



COLLABORATIVE RESEARCH SURVEY ON MARINE FISHERIES RESOURCES AND ENVIRONMENT IN THE GULF OF THAILAND 2018

Vertical variation of mercury contamination in four short core sediments of the Gulf of Thailand

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Supported by Southeast Asian Fisheries Development Center
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Contributors

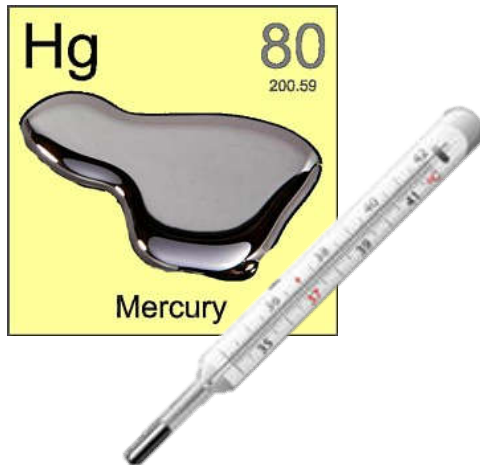
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Mercury (Hg)

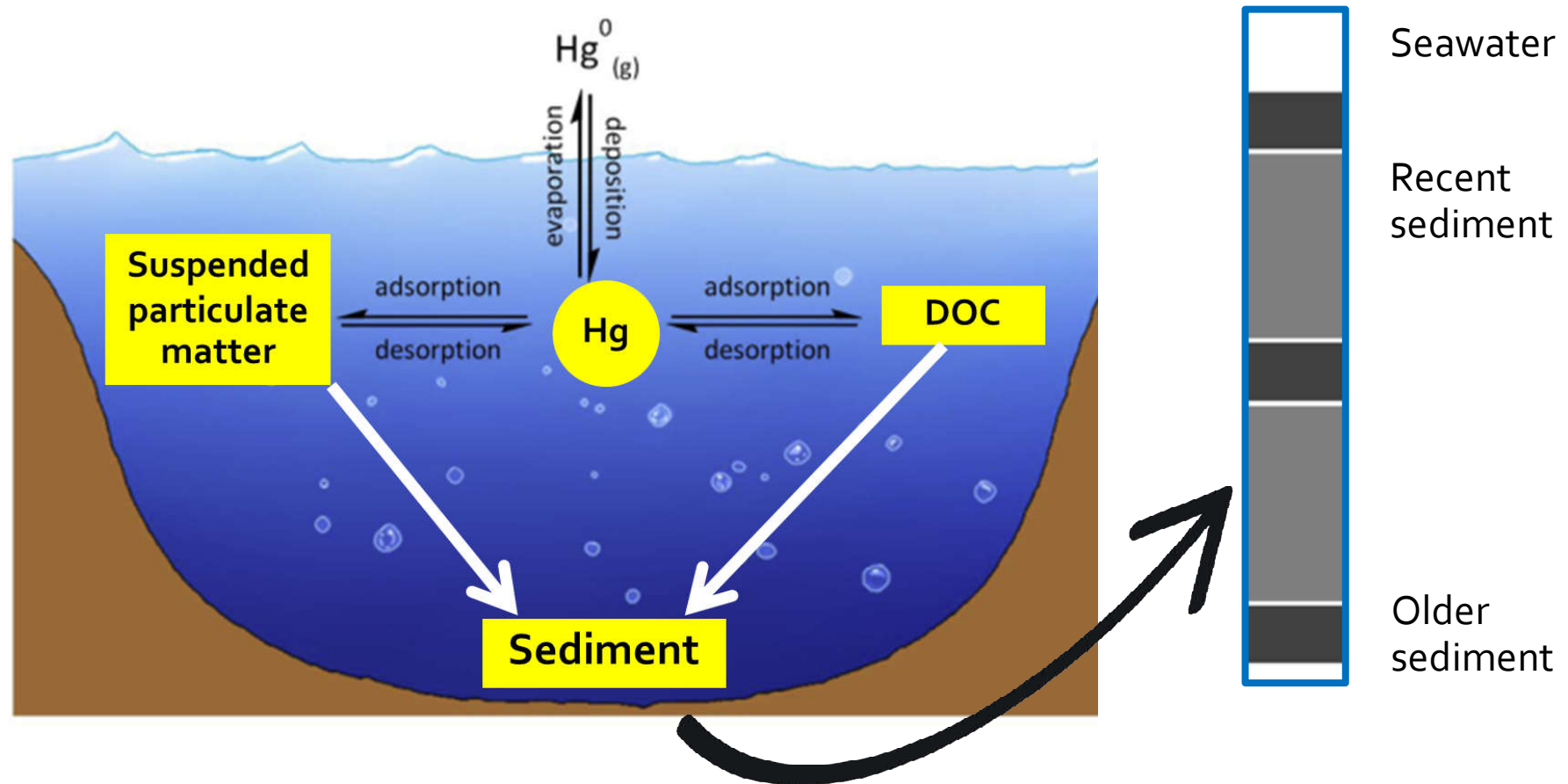
A heavy metal

Hazard: Neurogenic toxin



- Muscle weakness
- Ataxia (cannot control body)
- Damage of brain, kidneys and lungs
- Loss of vision, hearing, speech
- Dead

