Bringing together the East and the West: Joining ideas, people, datasets

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Marine Systems Institute at Tallinn University of Technology

1990

ГОСКОМГИДРОМЕТ = State Committee for Hydrometeorology

Positive side:

- Similar equipment
- Unified measurement methods
- Detailed instructions for personnel

Negative side:

- Raw data classified
- International cooperation centralised - WMO, IUGG, COSPAR…

1991

New possibilities?

August 3-8, 1992
Tallinn

IRS'92

INTERNATIONAL RADIATION SYMPOSIUM

The first meeting of interested people from the East.
Ehrhard Raschke explains his expectations:

- To describe water and energy cycles in the Baltic Sea catchment area following the examples of other GEWEX regional-scale experiments
- To unite meteorology, hydrology and oceanography
- To collect as much data as possible

May 1994, The First Meeting of the BALTEX Science Steering Group at Geesthacht

BALTEX Secretariat established at GKSS with **Hans-Jörg Isemer** as project scientist

Data centres founded:
Hydrological – Sweden, SMHI
Meteorological – Germany, DWD
Oceanographic metadata – Finland, FIMR

A preliminary list of **data requirements** for atmospheric and hydrological modelling

What was needed first?

Meteorological data and solar radiation
Hydrological data –
precipitation, snow depth, river runoff, soil moisture
Sea level data

Historical data

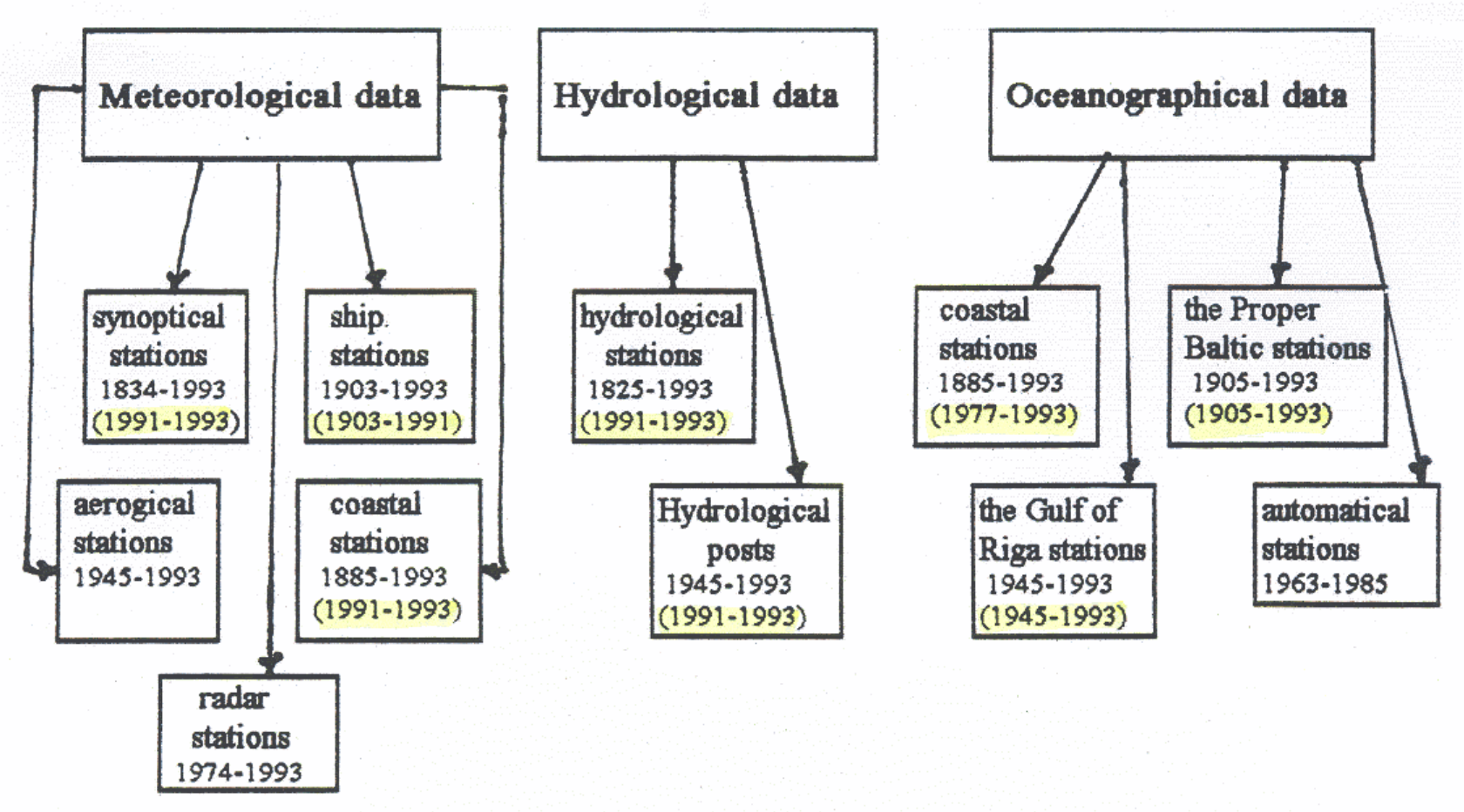
- 1986 – 1987 (key period for reanalysis)
- 1992 – 1993 (key period)

