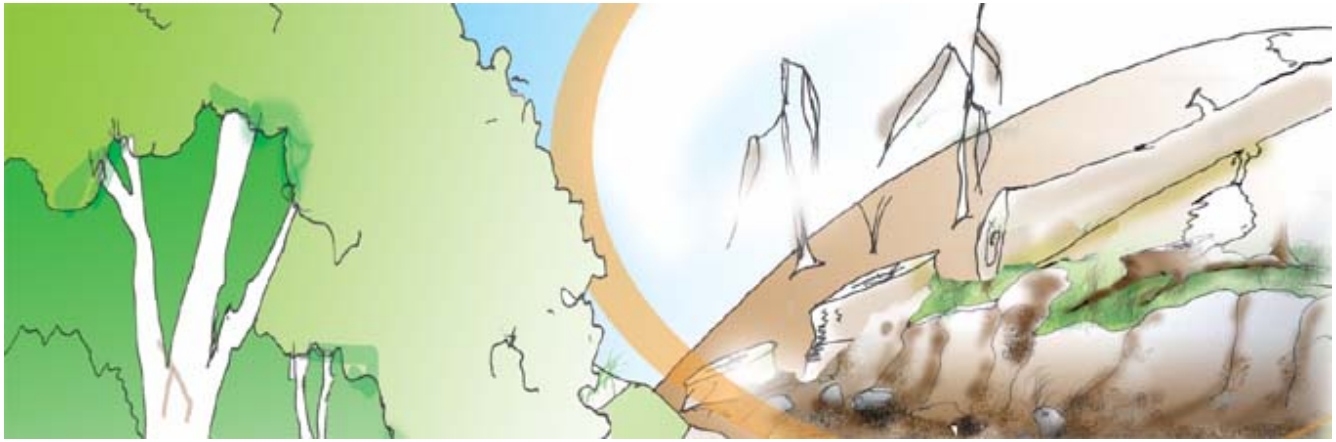
ASB
PARTNERSHIP FOR THE TROPICAL FOREST MARGINS



Overview of the Measurement Challenges

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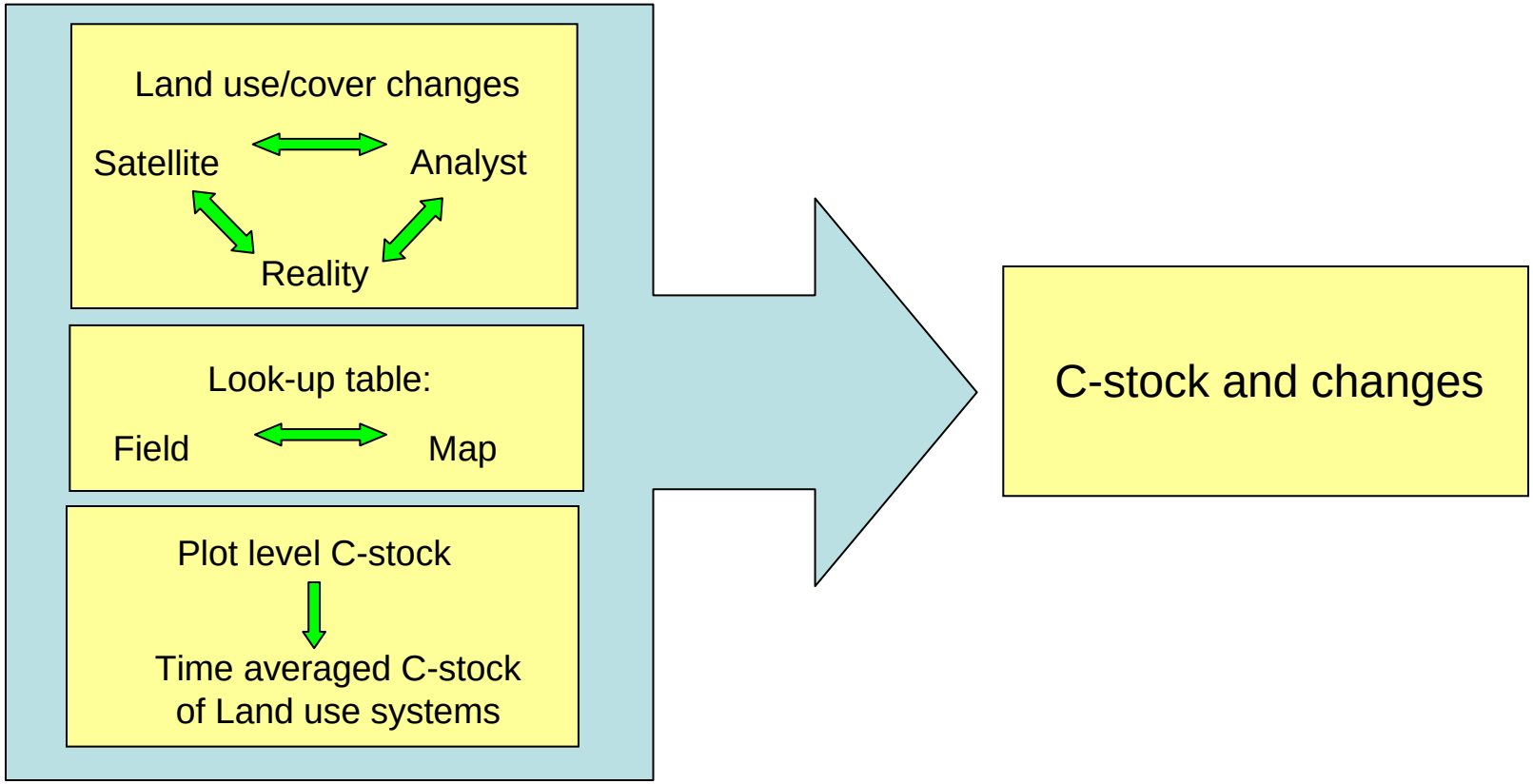
Outline

