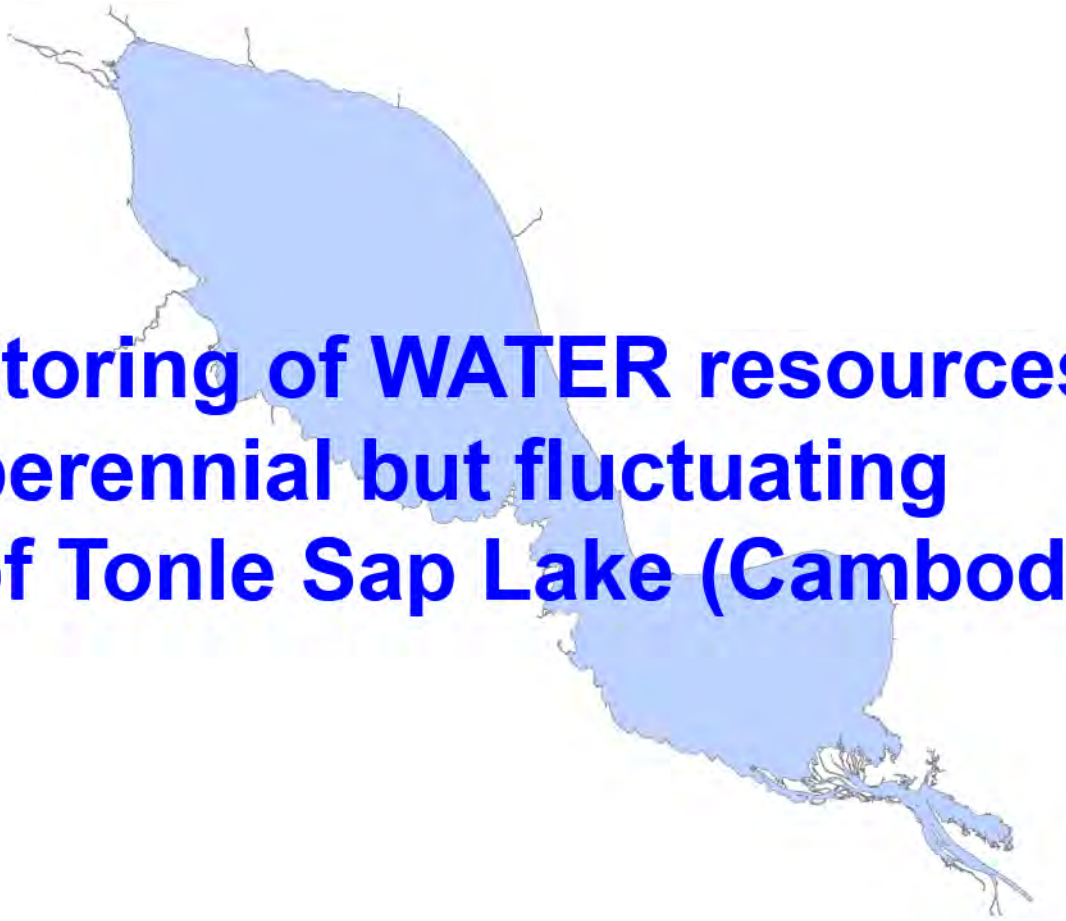
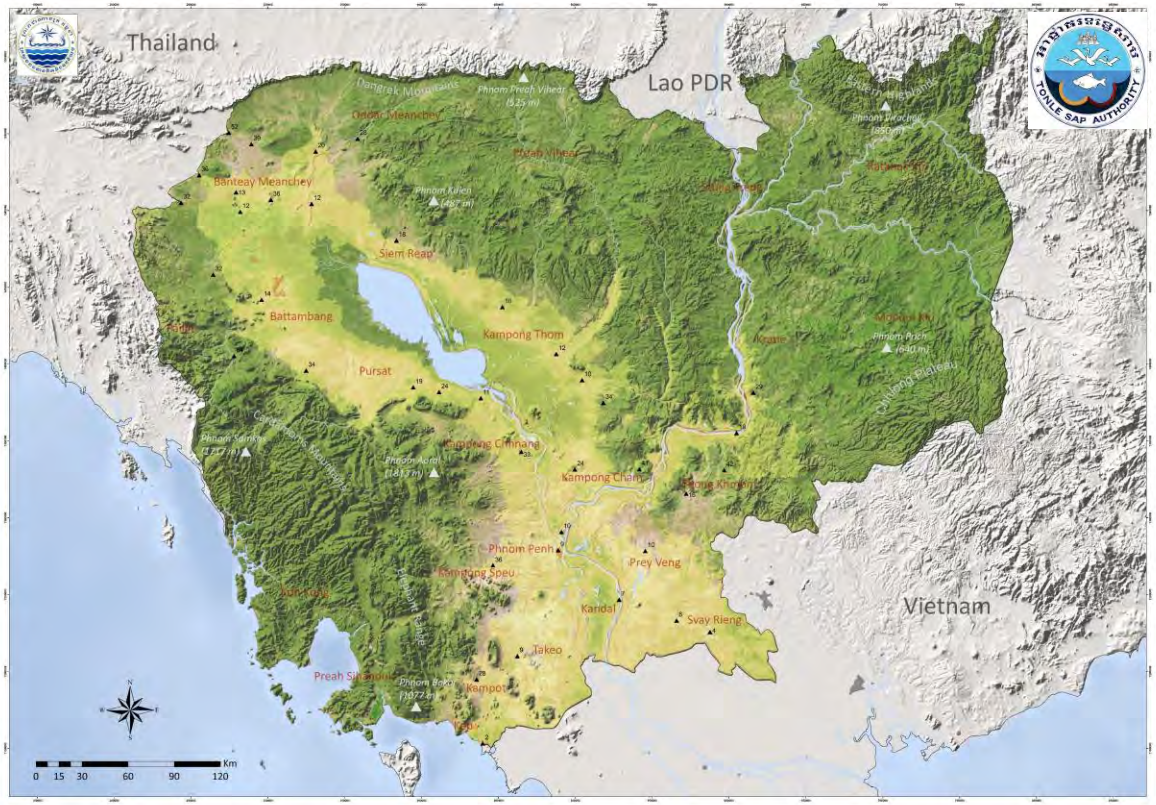


