

Efren J. Sta. Maria<sup>1</sup>, Anne Brigitte U. Lim<sup>2</sup>, Carmelo Miguel H. Ebreo<sup>1</sup>, Jennyvi D. Ramirez<sup>1</sup>, Kayla Marie I. Castro<sup>2</sup> and Severino G. Salmo III<sup>2</sup>

<sup>1</sup>Philippine Nuclear Research Institute-D.O.S.T., <sup>2</sup>Environmental Science Department - Ateneo de Manila University

## Pb-210 BACKGROUND



A member of the Uranium-238 decay series



Half-life ( $t_{1/2}$ ) = 22 years



Naturally found in sediments and rocks that have Uranium-238, and also in the atmosphere (from Radon gas)



A promising tool for dating sediments on a timescale of about 100 years (**\*\*sediments can record many useful information; but it is essential to have an age control\*\***)

## IMPORTANCE OF MANGROVES



### Ecological Benefits

- Habitats / Nursing Areas
- Coastal Protection
- Carbon Sink / Storage

### Economic Benefits

- Timber and Plant Products
- Aquaculture
- Tourism

## Pb-210 DATING TECHNIQUE



Provides age control (for historical studies), to establish the timing of past environmental change



Tool for understanding changes happening in particular area of concern



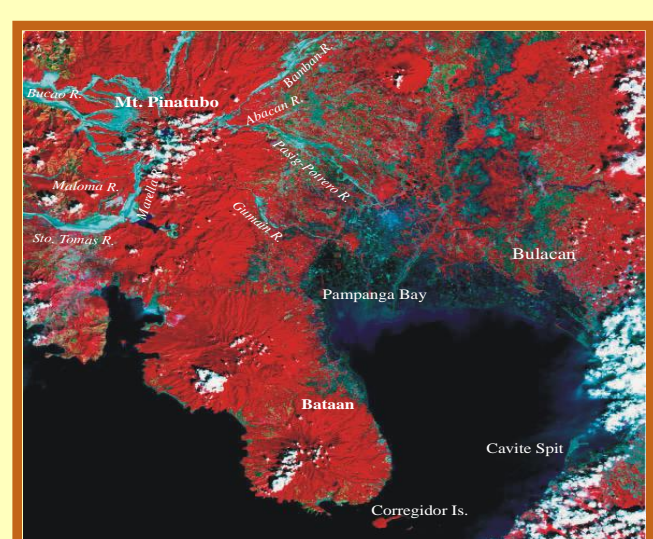
Determines the accumulation of materials (e.g. sediment, nutrients, pollutants)



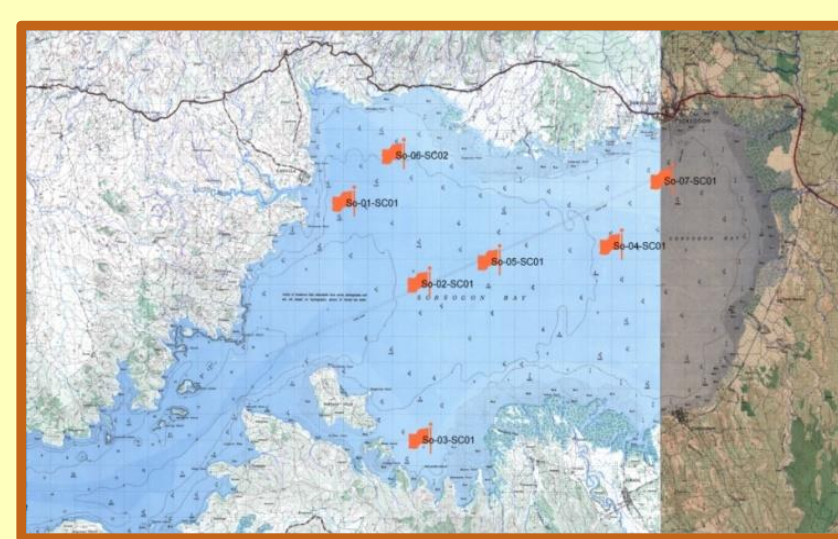
Gives information on possible sources, pathways, and sinks of sediments

## Pb-210 DATING IN THE PHILIPPINES

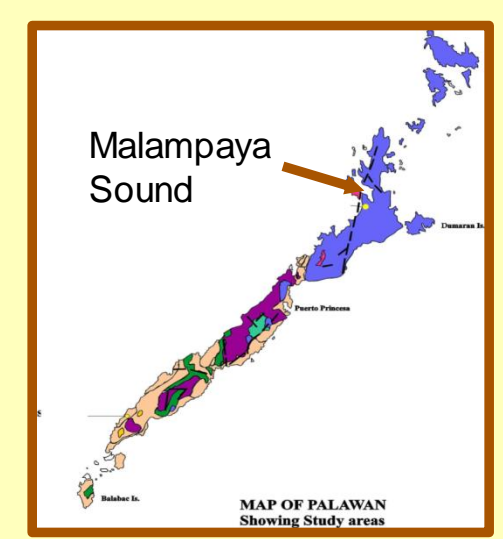
In the Philippines, the Pb-210 Dating Technique has been used in Harmful Algal Bloom (HABs) studies in Manila Bay, Sorsogon Bay, Juag Lagoon, Bolinao, and Malampaya Sound-Palawan as well as in the sedimentation study of Laguna Lake.