1. Introduction
   - What do we measure?
   - Does scale matter?
2. Remote sensing techniques
3. The challenge of ground truthing
4. Implications for the baseline
5. Concluding remarks

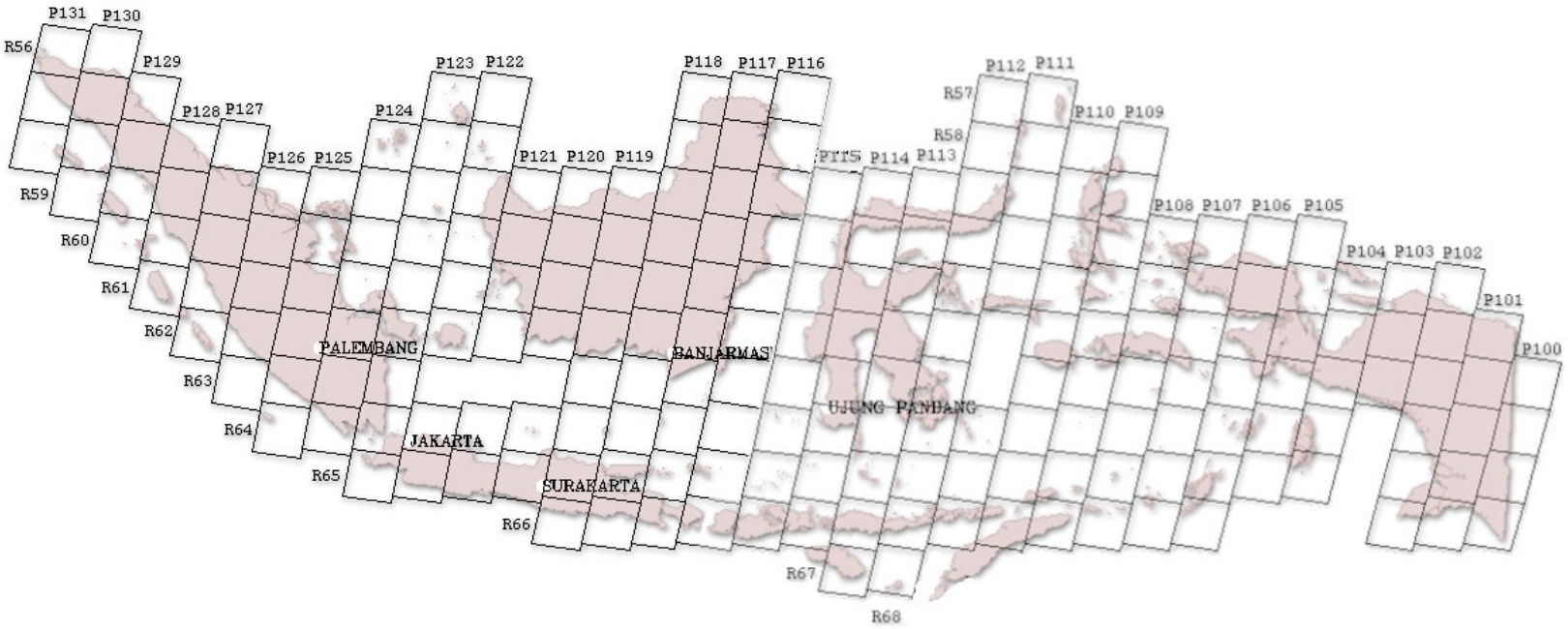
What do we measure?