Real-time and non-real time data

- August to October 1995 (PIDCAP)

PIDCAP = Pilot Study for Intensive Data Collection and Analysis of Precipitation

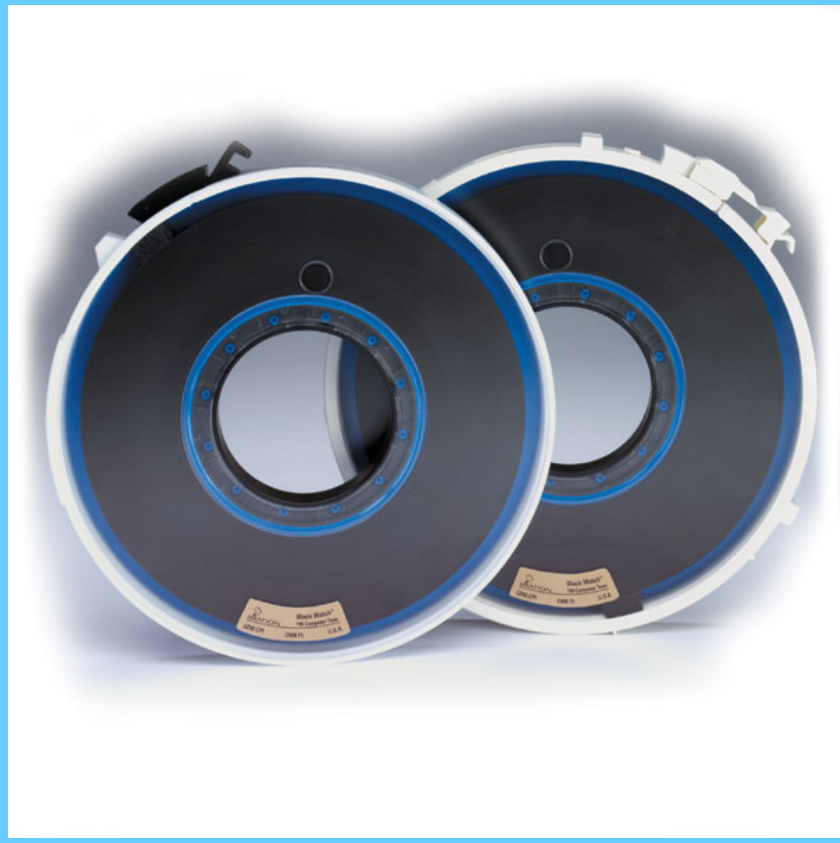
What do we have?



