

# **Improving Water Quality – Lessons from Lake Taihu, China**

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# Basic Information (2008)



Basin area	36,895 km <sup>2</sup>
Water area	2338 km <sup>2</sup>
Surround Length	425 km
Mean depth	1.8m
Total Population	49,770,000
Mean Population Density	1349/km <sup>2</sup>
Urbanization Rate	71%
Local GDP in state GDP	12%
Area in China	0.4%
GDP per person	¥ 51238





Alga bloom

## Drinking water crisis in 2007 in Taihu Lake



Dead fish for bad water quality



No drinking water for several days



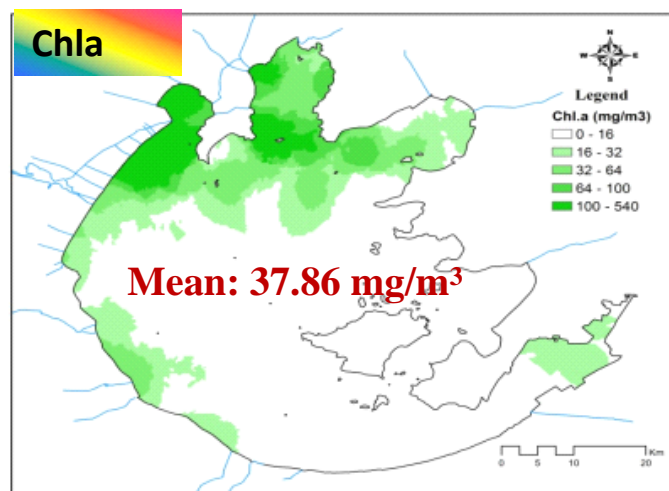
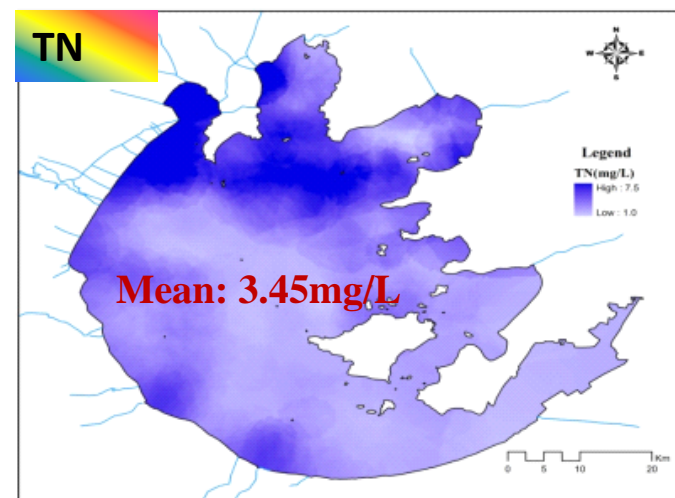
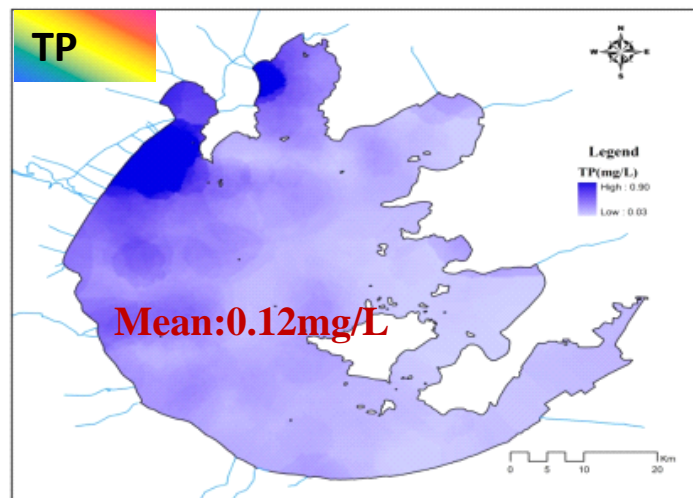
# Characteristics of Taihu Lake Basin different from other watersheds in China



