Long-term Monitoring Carbon Balance of Tropical Ecosystems ~ Soil Respiration ~

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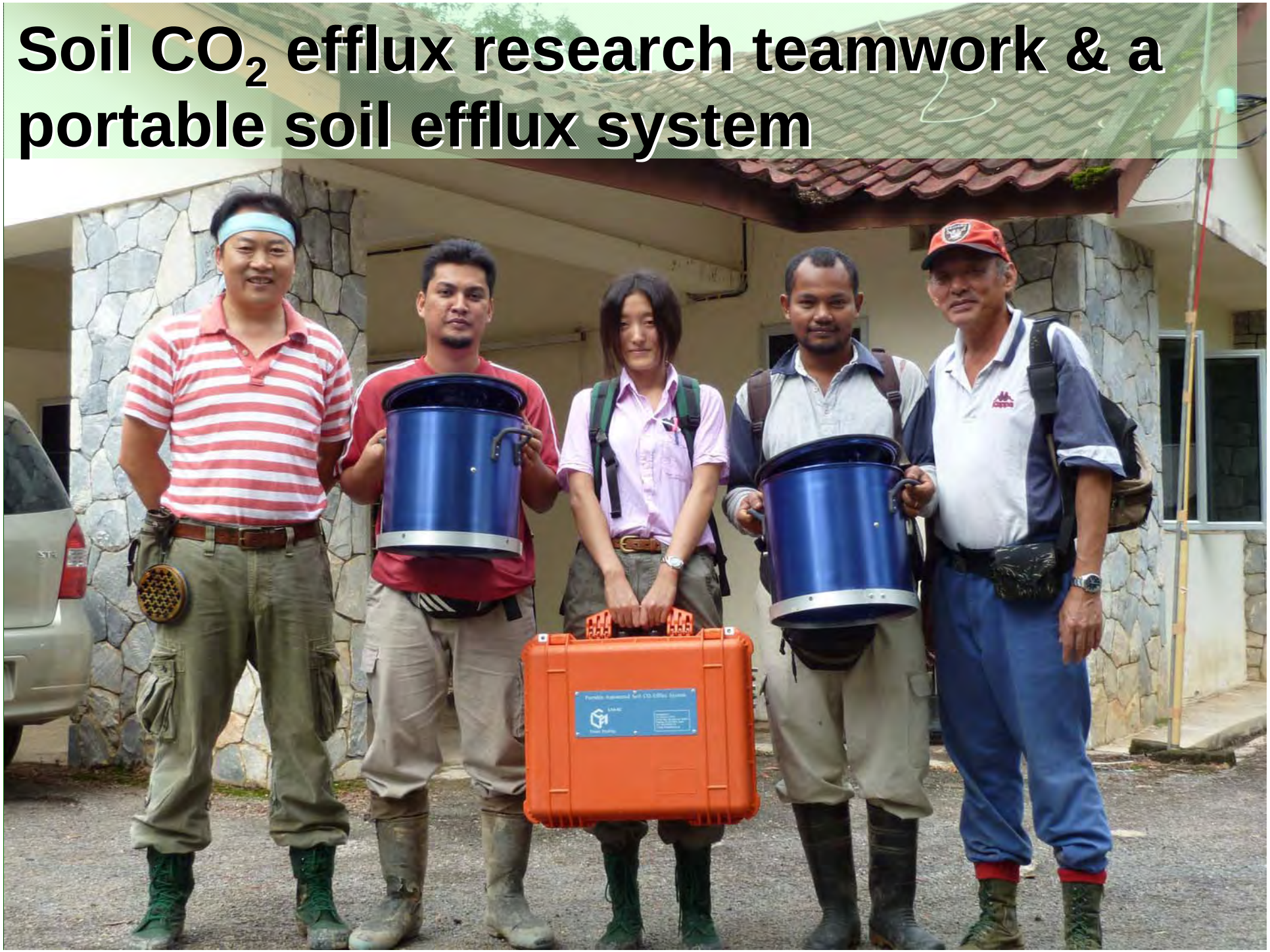
Soil CO_2 efflux research teamwork & a portable soil efflux system



