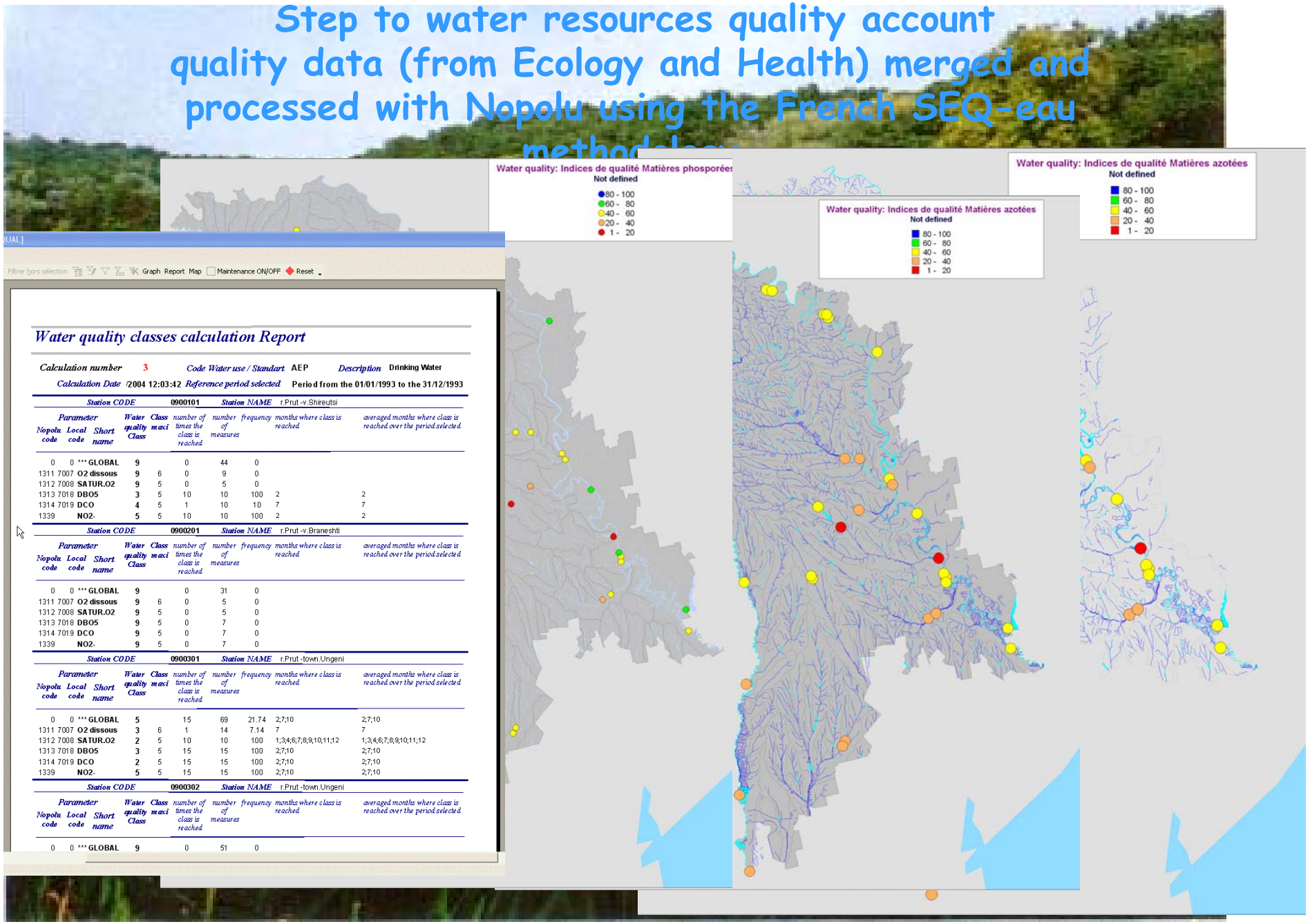
Water quality index, Moldova, 1993-2000





Step to water resources quality account

quality data (from Ecology and Health) merged and processed with Nopolu using the French SEQ-eau



Water quality classes calculation Report

Calculation number 3 **Code Water use / Standart** AEP **Description** Drinking Water

Calculation Date /2004 12:03:42 **Reference period selected** Period from the 01/01/1993 to the 31/12/1993

