

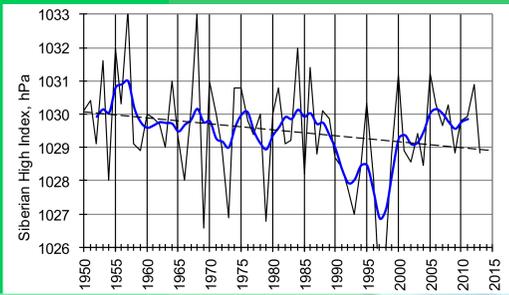


# Climatic changes of temperature, salinity and nutrients in the Amur Bay of the Japan Sea

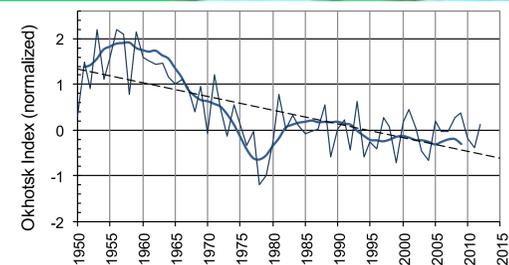
poster presentation on PICES 24<sup>th</sup> Meeting; Qingdao, China, October 2015

**Goal:** to understand the dependence of climate variation in local coastal area on large-scale climate change, to determine the mechanisms of environmental influence on biological productivity of coastal waters

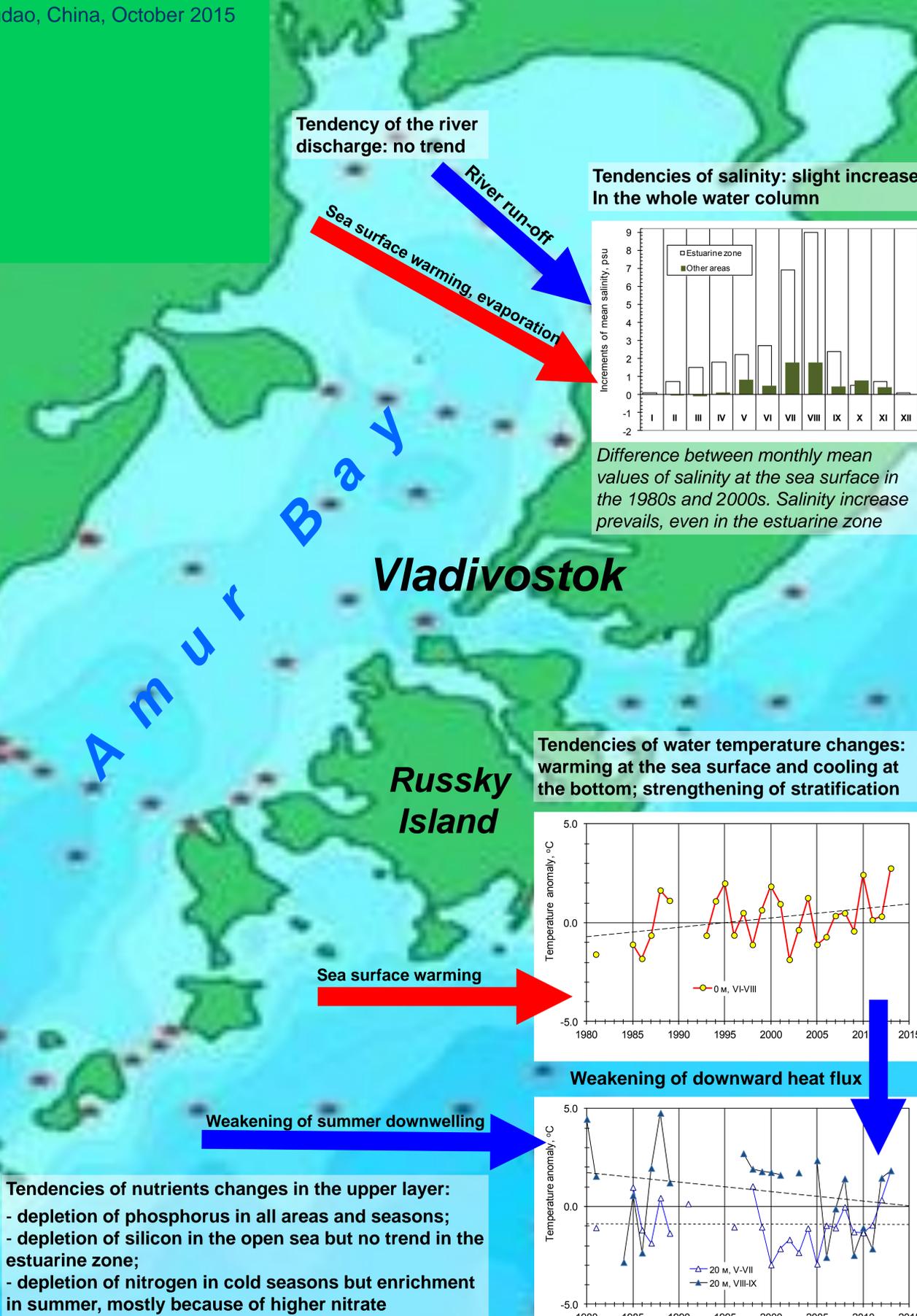
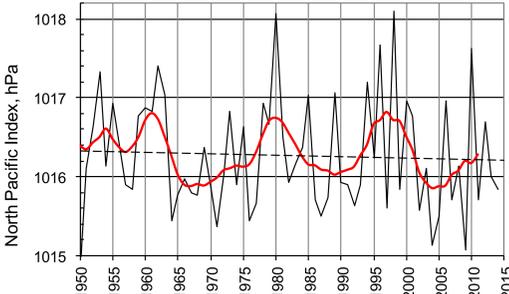
**Tendencies of monsoon activity in North-East Asia: weakening prevails in both winter and summer seasons**