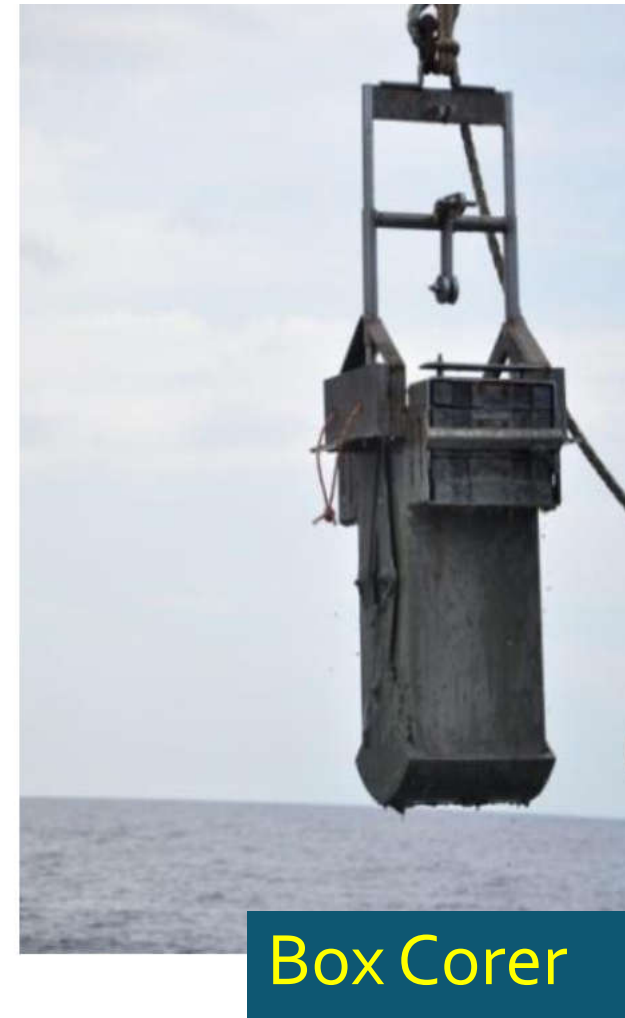
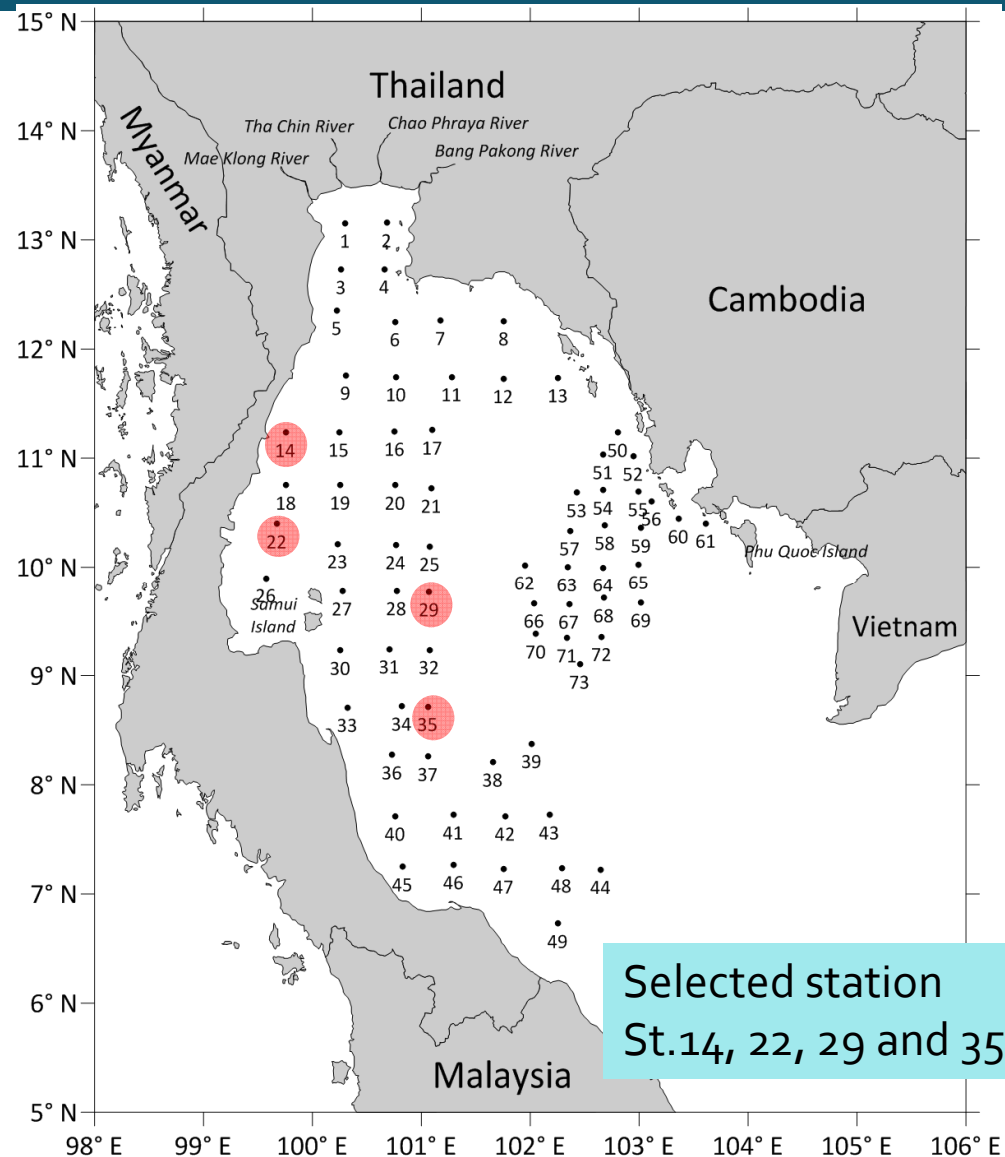
Study of Hg in sediment core