## Economic and social resources in Watershed

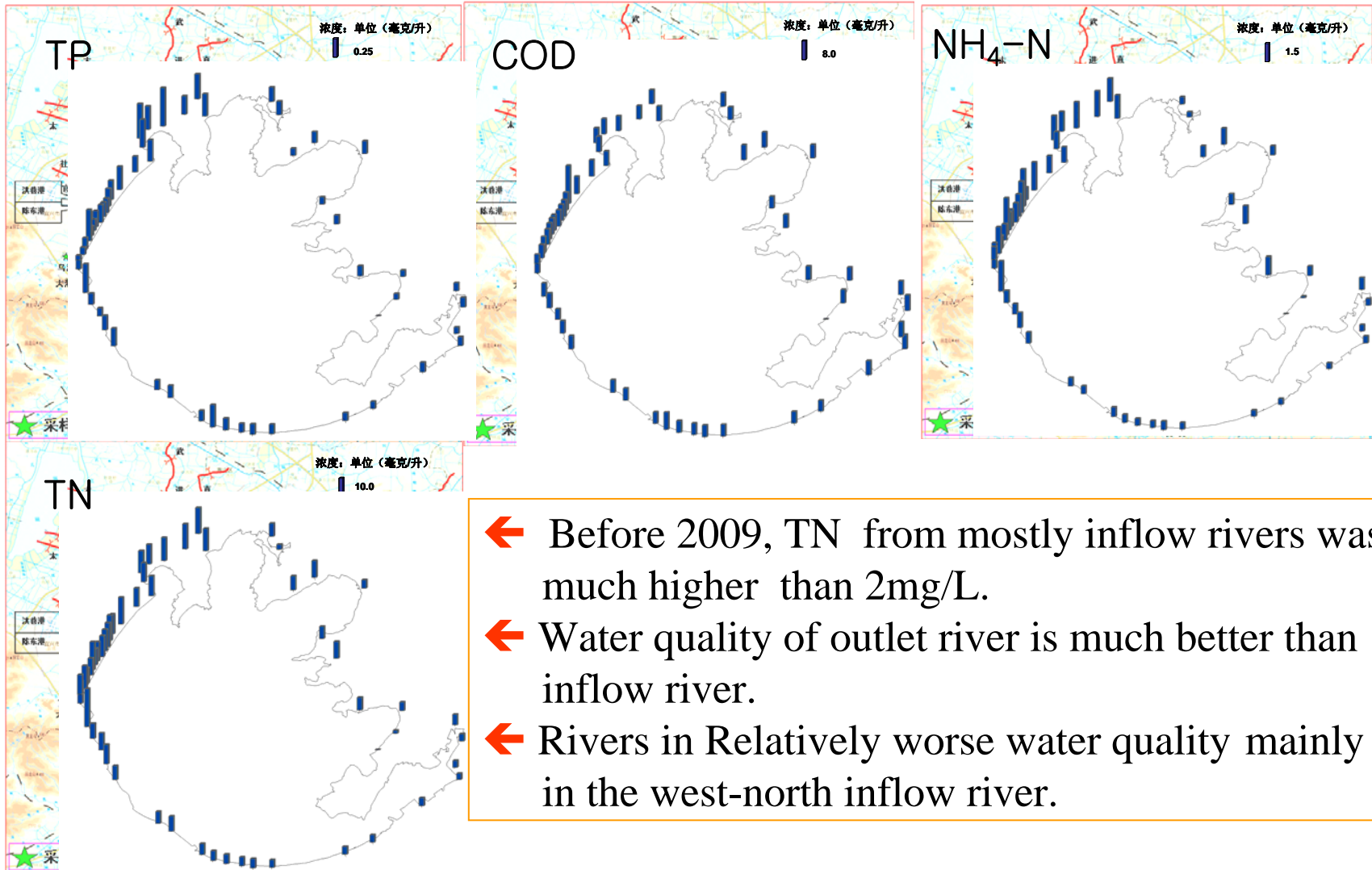
- **High population density:**  $>1236/\text{km}^2$ , Much higher than the national average of  $138/\text{km}^2$ .
- **Rapid economic development:** GDP : ¥ 51,238 /person; ¥ 57,000,000/ $\text{km}^2$ ; 3.4 times the average in China; highest in the lakes of China.
- **High urbanization :** Arable land 838,000 ha, 0.023Ha/person, much lower than the average in China(1.59)。

