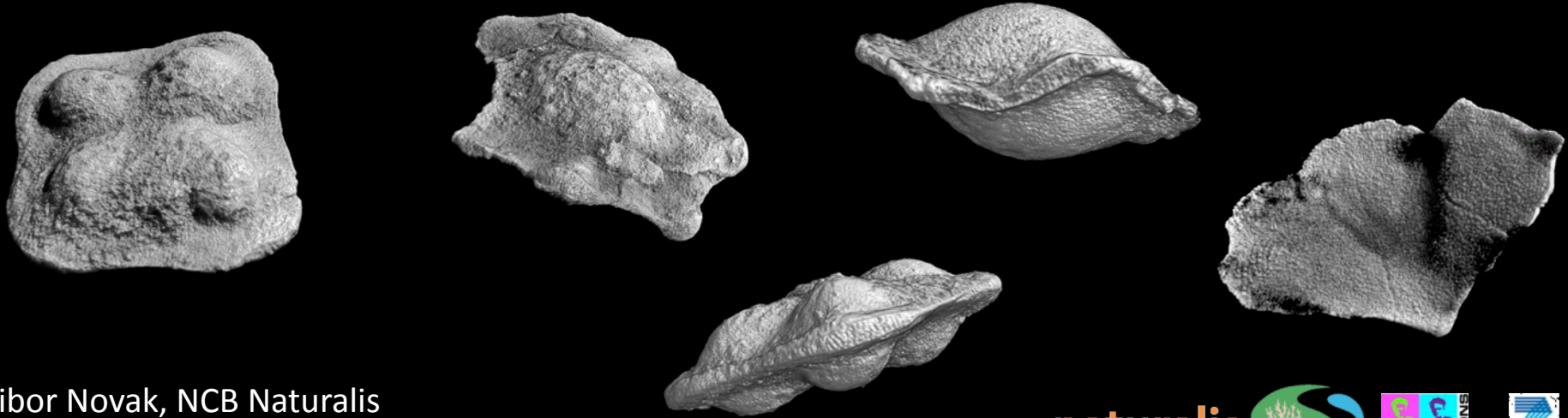


Foraminifera assemblages of the Oligo- Miocene of East Kalimantan

Biostratigraphic and paleoenvironmental overview



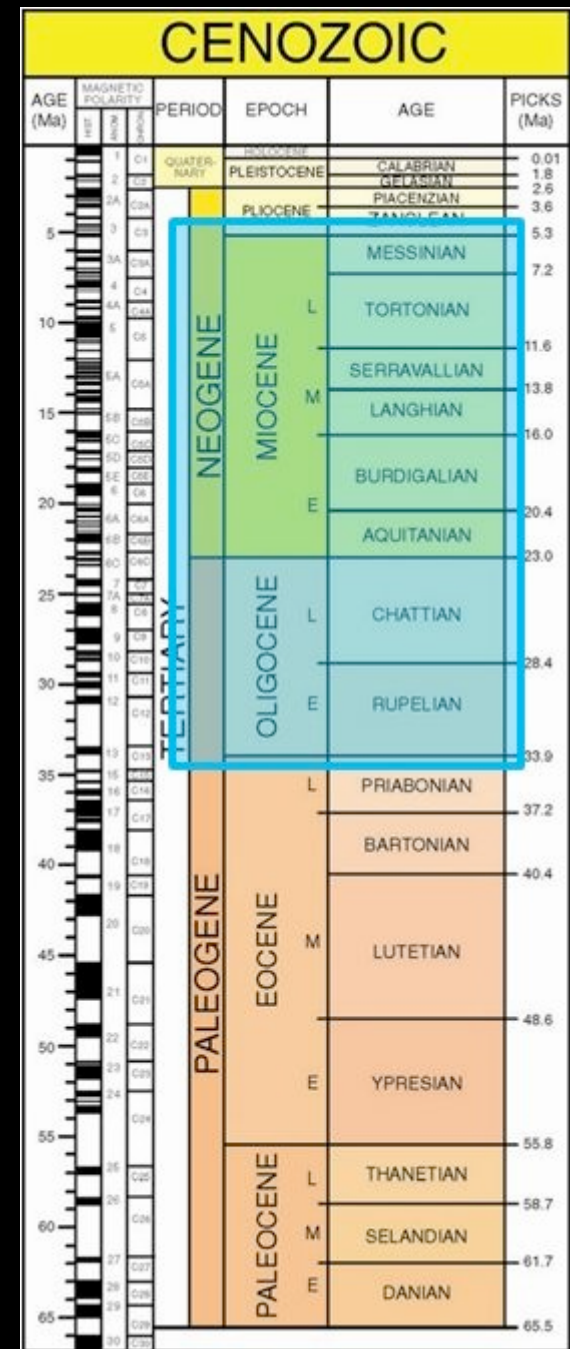
Vibor Novak, NCB Naturalis
Supervisor: Willem Renema