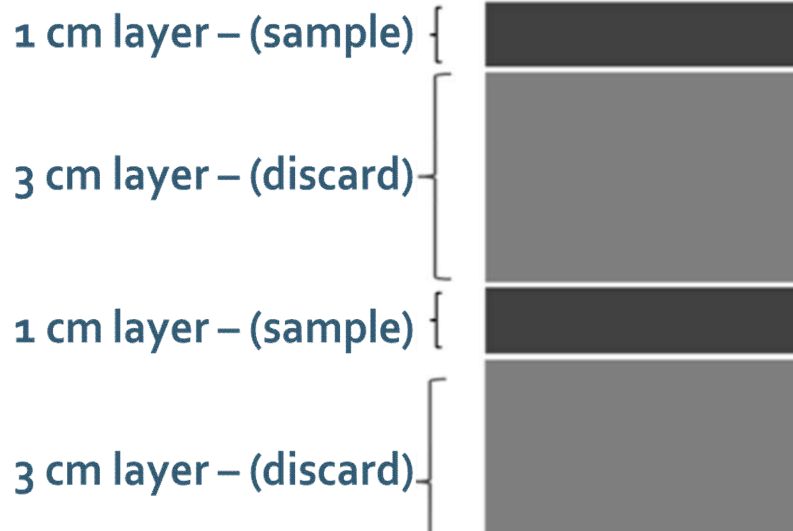
Gonzalez-Raymat et al., 2017

<http://dx.doi.org/10.1016/j.envpol.2017.04.101>

Method of Study – Sediment sampling



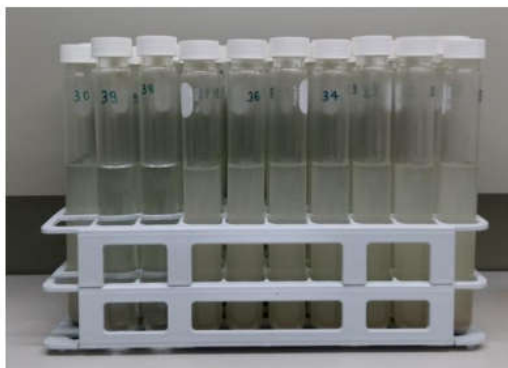
Method of Study – Sediment Preparation



Freeze dried and Homogenized

