



Svetlana Yu. Glebova

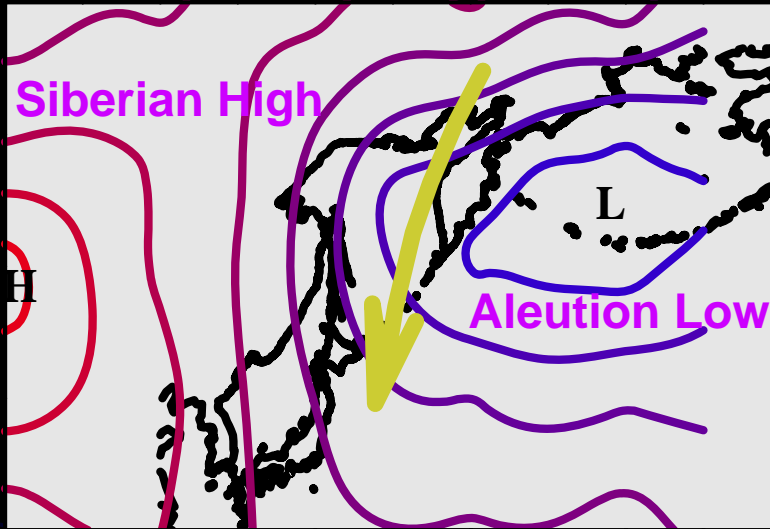
***Some features of reconstructions in atmospheric
circulation over the Asian-Pacific region
in 2000-2006***



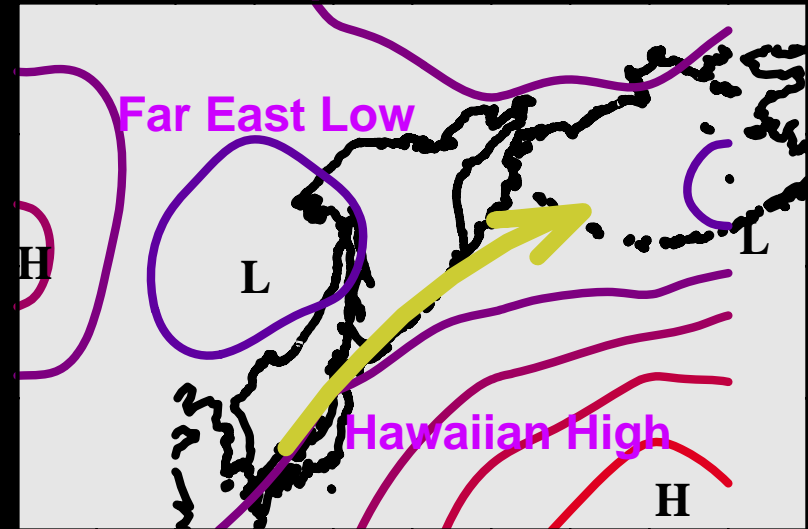
**Pacific Fisheries Research Centre (TINRO-centre),
Vladivostok, Russia, 2006**

General direction of the wind circulation over the Far East region in the different seasons

The winter monsoon



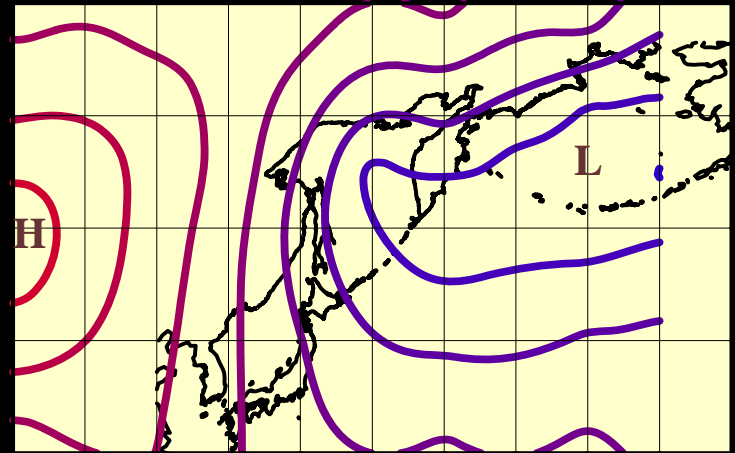
The summer monsoon



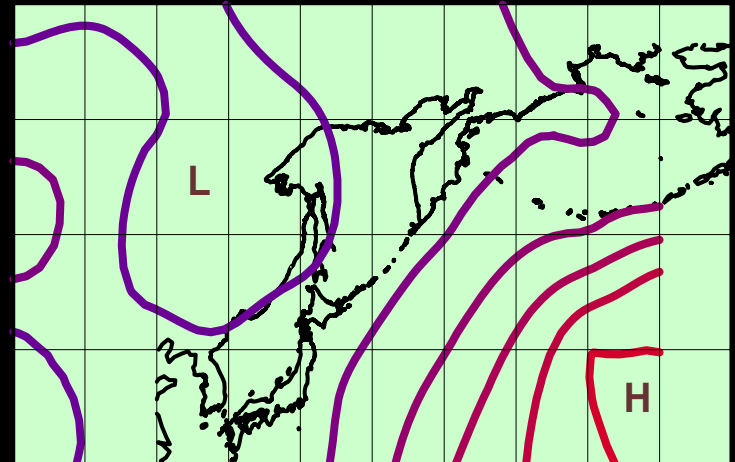
Charts of sea level atmospheric pressure, averaged for the “cold” and “warm” seasons, have been used.

Condition of the main Atmospheric Action Centers as well as direction and intensity of wind transfer over the each far East Seas were defined.

“Cold” season (October-March)



“Warm” season (April-September)



To estimate the intensity and direction of monsoon transfer over the Far East Seas, **meridional Katz index of atmospheric circulation** I_m was calculated as a number of isobars crossing latitudes inside and on boundaries of the three areas (including the Bering, Okhotsk and Japan Seas), taken into account their orientation. The formula was used:

$$I_m = I_s - I_n / N$$

Where:

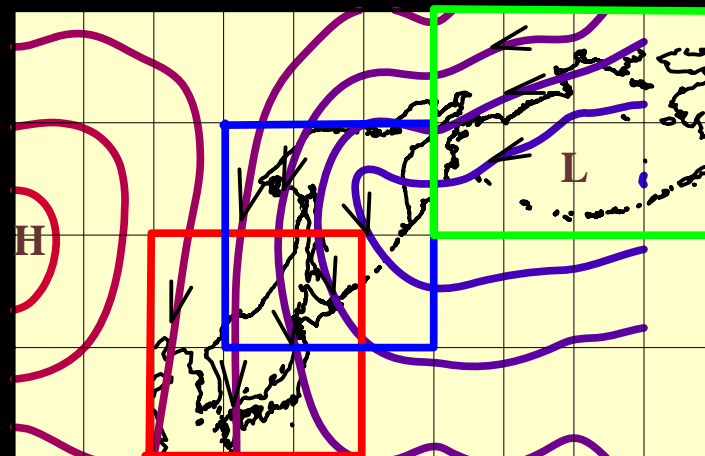
I_s – a number of the isobars orientated from the south to the north;

I_n – their number orientated from the north to the south.

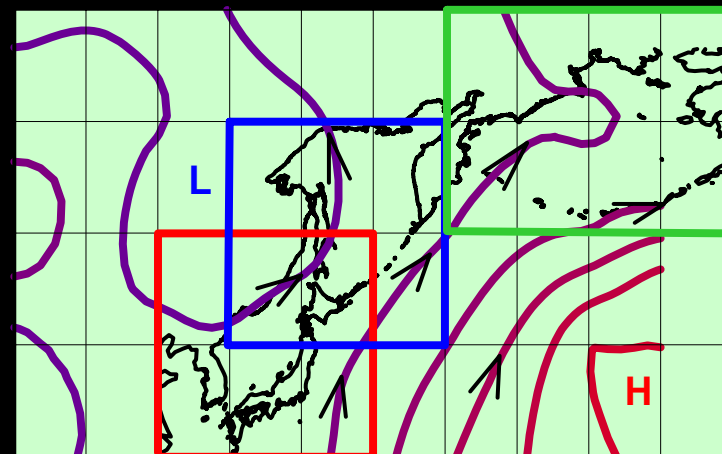
N – a number of the crossed latitudes

Actually, $I_m > 0$ characterizes **southern wind** (summer monsoon), $I_m < 0$ characterizes **northern wind** (winter monsoon).