Scale does matter

- Wall-to-wall overview of changes in forest cover (MODIS)
- Detailed C-stock change (Landsat)
- Degradation (Radar, IKONOS, Quickbird) – Mixed spectral analysis
- Ground-truth (above- and below-ground)

Remote sensing – which sensor?



LANDSAT:

Indonesia: 241 scences

Cost: 241 x US$ 600 = US$144.600

IKONOS:

Indonesian area: 1,8 million km^2

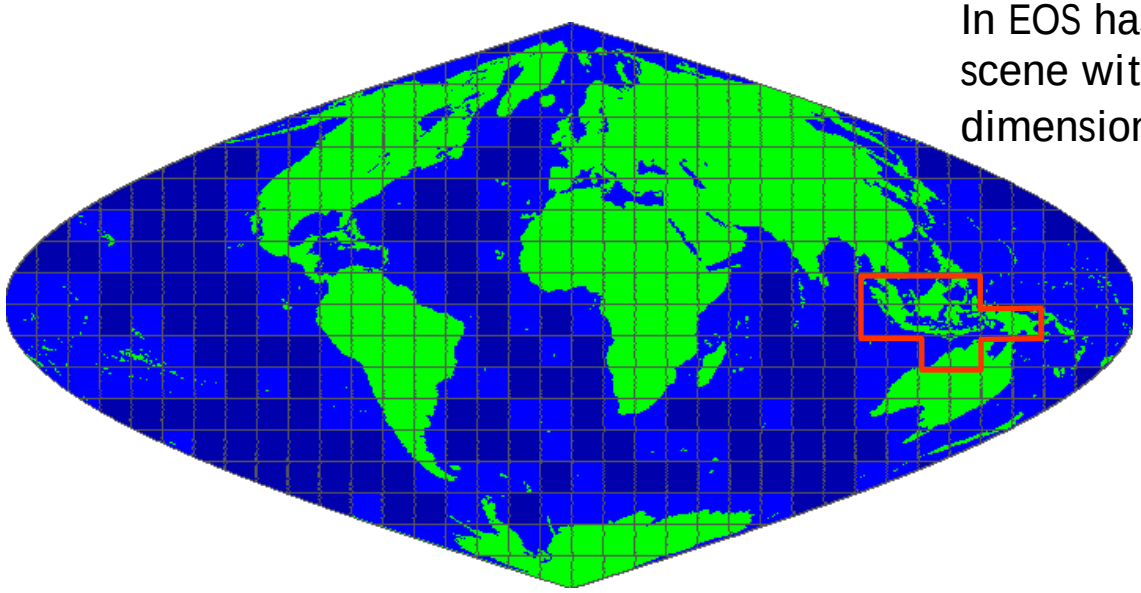
Cost: 1.8 x10^6 x US$30 = US$ 54 million

What can we do with MODIS?