# Monitoring of WATER resources perennial but fluctuating case of Tonle Sap Lake (Cambodia)



*PRAK Chanvoitna, Tonle Sap Authority*

Phnom Penh, October 9th, 2026



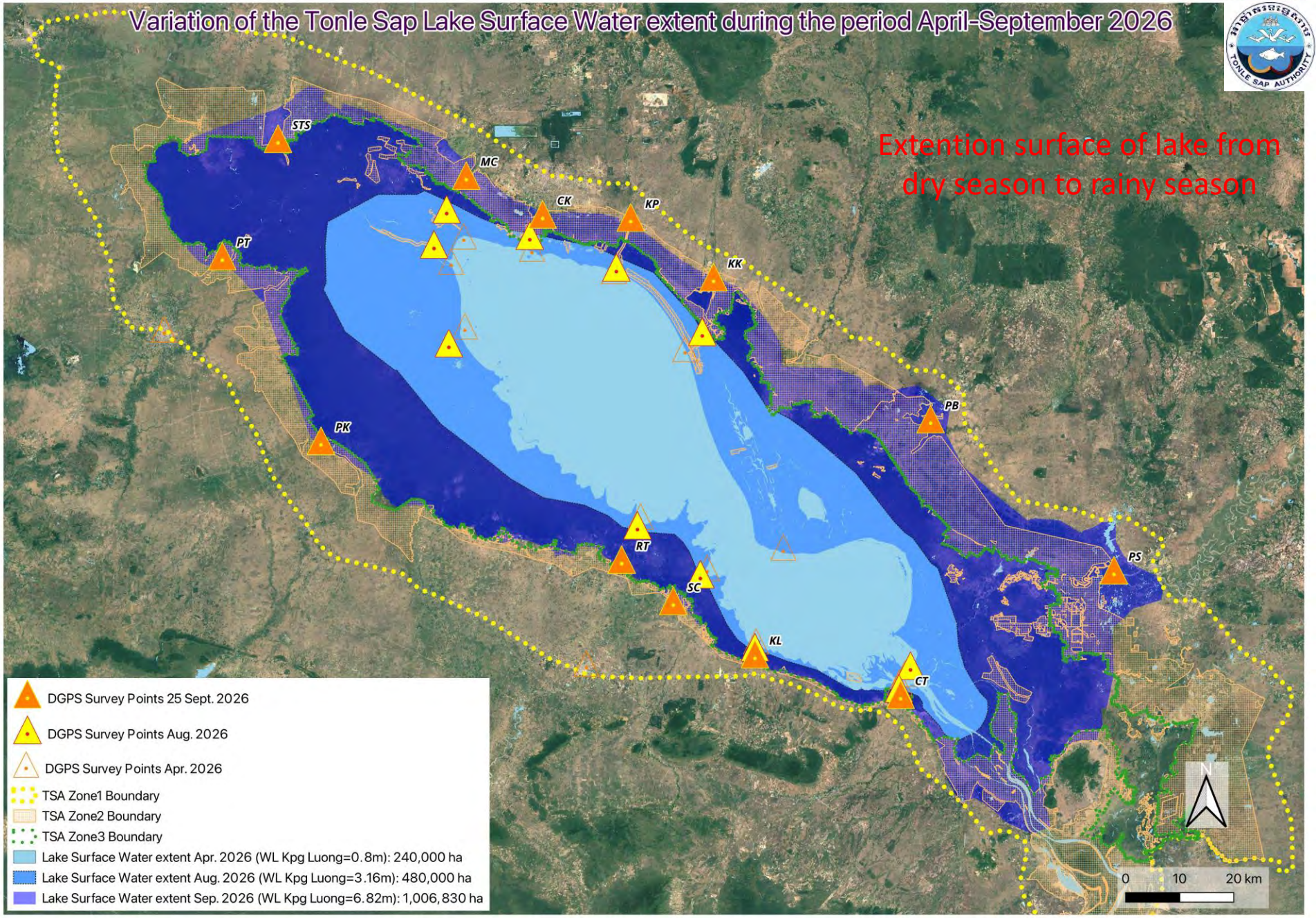




## Tonle Sap Lake

- Surface in rainy season: 12,410 $Km^2$ (water level: 8 m)
- Surface in dry season: 2,400 $Km^2$ (water level: <1 m)
- Perimeter in dry season: 643 Km

- Mekong river fill in Tonle Sap Great Lake from June to October.
- Tonle Sap Great Lake fill out to Mekong river from November to February.


Variation of the Tonle Sap Lake Surface Water extent during the period April-September 2026
Extention surface of lake from dry season to rainy season
STS
MC
CK
KP
PT
KK
PB
PK
RT
SC
PS
KL
CT
DGPS Survey Points 25 Sept. 2026
DGPS Survey Points Aug. 2026
DGPS Survey Points Apr. 2026
TSA Zone1 Boundary
TSA Zone2 Boundary
TSA Zone3 Boundary
Lake Surface Water extent Apr. 2026 (WL Kpg Luong=0.8m): 240,000 ha
Lake Surface Water extent Aug. 2026 (WL Kpg Luong=3.16m): 480,000 ha
Lake Surface Water extent Sep. 2026 (WL Kpg Luong=6.82m): 1,006,830 ha
N
0
10
20 km

# Pressure and Impact on Tonle Sap Great Lake from 2015

**PRESSURE**

- ✓ Physical environment
- ✓ Physico-chemistry soil/ water
- ✓ Biological compartment



**IMPACT**

1. Wood & NTFP(Non Timber Forest Product) Agriculture…
2. Agriculture, hunting, burning
3. NTFP, illegal fishing
4. Flooded village/population/boat/agriculture
5. Illegal fishing gear/non respect fishing period
6. Low recruitment, stock, biodiversity
7. Hydrology/climatology
8. Floating village, agriculture in dry season

1. **On flooded forest**
2. **On wetland**
3. **On sanctuary zone**
4. **On fish stock/fish productivity**
5. **Water resource -** Variation of the lake's surface area with ratio of 1 to 6 and 1 to 8m for depth and 1 to 26 for volume.
6. **Water quality – object of this presentation**

# Water quality

- The water quality of the TSGL is highly dependent of the seasonality of the lake with varying conditions observed during the dry and the rainy season.
- During the last 10 years (2015-2025), the observation of the period of the dry season has increased from 3 months to 4-5 months affecting negatively the overall water quality of the lake.





