Use of diverse database aggregation for the study of variability in oceanographic parameters of the Japan/East Sea

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Main Goals:

- Using the aggregate data bases from multiple sources as united information space on base of the conceptual data model for analyses of observed and model-based ocean and atmosphere parameters

- Reveling interaction of Japan/East Sea thermohaline structure and long-term variability in “ocean-atmosphere” system

Review of information resource

Aggregate of data

Observed data

Multi-sources oceanograpfic Data Bases (MODB)

POI
NODC
JODC
JMA
CORDY

Meteo data

NODC

Computed data

Grid data

JMA

Dayli SST 0.25 degry

Monthly SST 1 degry

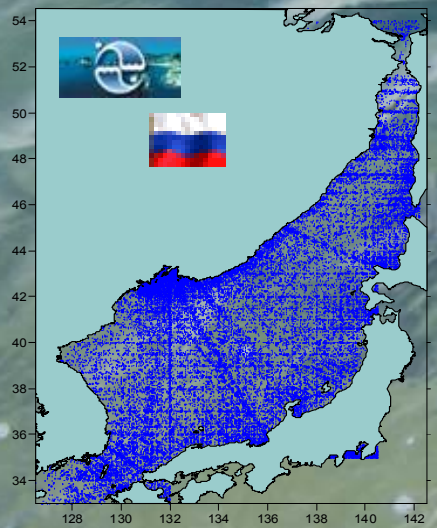
HadISST_1870-2002

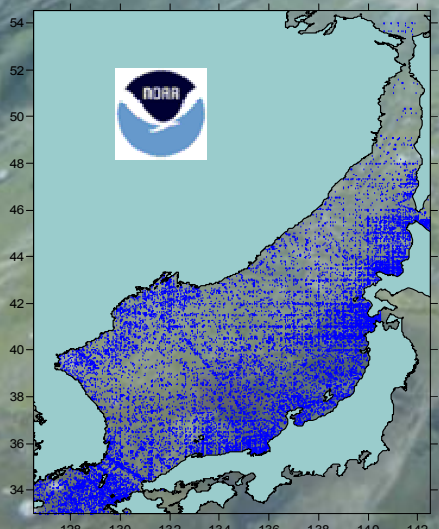
Different types of grid data other

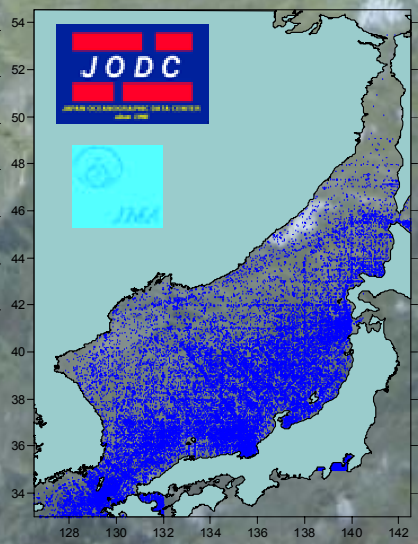
JMA
FERHI

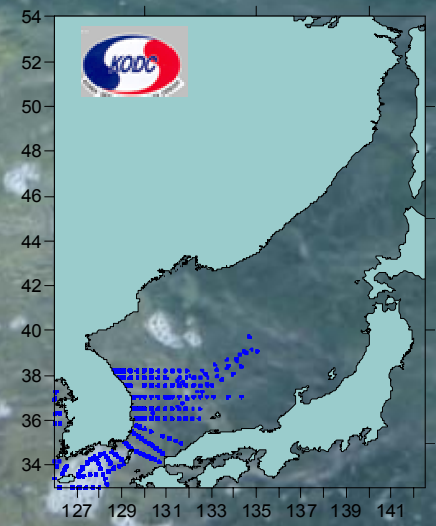
Review of information resource

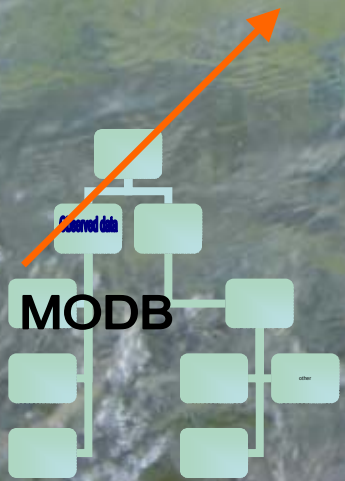
MODB stations distribution by sources



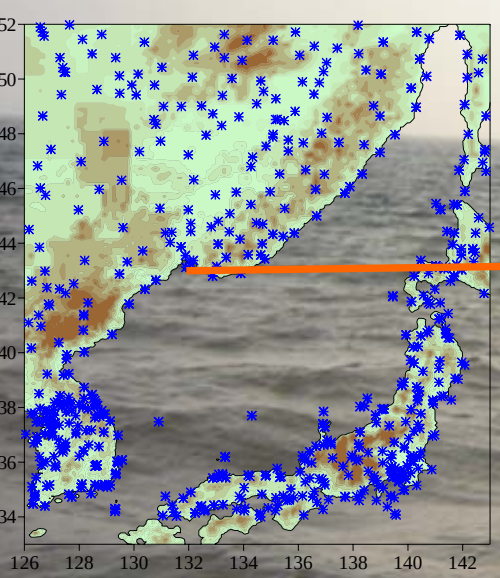






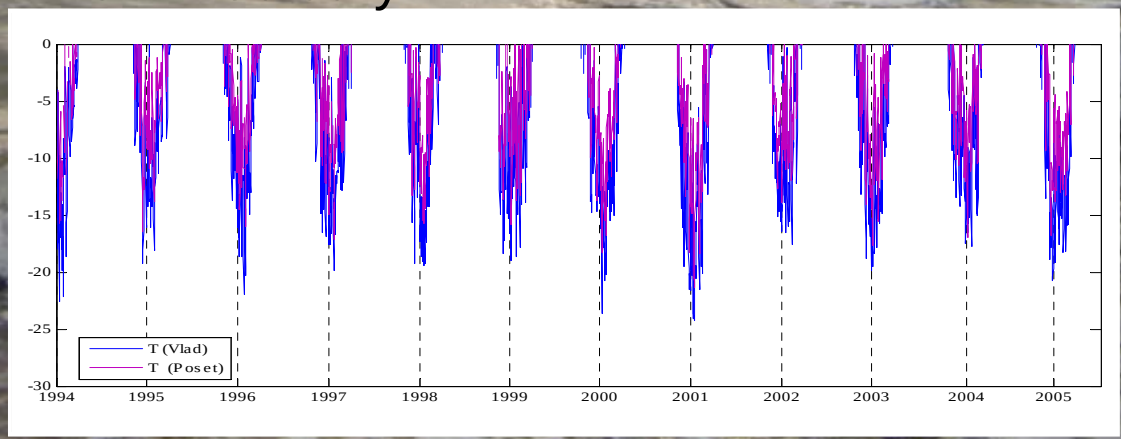


Daily meteorological data



Longitude	Latitude	STATION
132.87	42.80	NAHODKA
131.90	43.12	VLADIVOSTOK
139.05	37.92	NIIGATA
130.80	42.65	POSET

T° C in February



Review of information resource

120 files

dailysst(JMA)	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	Daily sea surface temperature data analysis by Japan Meteorological Agency

Month	KByte	
Jan	1749.0	GET
Feb	1579.8	GET
Mar	1749.0	GET
Apr	1692.6	GET
May	1749.0	GET
Jun	1692.6	GET
Jul	1749.0	GET
Aug	451.4	GET