“Cold” seasons (October-March)

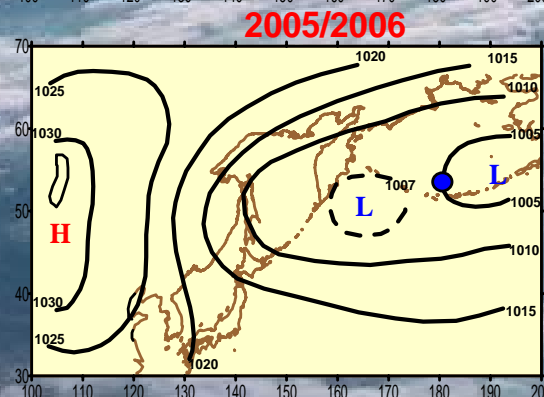
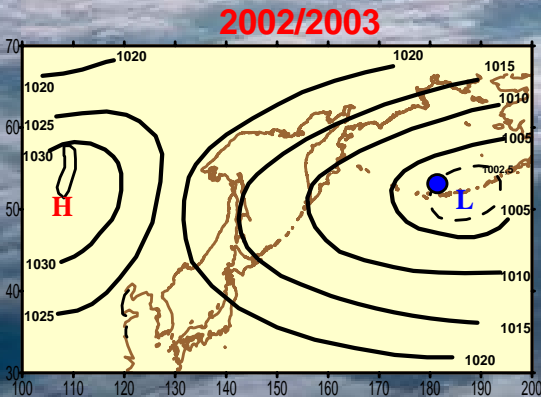
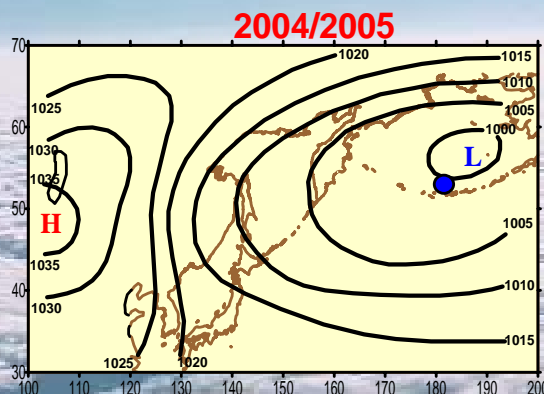
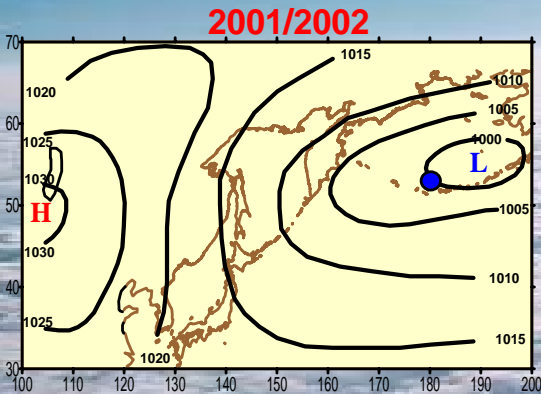
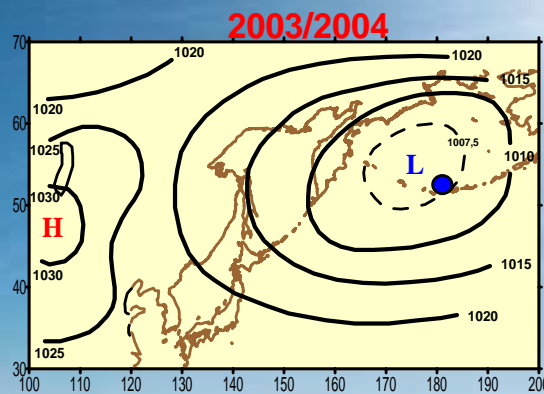
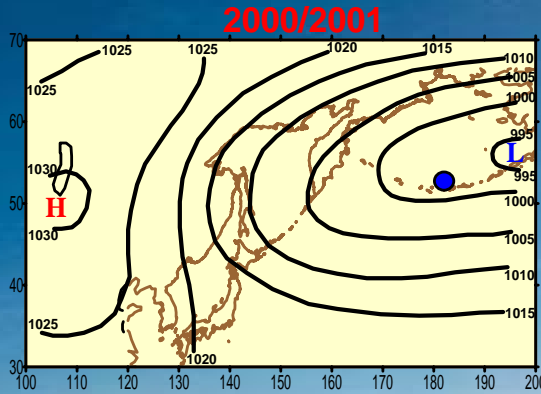


“Warm” seasons (April-September)

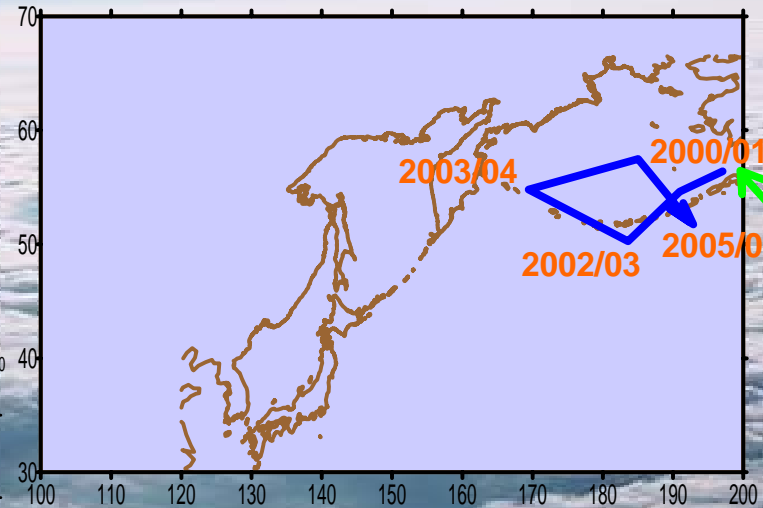


The meridional Katz indices were calculated for three marked areas including each of the Far East Seas