Station CODE 0900101 **Station NAME** r.Prut -v.Shireutsi

Parameter Nopolu code	Local code	Short name	Water quality Class	Class maxi	number of times the class is reached	number of measures	frequency	months where class is reached	averaged months where class is reached over the period selected
0	0	*** GLOBAL	9		0	44	0		
1311	7007	O2 dissous	9	6	0	9	0		
1312	7008	SATUR.O2	9	5	0	5	0		
1313	7018	DBO5	3	5	10	10	100	2	2
1314	7019	DCO	4	5	1	10	10	7	7
1339		NO2-	5	5	10	10	100	2	2

Station CODE 0900201 **Station NAME** r.Prut -v.Braneshti

Parameter Nopolu code	Local code	Short name	Water quality Class	Class maxi	number of times the class is reached	number of measures	frequency	months where class is reached	averaged months where class is reached over the period selected
0	0	*** GLOBAL	9		0	31	0		
1311	7007	O2 dissous	9	6	0	5	0		
1312	7008	SATUR.O2	9	5	0	5	0		
1313	7018	DBO5	9	5	0	7	0		
1314	7019	DCO	9	5	0	7	0		
1339		NO2-	9	5	0	7	0		

Station CODE 0900301 **Station NAME** r.Prut -town.Ungeni

Parameter Nopolu code	Local code	Short name	Water quality Class	Class maxi	number of times the class is reached	number of measures	frequency	months where class is reached	averaged months where class is reached over the period selected
0	0	*** GLOBAL	5		15	69	21.74	2;7;10	2;7;10
1311	7007	O2 dissous	3	6	1	14	7.14	7	7
1312	7008	SATUR.O2	2	5	10	10	100	1;3;4;6;7;8;9;10;11;12	1;3;4;6;7;8;9;10;11;12
1313	7018	DBO5	3	5	15	15	100	2;7;10	2;7;10
1314	7019	DCO	2	5	15	15	100	2;7;10	2;7;10
1339		NO2-	5	5	15	15	100	2;7;10	2;7;10

Station CODE 0900302 **Station NAME** r.Prut -town.Ungeni

Parameter Nopolu code	Local code	Short name	Water quality Class	Class maxi	number of times the class is reached	number of measures	frequency	months where class is reached	averaged months where class is reached over the period selected
0	0	*** GLOBAL	9		0	51	0		