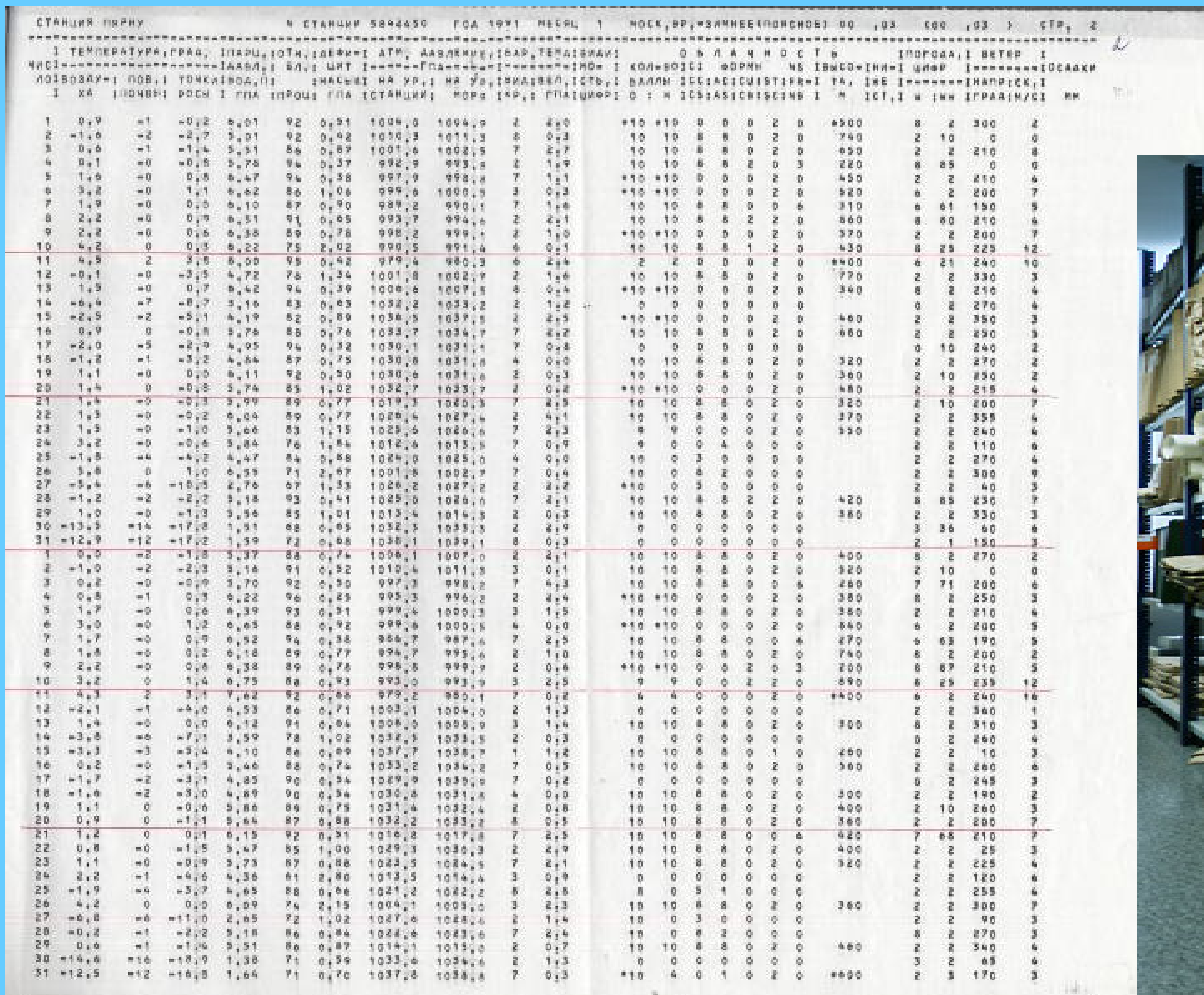
Latvia: We have all, but only partly in digital form

Formation of the hydrometeorological data base until 1991 in Estonia

- Data were coded in the stations and written on magnetic tapes
- Tapes were sent to Obninsk (ВНИИГМИ-МЦД = Research Institute of Hydrometeorological Information of the USSR – World Data Centre)
- Tables were printed at Obninsk and sent back to Tallinn