Naishen Liang

Measuring soil CO_2 efflux with a portable automated system

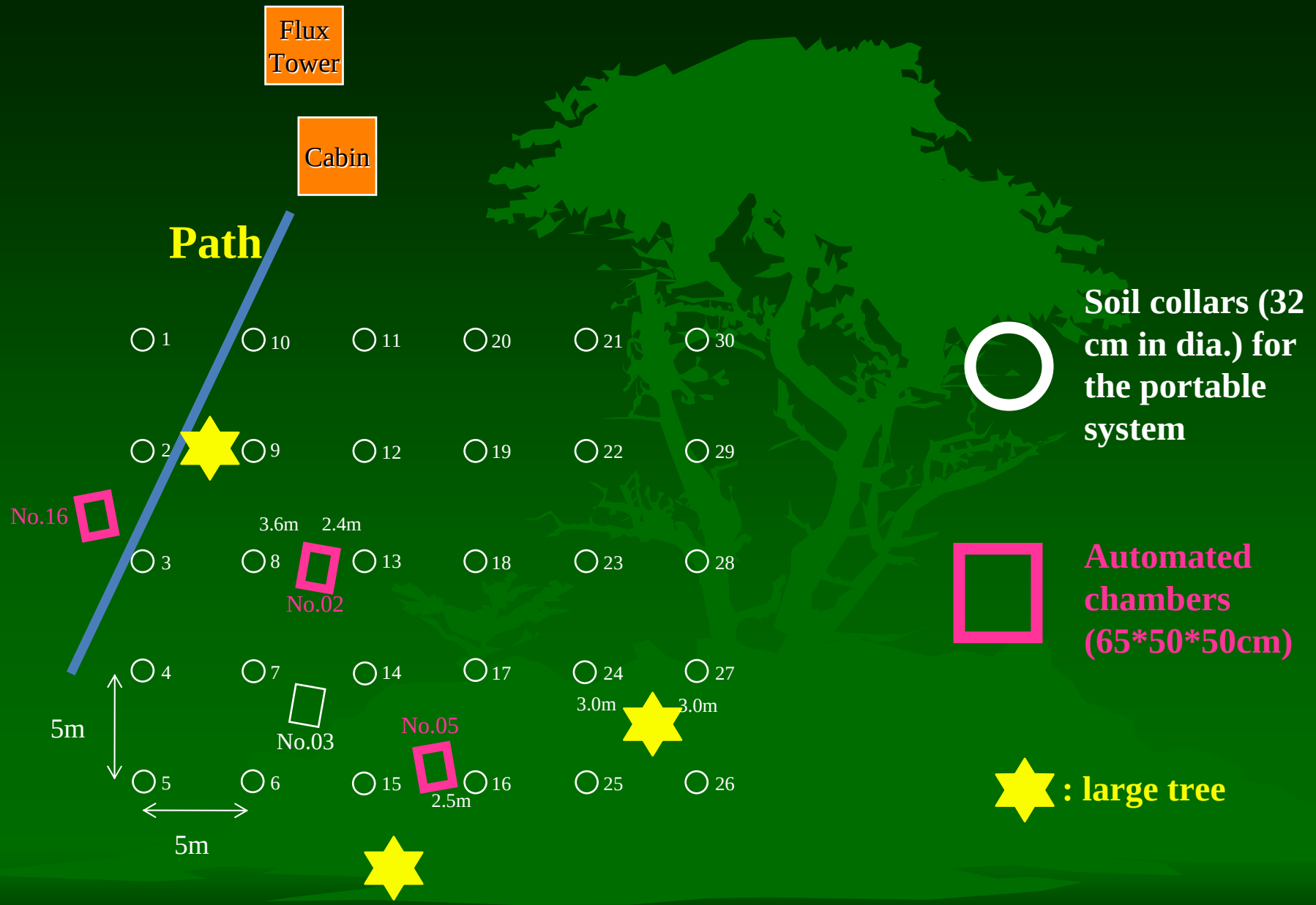
Pasoh:

