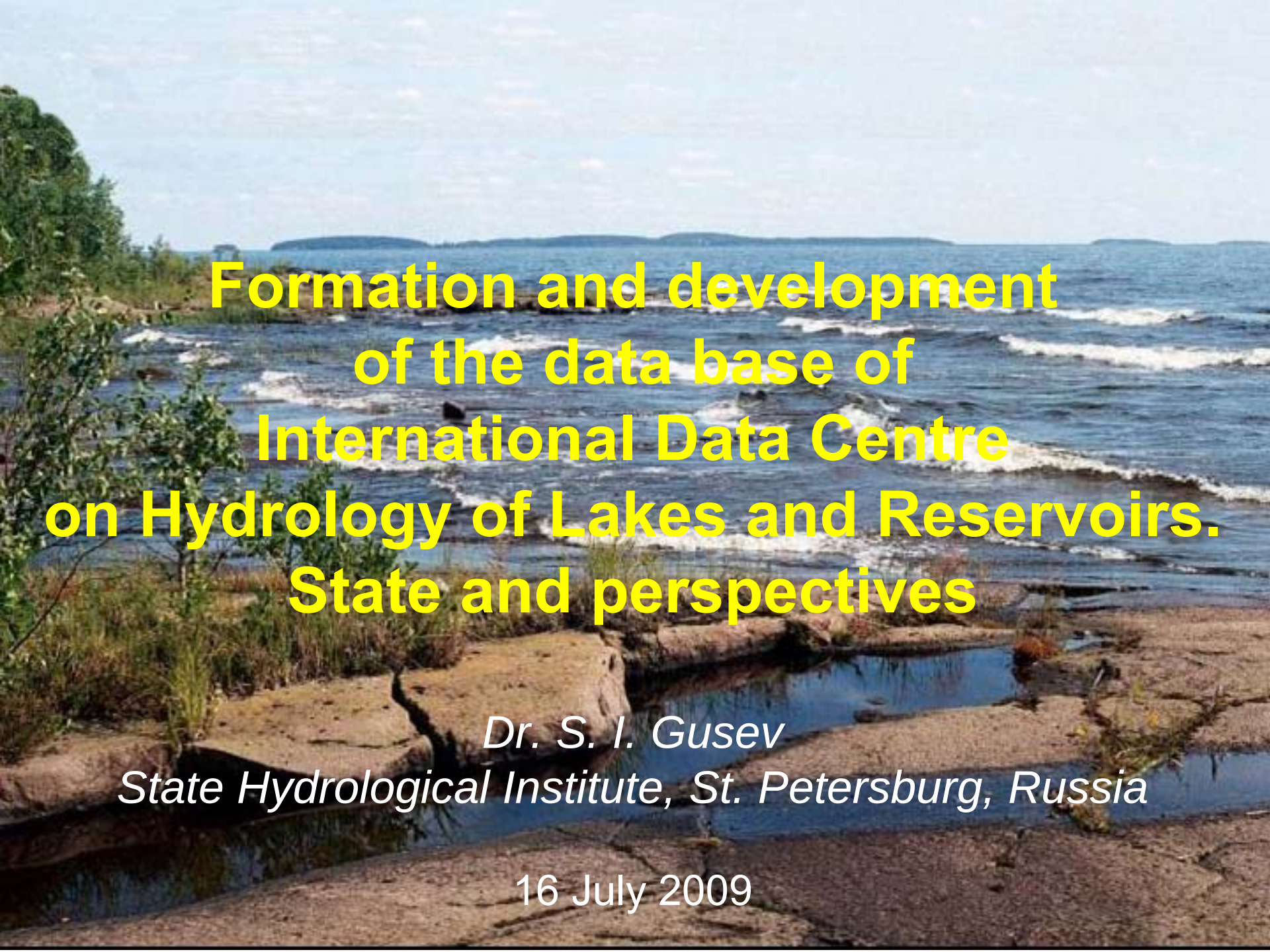

Formation and development of the data base of International Data Centre on Hydrology of Lakes and Reservoirs. State and perspectives

Dr. S. I. Gusev
State Hydrological Institute, St. Petersburg, Russia

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SHI information resources on lakes and reservoirs hydrology

1. *Data base of the Water Cadastre «Lakes and reservoirs».*

2. *Archive of long-term time series of lakes and reservoirs hydrological characteristics.*

3. *Integrated data base of the Water Cadastre «Water resources» (part «Lakes and reservoirs»).*

Content of the data base «Lakes and reservoirs» (data of hydrometeorological observations)