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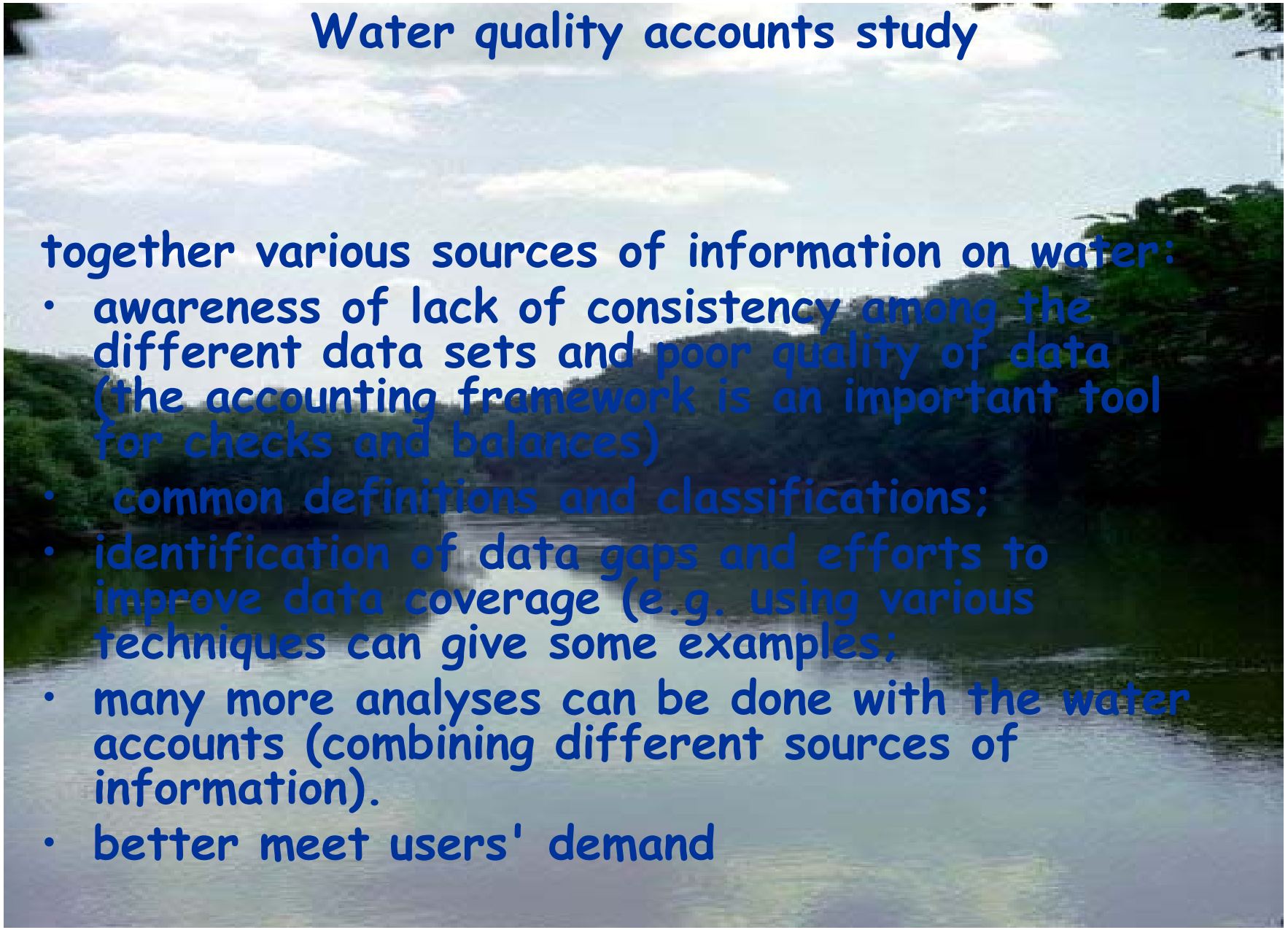
Water quality accounts study



together various sources of information on water:

- awareness of lack of consistency among the different data sets and poor quality of data (the accounting framework is an important tool for checks and balances)
- common definitions and classifications;
- identification of data gaps and efforts to improve data coverage (e.g. using various techniques can give some examples;
- many more analyses can be done with the water accounts (combining different sources of information).
- better meet users' demand