SST BD 1 table

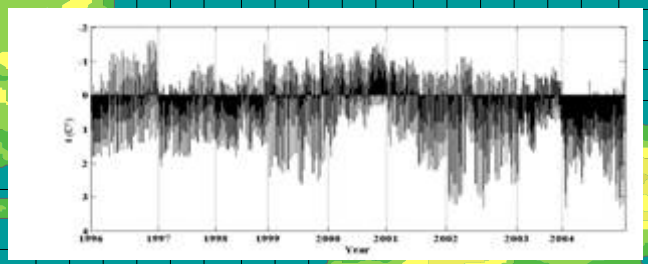


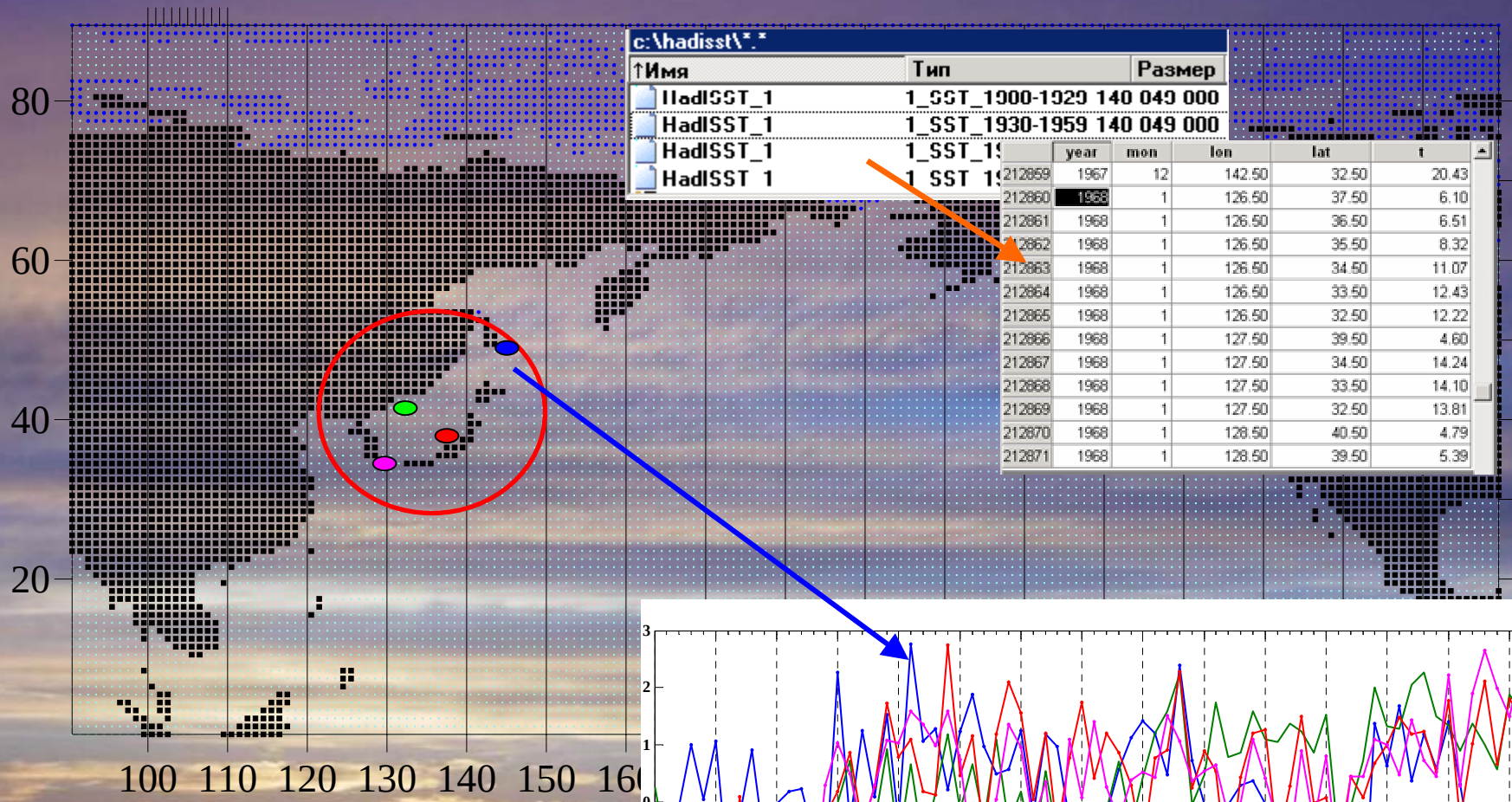
Table : E:\...\allsstpoi.DB

	year	mon	day	lon	lat	t
1	1996	1	1	126.00	30.00	17.00
2	1996	1	1	126.00	30.25	16.50
3	1996	1	1	126.00	30.50	16.10
4	1996	1	1	126.00	30.75	16.10
5	1996	1	1	126.00	31.00	16.00
6	1996	1	1	126.00	31.25	16.20
7	1996	1	1	126.00	31.50	16.20
8	1996	1	1	126.00	31.75	16.40
9	1996	1	1	126.00	32.00	16.50
10	1996	1	1	126.00	32.25	17.00
11	1996	1	1	126.00	32.50	17.40
12	1996	1	1	126.00	32.75	17.50
13	1996	1	1	126.00	33.00	17.30

1870-2002 monthly average

Review of information resource

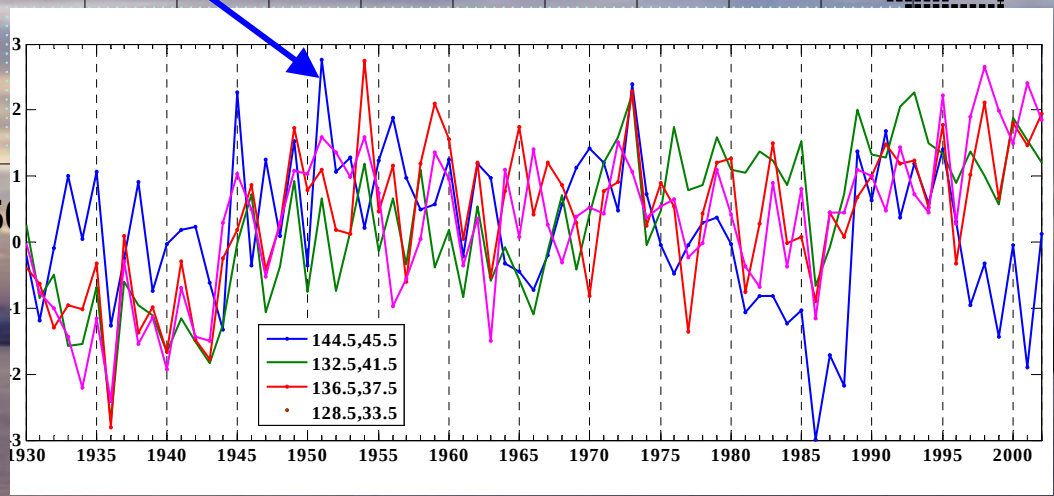
HADLEYsst 1 degree grid



c:\hadisst*.*

↑Имя	Тип	Размер
HadISST_1	1_SST_1900-1929	140 049 000
HadISST_1	1_SST_1930-1959	140 049 000
HadISST_1	1_SST_19	
HadISST_1	1_SST_19	

	year	mon	lon	lat	t
212859	1967	12	142.50	32.50	20.43
212860	1968	1	126.50	37.50	6.10
212861	1968	1	126.50	36.50	6.51
212862	1968	1	126.50	35.50	8.32
212863	1968	1	126.50	34.50	11.07
212864	1968	1	126.50	33.50	12.43
212865	1968	1	126.50	32.50	12.22
212866	1968	1	127.50	39.50	4.60
212867	1968	1	127.50	34.50	14.24
212868	1968	1	127.50	33.50	14.10
212869	1968	1	127.50	32.50	13.81
212870	1968	1	128.50	40.50	4.79
212871	1968	1	128.50	39.50	5.39



t˚C in February
at 4 point

The fragment of the logical model of MODB

SOURCE
Code_source
Specification

STATION
Code_source
Unic_nom_st
Code_ship
Code_cntry_(for_data)
Code_work
Lat, Lon, Depth,
Date, Time

DATA_CLASS
Code_work
Code_source
Specification

SHIP
Code_ship
Name_ship
Code_cntry_(for_ship)