Available for free

Large coverage

In EOS has been set into scene with 10^{o} to 10^{o} dimension



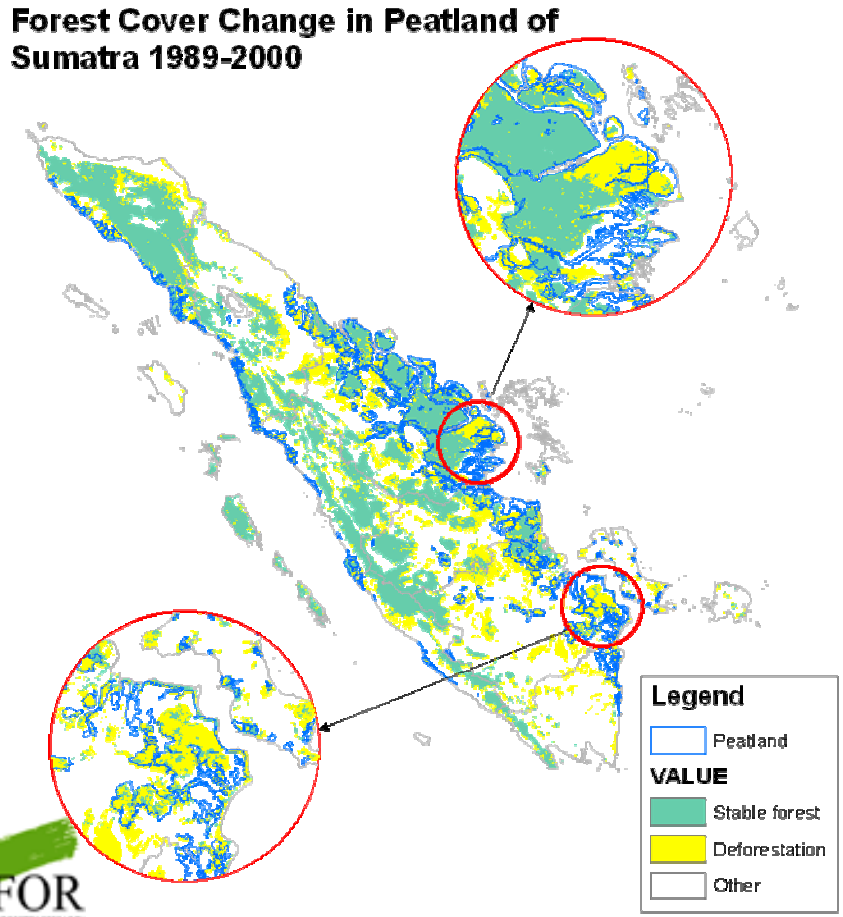
High temporal resolution

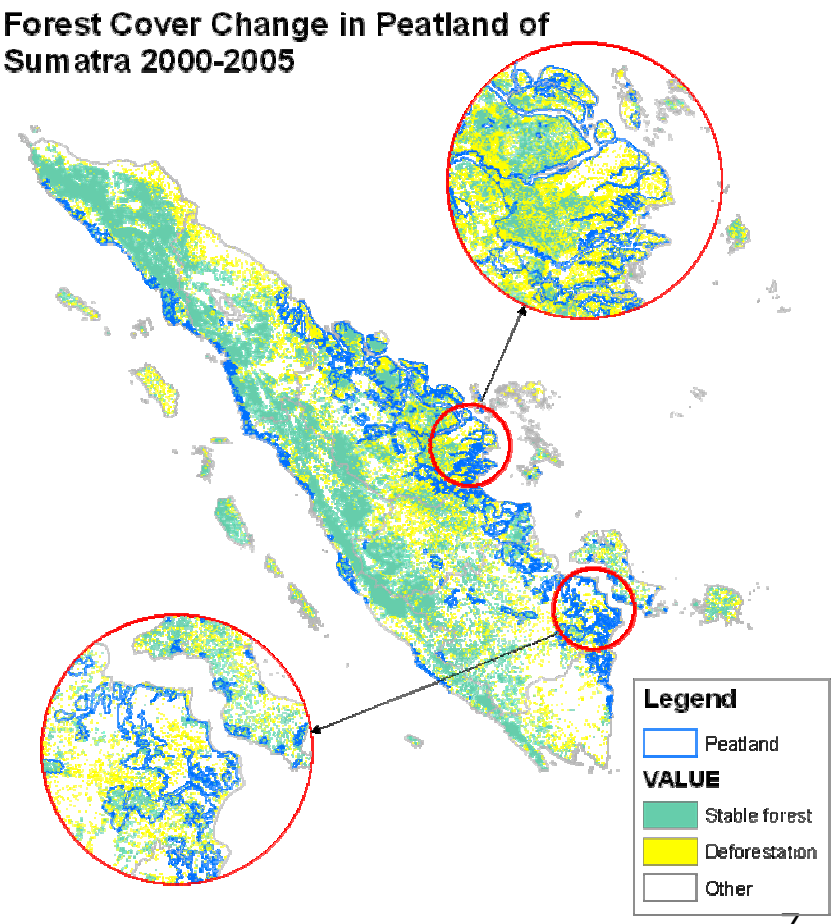
2 visits per day
Produces daylight image and day/night thermal emission data