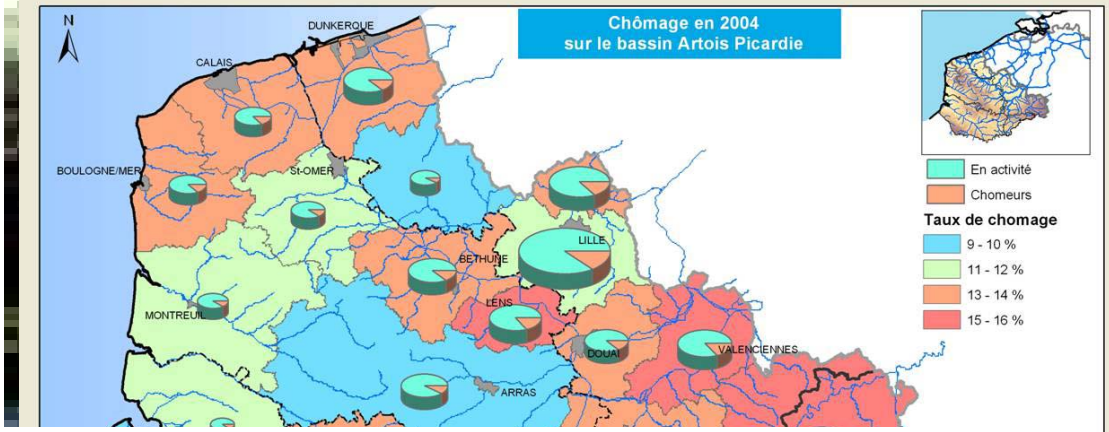
Difficulties

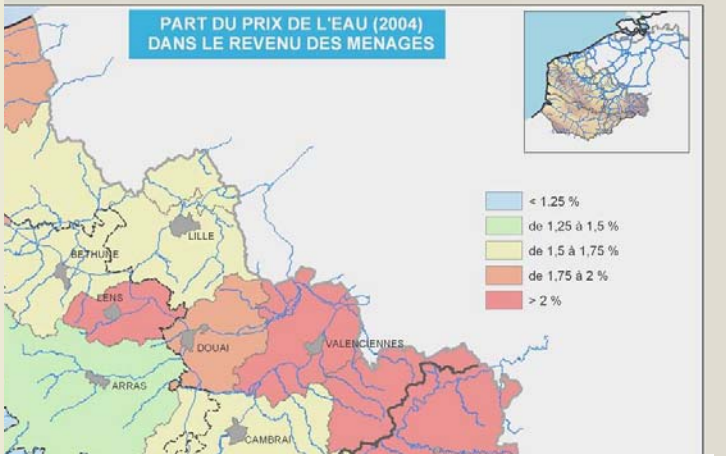
- Multi institutional involvement at national & international
- Recognition by policymakers
- Quality data: monitoring and spatial
- Institutional capacity