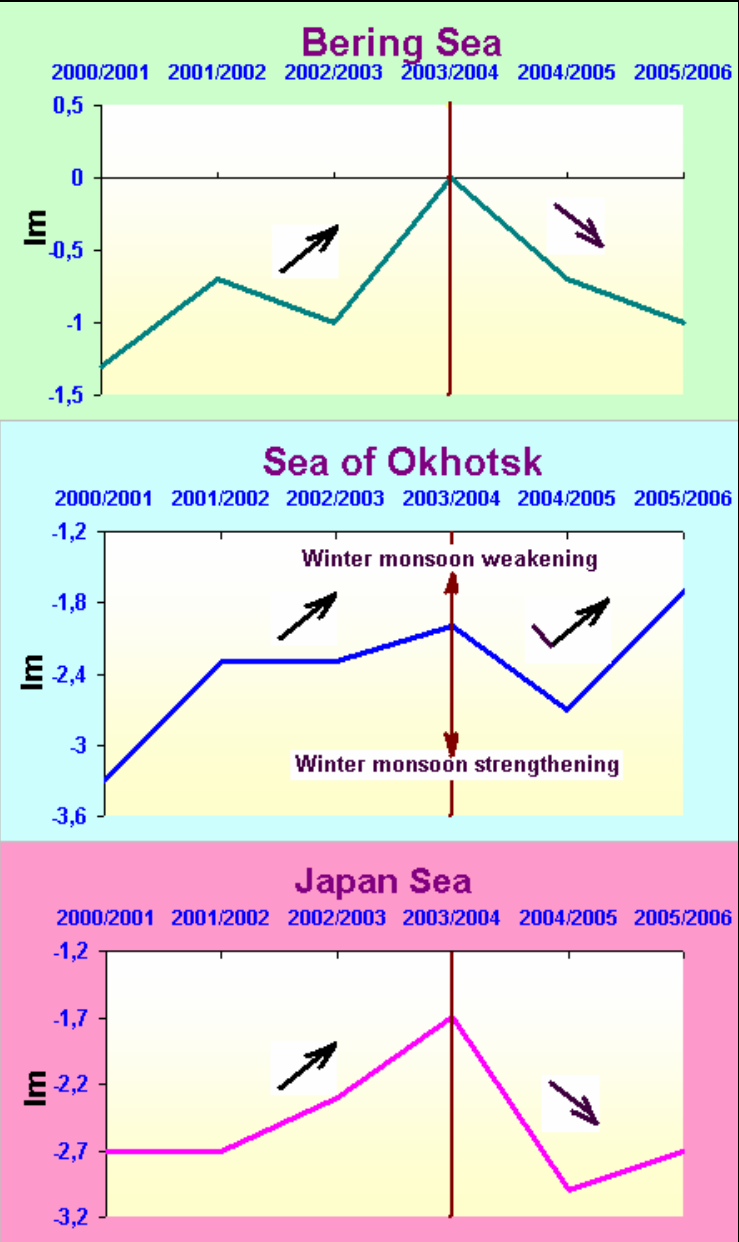
Synoptic conditions over the Far East Seas in the cold seasons (October-March) 2000-2006



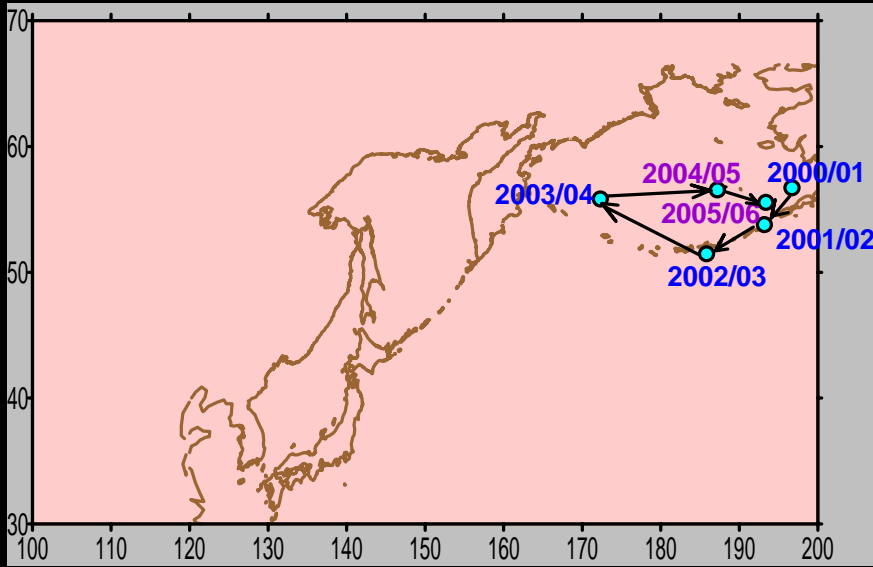
**Direction of moving of the
Aleutian Low in 2000-2006**



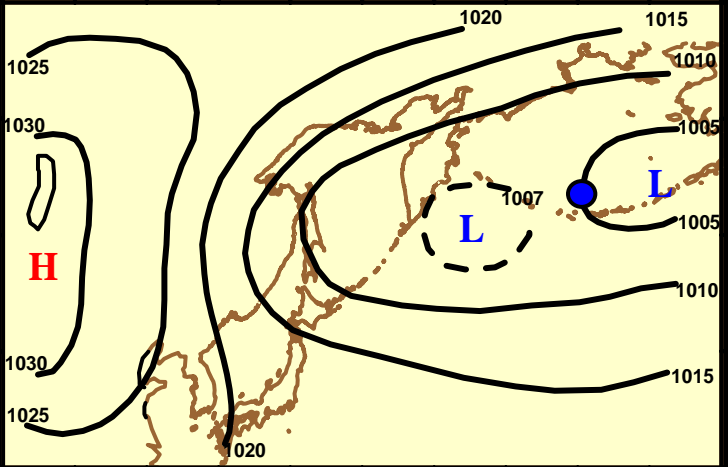
Year-to-year variability of a meridional Katz index (Im) (as indicator of a winter monsoon) in the Far East Seas in the cold seasons 2000-2006



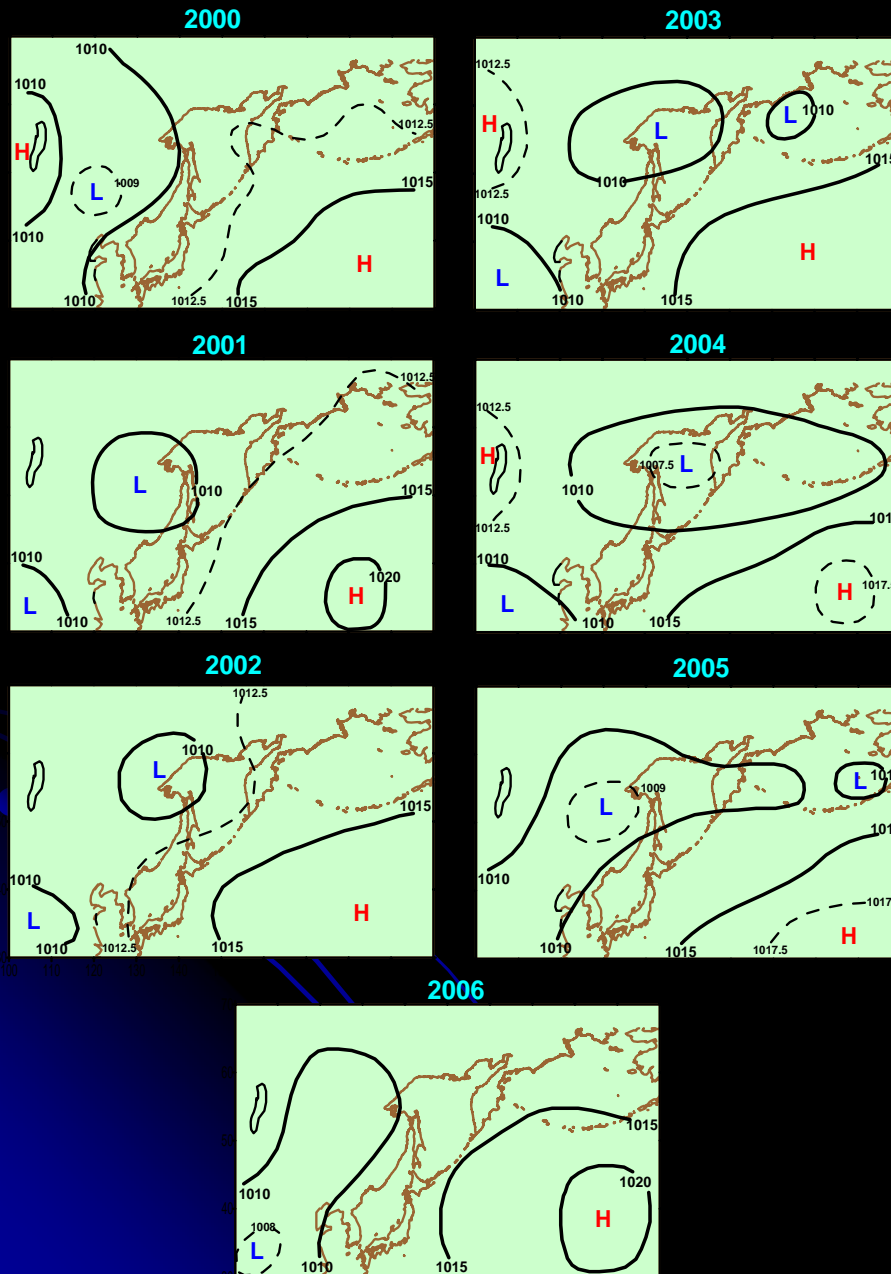
Direction of moving of the Aleutian Low in 2000-2006