Moderate spatial resolution

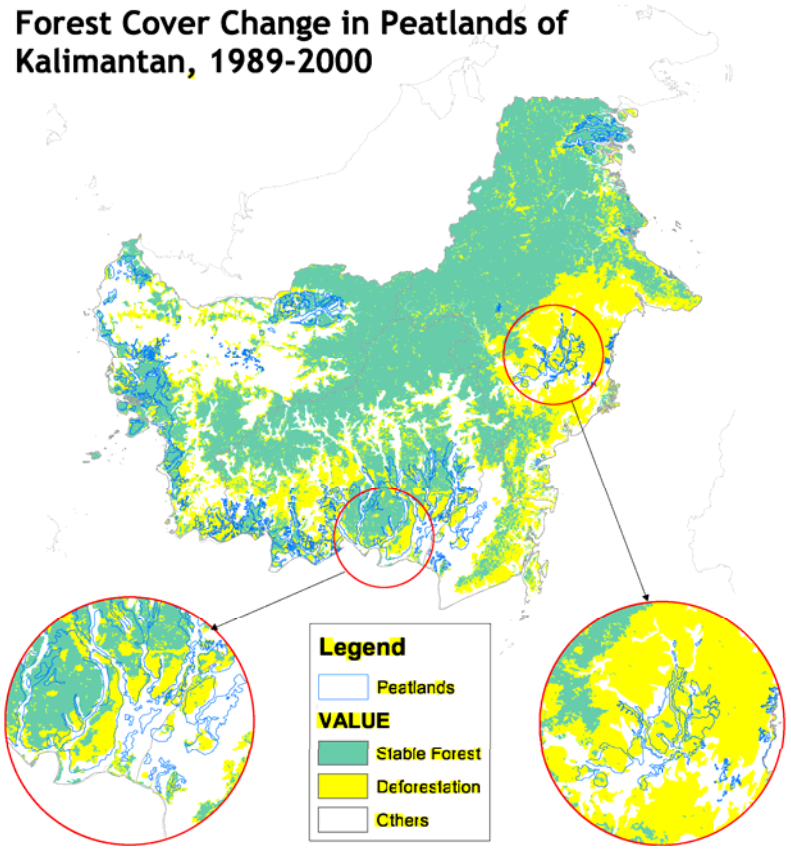
250m for band 1-2
500m for band 3-7
1000m for band 8-36