Meteorological archive until 1991



СТАНЦИЯ ПЯРНУ   N СТАНЦИИ 5844450   ГОД 1991   МЕСЯЦ 1   МОСК,ВР,=ЗИМНЕЕ(ПОЯСНОЕ) 00 ,03 (00 ,03)   СТР, 2

Число	Температура воздуха	Темп. пов. почвы	Точки росы	Парц. давл. водяного пара, гПа	Отн. влажн., %	Дефицит насыщ., гПа	Атм. давление на ур. станции, гПа	Атм. давление на ур. моря	Бар. тенд. вид	Бар. тенд. вел., гПа	Облачность кол-во общ.	Облачность кол-во ниж.	CS	AS	CB	SC	NB	Высота нижн. гр., м	Погода W	Погода ww	Ветер напр., град	Ветер ск., м/с	Осадки, мм
1	0,9	-1	-0,2	6,01	92	0,51	1004,0	1094,9	2	4,0	*10	*10	0	0	0	2	0	+500	8	2	300	2	
2	-1,6	-2	-2,7	5,01	92	0,42	1010,3	1011,3	8	0,3	10	10	8	8	0	2	0	740	2	10	0	0	
3	0,6	-1	-1,4	5,51	86	0,87	1001,6	1002,5	7	2,7	10	10	8	8	0	2	0	650	2	2	210	8	
4	0,1	-0	-0,8	5,76	96	0,37	992,9	993,8	2	1,9	10	10	8	8	2	0	3	220	8	85	0	0	
5	1,6	-0	0,8	6,47	96	0,38	997,9	998,8	7	1,1	*10	*10	0	0	0	2	0	450	2	2	210	4	
6	3,2	-0	1,1	6,62	86	1,06	999,6	1000,5	3	0,3	*10	*10	0	0	0	2	0	520	6	2	200	7	
7	1,9	-0	0,5	6,10	87	0,90	989,2	990,1	7	1,6	10	10	8	8	0	0	6	310	6	61	150	5	
8	2,2	-0	0,9	6,51	91	0,65	993,7	994,6	2	2,1	10	10	8	8	2	2	0	560	8	80	210	4	
9	2,2	-0	0,6	6,38	89	0,78	998,2	999,1	2	1,0	*10	*10	0	0	0	2	0	370	2	2	200	7	
10	4,2	0	0,5	6,22	75	2,02	990,5	991,4	6	0,1	10	10	8	8	1	2	0	430	8	25	225	12	
11	4,5	2	3,8	8,00	95	0,42	979,4	980,3	6	2,4	2	2	0	0	0	2	0	+400	6	21	240	10	
12	-0,1	-0	-3,5	4,72	76	1,34	1001,8	1002,9	2	1,6	10	10	8	8	0	2	0	770	2	2	330	3	
13	1,5	-0	0,7	6,42	94	0,39	1006,6	1007,5	8	0,4	*10	*10	0	0	0	2	0	340	8	2	210	4	
14	-6,4	-7	-8,7	3,16	83	0,63	1032,2	1033,2	2	1,2	0	0	0	0	0	0	0		0	2	270	4	
15	-2,5	-2	-5,1	4,19	82	0,89	1036,5	1037,5	2	2,5	*10	*10	0	0	0	2	0	460	2	2	350	3	
16	0,9	0	-0,8	5,76	88	0,76	1033,7	1034,7	7	2,7	10	10	8	8	0	2	0	680	2	2	250	3	
17	-2,0	-5	-2,9	4,95	94	0,32	1030,1	1031,1	7	0,8	0	0	0	0	0	0	0		0	10	240	2	
18	-1,2	-1	-3,2	4,84	87	0,75	1030,8	1031,8	4	0,0	10	10	8	8	0	2	0	320	2	2	270	2	
19	1,1	-0	0,0	6,11	92	0,50	1030,6	1031,6	2	0,3	10	10	8	8	0	2	0	360	2	10	250	2	
20	1,4	0	-0,8	5,74	85	1,02	1032,7	1033,7	2	0,8	*10	*10	0	0	0	2	0	480	2	2	215	4	
21	1,4	-0	-0,3	5,99	89	0,77	1019,3	1020,3	7	2,5	10	10	8	8	0	2	0	320	2	10	200	7	
22	1,3	-0	-0,2	6,04	89	0,77	1026,4	1027,4	2	4,1	10	10	8	8	0	2	0	270	2	2	355	4	
23	1,5	-0	-1,0	5,66	83	1,15	1025,6	1026,6	7	2,3	9	9	0	0	0	2	0	550	2	2	240	4	
24	3,2	-0	-0,6	5,84	76	1,84	1012,6	1013,5	7	0,9	9	0	0	4	0	0	0		2	2	110	6	
25	-1,8	-4	-4,2	4,47	84	0,88	1024,0	1025,0	4	0,0	10	0	3	0	0	0	0		2	2	270	4	
26	5,8	0	1,0	6,55	71	2,67	1001,8	1002,7	7	0,4	10	0	8	2	0	0	0		2	2	300	9	
27	-5,4	-6	-10,5	2,76	67	1,33	1026,2	1027,2	2	2,2	*10	0	3	0	0	0	0		2	2	40	3	
28	-1,2	-2	-2,2	5,18	93	0,41	1025,0	1026,0	7	2,1	10	10	8	8	2	2	0	420	8	65	230	7	