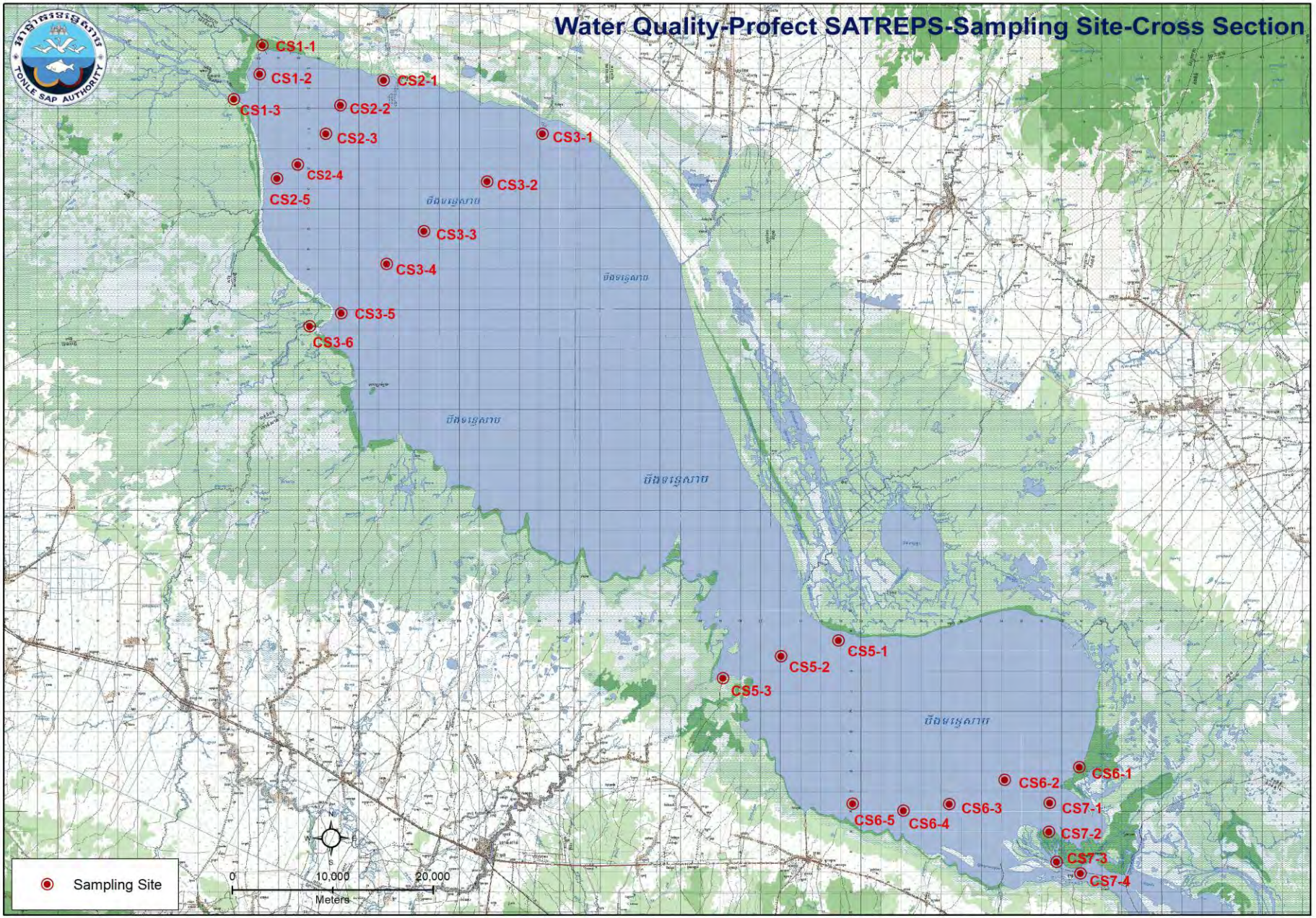
**Eutrophication in the dry season-around the floating village and the shoreline of TSGL**