METHOD
Code_met
Name_met

STATION-PARAM
Code_source
Unic_nom_st
Code_par
Code_met, count_level

O2

SALINITY

TEMPERATURE
Code_source,
Unic_nom_st
level
tempr
flag

COUNTRY
Code_cntry
Name_cntry

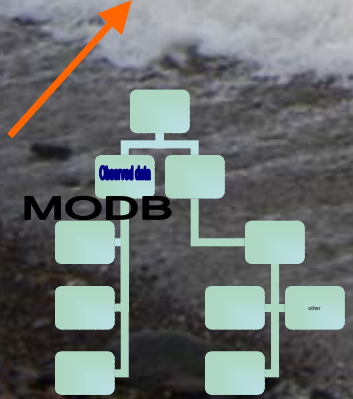
PARAMETER
Code_par
Name_par
Code_unit

RELIEF Lat,
Lon,
Depth

UNIT
Code_unit
Name_unit

LIMITS-TS
Level_min
Level_max
Tempr_min
Tempr_max

QUALITY
flag
specification



Analysis of the logical models

The fragment of the logical model of MGDB

CALCULATE_CLASS
Code_cflculate
Specification:
Average, Min, Max, Mtdian

SOURCE
Code_source
Specification

GRIDD_CLASS
Code_class
Code_source
Code_sizetime
Code_size_region
Code_calculate

DATE_CLASS
Code_sizeti
Shtcification:
Daily, Montly, Yearly, Main

DATE_CEIL
Code_gridd
~~Code_class~~
Code_ceil
date

CEIL
Cod_ceil
Latitude
Longitude

TEMPERATURE
Code_grid
Level
Tempr

SALINITY
Code_grid
Level
Saliniti

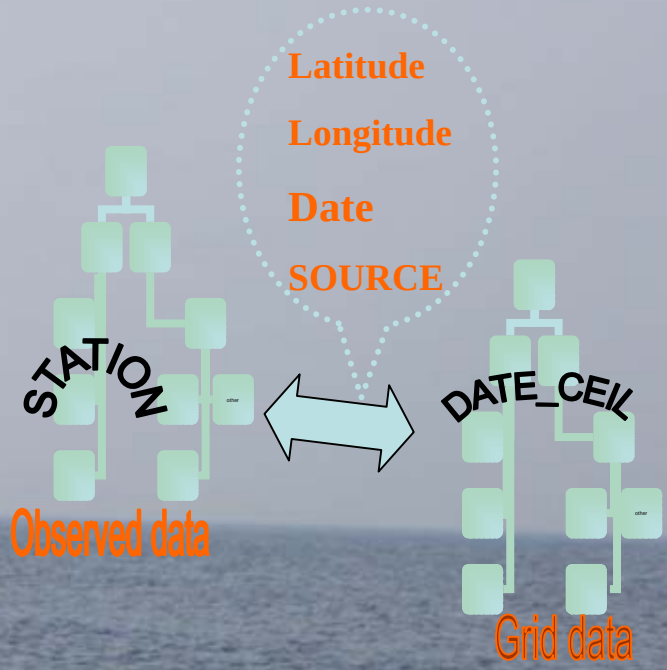
Analysis of the logical models

SOURCE

CODE_SOURCE	Specification
JMA	http://near-goos1.jodc.go.jp/
POI	
NODC	
FERHI	

GRIDD_CLASS

CODE_GRID	CODE_SOURCE	SIZE_PERIOD	SIZE_REG	CODE_CALC
1	JMA	DAY	0.25	average
2	JMA	Month	0.5	average
3	hadley	Month	1	averade
4	FERHI	Not date	1	averade



DATE_CEIL

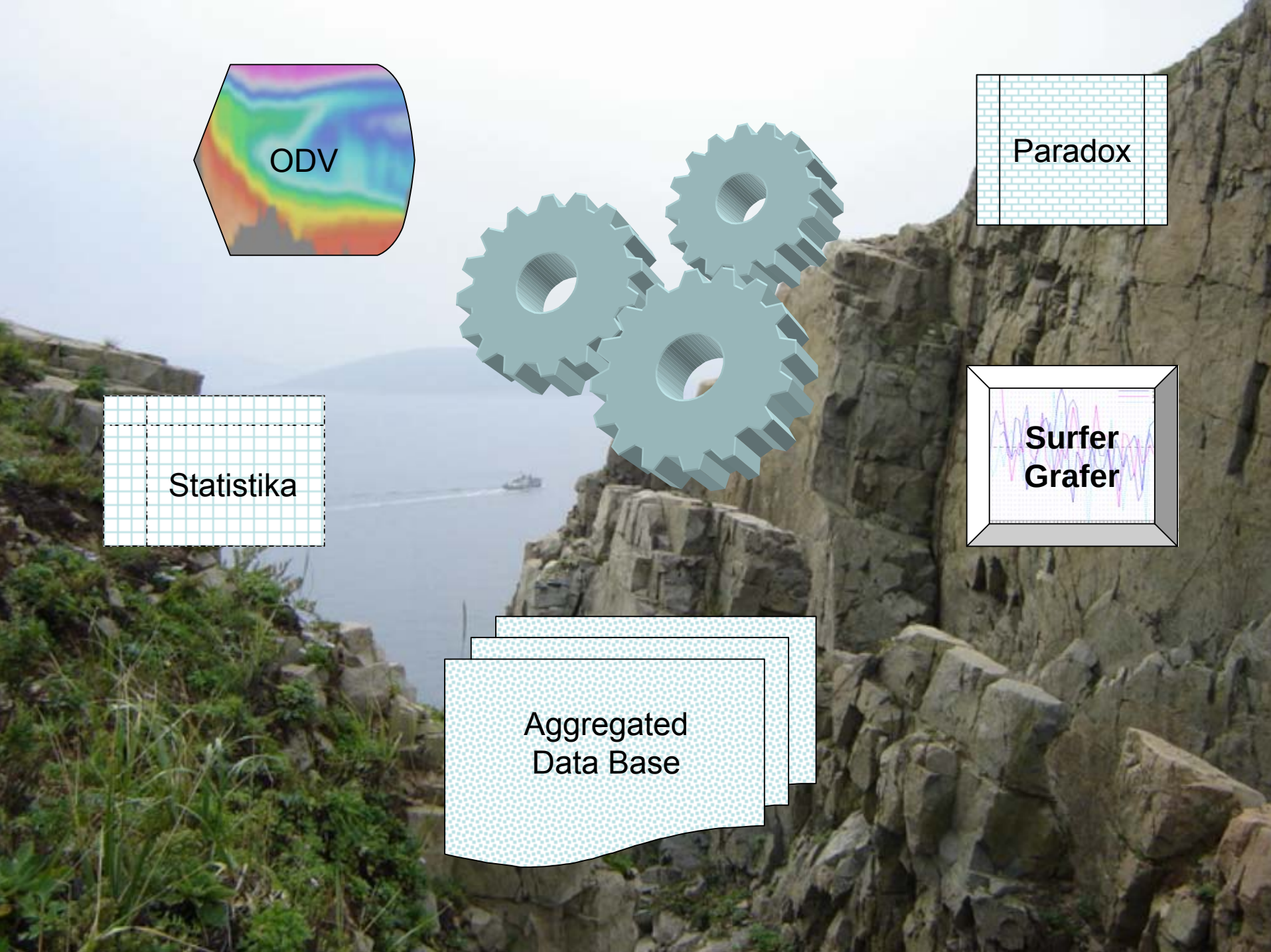
UNI_CODE	CODE_GRID	CODE_CEIL	DATE
223456	1	1323423	15/01/94
127655554	3	1323421	/01/ 94
387655555	4	1321421	/01/