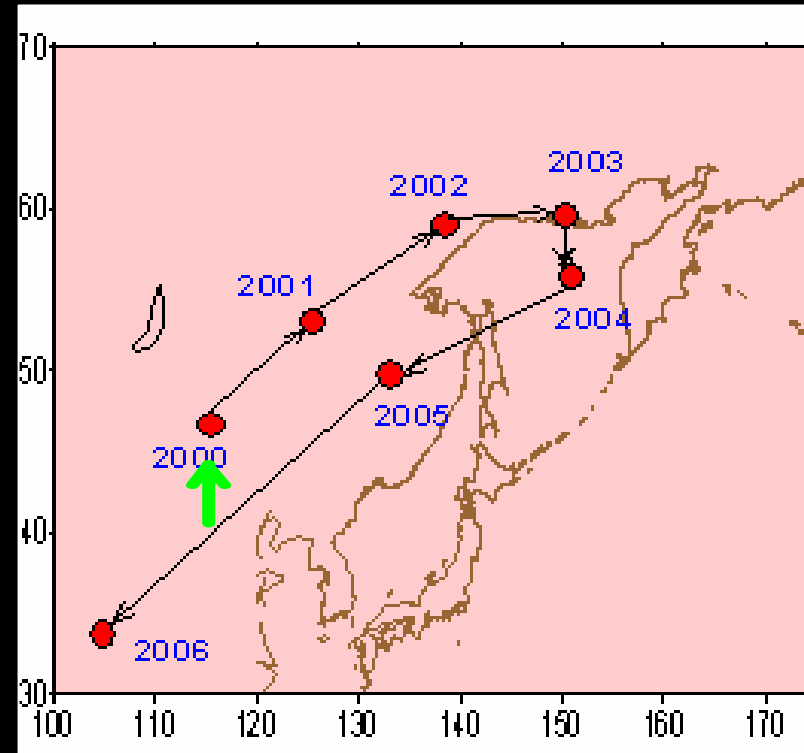
Synoptic situation over the Far East Seas in the cold season 2005/2006



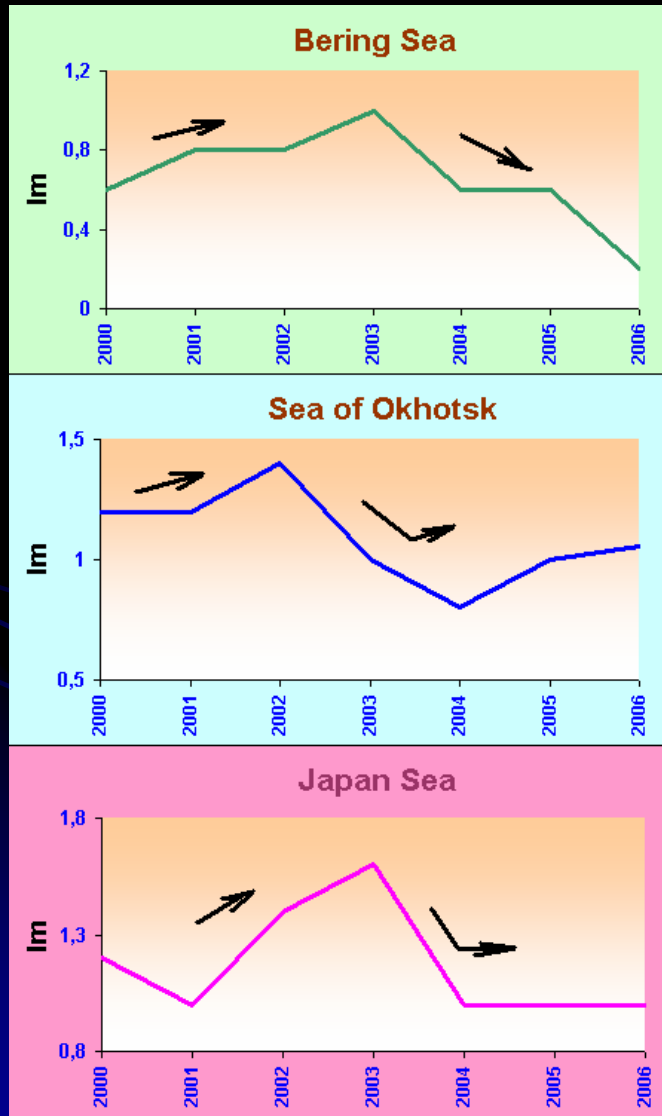
Synoptic conditions over the Far East Seas in the warm (April-September) seasons 2000-2006



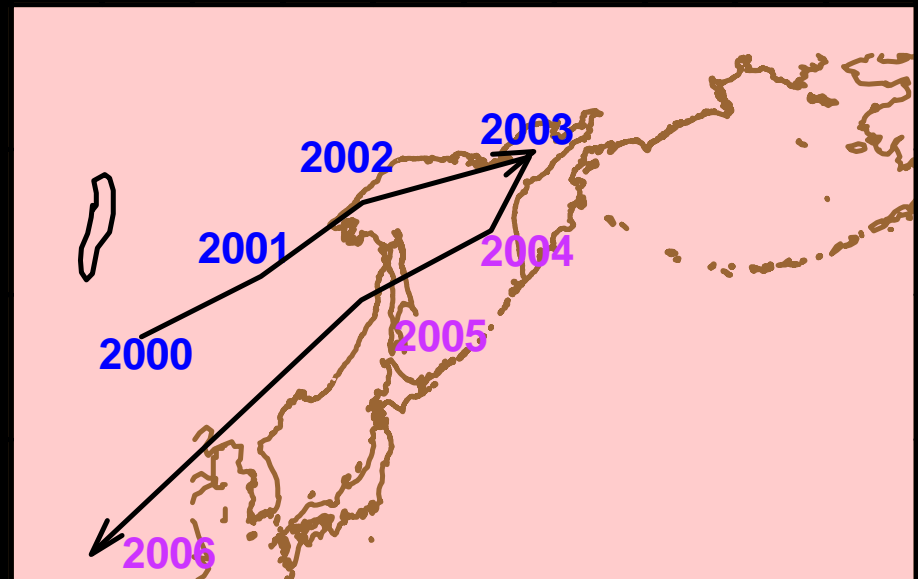
Direction of moving of the Far East Low in 2000-2006