Year-to-year changes and trend of winter monsoon in North-East Asia (SHI for December-February)



Year-to-year changes and trends of summer monsoon in North-East Asia (Okhotsk Index in June and NPI in July)



Tendency of the river discharge: no trend

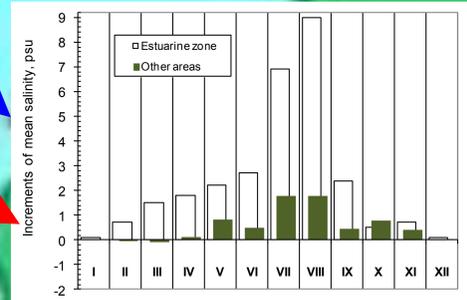
River run-off

Sea surface warming, evaporation

Sea surface warming

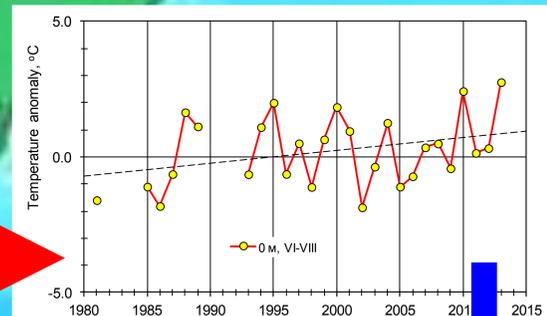
Weakening of summer downwelling

**Tendencies of salinity: slight increase in the whole water column**

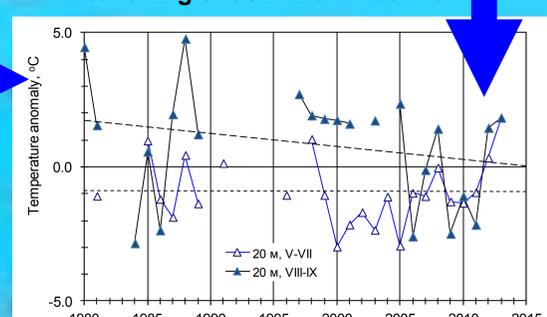


Difference between monthly mean values of salinity at the sea surface in the 1980s and 2000s. Salinity increase prevails, even in the estuarine zone