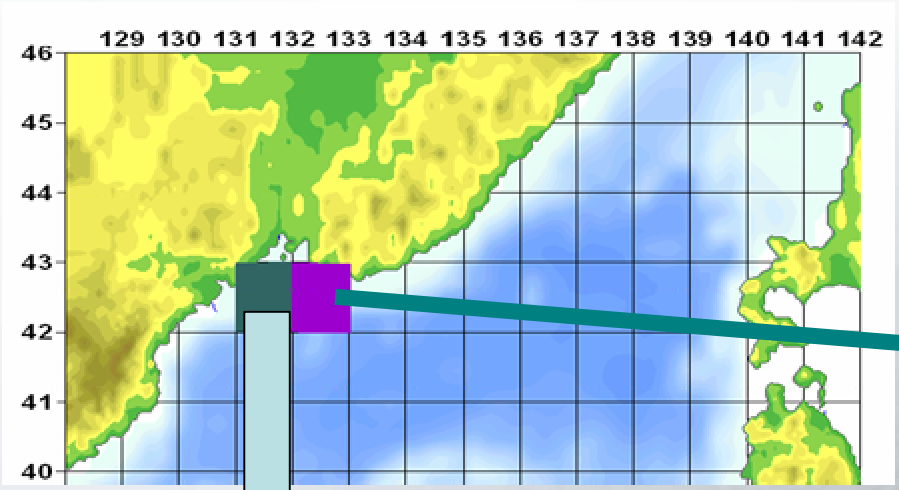
CEIL

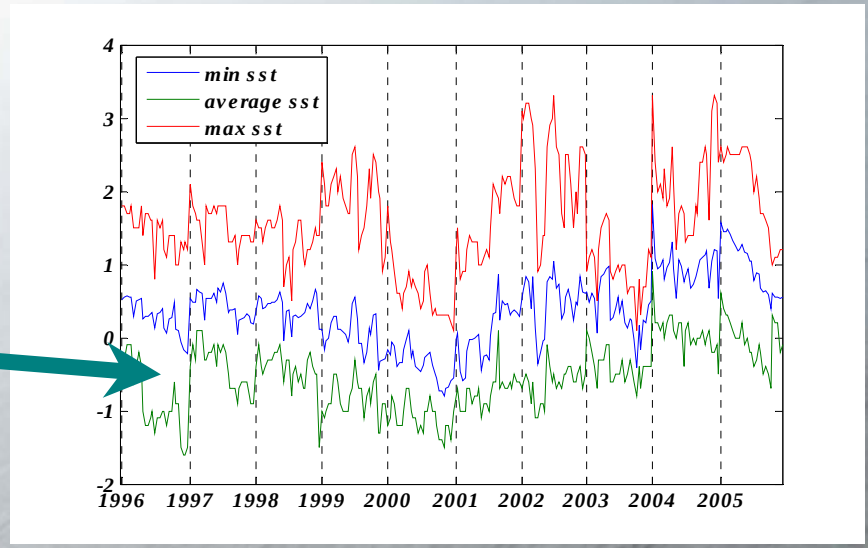
CODE_CEIL	LONGITUDE	LATITUDE
1323423	132.25	42.25
1321421	132..5	42.5
1320420	132	42

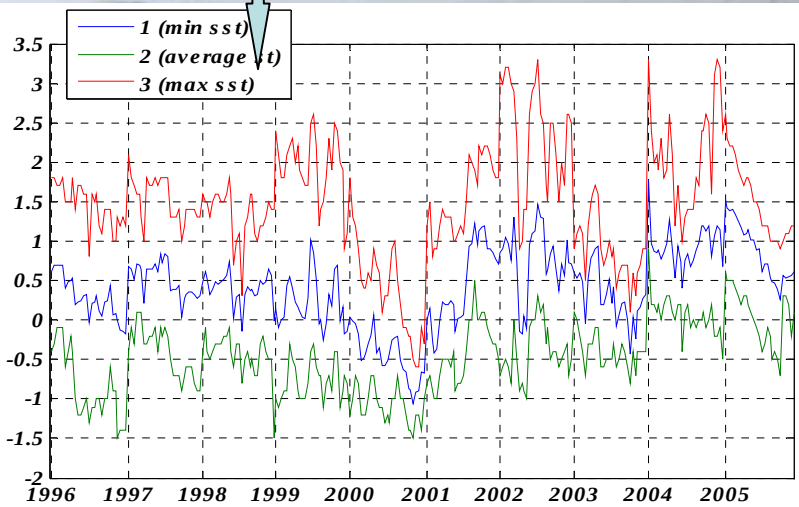
UNI_CODE	LEVEL	TEMPERATURE
223456	0	0.5
127655554	0	2.7
387655555	0	0.25
387655555	10	0.21