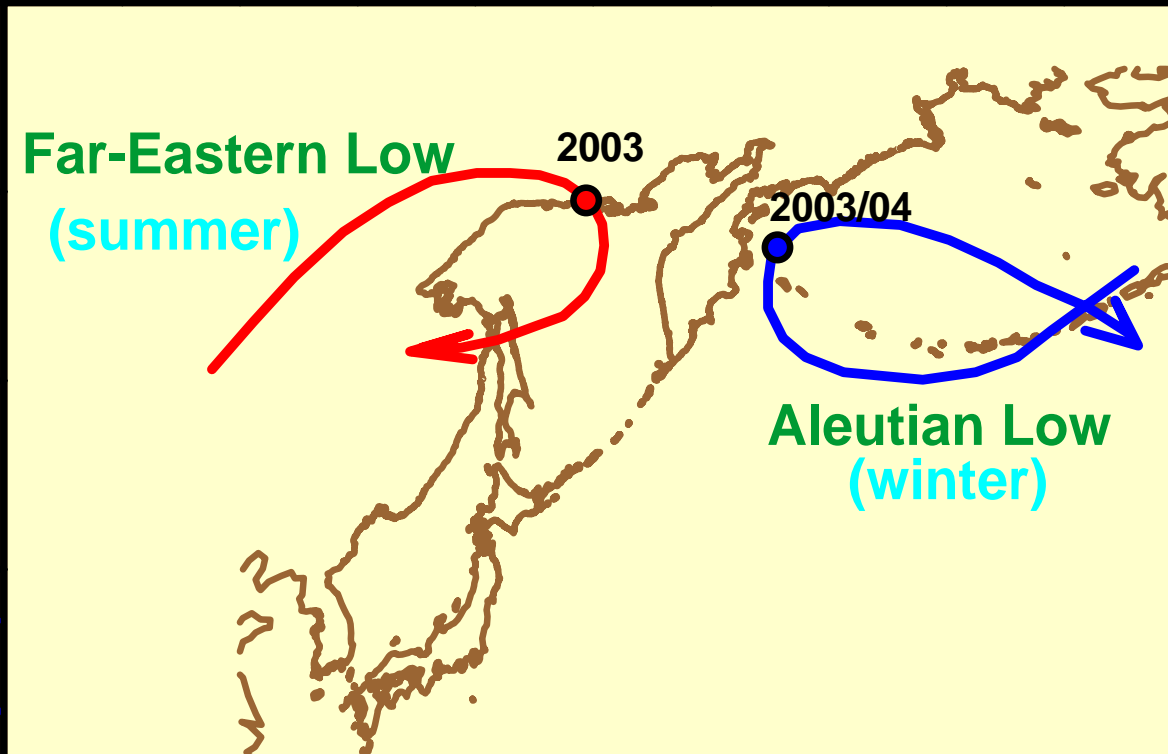
Year-to-year variability of a meridional Katz's index (Im) (as indicator of a summer monsoon) in the Far East Seas in the warm seasons 2000-2006



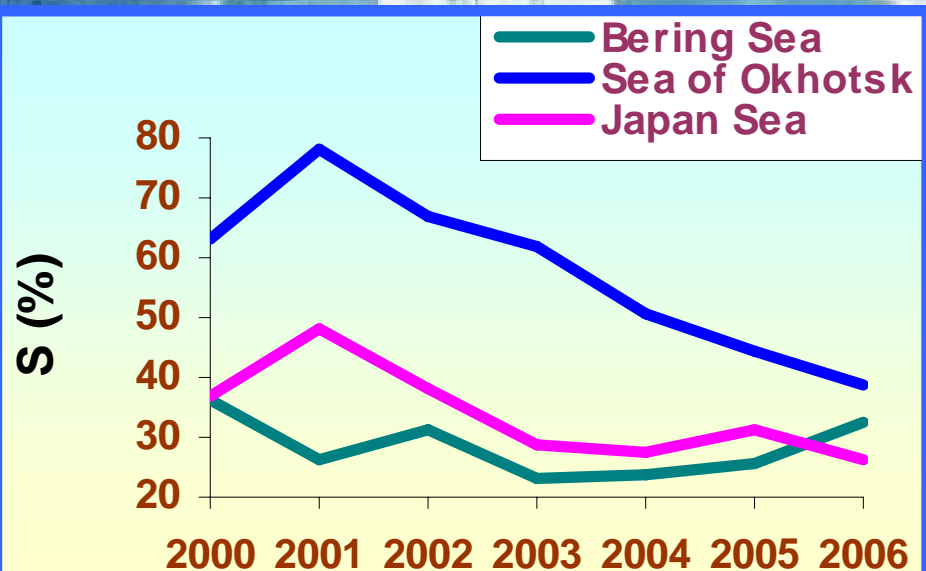
Direction of moving of
the Far East Low in 2000-2006



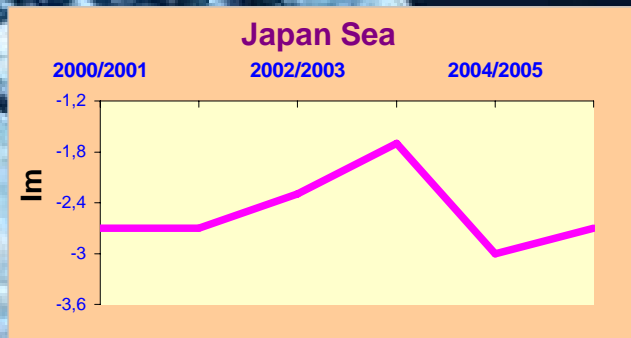
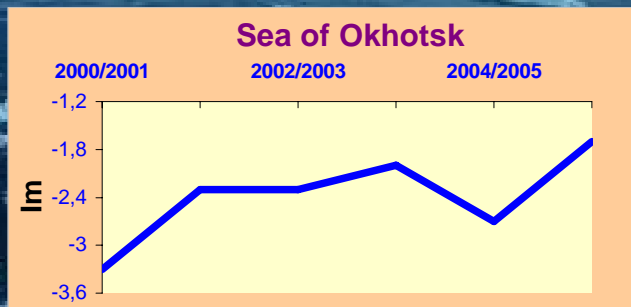
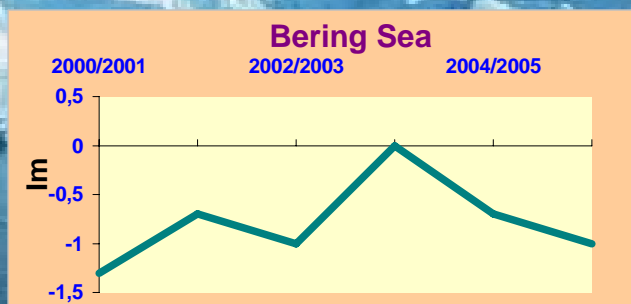
**Direction of moving of
the summer and winter Atmosphere
Action Centers in 2000-2006**



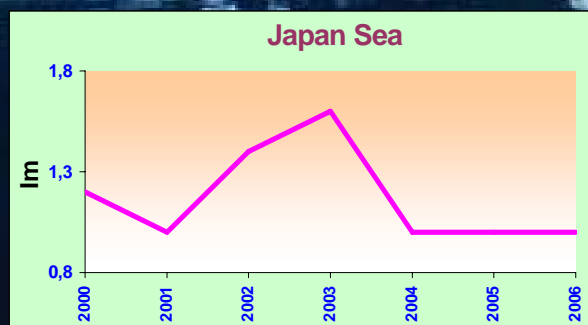
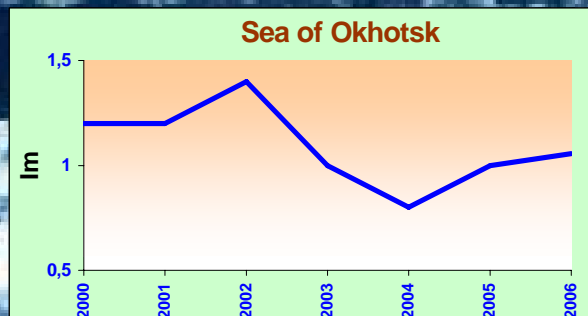
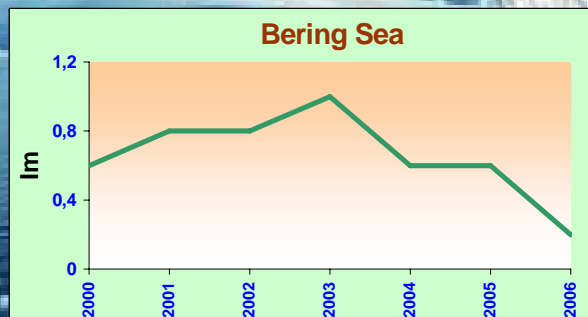
Year-to-year variability of ice cover (%) (from Ustinova et al., 2004) in the Far East Seas in 2000-2006