What?

- Building a stratigraphic framework based on biostratigraphy of larger benthic foraminifera (LBF)
- Determine how the environmental change affected LBF assemblages
- Indo-Pacific LBF fauna evolution through time

How?

- Thin sections and isolated specimens of LBF analyzed and recognized to species level -> age determination
- Microfacies analysis -> reconstruction of changes that occurred in reef ecology
- Absolute dating - strontium isotope analyses



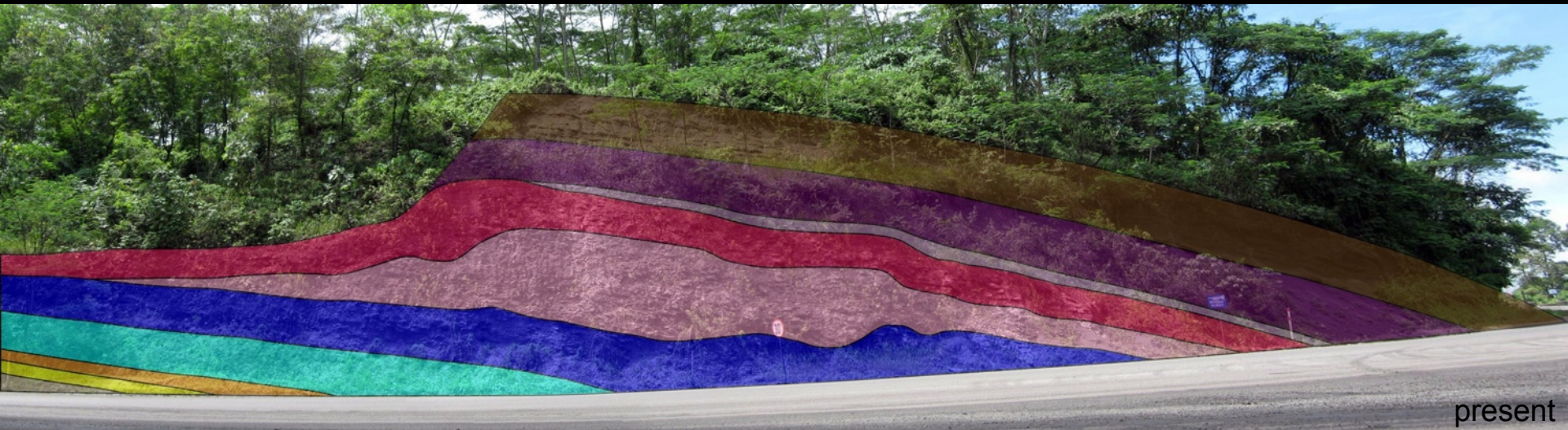
3D Reef

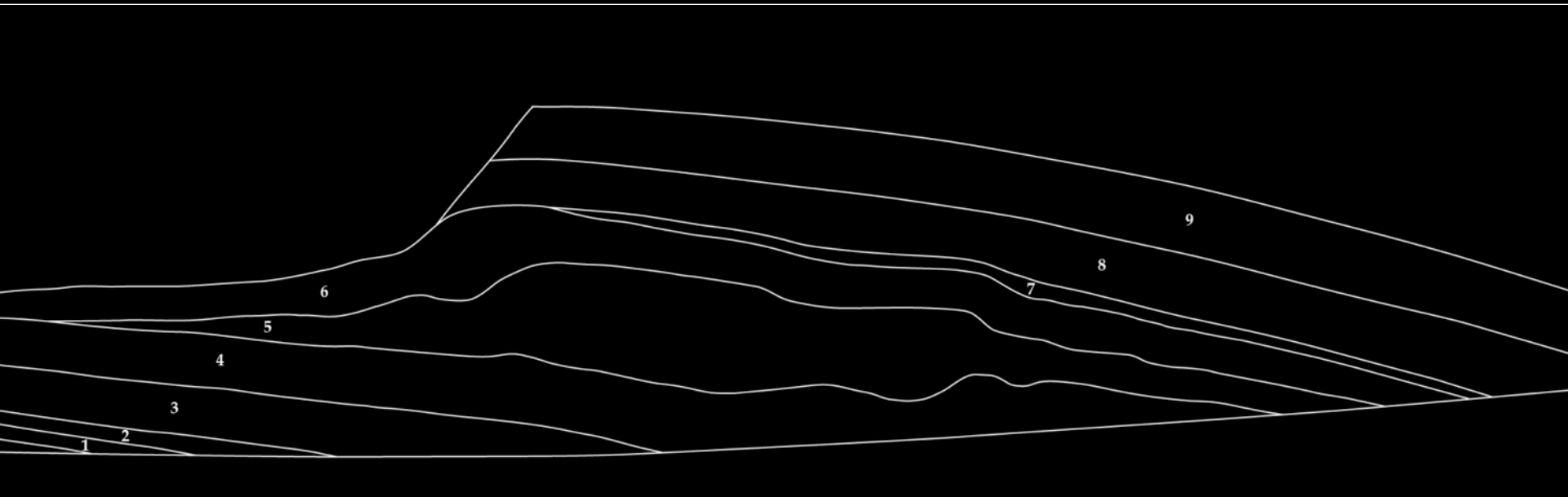
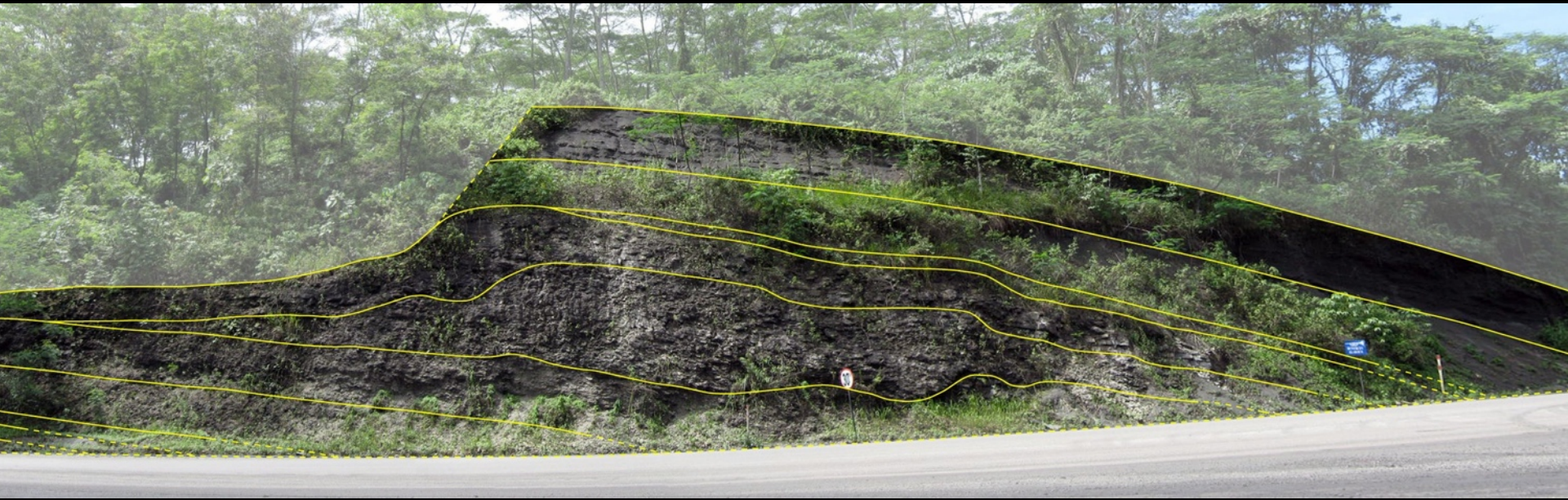
- Paleoenvironmental reconstruction
- Fossil groups included – corals, algae, bryozoans, LBF
- Plan:
 - Divide reef in lithological units
 - Analyze each unit based on fossils, facies, depositional fabrics and textures
 - Combine fossil groups to develop environmental model for patch reef facies
 - Determine if the water depth was higher or water clarity was lower?