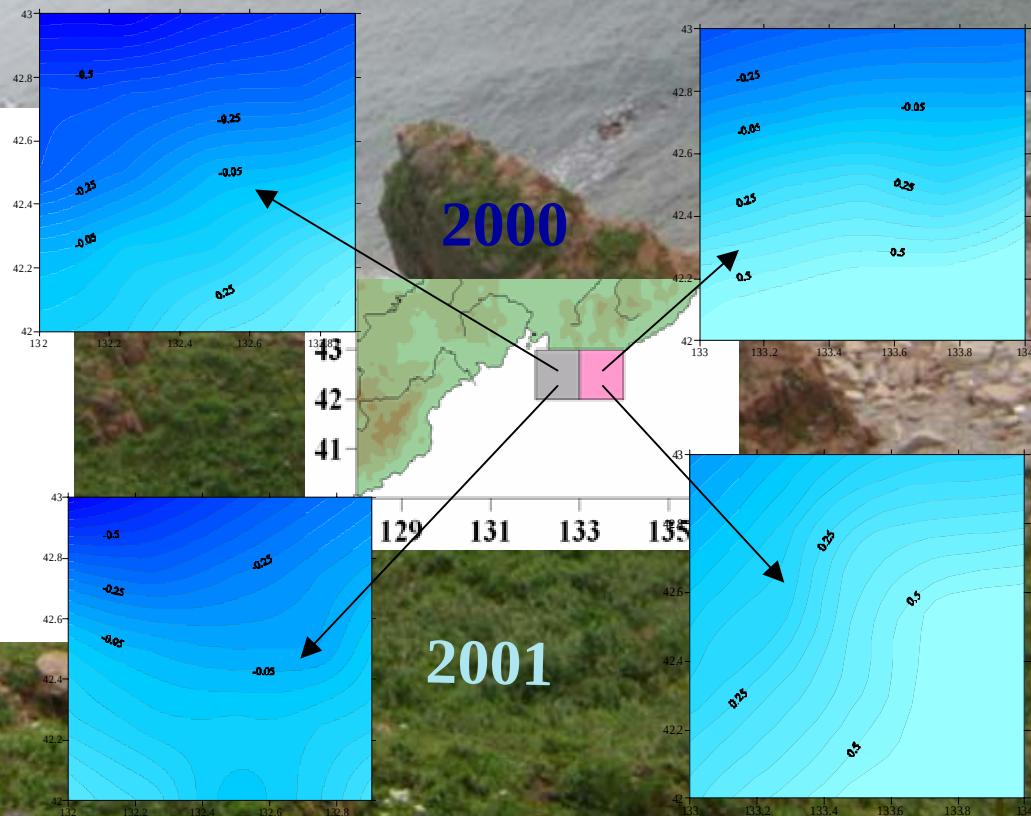
Analysis of the logical models


ODV
Paradox
Statistika
Surfer
Grafer
Aggregated
Data Base

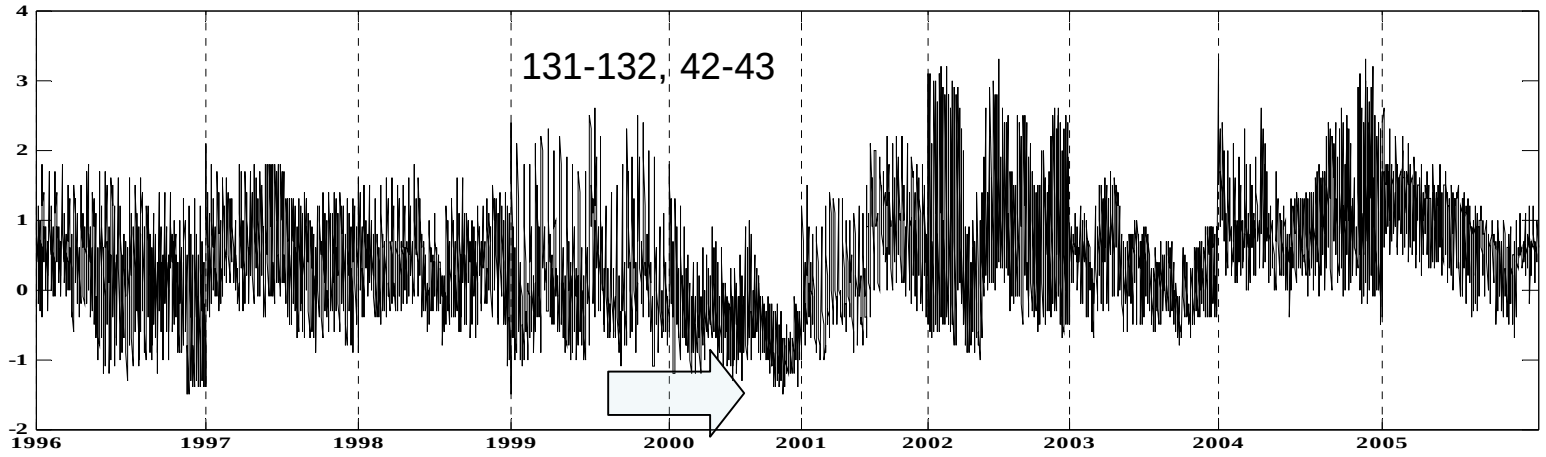

129 130 131 132 133 134 135 136 137 138 139 140 141 142
46
45
44
43
42
41
40


min sst
average sst
max sst
4
3
2
1
0
-1
-2
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005

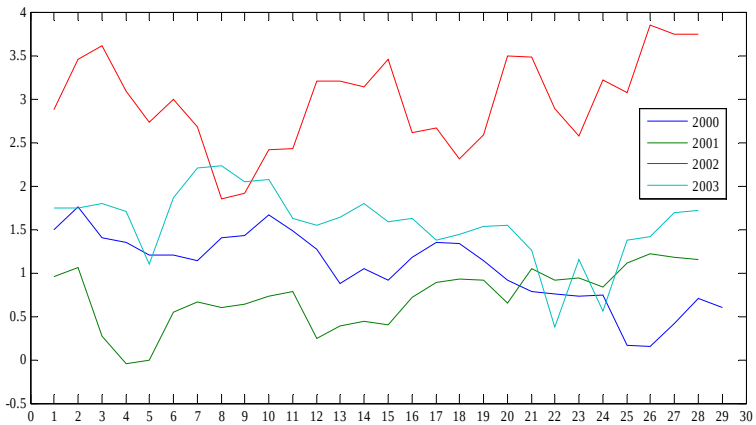

1 (min sst)
2 (average sst)
3 (max sst)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005


2000
2001
43
42
41
129 131 133 135

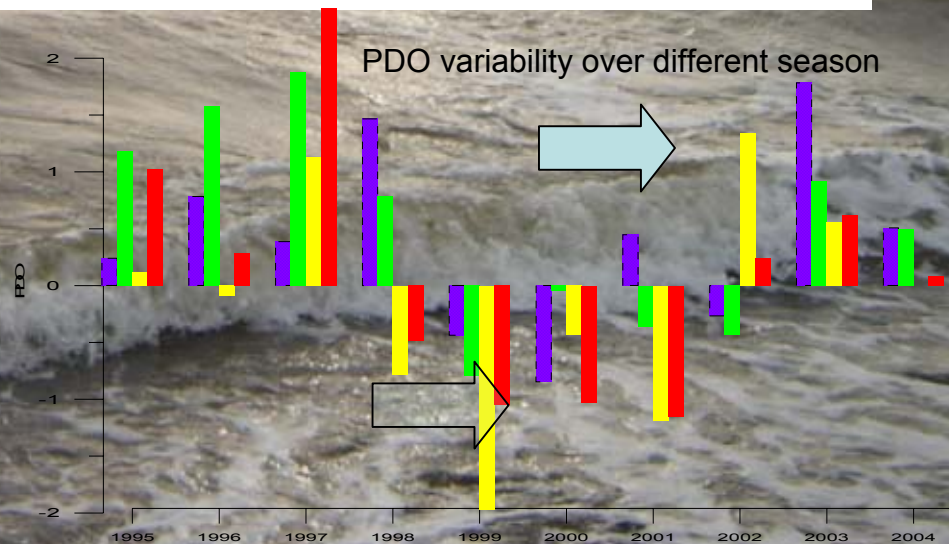
Daily sst diagram in cold period

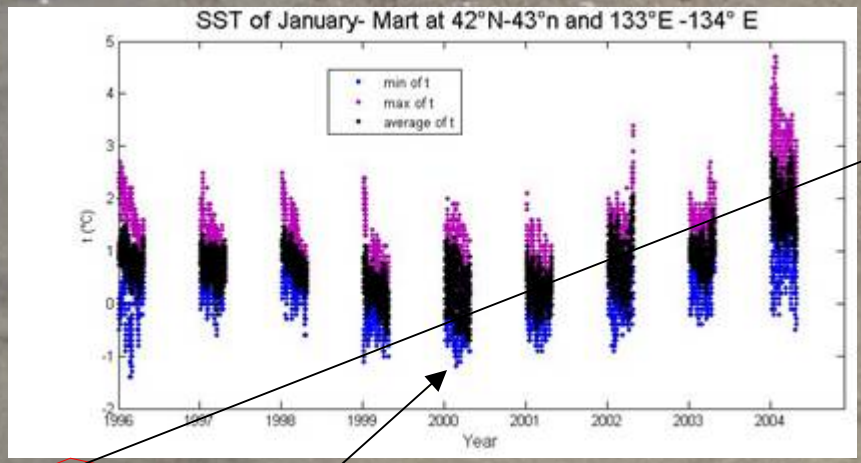


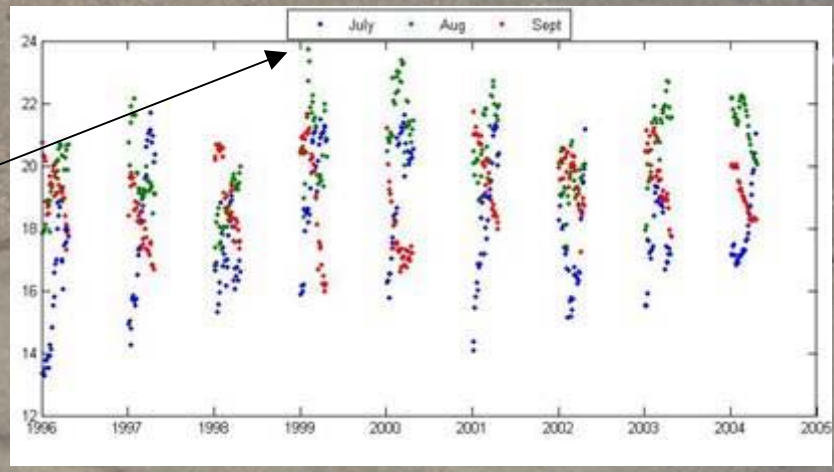
Day averaged sst in February over 2000-2003