29	1,0	-0	-1,3	5,56	85	1,01	1013,4	1014,3	2	0,3	10	10	8	8	0	2	0	380	2	2	330	3	
30	-13,5	-14	-17,8	1,51	68	0,65	1032,3	1033,3	2	2,9	0	0	0	0	0	0	0		3	36	60	6	
31	-12,9	-12	-17,2	1,59	72	0,68	1038,1	1039,1	8	0,3	0	0	0	0	0	0	0		2	1	150	3	
1	0,0	-2	-1,8	5,37	88	0,74	1006,1	1007,0	2	2,1	10	10	8	8	0	2	0	400	8	2	270	2	
2	-1,0	-2	-2,3	5,16	91	0,52	1010,4	1011,3	3	0,1	10	10	8	8	0	2	0	320	2	10	0	0	
3	0,2	-0	-0,9	5,70	92	0,50	997,3	998,2	7	4,3	10	10	8	8	0	0	6	260	7	71	200	6	
4	0,8	-1	0,3	6,22	96	0,25	995,3	996,2	2	2,4	*10	*10	0	0	0	2	0	350	8	2	250	3	
5	1,7	-0	0,6	6,39	93	0,51	999,4	1000,3	3	1,5	10	10	8	8	0	2	0	380	2	2	210	4	
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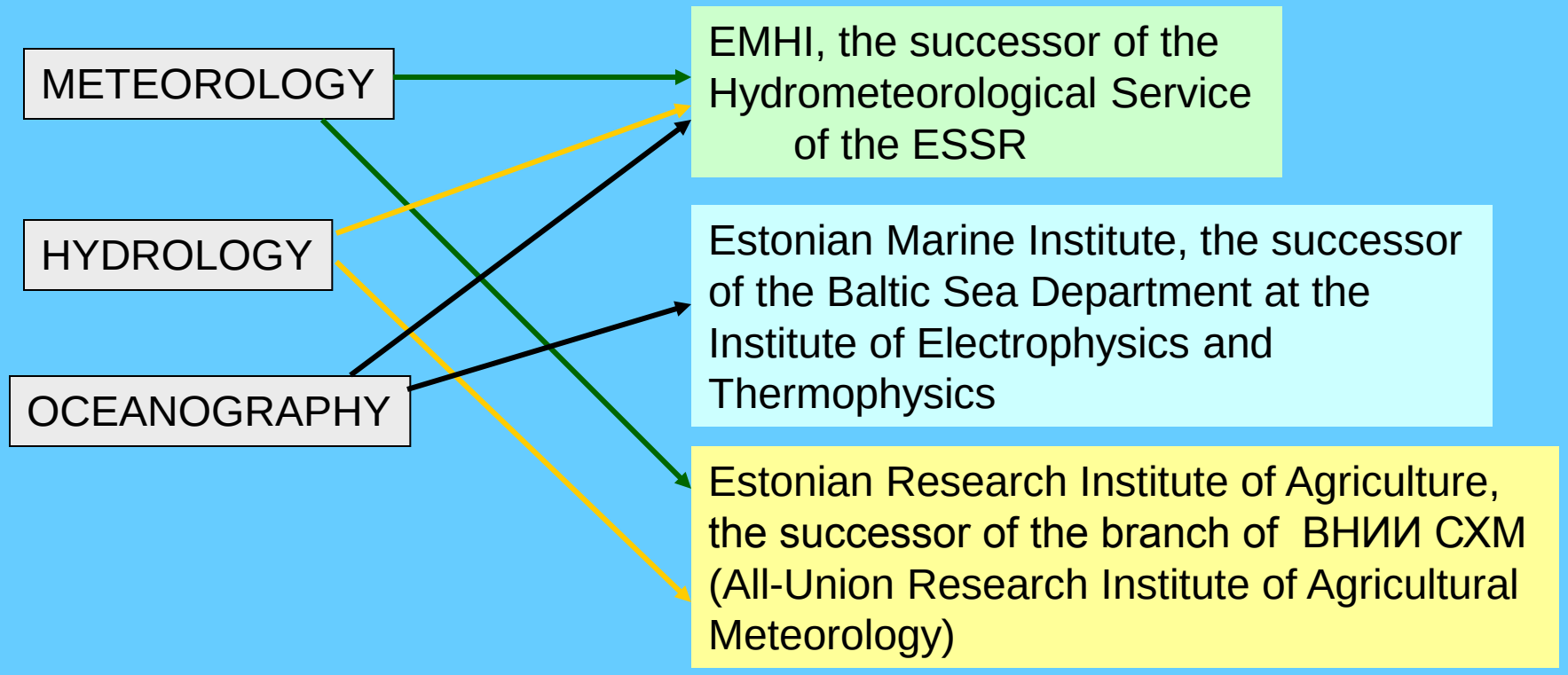
7	1,7	-0	0,9	6,52	94	0,38	986,7	987,6	7	2,5	10	10	8	8	0	0	4	270	6	63	190	5	
8	1,8	-0	0,2	6,18	89	0,77	994,7	995,6	2	1,0	10	10	8	8	0	2	0	740	8	2	200	2	
9	2,2	-0	0,6	6,38	89	0,78	998,8	999,7	2	0,6	*10	*10	0	0	2	0	3	200	8	87	210	5	
10	3,2	0	1,4	6,75	88	0,93	993,0	993,9	3	2,5	9	9	0	0	2	2	0	890	8	25	235	12	
11	4,3	2	3,1	7,62	92	0,66	979,2	980,1	7	0,2	4	4	0	0	0	2	0	+400	6	2	240	16	
12	-2,1	-1	-4,0	4,53	86	0,71	1003,1	1004,0	2	1,3	0	0	0	0	0	0	0		2	2	360	1	
13	1,4	-0	0,0	6,12	91	0,64	1006,0	1006,9	3	1,4	10	10	8	8	0	2	0	300	8	2	310	3	
14	-3,8	-6	-7,1	3,59	78	1,02	1032,5	1033,5	2	0,3	0	0	0	0	0	0	0		0	2	260	4	
15	-3,3	-3	-5,4	4,10	86	0,69	1037,7	1038,7	1	1,2	10	10	8	8	0	1	0	260	2	2	10	3	
16	0,2	-0	-1,5	5,46	88	0,74	1033,2	1034,2	7	0,5	10	10	8	8	0	2	0	560	2	2	260	6	
17	-1,7	-2	-3,1	4,85	90	0,54	1029,9	1030,9	7	0,2	0	0	0	0	0	0	0		0	2	245	3	
18	-1,6	-2	-3,0	4,89	90	0,54	1030,8	1031,8	4	0,0	10	10	8	8	0	2	0	300	2	2	190	2	
19	1,1	0	-0,6	5,86	89	0,75	1031,4	1032,4	2	0,8	10	10	8	8	0	2	0	400	2	10	260	3	
20	0,9	0	-1,1	5,64	87	0,88	1032,2	1033,2	8	0,5	10	10	8	8	0	2	0	360	2	2	200	7	
21	1,2	0	0,1	6,15	92	0,51	1016,8	1017,8	7	2,5	10	10	8	8	0	0	4	420	7	68	210	7	
22	0,8	-0	-1,5	5,47	85	1,00	1029,3	1030,3	2	2,9	10	10	8	8	0	2	0	400	2	2	25	3	
23	1,1	-0	-0,9	5,73	87	0,88	1023,5	1024,5	7	2,1	10	10	8	8	0	2	0	320	2	2	225	4	
24	2,2	-1	-4,6	4,36	61	2,80	1013,5	1014,4	3	0,9	0	0	0	0	0	0	0		2	2	120	6	
25	-1,9	-4	-3,7	4,65	88	0,66	1021,2	1022,2	8	2,8	8	0	5	1	0	0	0		2	2	255	6	
26	4,2	0	0,0	6,09	74	2,15	1004,1	1005,0	3	2,3	10	10	8	8	0	2	0	360	2	2	300	7	
27	-6,8	-6	-11,0	2,65	72	1,02	1027,6	1028,6	2	1,4	10	0	3	0	0	0	0		2	2	90	3	
28	-0,2	-1	-2,2	5,18	86	0,84	1022,6	1023,6	7	2,4	10	0	8	2	0	0	0		8	2	270	3	
29	0,6	-1	-1,6	5,51	86	0,87	1014,1	1015,0	2	0,7	10	10	8	8	0	2	0	460	2	2	340	4	
30	-14,6	-16	-18,9	1,38	71	0,59	1033,6	1034,6	2	1,3	0	0	0	0	0	0	0		3	2	65	6	
31	-12,5	-12	-16,5	1,64	71	0,70	1037,8	1038,8	7	0,3	*10	4	0	1	0	2	0	+600	2	3	170	3	