3D Reef - Methods

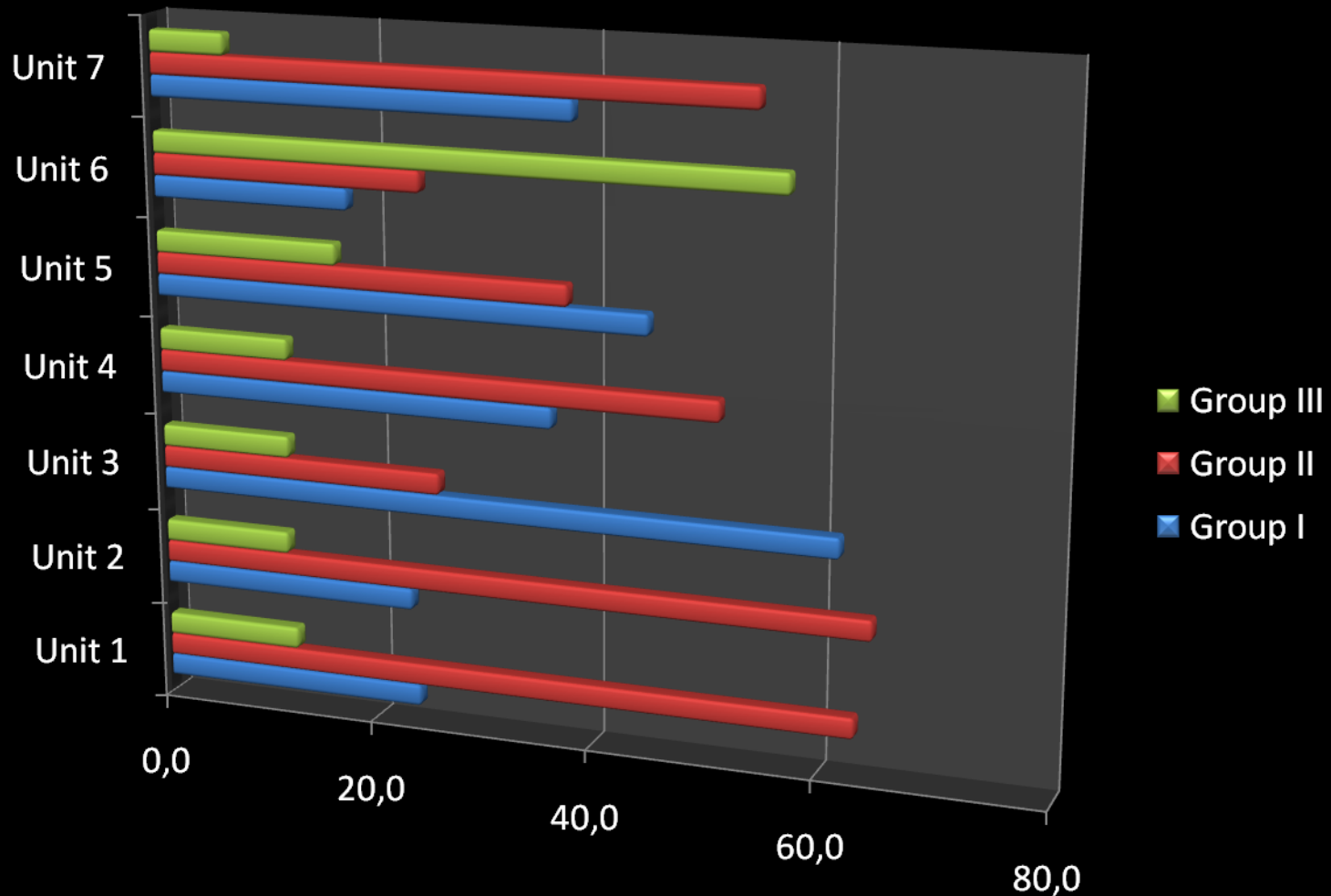
- Thin sections + isolated specimens
- Microfacies analysis:
 - Carbonate lithology classification
 - Relative abundance of LBF, algae and corals were estimated
 - Foraminifera determination based on genera level
 - Divided into three depth indicative groups
 - Triangular diagram presenting distribution of palaeoenvironments