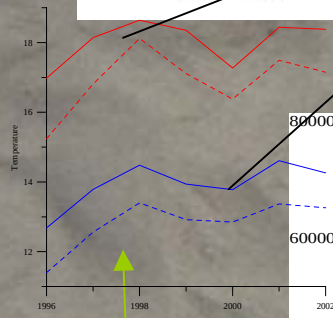


PDO variability over different season

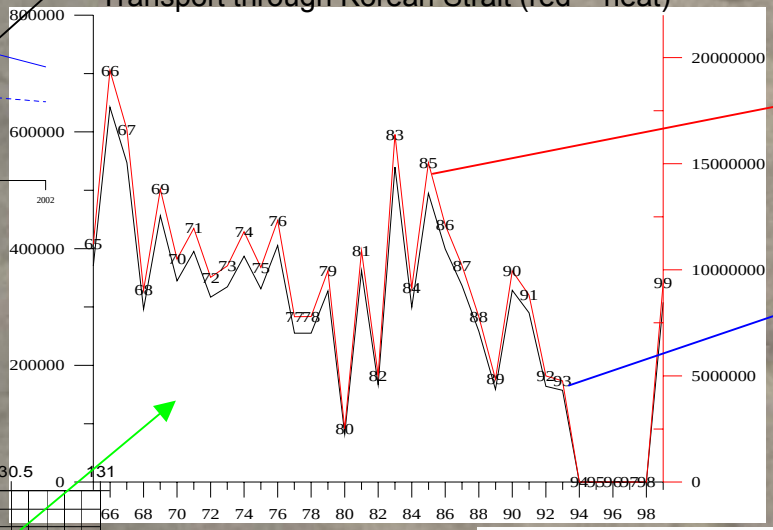


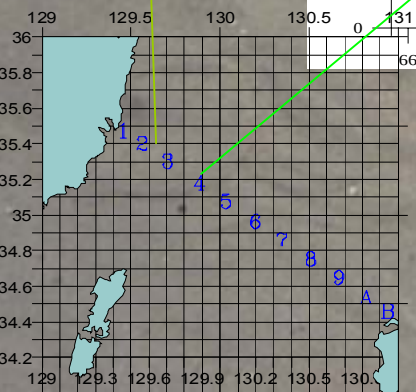


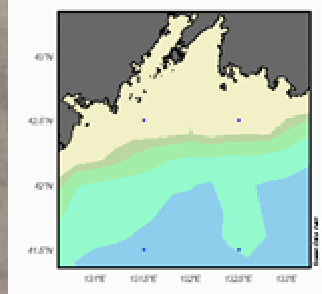


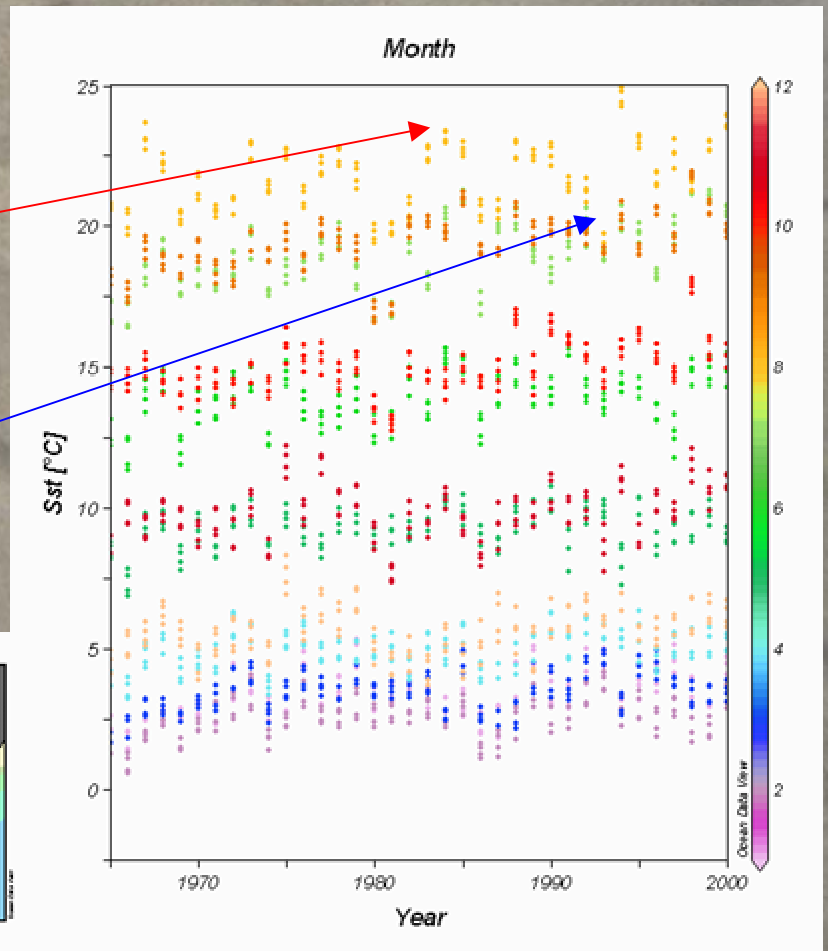


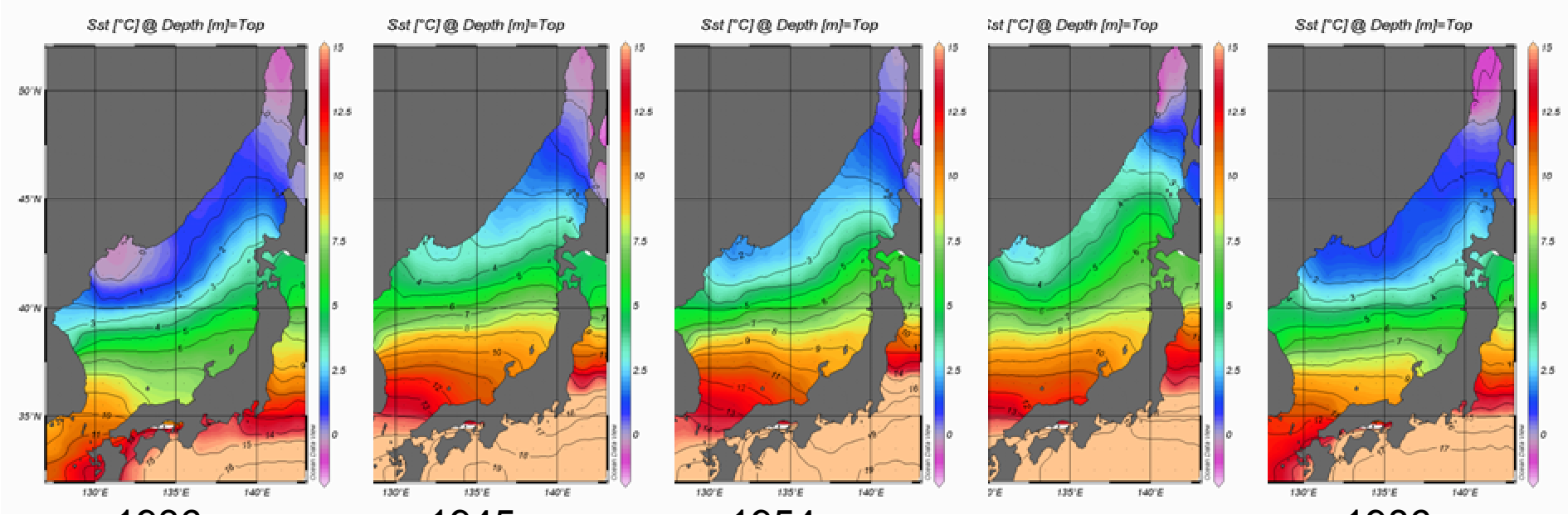
Transport through Korean Strait (red – heat)