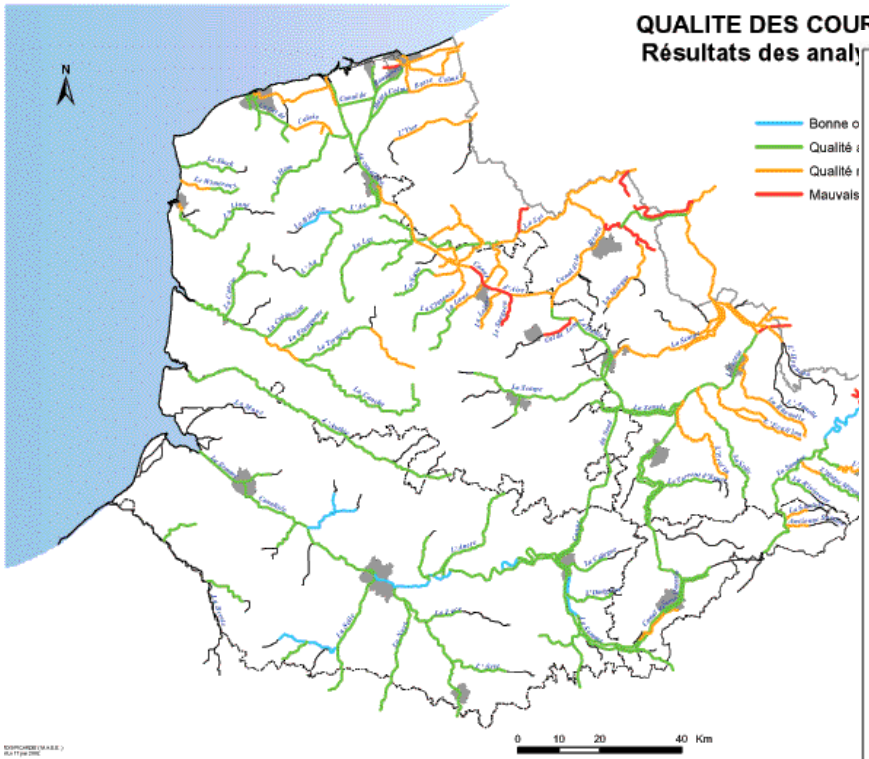
Future steps

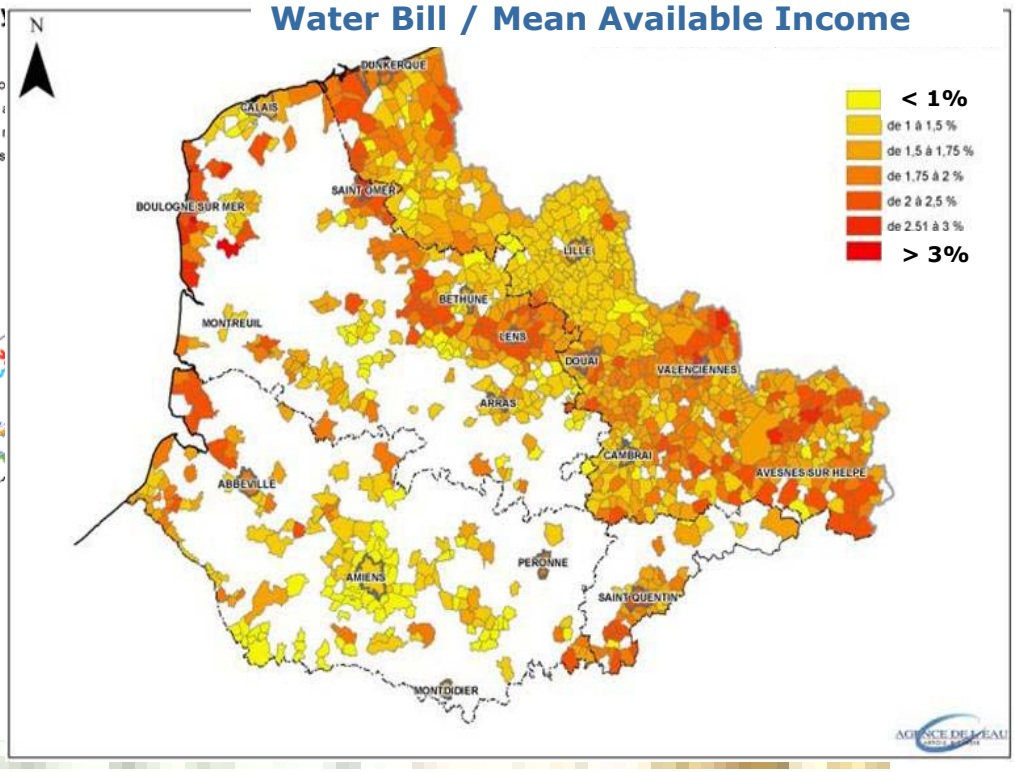
- Development of indicators based on water quality accounts
- Performing GIS layer : watersheds, catchments
- Compute water quality accounts
- Improve the database in terms of quality of the monitoring data and statistics and to implement the methodological changes needed to better define these data, to improve data gathering, processing and dissemination;
- Technical training in management data bases and data analysis
- Water price survey