LBF results

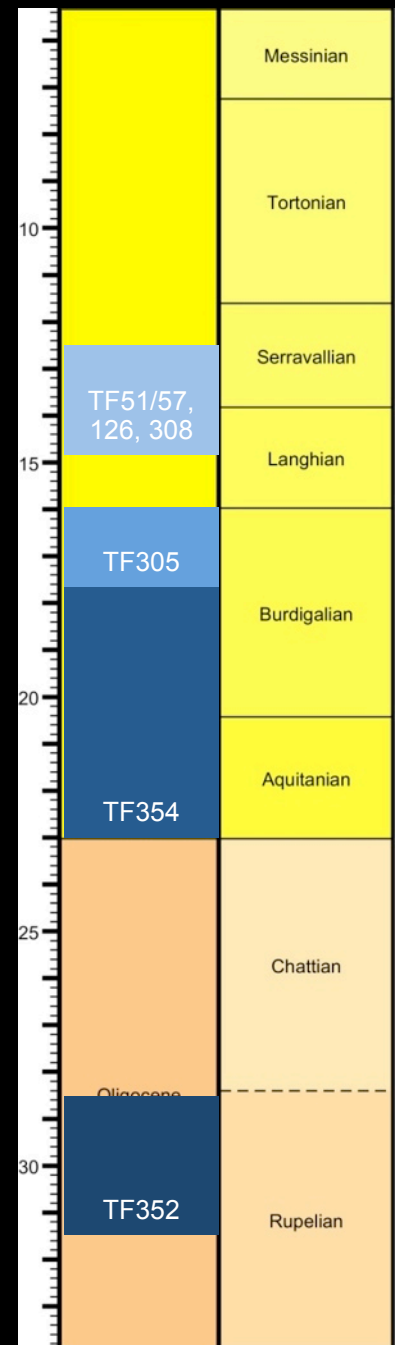
- three environmentally indicative groups:
 - group I: *Cycloclypeus* and *Lepidocyclina*
 - group II: *Amphistegina* and *Miogyopsina*
 - group III: smaller miliolids and rotalids



NTA-2 & NTA-4 preliminary results

- NTA-2
 - TF52/76 – *N. ferreroi* (Burdigalian/Langhian – Tf1/Tf2)
 - TF51/57 – *Lepidosemicyclina polymorpha*,
Cycloclypeus annulatus (Langhian/Serravallian – Tf2)
 - TF126 – *N. ferreroi*, *C. annulatus* (Tf2; Langhian/
Serravallian)

- NTA-4
 - TF305 – *Flosculinella* (Tf1 – Burdigalian)
 - TF308 – *Cycloclypeus annulatus* (Tf2; Langhian/
Serravallian)
 - TF352 – *Nummulites fichteli* (Rupelian – Tc/Td)
 - TF354 – *N. ferreroi*<*Flosculinella*<*Eulepidina* (Chattian/
Aquitanian – Burdigalian; Te – Tf)



Future plans

- Participations:
 - December 2011 – PhD Day of Research School Biodiversity, Leiden
 - April 2012 – EGU, Vienna
- Potential publications:
 - 3D-Reef – early 2012 (VN, NS, AR, EDM)*
 - Stadium Top Reef – mid 2012 (NS, EDM, AR, VN)*
 - Batu Putih – end 2012 (NM, IC, VN, ...)*
 - Oddly shaped foraminifera – 2013 (VN, WR)
 - Mangkalihat sediments – 2013 (VN, NM, ...)
 - Bulu vs Batu Putih vs Mangkalihat – 2014 (VN, WR)

* supervisors included by default