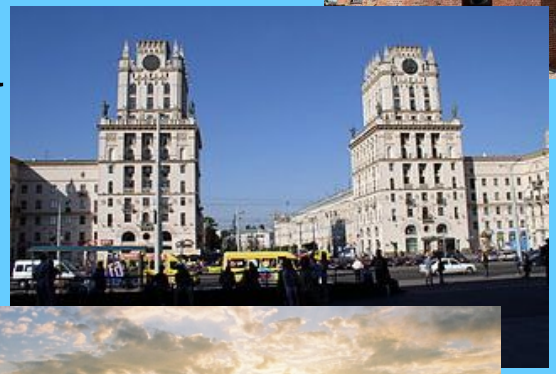
1992-1993, Estonia

No centralised data processing any more
Data collected and stored at different institutions

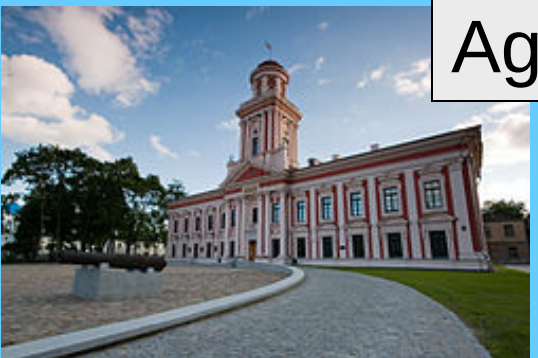


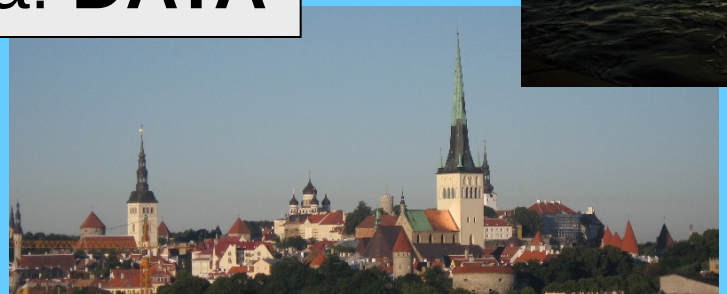
BALTEX Workshops

- 6-7 June 1994, Vilnius, Lithuania
- 14-15 November 1994, Minsk, Belarus
- 26-27 June 1995, St. Petersburg, Russia
- 28-30 May 1996, Wroclaw, Poland
- 29-31 October 1996, Tallinn, Estonia
- 21-22 October 1999, Tallinn, Estonia
- 21-22 July 2000, Jelgava, Latvia



Agenda: **DATA**





How to accelerate the digitizing?