Densely population, high urbanization rate, the complexity of the industrial structure, large and wide range of dispersed pollution sources 。



# Water Quality in the surrounding rivers

(2008–2009)

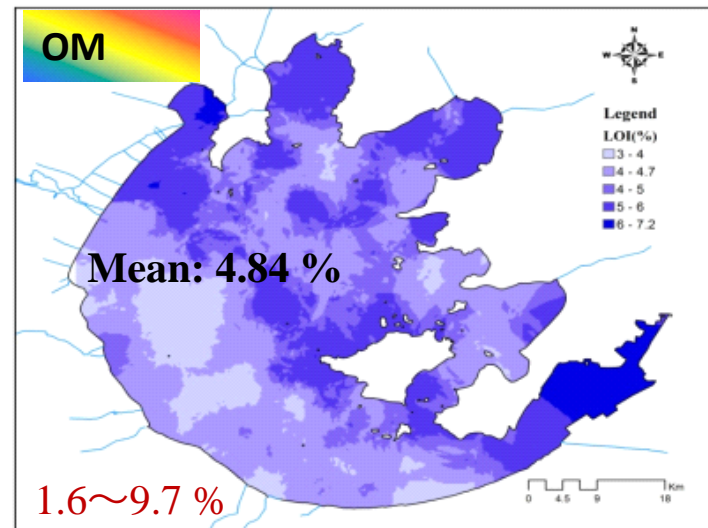
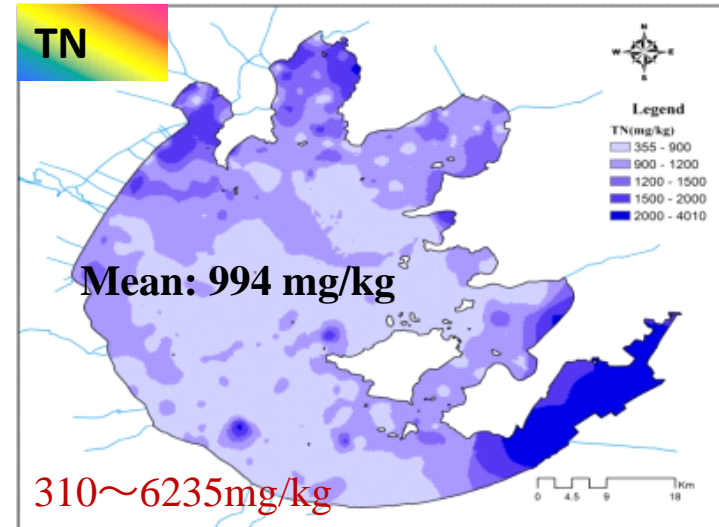
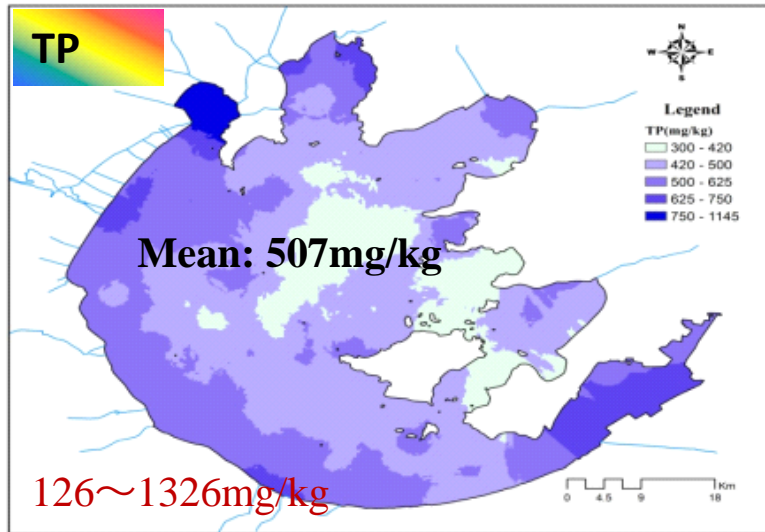