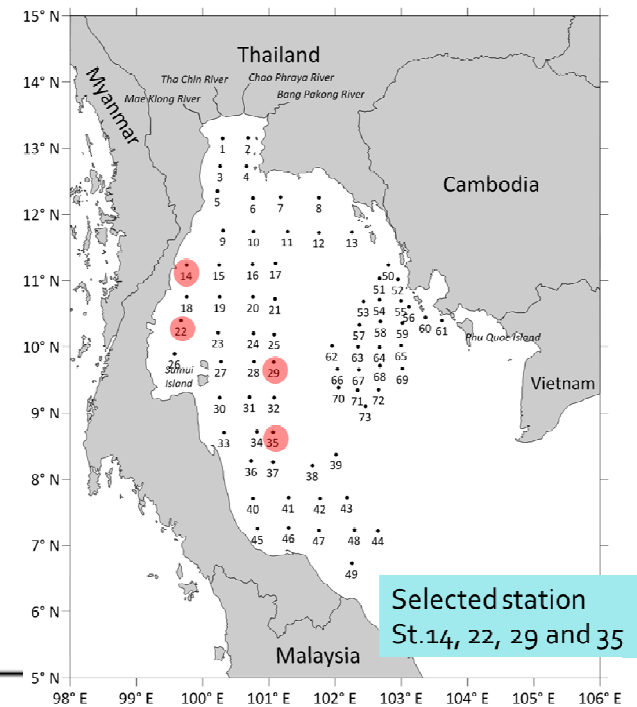
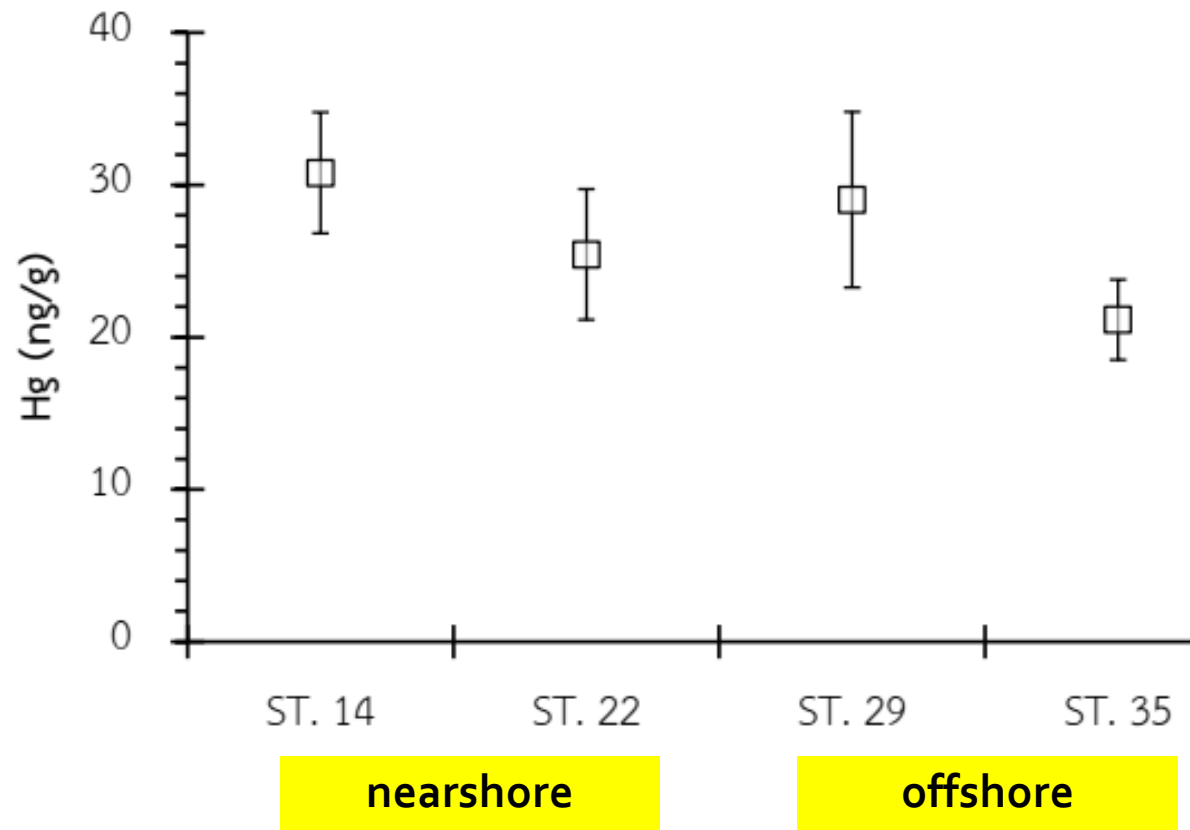
Method of Study – Hg Analysis

Total Mercury in Tissue, Sludge, Sediment and Soil US-EPA METHOD 1631 (US-EPA, 2001) using Cold Vapor Atomic Absorption Spectrometry (CVAAS)



Mercury analyser (FIM 400, Perkin Elmer)