1. Data of observations near shore: *water level, water and air temperature, precipitation, ice phenomena and water body state, ice thickness, snow depth, waves* ***at gauging sites****.*

2. Data of observations at open water:

– *water temperature at different depths, air temperature and humidity, wind characteristics, water colour and transparency, ice and snow cover characteristics, currents* ***at hydrological verticals****;*

– *water temperature at the water body surface area, ice and snow cover characteristics* ***along thermal and ice profiles****;*

– *waves characteristics* ***at max-min marks****;*

3. Data of observations near shore and at open water:

– *wind characteristics* ***on insular, floating and coastal meteorological platforms****.*

Content of the data base «Lakes and reservoirs» (main passport data)

1. **Data on water bodies:**

   code, name, location (coordinates, subjects of federation), catchment area, hydrographical characteristics (including related water bodies), morphometric, project (for reservoirs) and other characteristics.

2. **Data on gauging sites on water bodies:**

   code, name, location (coordinates, water body, subjects of federation), holding, observation period and other characteristics.

Content of archive of long-term time series of lakes and reservoirs hydrological characteristics

1. *Mean monthly level at gauging site*
2. *Mean monthly and at the first date of each month level averaged for water body*
3. *Extreme level (highest and lowest for year and for regime phases, its first and last dates, number of cases)*
4. *Water temperature near shore (at gauging site) ten-days and month averaged, highest for year, its first and last dates, number of cases*
5. *Surface water temperature at the water bodies surface area ten-days and month averaged*
6. *Ice phenomena at gauging site (dates and durations of ice regime phases)*
7. *Ice thickness at gauging site each ten-days, maximal for year, its first and last dates, number of cases*
8. *Surface inflow (into reservoir) per month and year*

Presence and state of long-term time series of lakes and reservoirs hydrological characteristics (countries of former USSR except Russia)

Country	Mean level on gauging site	Mean level for water body	Extremal level	Water temperature	Surface water temperature	Ice phenomena	Ice thickness	Surface inflow into reservoir
Azerbaijan								
Armenia								
Belarus								
Georgia								
Kazakhstan								
Kyrgyzstan								
Latvia								
Lithuania								
Moldova								
Tajikistan								
Turkmenistan								
Uzbekistan								
Ukraine								
Estonia								

Digital

Paper records

The data is not present

Lakes and reservoirs presented in the integrated data base «Water resources» (Russian Federation)

Ladoga
Onega
Ilmen
Baikal
Khanka
Ivankovskoye
Uglichskoye
Rybinskoye
Gorkovskoye
Cheboksarskoye
Kamskoye
Votkinskoye
Pavlovskoye
Kuibyshevskoye
Saratovskoye
Volgogradskoye
Iriklinskoye
Tsimlyanskoye
Krasnodarskoye
Novosibirskoye
Krasnoyarskoye
Sayano-Shushenskoye
Irkutskoye
Bratskoye
Ust-Ilimskoye
Zeyskoye
Kaspian sea

Lakes and reservoirs presented in the integrated data base «Water resources»
(other states of former USSR)

Sevan
Balkhash
Issyk-kul
Kievskoye
Kanevskoye
Kremenchugskoye
Dneprodzerzhinskoye
Dneprovskoye
Kakhovskoye
Dnestrovskoye
Dubossarskoye
Mingechaurskoye
Kapchagaiskoye
Kairakkumskoye
Chardarinskoye
Akhangaranskoye
Toktogulskoye
Tashutkulskoye
Yuzhnosurkhanskoye
Chimkurganskoye
Nurekskoye
Tuyamuyunskoye
Bukhtarminskoye
Ust-Kamenogorskoye
Aral

Content of the Hydrolare data base (generalized data of hydrological observations)

1. Data on gauging sites:

- *mean monthly level,*
- *mean monthly water temperature,*
- *highest water temperature per year, its first and last dates, number of cases,*
- *maximal ice thickness per year, its first and last dates, number of cases.*

2. Water body averaged data:

- *mean monthly level,*
- *level at the first date of each month.*

Content of the Hydrolare data base (main passport data)

1. **Water body passport data:** *code, name, location (coordinates, country), catchment area, other hydrographical and morphometric characteristics, project characteristics (for reservoirs).*

2. **Gauging site passport data:** *code, name, location (coordinates, water body, country), zero of gauge, observation period and other characteristics.*

Formation of initial fund of the Hydrolare data base *(Russia and other countries of former USSR)*

1. **Water body and gauging site passport data** ← *Data base of the Water Cadastre «Lakes and reservoirs».*

2. **Generalized annual data of hydrological observations at gauging sites and water bodies – mean and maximal values of level, water temperature and ice thickness** ← *Archive of long-term time series of lakes and reservoirs hydrological characteristics.*