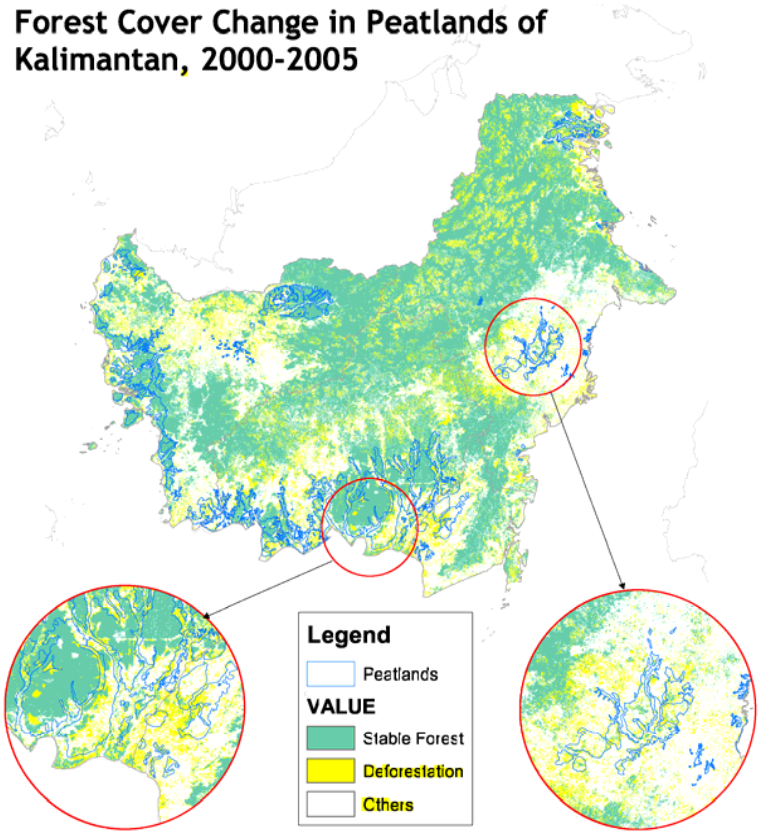
Deforestation rate – Sumatra



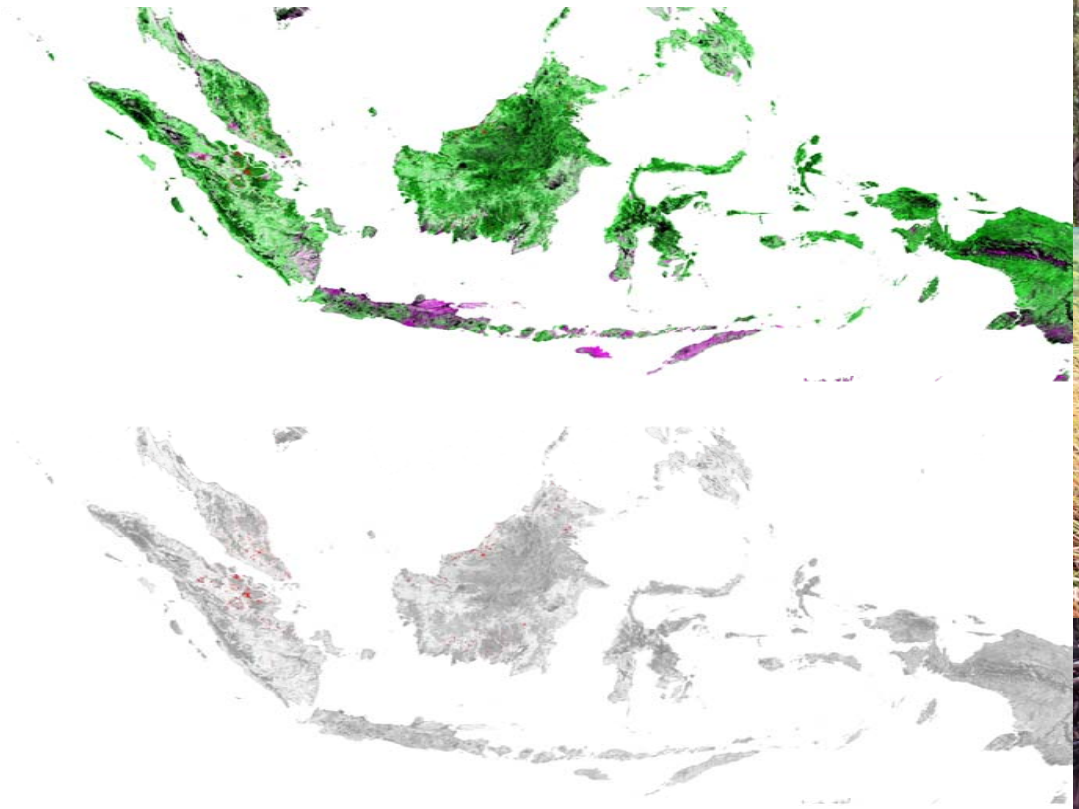


Deforestation rate – Kalimantan