1. Primary forest – 2 plot
2. logged sites: 1 plots (logged during 2002)

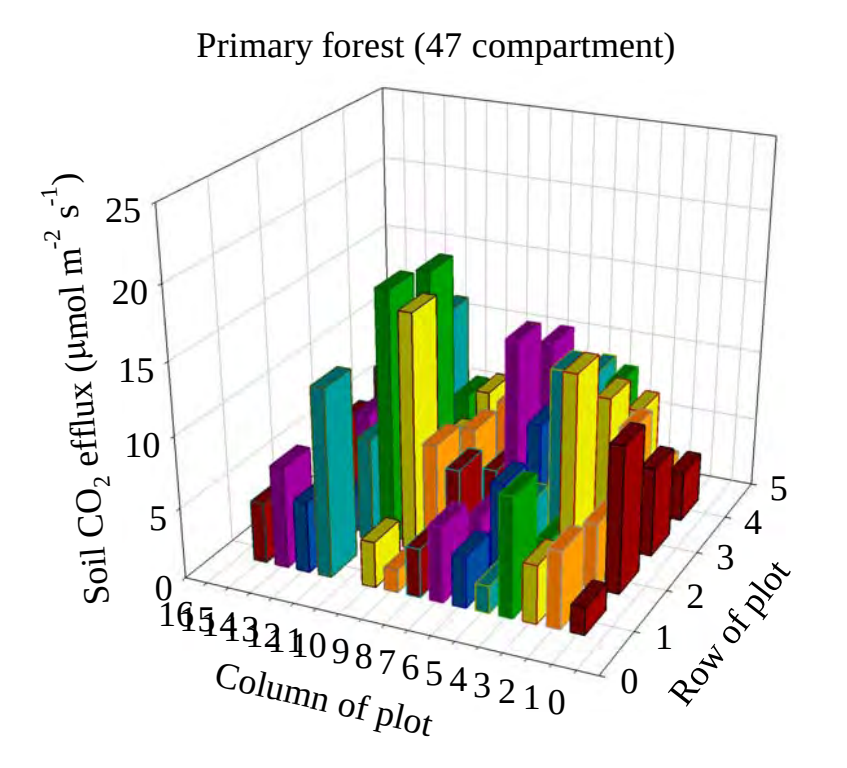
Temengor:

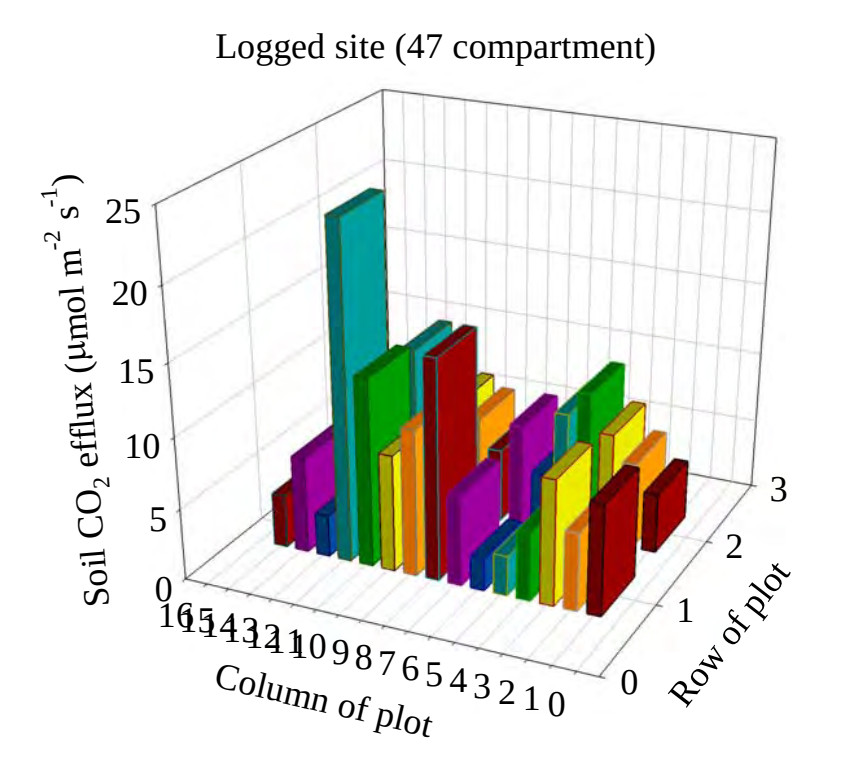
1. Primary forest – 1 plot
2. logged sites: 2 plots (logged during May 2010)