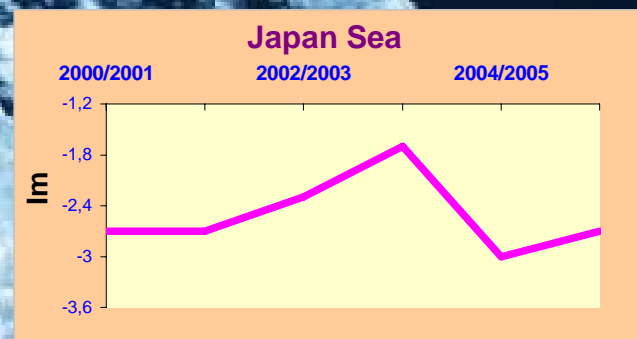
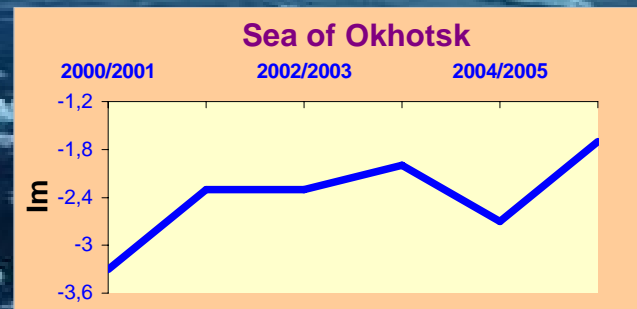
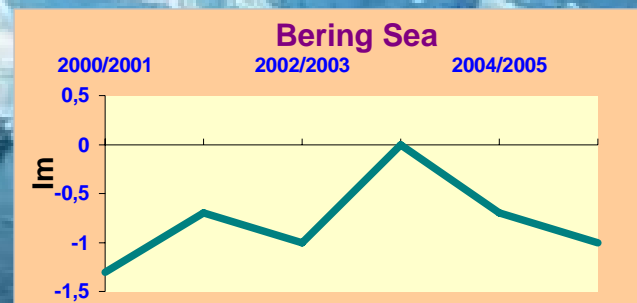
Intensity of the “northern wind transfer”



Intensity of the “summer
wind transfer”



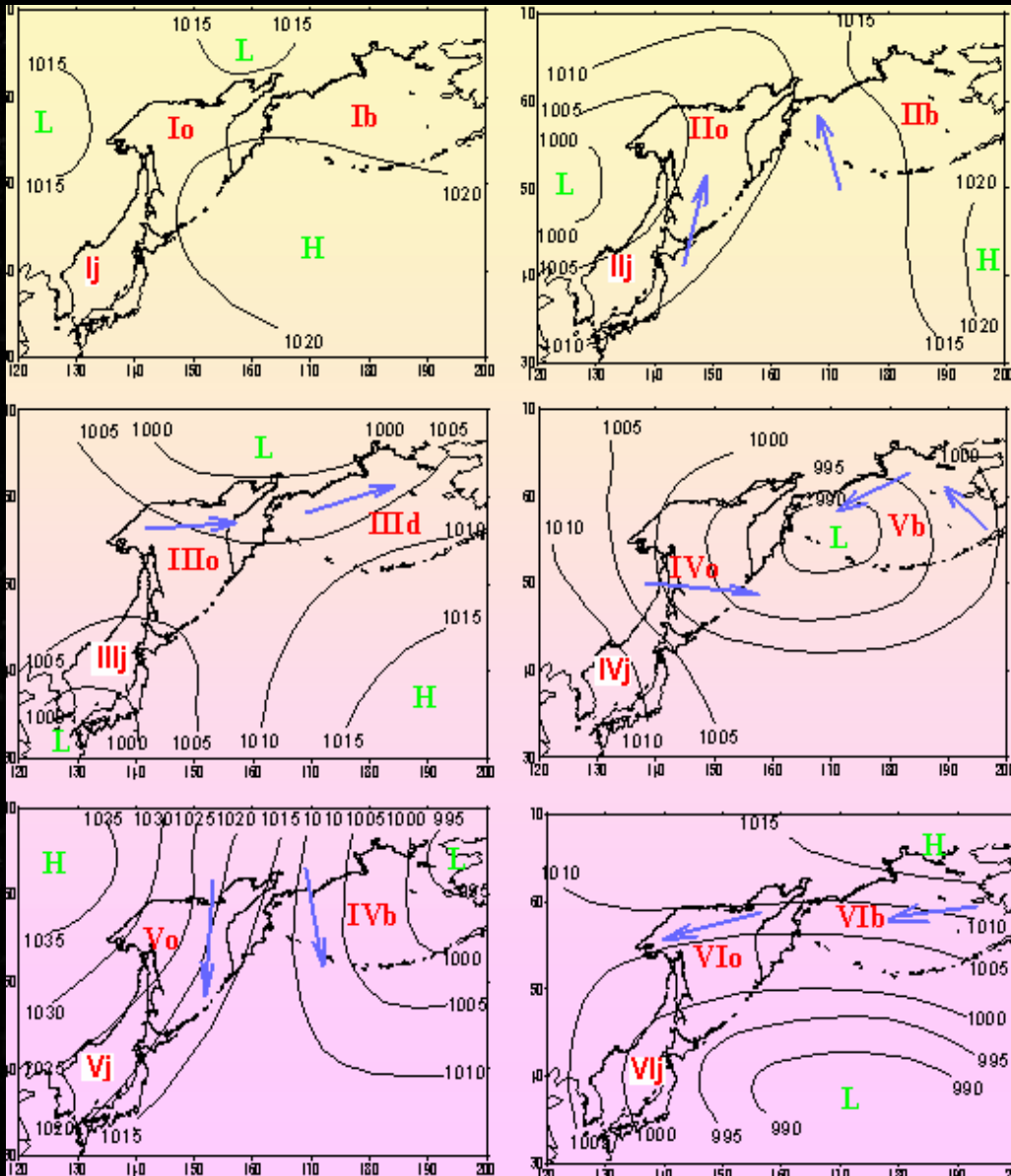
Intensity of the “northern
wind transfer”



What will be a climatic regime in the Far East Seas the nearest years?



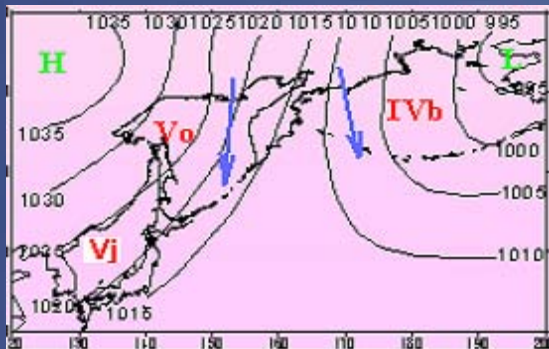
Generalized synoptic situations appropriate to certain types of atmospheric processes over the Japan, Okhotsk and Bering Seas (after Glebova, 1999; 2001)



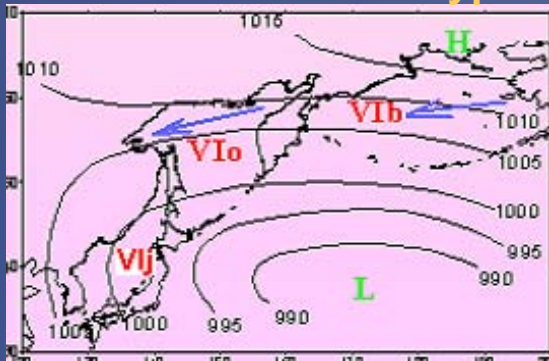
The charts of surface pressure, averaged for 10-days, were used for classification of the atmospheric processes