- Contracts between GKSS and hydrometeorological services of Russia, Estonia, Latvia, Lithuania, Belarus and Poland
- Additional salaries to people who digitize data
- PCs and printers to eastern countries

A dream
of a scientist
in the East
in 1992

Which instruments are used?

	Former USSR	Poland and Germany	Denmark	Sweden	Finland
Gauge	Tretjakov	Hellmann	Hellmann	SMHI	H&H-90 Tretjakov
Wind shield	yes			yes	yes
Wetting correction	By types		By types and months		

Example: Manual precipitation measurements

What is the resolution?

Estonia:	Every 10 days	3 levels (20-80cm)
Finland:	Every 5 days	14 levels (0-400cm)
Germany:	3 times a day	6 levels (2-100cm)
Latvia:	Every 3 hours	6 levels (2-40cm)
Lithuania:	Every 3 hours	4 levels (5-20cm)

Example: Soil temperature measurements

Which units are used?

Estonia:	Hourly and daily totals (**MJ/m^2**)
Finland:	Hourly and daily mean values (**W/m^2**)
Sweden:	Hourly mean values (**W/m^2**)
Poland:	Daily totals (**J/cm^2**)
Latvia & Lithuania:	**Calculated** as a sum of direct and diffuse radiation on a horizontal surface

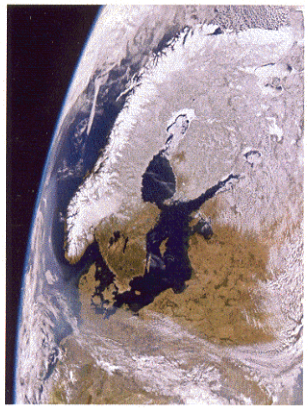
Example: Global radiation measurements

By 2002 the data era ended together with the BALTEX Phase I

BALTEX
Baltic Sea Experiment

Phase II 2003 - 2012

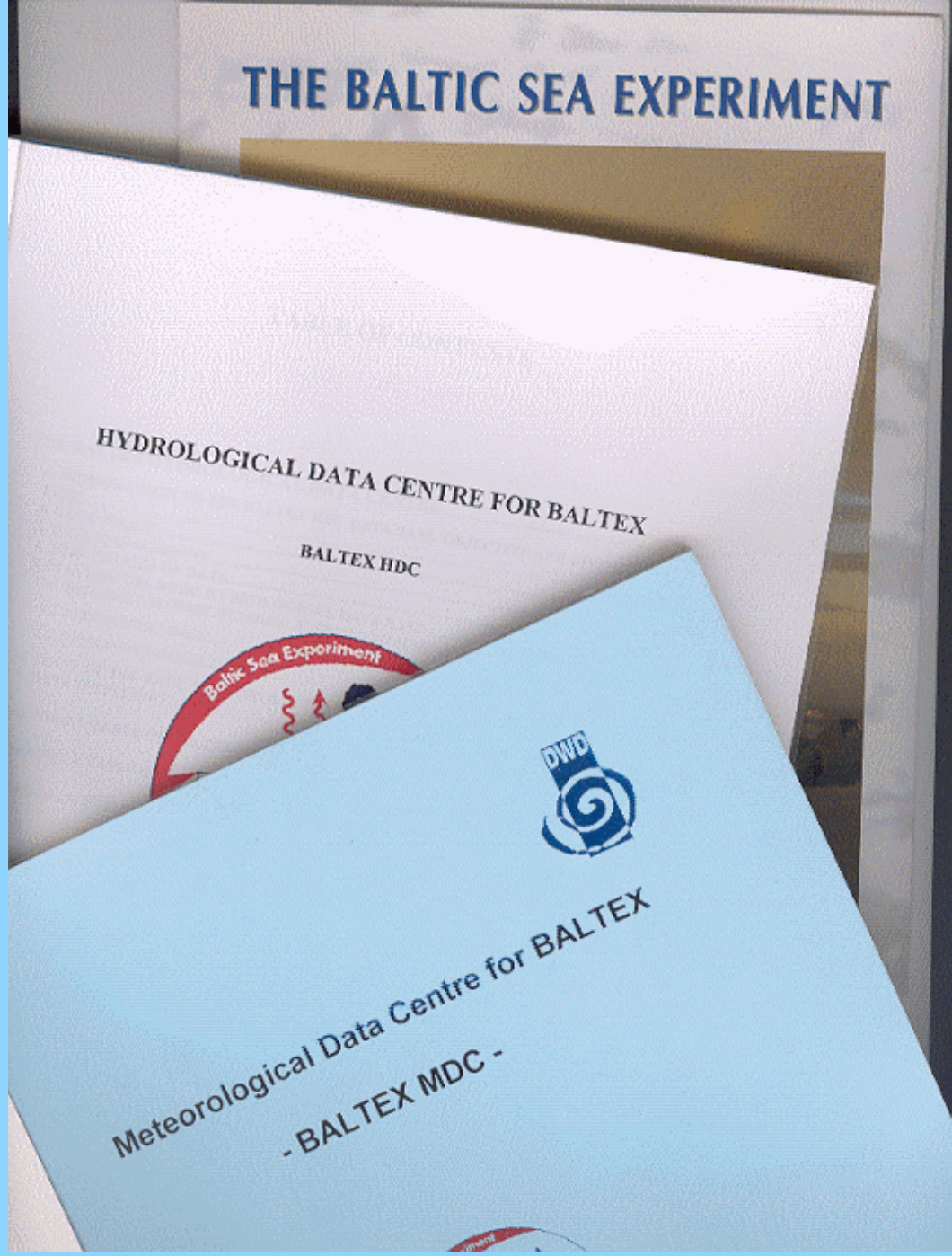
A multi-disciplinary programme
for environmental research
in the Baltic Sea drainage basin