Plot near the tower



Spatial variation of Soil CO_2 Efflux





6.85+3.88 μmol m^{-2} s^{-1}

CV = 57%

7.50+4.35 μmol m^{-2} s^{-1}

CV = 58%

Land use change vs. soil degradation

Installation of soil efflux plot at a 4-year-old rubber plantation

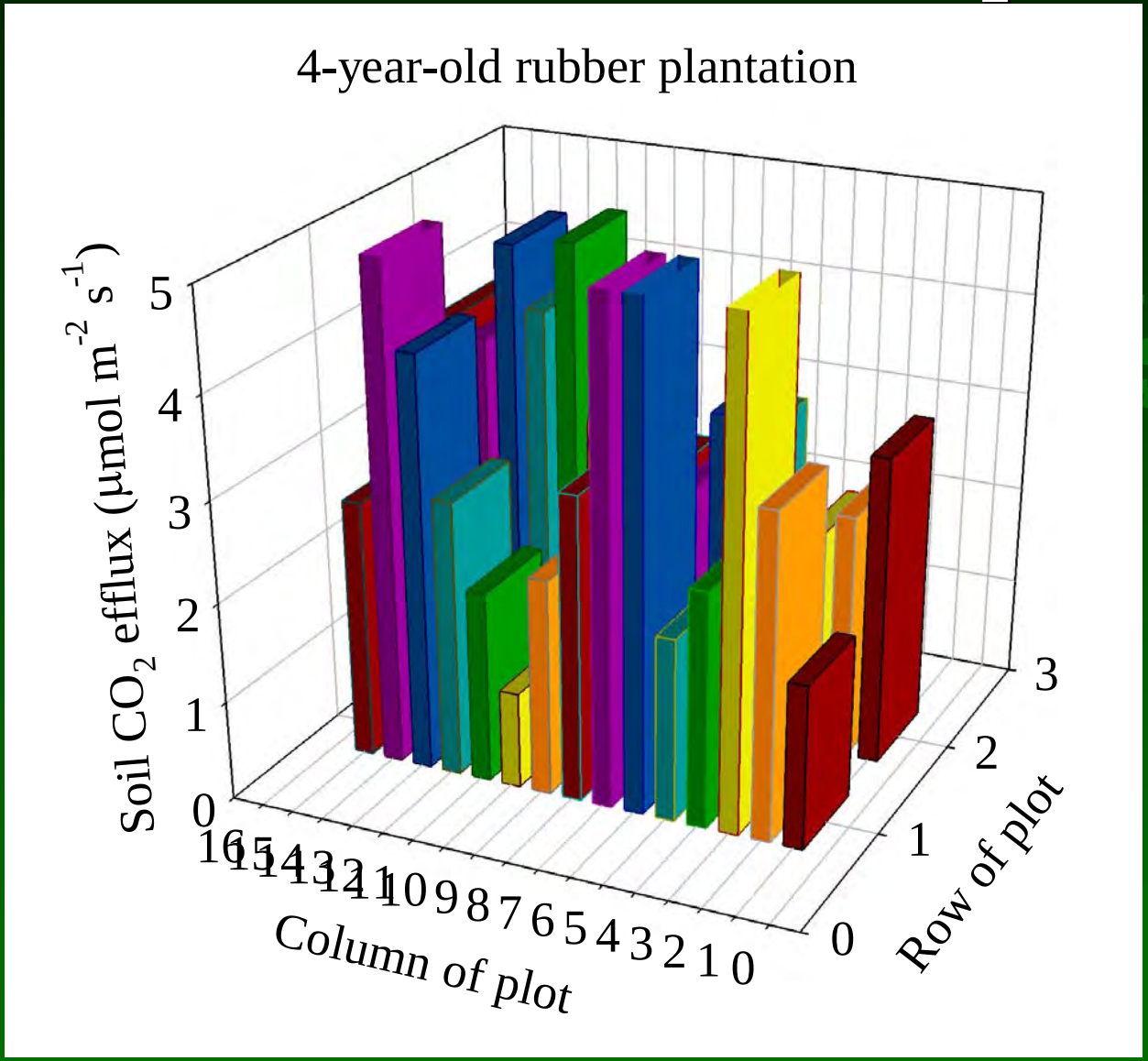
Plot at the rubber plantation

Rubber trees

Soil collars (32 cm in dia.) for the portable system