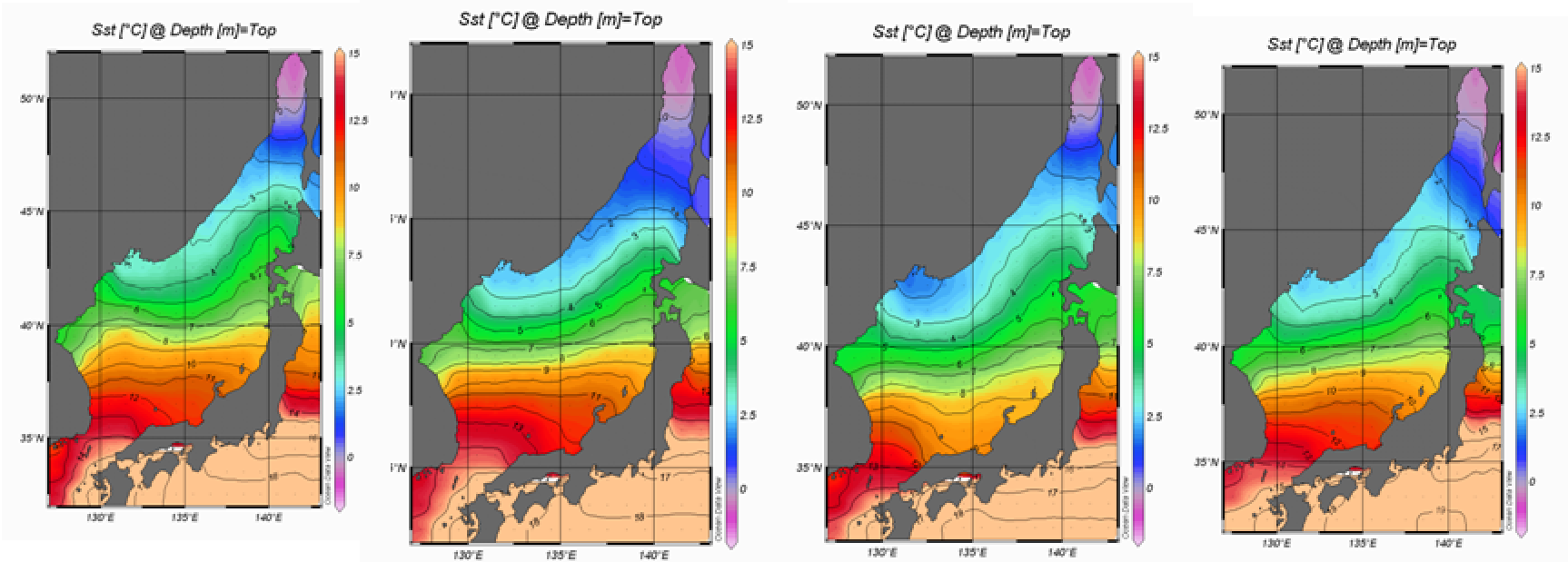








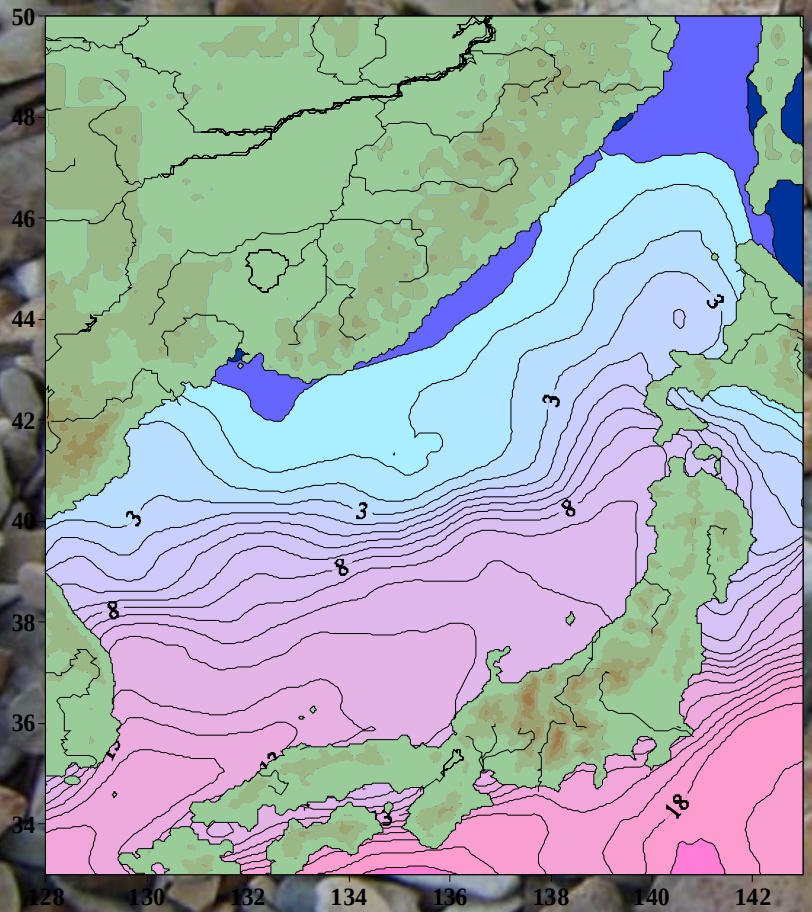
1936 1945 1954 1973 1986



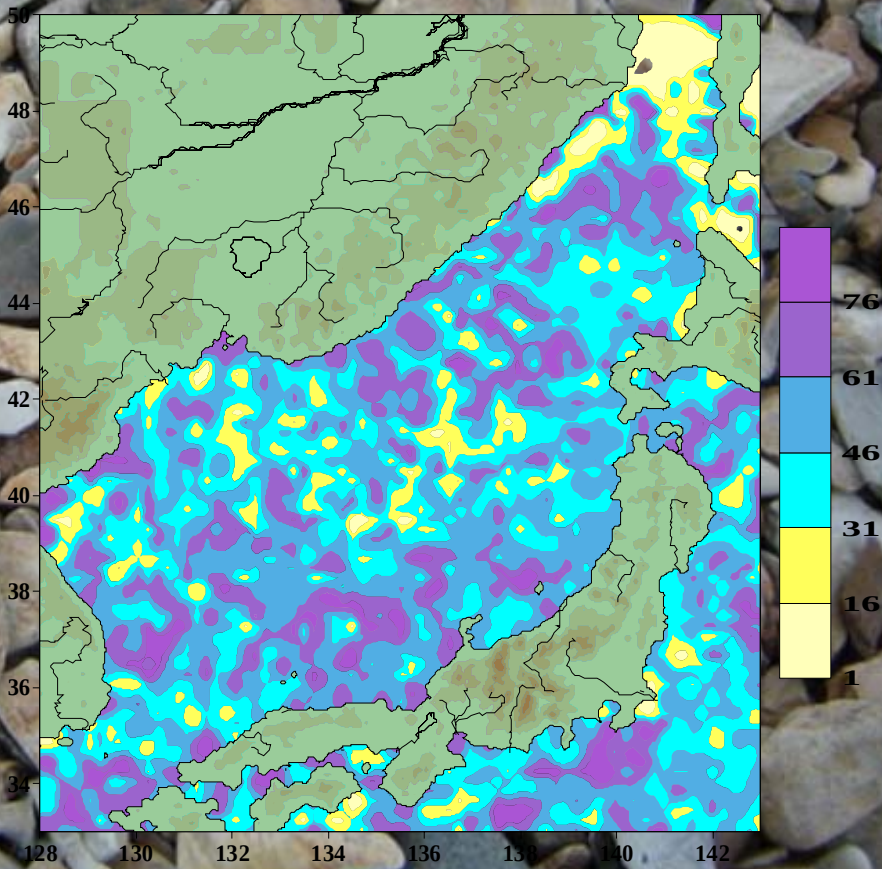
1995 1999 2001 2002

2001 (January - Mart)