- Before 2009, TN from mostly inflow rivers was much higher than 2mg/L.
- Water quality of outlet river is much better than inflow river.
- Rivers in Relatively worse water quality mainly in the west-north inflow river.



# Nutrient in Sediment

2009.10





# Basin management in China

## Rules and Regulations

- **“Regulation on the Administration of the Taihu lake Basin”** was adopted by the State Council , have carried out since Nov. 1, 2011.
  - Management Bureau of Taihu Lake Basin
  - Regular Consultation system
  - Division of Responsibilities among Central and local Government, Ministry of Environment Protection(MEP), DRC(development and reform commission), MWR(Ministry of water resource), etc.
- **Regulation on the Water Pollution Control of the Taihu Lake in Jiangsu Province** have carried out since Feb. 1, 2012.

# Basin management in China

## In technologies

- “Comprehensive plan for water environment improvement of Taihu Lake basin” are organized and continuing carried out since 1992 in China .

Unit: US \$

Lakes	1992-1996	1997-2001	2002-2007	2008-2020
Taihu Lake	2, 127, 093, 596	3, 614, 121, 511	14, 154, 351, 396	18, 308, 702, 791

- Major Science and Technology Program for Water Pollution Control and Treatment(2007-2020):**  
2007-2011: US\$47,947,455 from central government;  
2012-2015: US\$52,545,156 from central government.

# Basin management in China



## Administration

- the Joint Consultation system :
  - Led by the national DRC, jointly with MEP, MWR, etc, and also include Jiangsu and Zhejiang Province, consultation regularly held to discuss the implement of comprehensive plan for water environment in Taihu lake basin.
  - Water quality is involved in the assessment of the local government.
- Jiangsu Province :
  - Water pollution prevention office established in July, 2009
  - Heavy polluted rivers are claimed by major leaders in the province government, and ensure the improvement of water.