Measuring soil CO_2 efflux at the rubber plantation

Spatial variation of Soil CO_2 Efflux



3.34 + 1.55 μmol m^{-2} s^{-1}, CV = 46%

Installation of soil efflux plot at a 4-year-old oil palm plantation

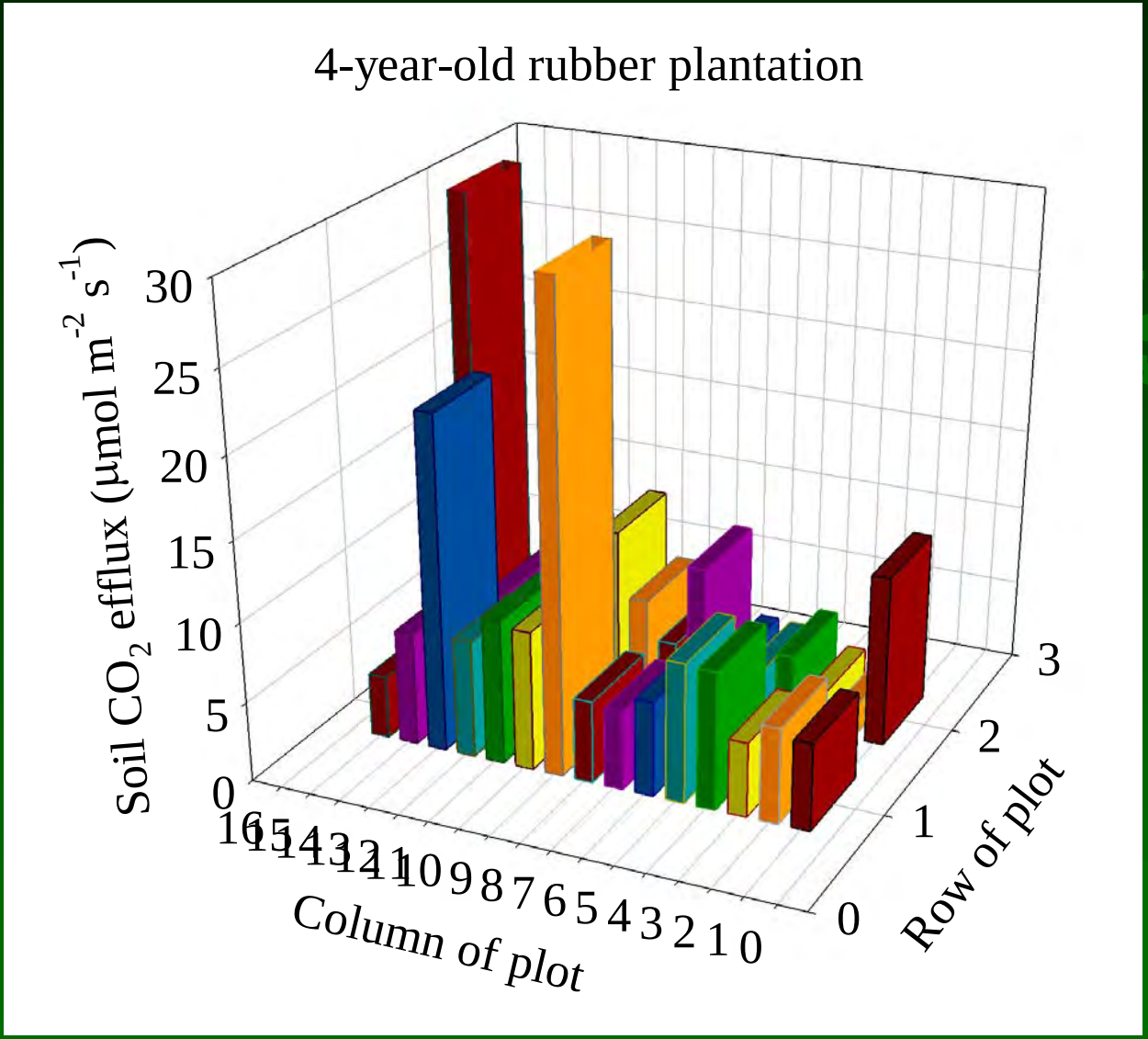
Plot at the oil palm plantation

Oil palm trees

Soil collars (32 cm in dia.) for the portable system

Measuring soil CO_2 efflux at the oil palm plantation