Manila Bay



Sorsogon Bay



Malampaya, Palawan



Laguna Lake

This current study is a pioneering work in the estimation of sedimentation rates of selected mangrove areas in the Philippines using Pb-210 Dating Technique.

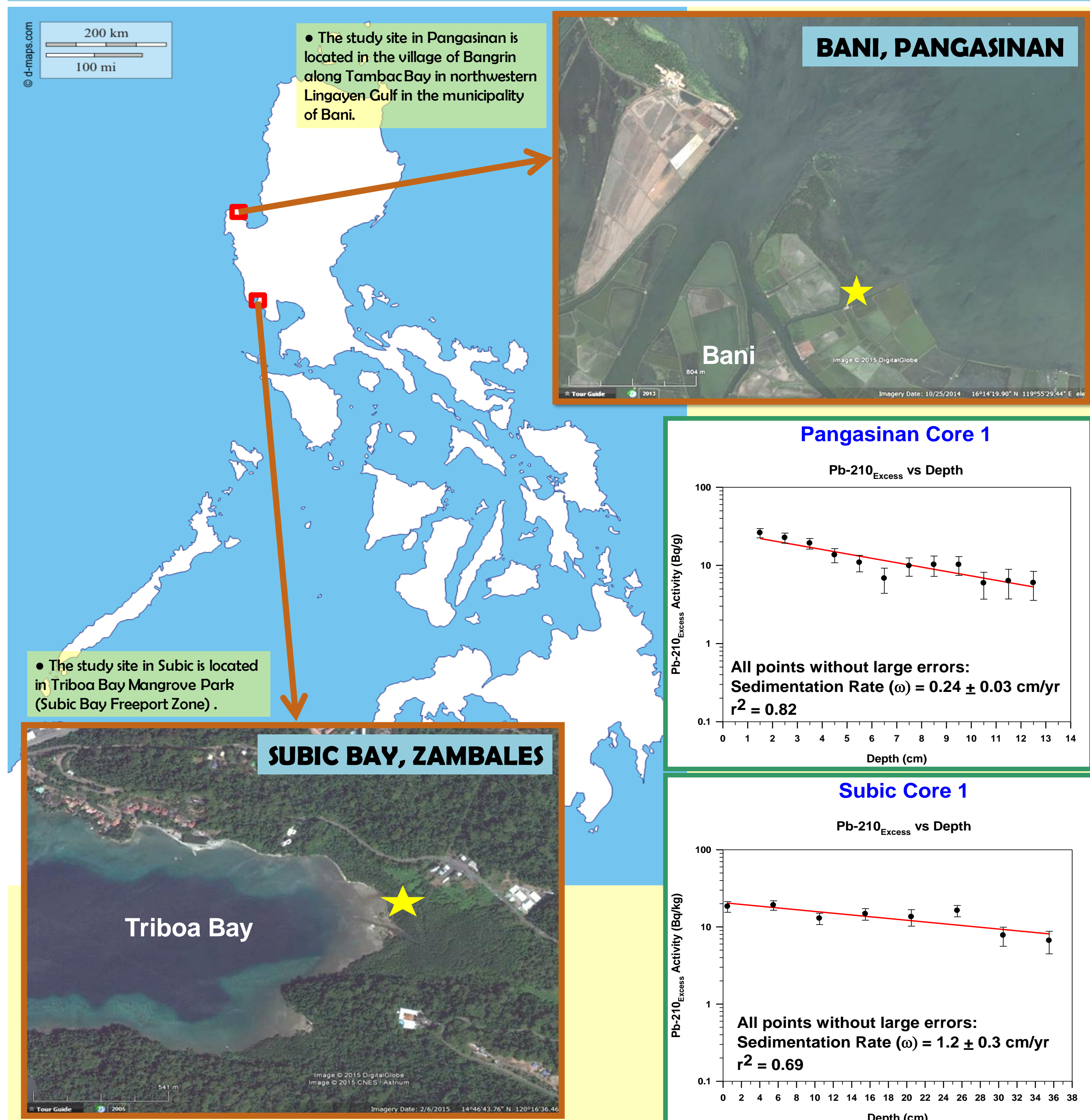
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## PHILIPPINE MANGROVE STUDY SITES and Pb-210 PROFILES



## PRELIMINARY RESULTS

Initial Pb-210 results from these two mangrove areas reveal that Pb-210 is a promising tool for this type of environment. The Pb-210 profiles of the sediment cores (using the CIC Model) indicate that Pangasinan mangrove area has a much lower sedimentation rate than the Subic mangrove area.

| Core Location    | Sedimentation Rate (cm/yr) | r <sup>2</sup> value |
|------------------|----------------------------|----------------------|
| Bani, Pangasinan | 0.24 ± 0.03                | 0.82                 |
| Subic Bay        | 1.20 ± 0.30                | 0.69                 |

The difference in the sedimentation rates of the two areas could be due to the existing topographic, geologic, hydrodynamic and environmental conditions of the area. The factors responsible for the different sedimentation rates are still being investigated.