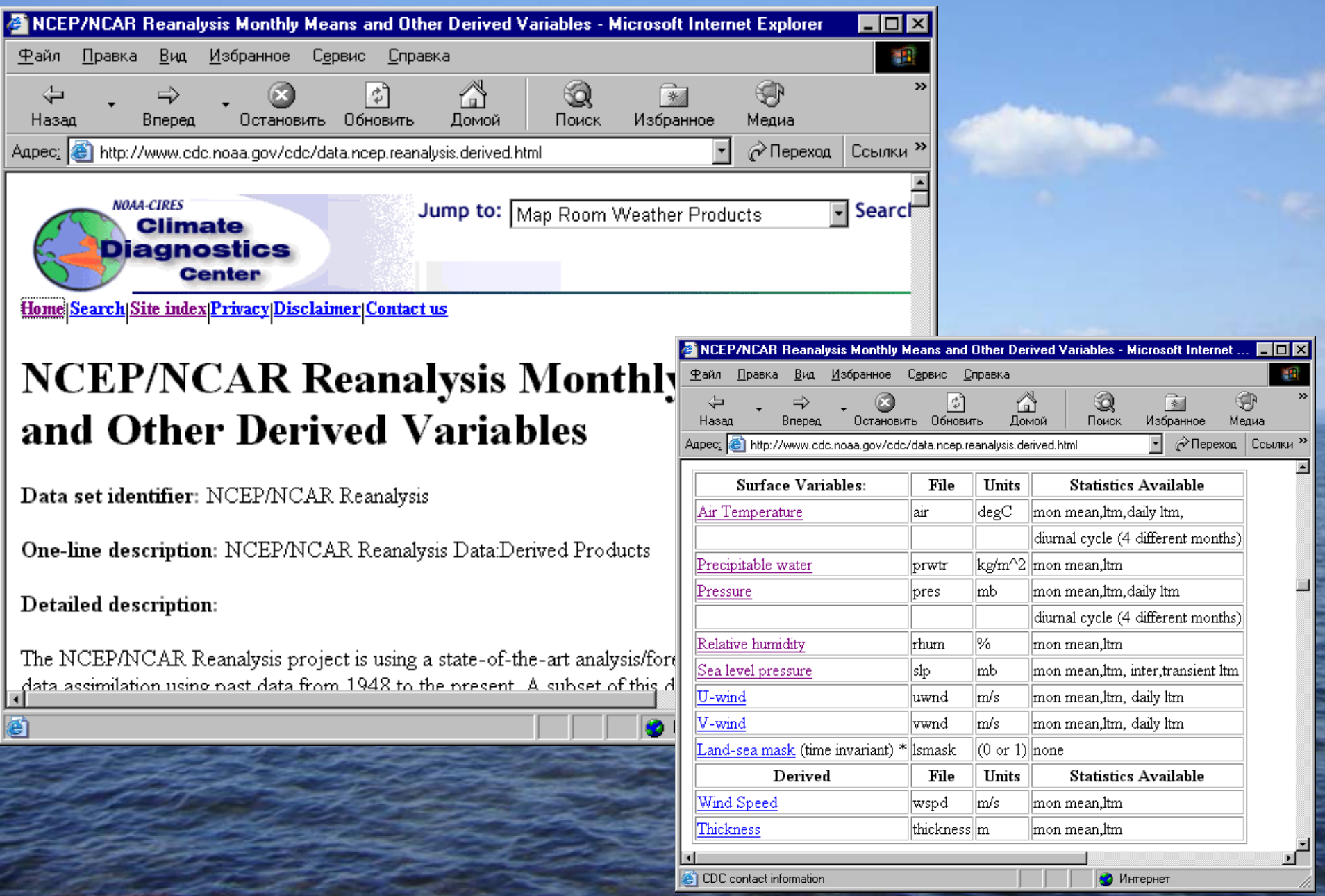
WINTER Median SST



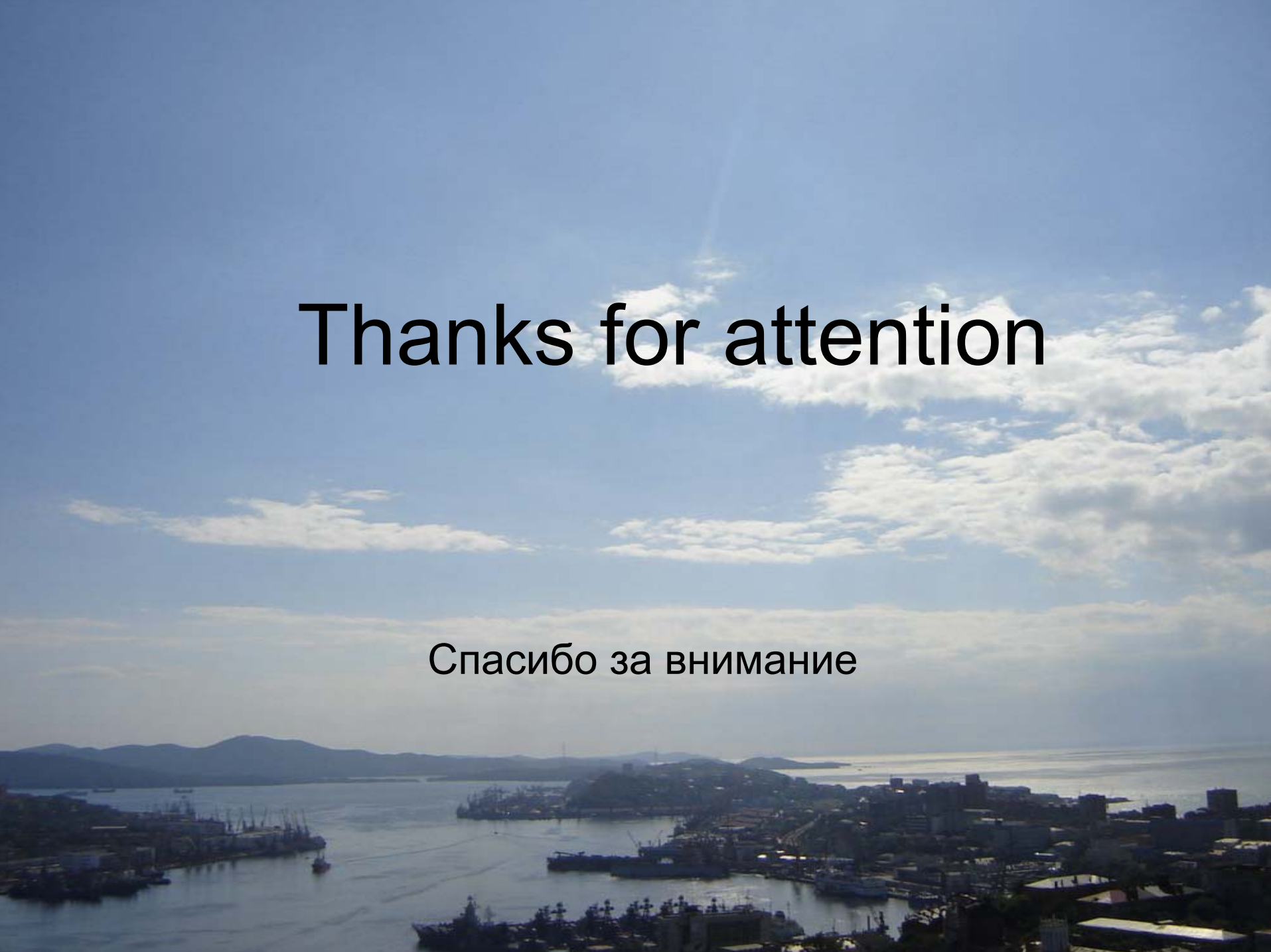
Median day distribution (1-90)



We plan to involve new available data sets



Surface Variables:	File	Units	Statistics Available
Air Temperature	air	degC	mon mean,ltm,daily ltm,
			diurnal cycle (4 different months)
Precipitable water	prwtr	kg/m^2	mon mean,ltm
Pressure	pres	mb	mon mean,ltm,daily ltm
			diurnal cycle (4 different months)
Relative humidity	rhum	%	mon mean,ltm
Sea level pressure	slp	mb	mon mean,ltm, inter,transient ltm
U-wind	uwnd	m/s	mon mean,ltm, daily ltm
V-wind	vwnd	m/s	mon mean,ltm, daily ltm
Land-sea mask (time invariant) *	lsmask	(0 or 1)	none
Derived	**File**	**Units**	**Statistics Available**
Wind Speed	wspd	m/s	mon mean,ltm
Thickness	thickness	m	mon mean,ltm


Thanks for attention
Спасибо за внимание