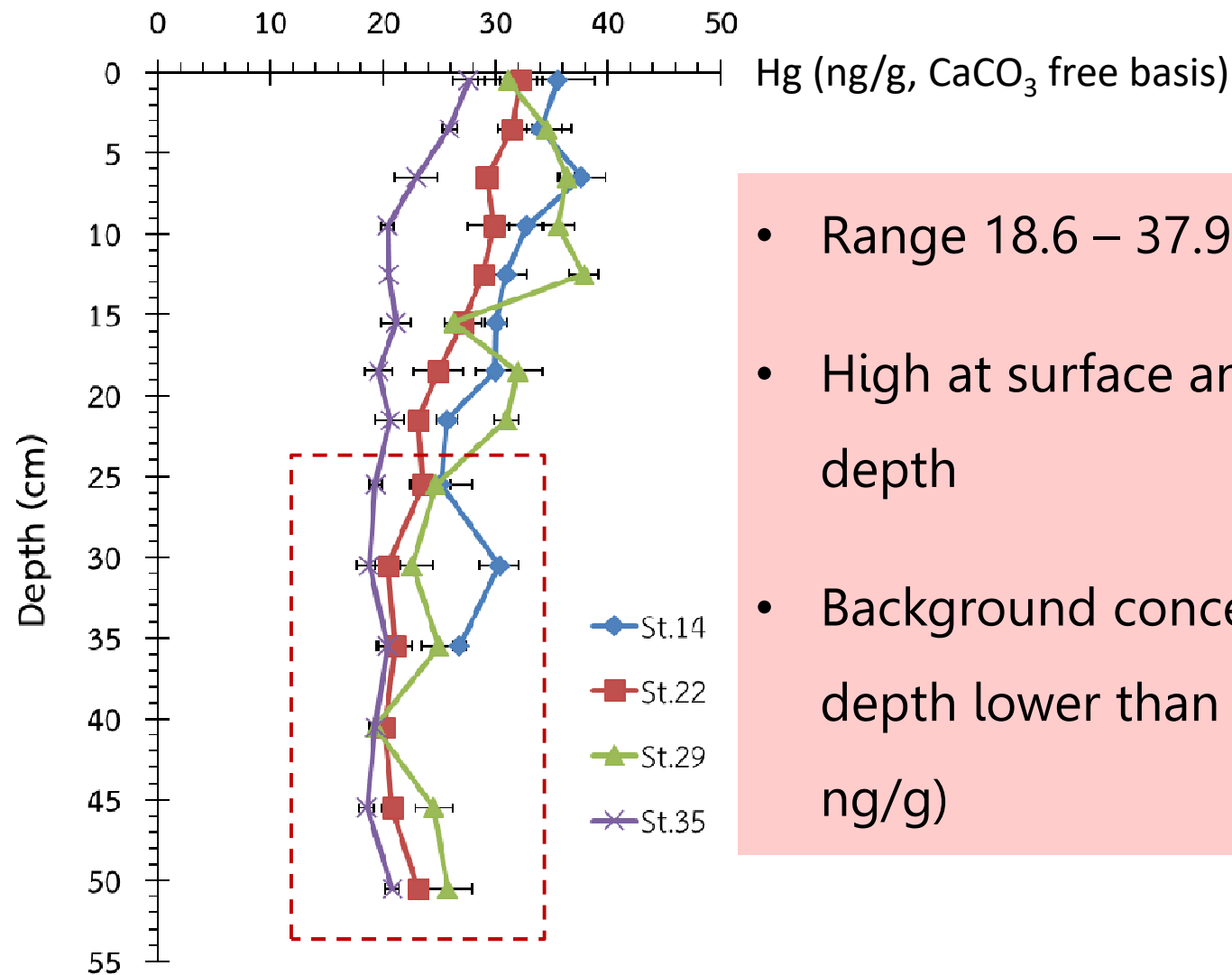
Result – Sediment Hg (ng/g)