A European contribution to the
Global Energy and Water Cycle Experiment
and World Climate Research Programme

GEWEX WCRP

WCRP

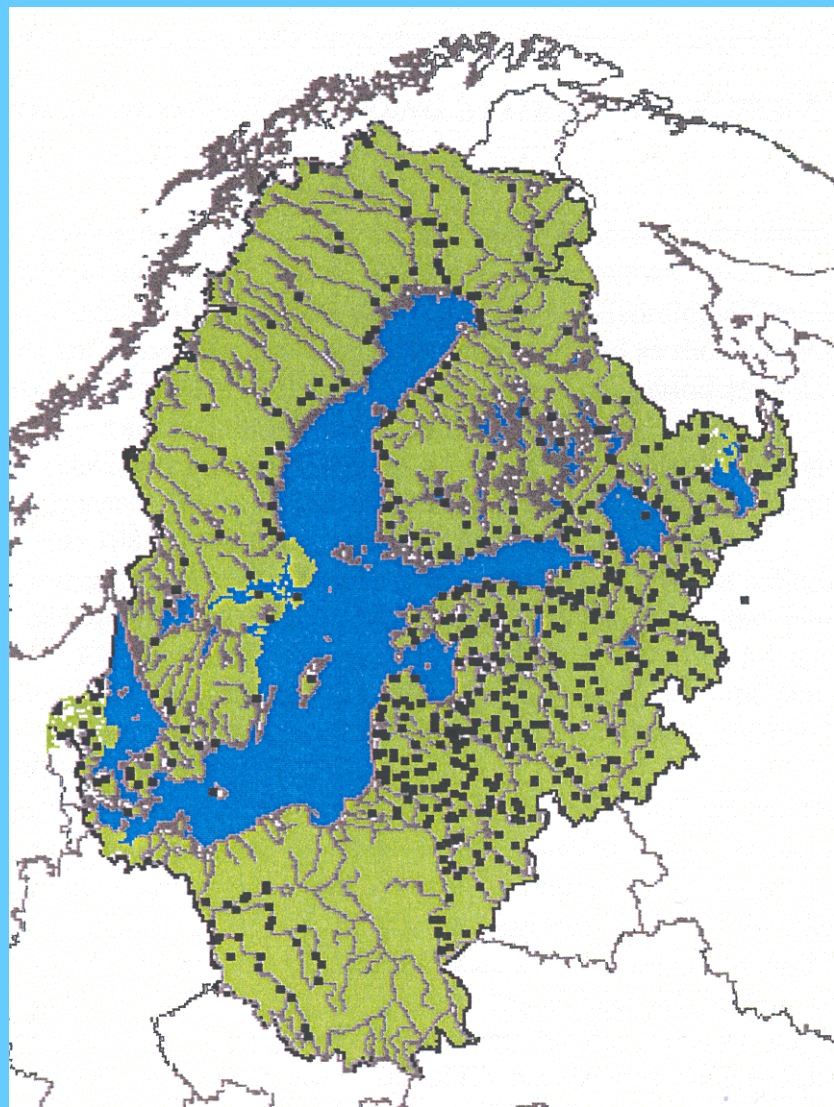


What did the East gain?

- The inventory of measurement routine and equipment was accelerated
- Data processing was intensified
- The foundation to digital data base was laid
- The access to the data stored at the BALTEX data centres was made available
- The BALTEX Study Conferences gave the possibility to young scientists to find contacts in the West

What did the West gain?

- A new look on their own data
- Personal contacts –
  visiting scientists from the East
- BALTEX Study Conferences as
  a wonderful meeting point
- Data over the whole catchment
  area



Daily runoff stations in 2001

The year 2013

The conditions and activities in West and East are similar:

- Weather services cooperate to give better weather forecast
- Research groups cooperate to apply for money and promote science

The problems are common:

- Automatic weather stations are not always reliable
- Long time series are not always homogeneous
- etc

The End

Thank you!