# Water quality changes



2008

2009

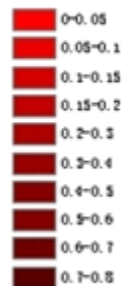
2010



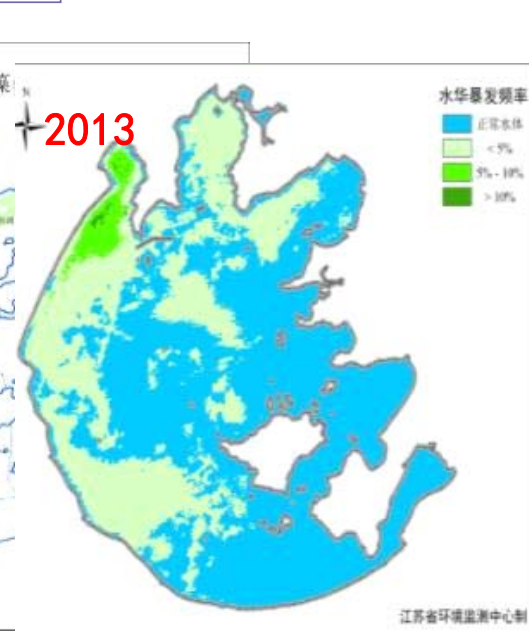
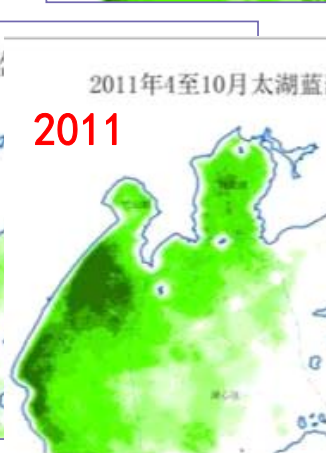
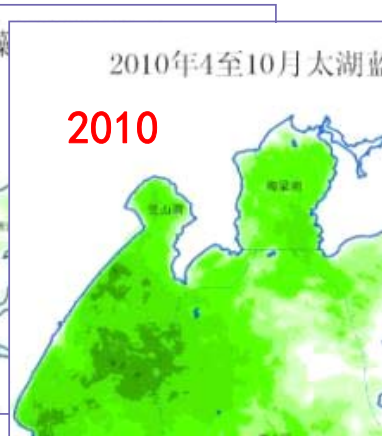
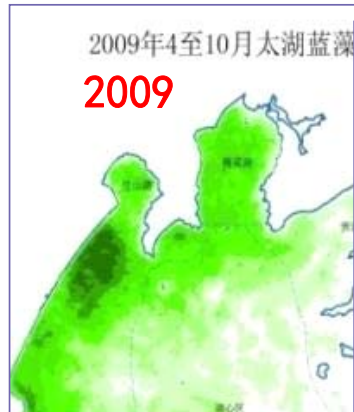
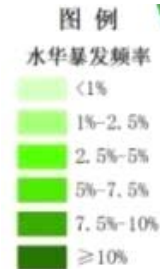
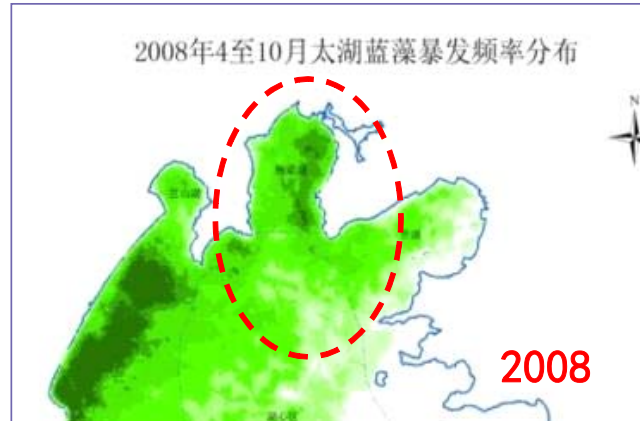
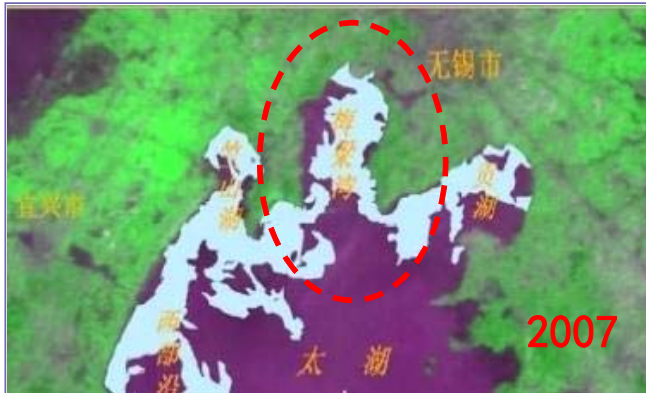
TN (mg L<sup>-1</sup>)



TP (mg L<sup>-1</sup>)



# Water quality changes



# Lessons



- Management Bureau of Taihu Lake Basin affiliated to the MWR mainly takes in charge of water resource, the responsibility of water quality improving is MEP, the responsibility of comprehensive plan on the Taihu lake protection (2013–2020) is DIC.
- Balance the development and protection in Taihu Lake basin. Eco-recovery system should be set up between the upper and lower basin.

**So, based on the water quality improving, to set up Management Bureau of Taihu Lake Basin in real meaning is important and urgent.**

The Bureau should be independent from local government and Central Ministry and Committee. Its responsibilities includes making rules, design and carry out long-term basin protection plan, integrate and harmonize the social and economic development in the Taihu Lake basin, etc.



Thank you  
for your attention!