Selected station
St.14, 22, 29 and 35

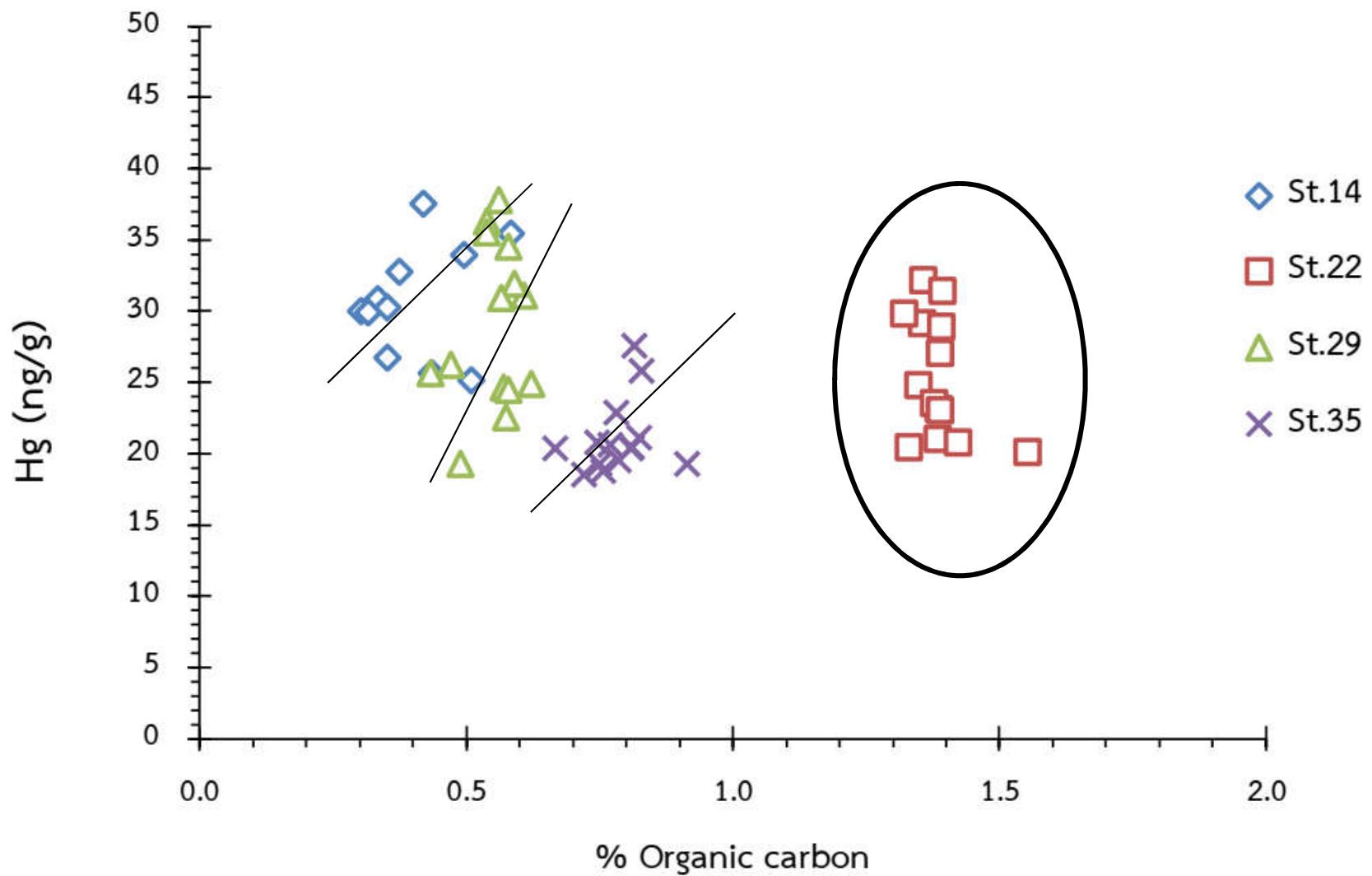
- Avg. Hg in st.14 and 29 are slightly greater than the others two

Result – Sediment Hg (ng/g)