# Water quality monitoring of Tonle Sap Lake (Special case)

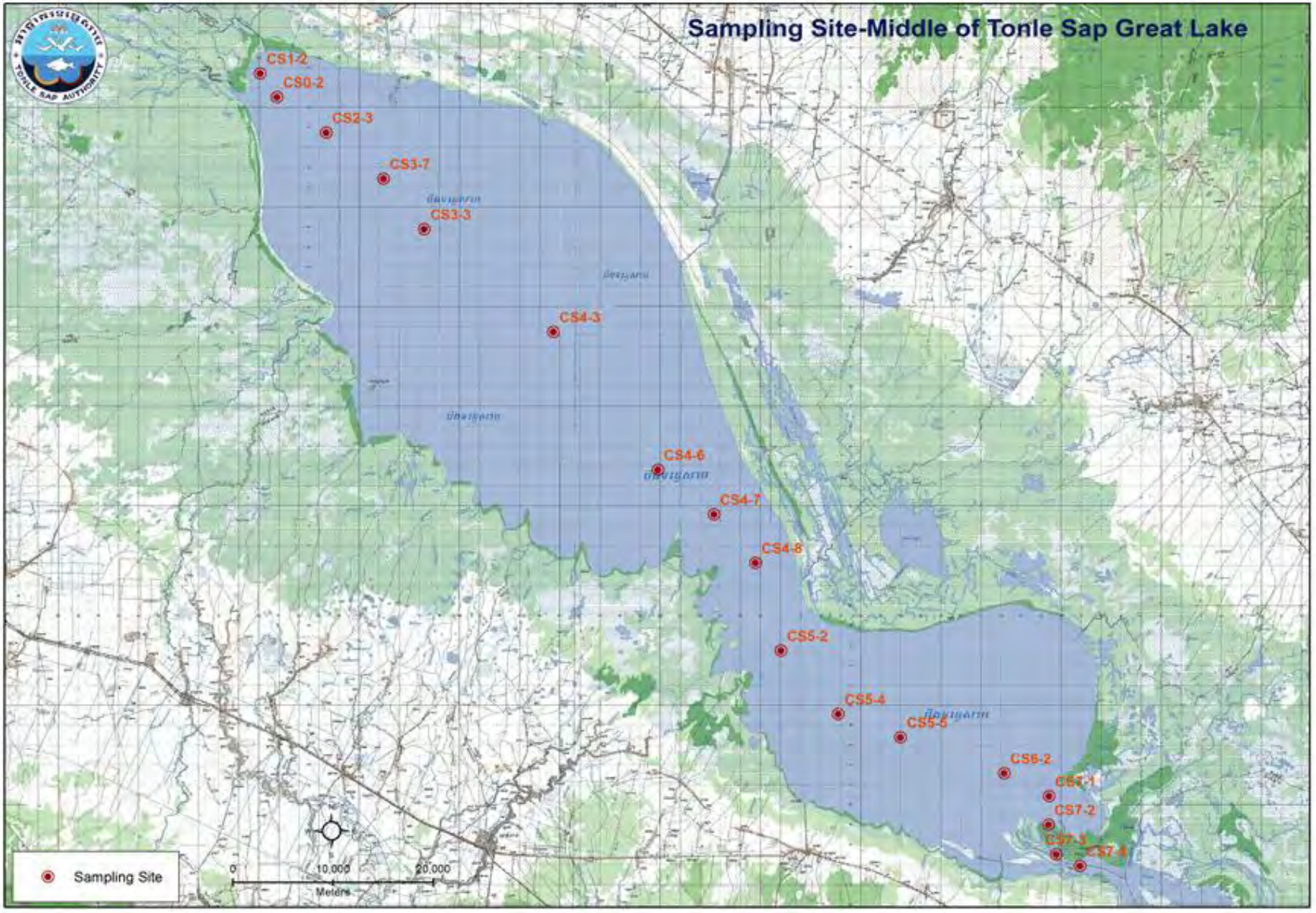
Monitoring is carried out in collaboration with JICA (Japan International Cooperation Agency) from 1996 to 2000 on:

- 39 sites (longitudinal and transverse profile) : (i) Me Chrey/Prek Toal (ii)Chong Kneas/Kbal Toa (iii)Reang Til/Kg Phlouk (iv) Kg Khleang/Peam stung Pursat (v)Kg Luong/Peam bang (vi) Chnok trou/Phat sanday (vii)Kg Chang).
- Frequency: 3 to 4 times/yrs.
- Parameters: 17 physico-chemicals parameters, chlorophylle, cyanobacteria, Pesticides, Heavy metals.
- Data base storage: in Network – Attached Storage(NAS), in format Exell