Synoptic situations leading to formation of the different types of atmospheric processes over the Far East Seas

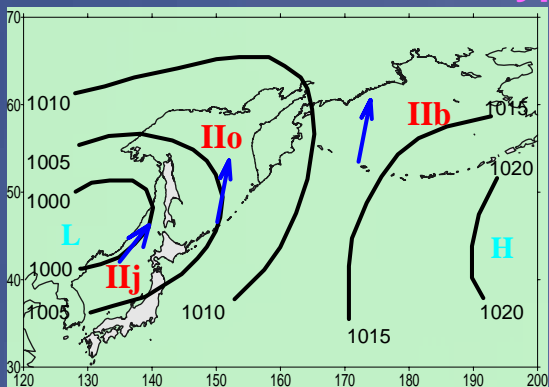
The winter "cold" types



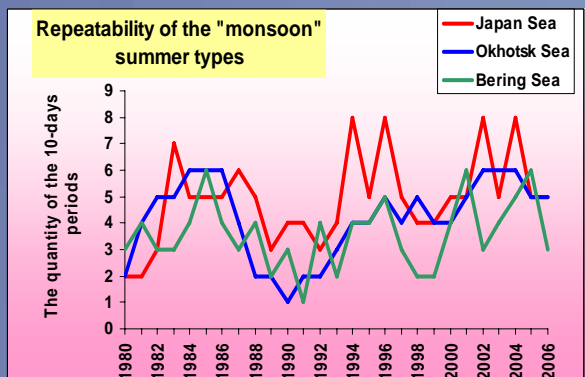
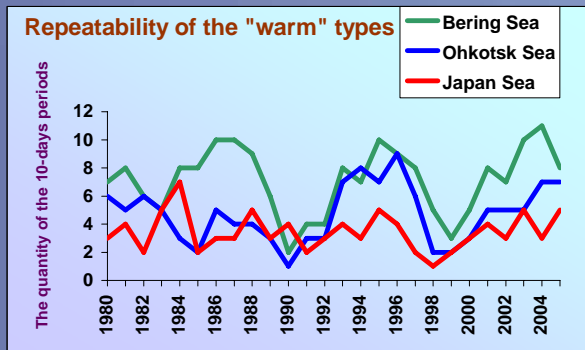
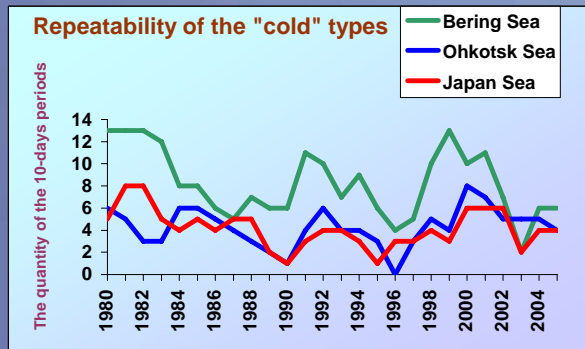
The winter "warm" types



The summer "monsoon" types

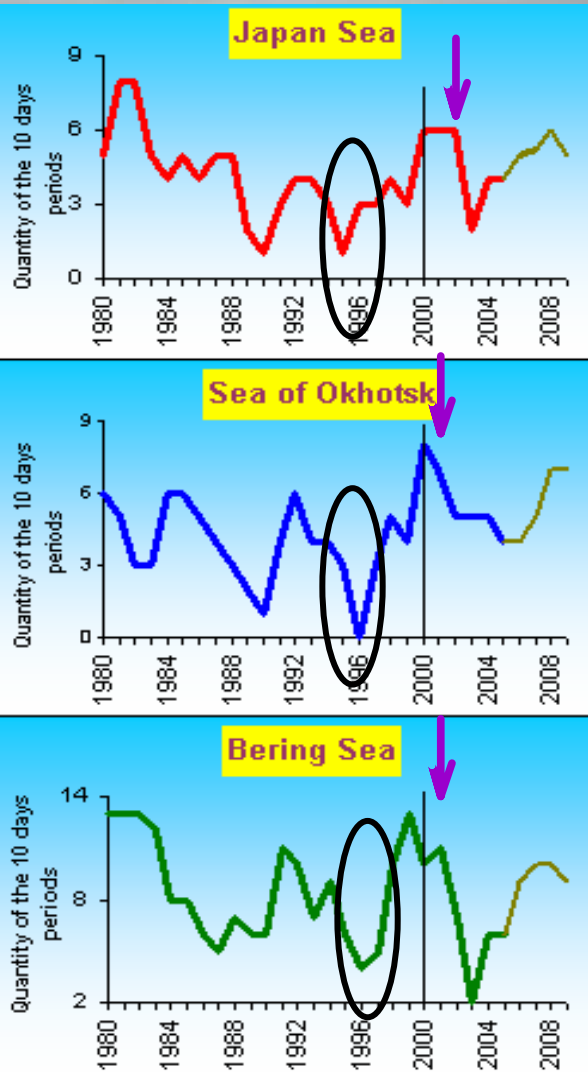


Year-to-year variability of the repeatability of the atmospheric types (quantity of the 10-days periods for year)

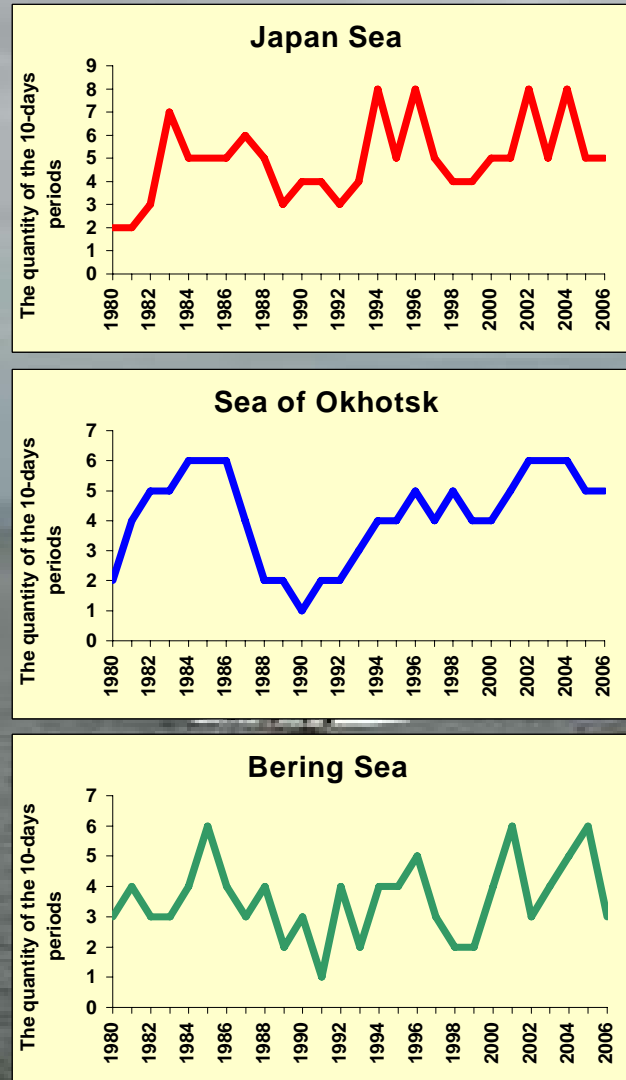


Total repeatability (per year) of the winter atmospheric processes causing strengthening (“cold” types) and easing (“warm” types) of northern monsoon over the Far East Seas