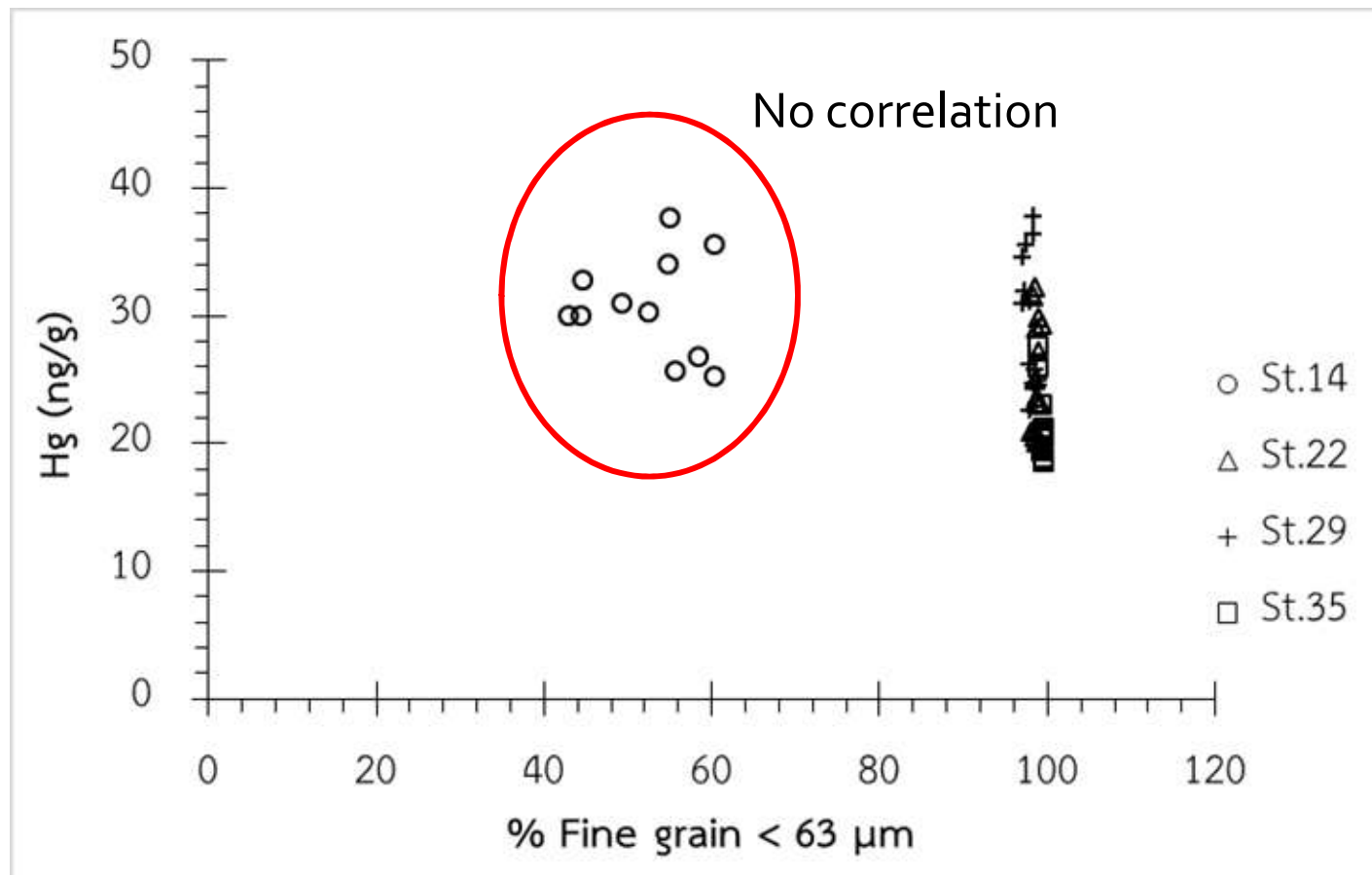
- Range 18.6 – 37.9 ng/g dry wt.
- High at surface and low with depth
- Background concentration at depth lower than 25 cm (19-26 ng/g)