# Cross section survey on water quality monitoring (Number 7)



# Longitudinal profile on water quality (middle of lake)



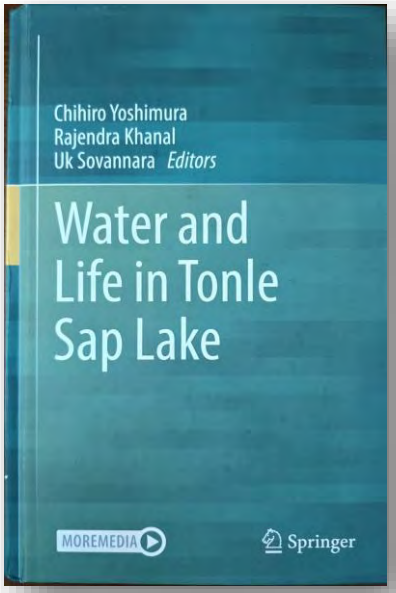
# Publication and communication

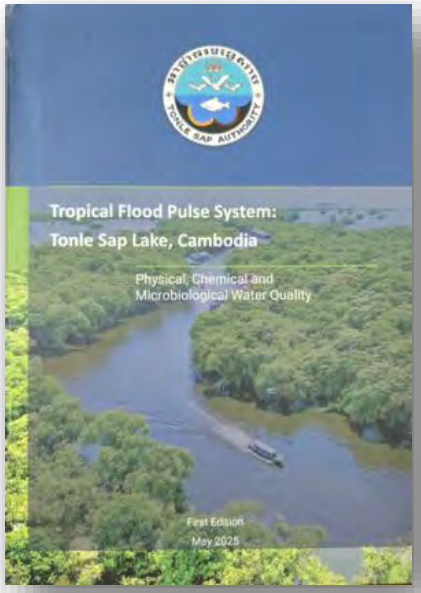
- Results and articles on the water quality of Tonle Sap Lake and its exceptional ecosystem are available :

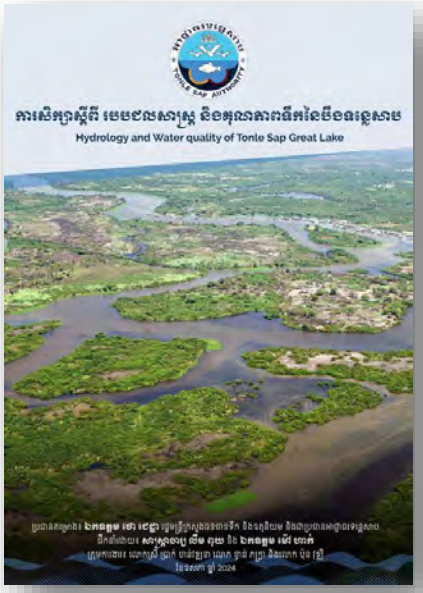
❖ Water and life in Tonle Sap lake. 2022. **Edited by Springer.**

❖ Tropical Flood pulse system: Tonle sap Lake, Cambodia. 2025. **Edited by Tonle sap Authorithy.**

❖ Hydrology and Water quality of Tonle Sap Great Lake. 2026. ***In press***



# Reflecting on the subject

- The evidence shows that water quality is deteriorating year by year, especially during the dry season (3–4 months a year).
- Excessive agricultural fertilization only exacerbates this degradation through eutrophication.
- The path from acquired knowledge and necessary measures to political decisions is long and sometimes unfeasible due to a lack of financial resources.
- The database - built up over years of research and intended to be made available to researchers at both national and international levels via a platform - has been slow to materialize. Support from donors is needed to help create these data platforms.

# Question?

- My question on WIS concern who manages and optimizes digital system that collect, analyze and share data about water resources, distribution network, and treatment facilities.
- **Question: For WIS Experts (Data Infrastructure & Platform Focus)**

"Given our 30-year water quality dataset currently stored in local formats and Excel, what are the most effective technical frameworks and standards to successfully transition this data into an open-access, scalable WIS platform that attracts long-term donor support?"




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**Thank you for your attention**