3. **Mean levels at the first date of each month** ← *Integrated data base of the Water Cadastre «Water resources».*

Activities necessary for Hydrolare data base formation

1. *Selection and mastering of DBMS and report generators.*
2. *Development of encoding system for water bodies, gauging sites and other data base objects.*
3. *Collection and preparation of information for initial fund, its transformation to form to be loaded.*
4. *Loading of prepared information into data base.*

Used DBMS and Report generators

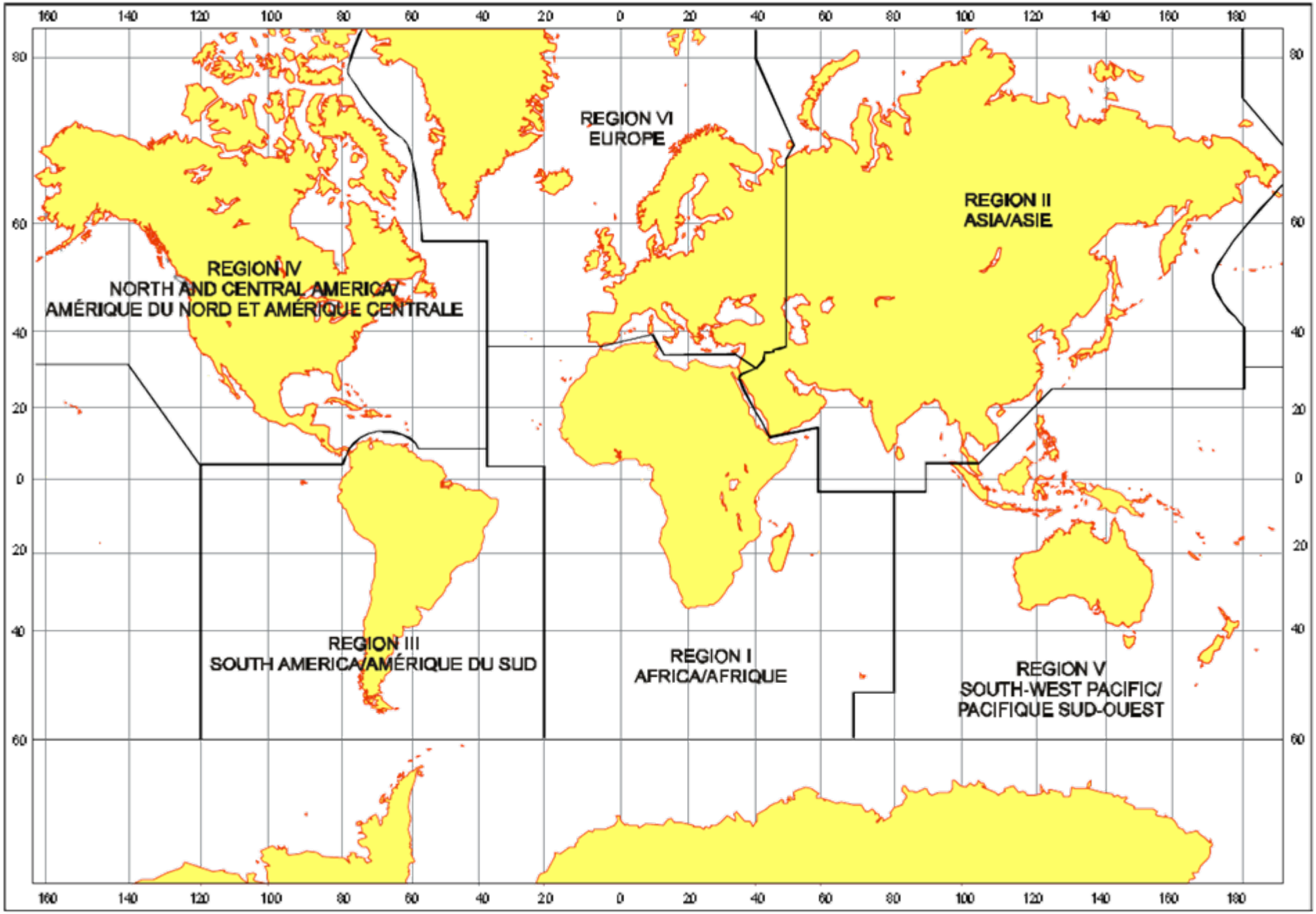
DBMS:

InterBase → *(Access)* → Firebird

Report generators:

Crystal Reports, ReportSmith

WORLD MAP OF WMO REGIONS / CARTE MONDIALE DES RÉGIONS



Division of WMO region «Europe» into subregions (hydrographical regions)

Hydrolare encoding system for water bodies (lakes and reservoirs)

Water body code structure

TRSSNNN

where

T – type of water body;

R – WMO region;

SS – WMO subregion;

NNN – number of water body within WMO subregion

Quantitative characteristics of initial fund of Hydrolare data base *(Russia and other countries of former USSR)*

Country	Lakes	Reservoirs	Gauging sites	Length of time series			
				Level on gauging site	Water temperature	Ice thickness	Water body level
Russia	286	90	668	40	35	40	34
Azerbaijan							
Armenia	3	1	8	23	23	23	51
Belarus	26	10	37	30	30	30	
Georgia	9	9	23	16			
Kazakhstan	50	17	88	23	23	20	25
Kyrgyzstan							
Latvia	25	3	28	30	30		11
Lithuania							
Moldova		4	13	20			
Tajikistan							
Turkmenistan	2	4	8				
Uzbekistan		12	16	19	19		18
Ukraine	10	11	89	30			24
Estonia	12	4	24	23	23	23	

The data is not present

Summary from answers on Questionnaire

Date	Country	Station	Level	T_water	Ice_ regim	T_ice	Wave	Current	Archive	Type of data	Action
28.10.2008	BELARUS	14							PD	OH	yes
16.12.2008	SLOVAKIA										no
23.12.2008	SWITZERLAND	35							PD	OH	yes
26.12.2008	KAZAKHSTAN	34							P	H	no
30.12.2008	UZBEKISTAN	25							P	OH	yes
02.01.2009	FINLAND	300							D	OH	yes
07.01.2009	ESTONIA	6							PD	OH	yes
08.01.2009	HONG KONG	17							D	OH	yes
08.01.2009	KYRGYZSTAN	5							P	H	yes
09.01.2009	AUSTRIA	53							PD	OH	yes
12.01.2009	CHINA	426							PD	OH	no
14.01.2009	LAO PEOPLE'S (DR)										no
14.01.2009	MONGOLIA	16							PD	OH	yes
15.01.2009	TANZANIA, UNITED REPUBLIC OF	5							PD	OH	yes
16.01.2009	HUNGARY	20							PD	OH	yes
19.01.2009	OMAN										yes
19.01.2009	TAJIKISTAN	6							P	H	yes
20.01.2009	BELIZE	3							PD	OH	yes
20.01.2009	SPAIN	360							D	OH	yes
22.01.2009	ARMENIA (Fax)	8							PD	H	yes
22.01.2009	ROMANIA	142							P	H	yes
23.01.2009	COLOMBIA (CVC)	2							D	O	yes
23.01.2009	LATVIA (Post)	5							PD	OH	no
23.01.2009	MALI	2							PD	H	yes
26.01.2009	JAPAN	100							PD	OH	no
27.01.2009	TURKEY	134							P	H	no
28.01.2009	SLOVENIA	4							PD	OH	yes
29.01.2009	DOMINICA (BG)	1							PD	O	yes
29.01.2009	DOMINICAN REPUBLIC	22							D	O	no
29.01.2009	MOLDOVA, REPUBLIC OF	2							P	OH	yes
30.01.2009	COLOMBIA (IDEM)	5							PD	H	yes
30.01.2009	MAURITIUS	6							PD	OH	no
30.01.2009	CHILE	60							PD	H	yes
02.02.2009	GUYANA										no
02.02.2009	SWEDEN	200							PD	H	yes

Date	Country	Station	Level	T_water	Ice_ regim	T_ice	Wave	Current	Archive	Type of data	Action
03.02.2009	AUSTRALIA	200	*	*					D	OH	yes
03.02.2009	CANADA	444							PD	OH	yes
03.02.2009	POLAND	89							PD	OH	no
04.02.2009	ZAMBIA (Fax)								PD	OH	yes
05.02.2009	THAILAND										no
06.02.2009	DOMINICA (DES)								PD	OH	yes
12.02.2009	ANTIGUA AND BARBUDA								PD	O	yes
17.02.2009	INDIA (Fax)	81							P	OH	yes
23.02.2009	CYPRUS	57							PD	OH	yes
23.02.2009	TUNISIA	29							PD	OH	no
30.03.2009	MEXICO (Post)	176							PD	OH	yes
Итог	46	38	40	24	14	11	3	4			

there are other type of observations

don't mark quantum stations

Archive: P - paper records
D - digital

Type of data: O- operational
H - historical

Action: agree (yes) or disagree (not) to deliver their data to HYDROLARE


Thank you!