Result – % OC and Hg

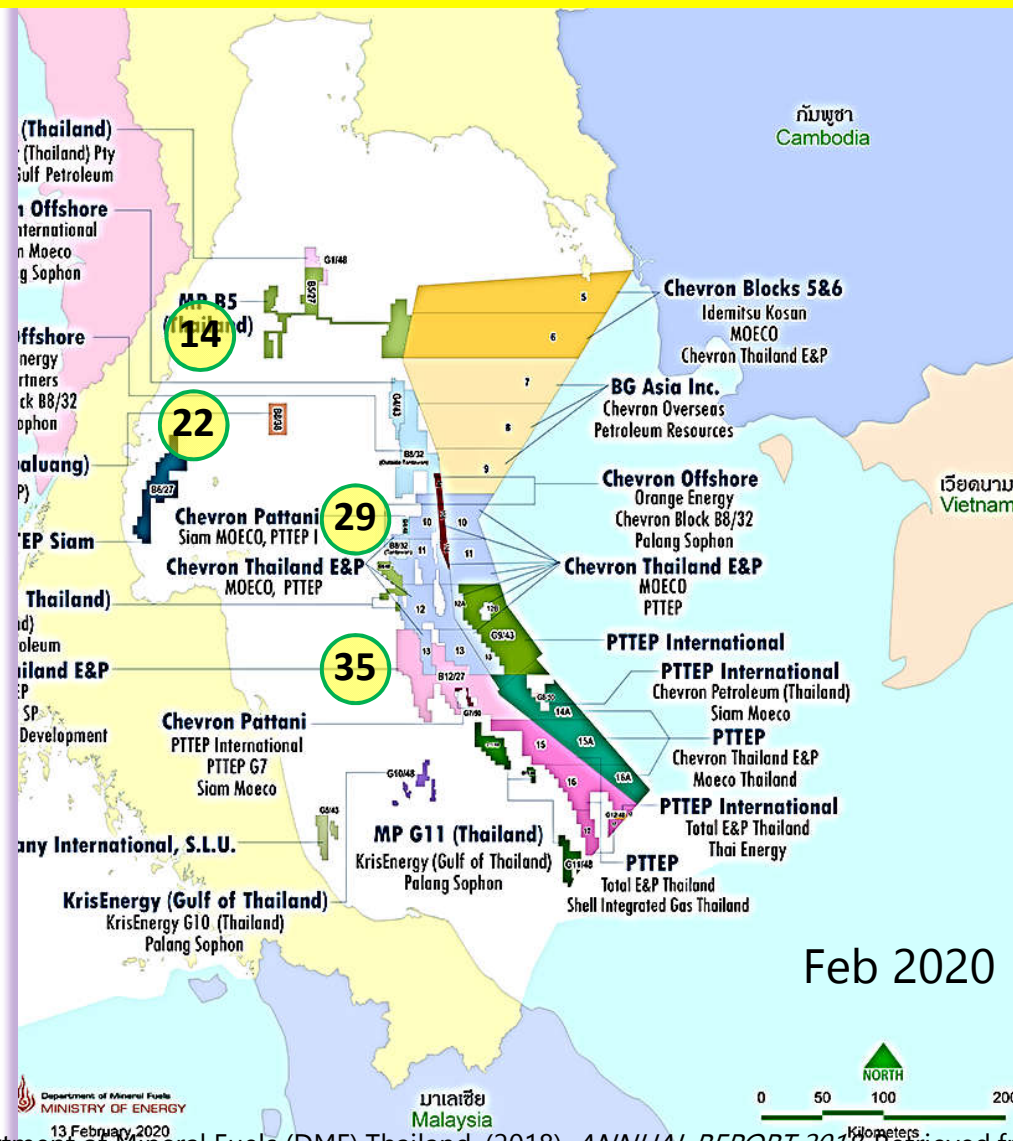


Result – Grain size and Hg

- The sediment cores (except St.14) are contained with fine grain > 98%

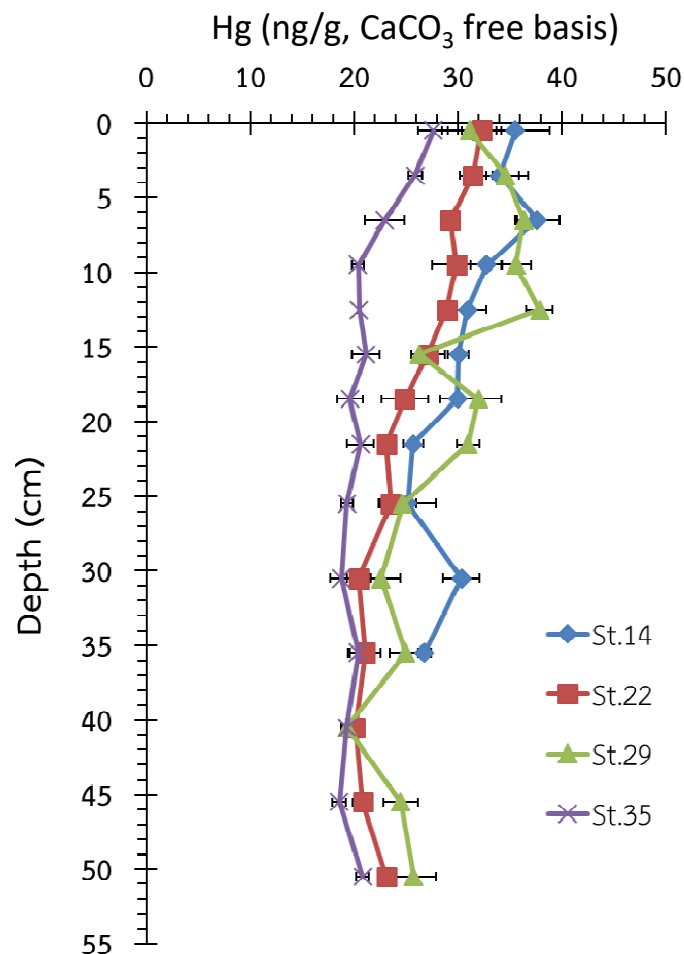


Thailand Petroleum Concession Map



Department of Mineral Fuels (DMF) Thailand. (2018). *ANNUAL REPORT 2018*. Retrieved from <https://dmf.go.th/public/list/data/index/menu/668>

Summary



- 1) Hg in sediment ranged from 18.6 – 37.9 ng/g and decrease with depth (St.14 – highest)
- 2) The GOT sediment is unpolluted
- 3) Unclear correlation of **Hg** with **organic carbon** and **fine particles**, implies that Hg in the sediment might be contaminated from anthropogenic activities



Collaborative Research Survey on Marine Fisheries Resources and Environment in the Gulf of Thailand 2018