**Tendencies of water temperature changes: warming at the sea surface and cooling at the bottom; strengthening of stratification**



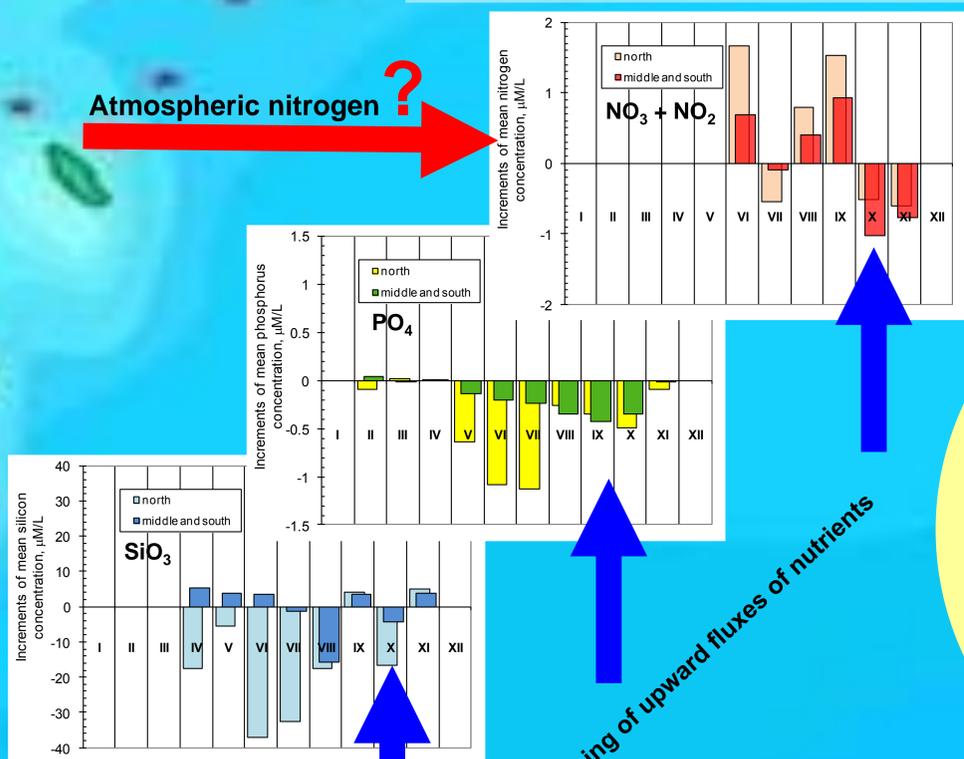
**Weakening of downward heat flux**



Year-to-year changes and trends of water temperature at the sea surface and at the 20 m depth in summer (averaged over the bay)

**Tendencies of nutrients changes in the upper layer:**  
- depletion of phosphorus in all areas and seasons;  
- depletion of silicon in the open sea but no trend in the estuarine zone;  
- depletion of nitrogen in cold seasons but enrichment in summer, mostly because of higher nitrate

**Atmospheric nitrogen ?**



**Weakening of upward fluxes of nutrients**

Difference between monthly mean nutrients concentration at the sea surface in the 1980s and 2000s, by areas

**Conclusion:**  
Consequences of recent monsoon weakening for the Amur Bay (Japan Sea):  
- warming of the sea surface,  
- strengthening of summer stratification,  
- weakening of summer downwelling,  
- cooling at the bottom,  
- lowering of nutrients concentrations in the upper layer because of weaker upward flux.  
However, the nitrate concentration increases in summer, possibly due to anthropogenic nitrogen influx from the atmosphere.