Spatial variation of Soil CO_2 Efflux



9.11 + 10.72 μmol m^{-2} s^{-1}, CV = 118%

Old automated efflux system at Pasoh

Assembly the
chambers

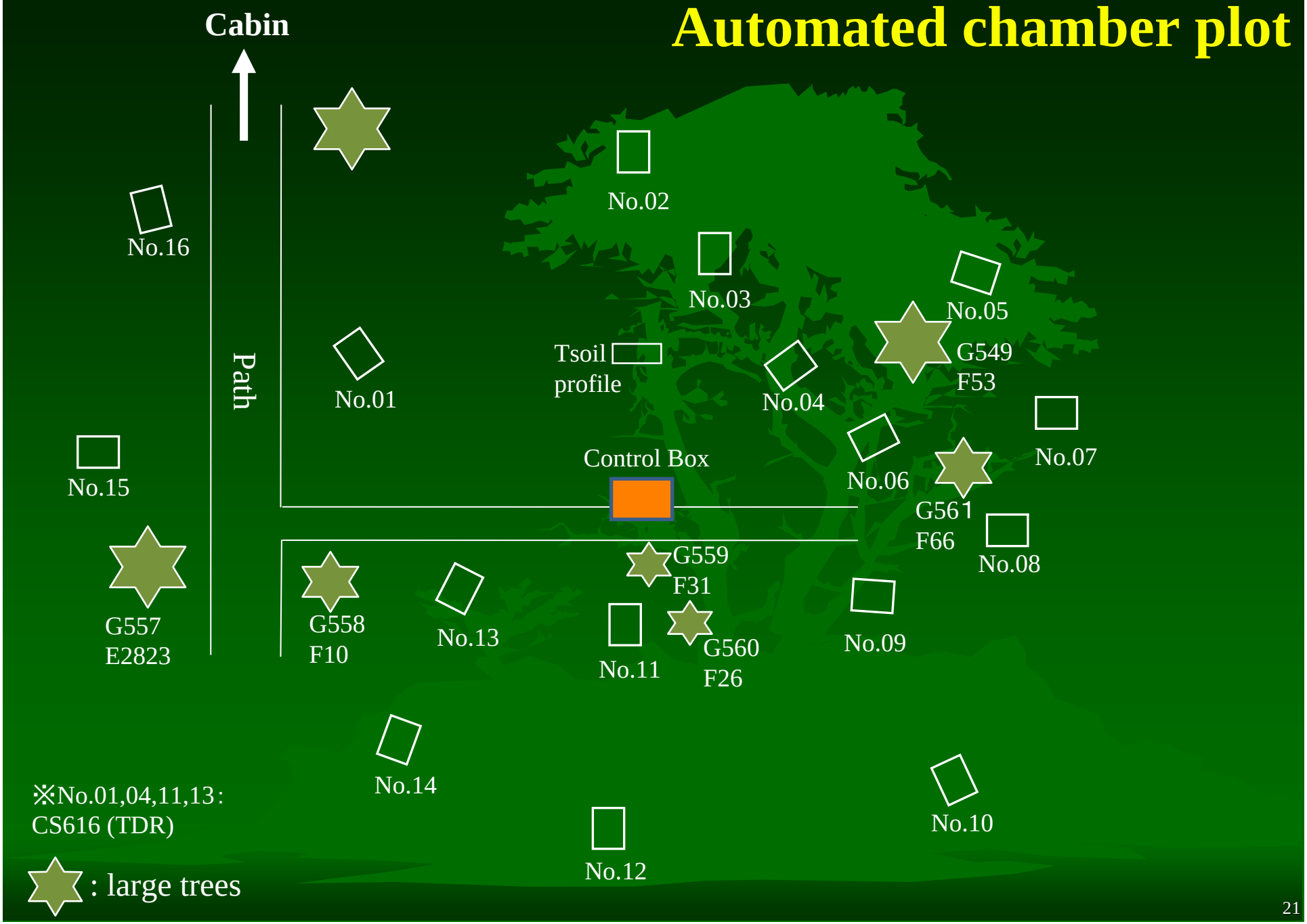
24 automated chambers
(65cm*50cm*50cm, L*W*H)

Installation

Control box

Automated Flux Chamber LAC-65 (CGER/NIES, liang@nies.go.jp)

Automated chamber plot



Chamber campaign

Litterfall vs. soil respiration

Pasoh Tower Repairing