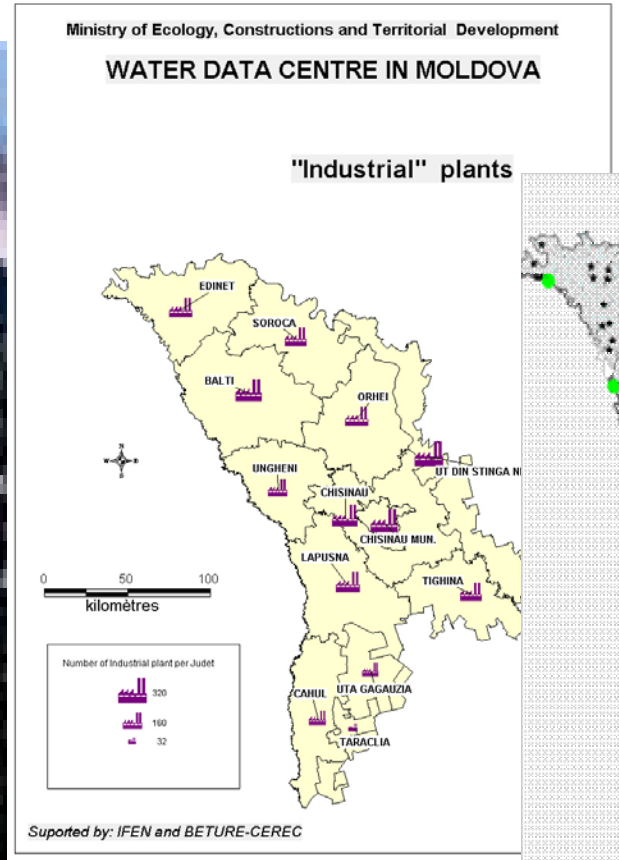
→quality water in river

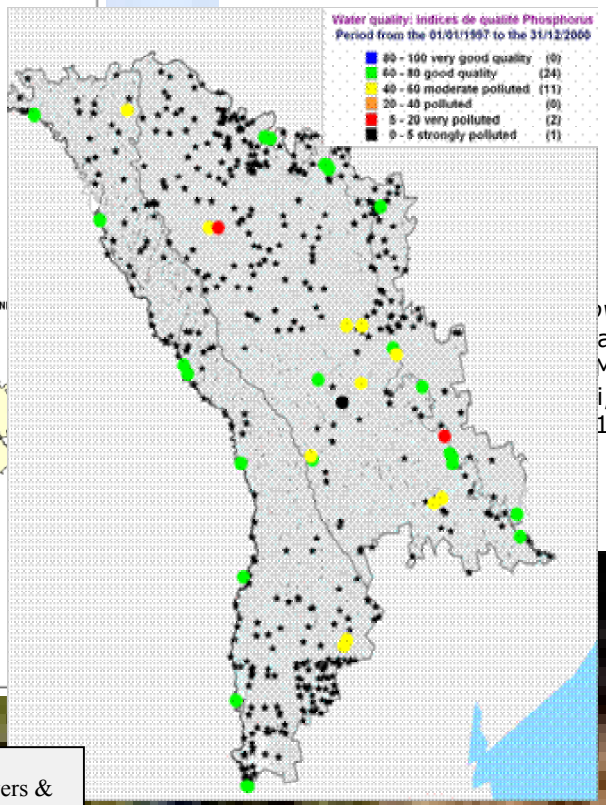




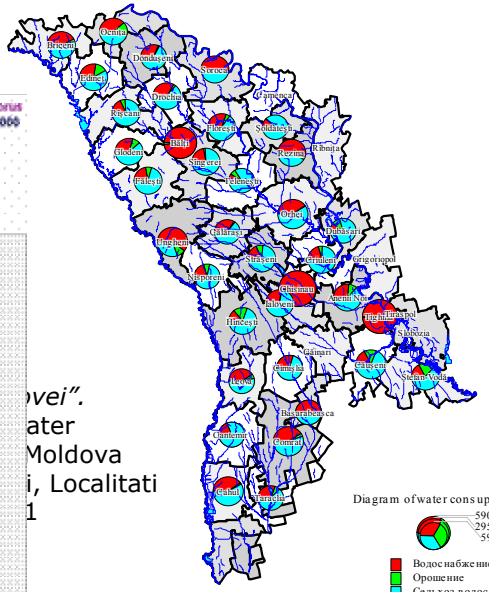




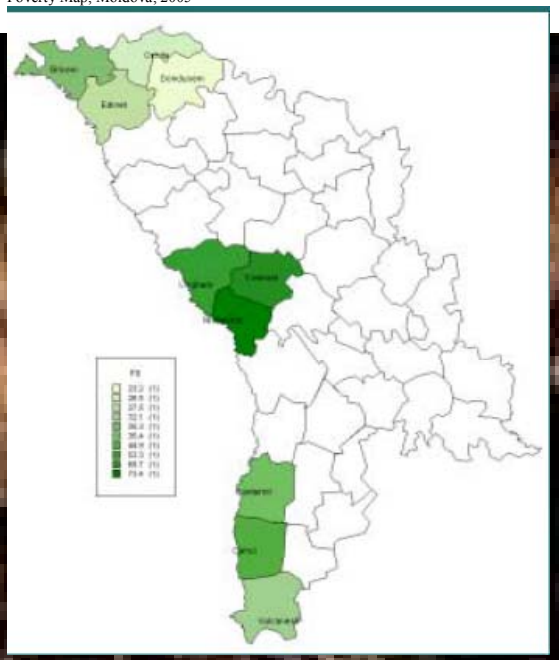


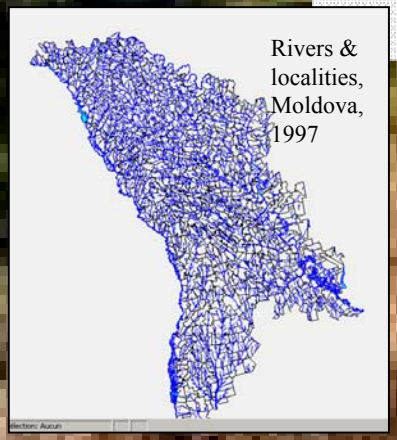


Water consumption, Moldova



Poverty Map, Moldova, 2005





Rivers & localities, Moldova, 1997

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THANKS
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&
Arnaud Courtecuisse, Agence de l'Eau Artois-Picardie
"OUTPUTS OF THE EU WFD ECONOMIC ANALYSIS AND ITS OUTPUTS OF THE EU WFD ECONOMIC ANALYSIS AND ITS ROLE IN THE DECISION PROCESS:ILLUSTRATIONS FROM THE ARTOIS-PICARDIE RIVER BASIN"
, Water price survey