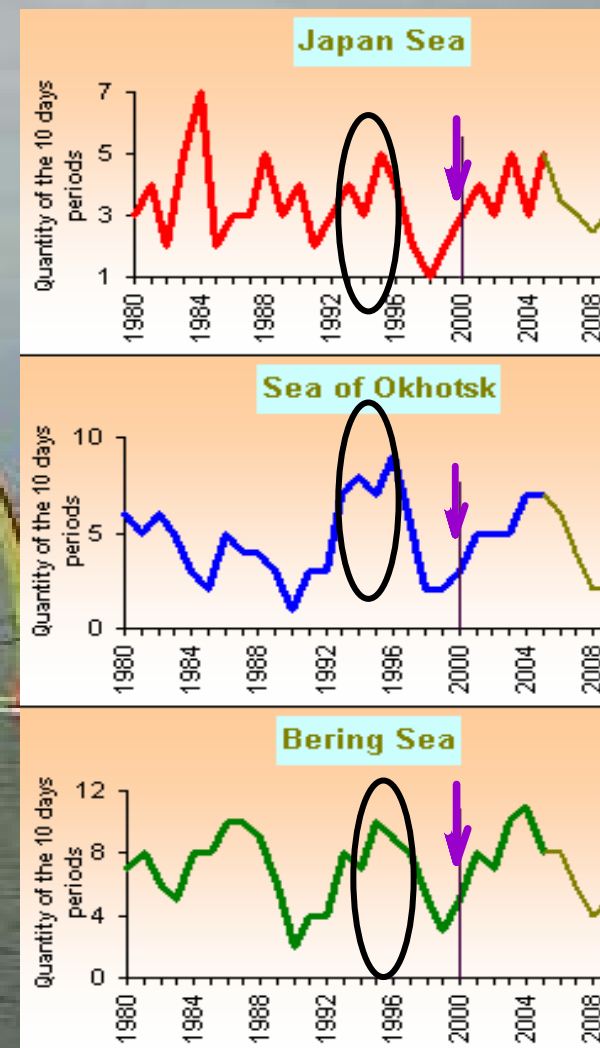
The “cold” atmospheric types



The summer “monsoon” types

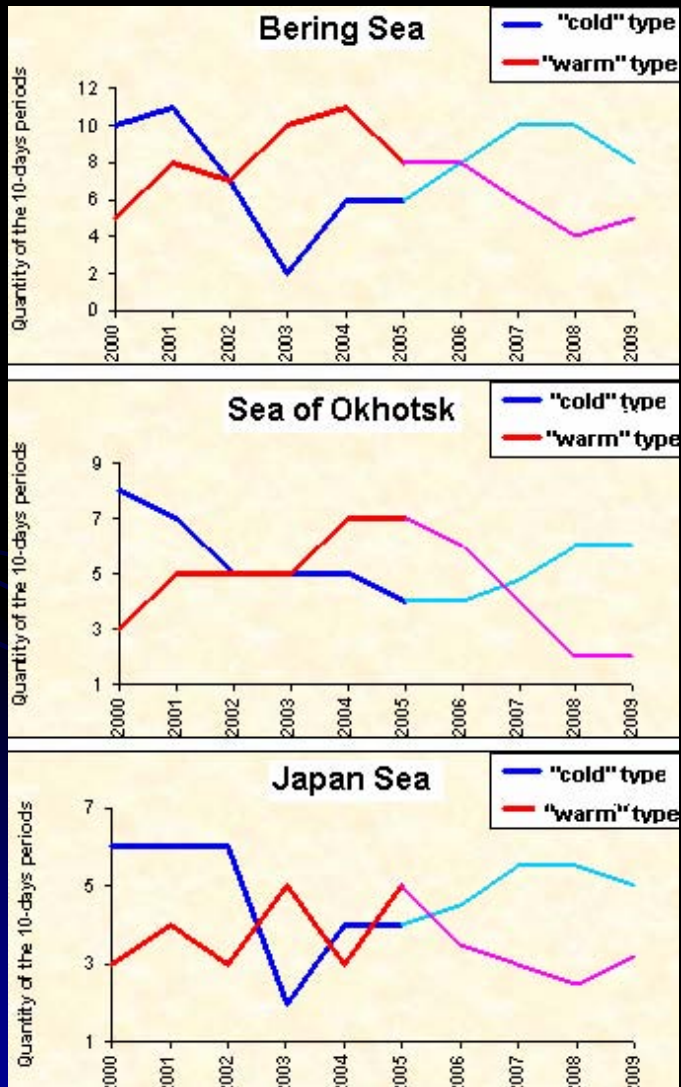


The “warm” atmospheric types

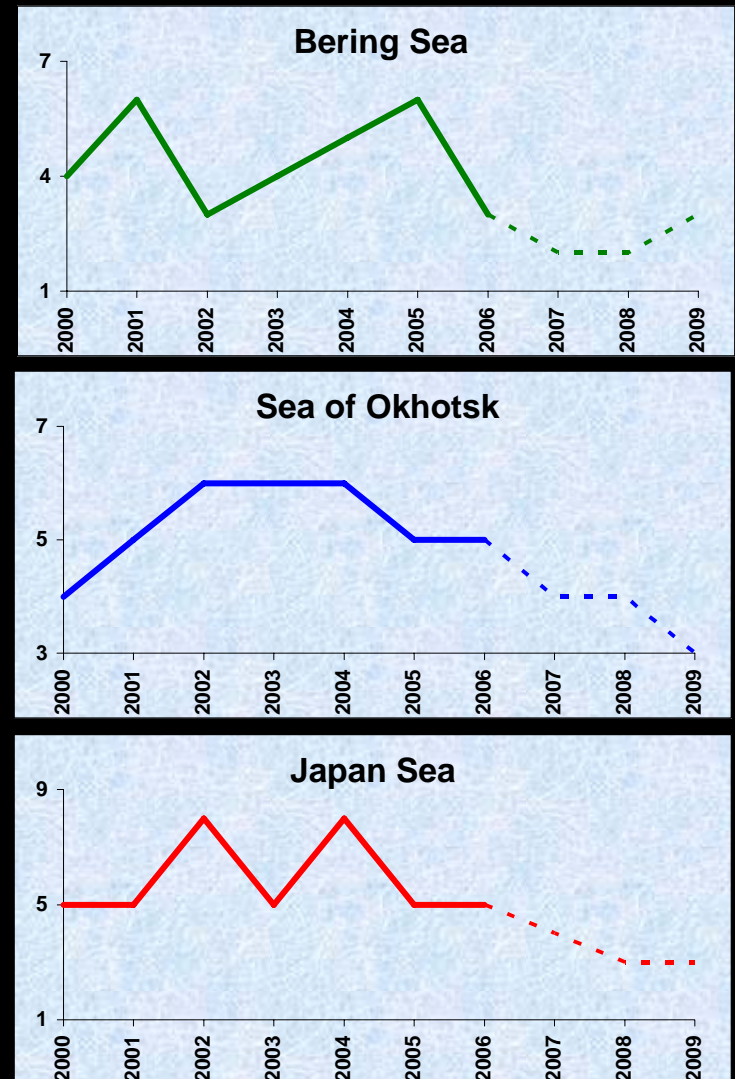


Real and expected repeatability of the winter (A) and spring-summer “monsoon” (B) atmospheric types over the Far East Seas in 2000-2009

A



B



Conclusion

Wind transfer dependence on conditions of seasonal Atmospheric Action Centers is determined for Far East region.

When the Aleutian Low moves toward the West, intensity of winter monsoon decreases. Displacement of the Far East Low toward the East usually causes strengthening of southern wind transfer over the Far East Seas.

When these processes occur, a climate becomes warmer in the Far East region.

The latest this situation was in 2003-2005.

Since 2005, the both Atmospheric Action Centers began an opposite movement. Possibly, these changes in atmospheric regime are harbingers of cooling in the Far East region in the nearest future.

Thank for attention