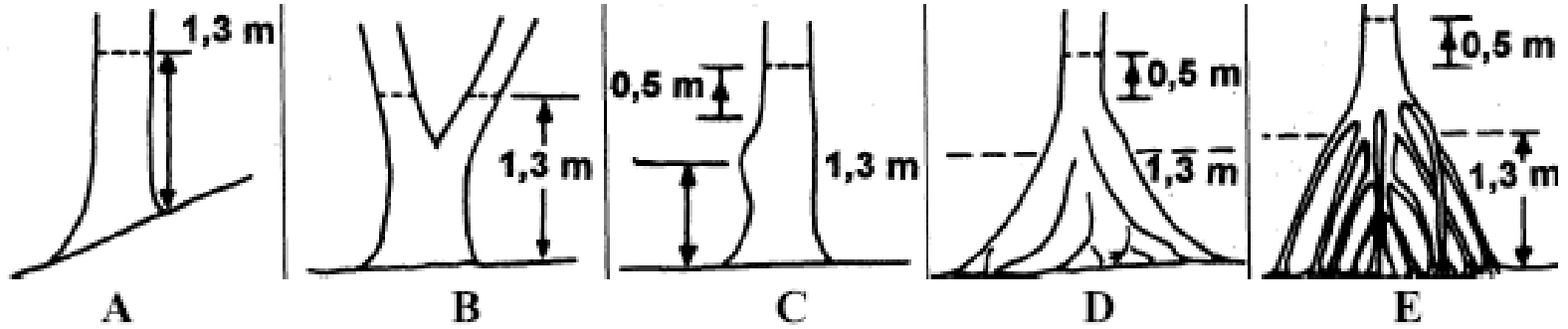


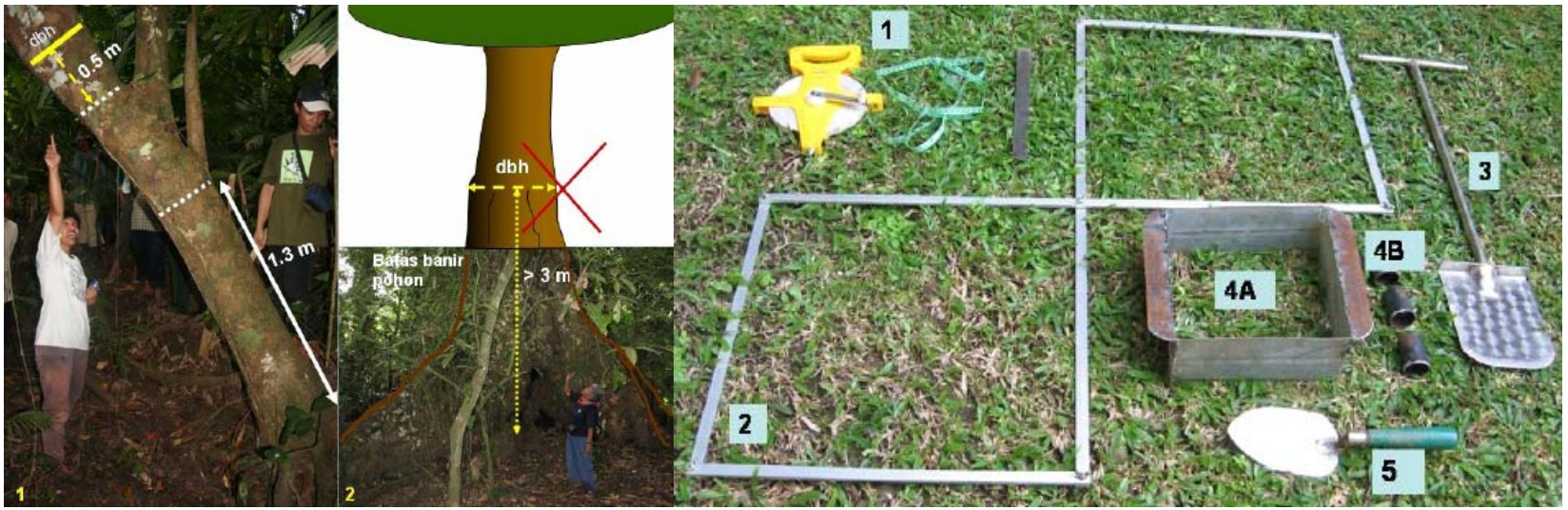


Remote sensing & ground truthing



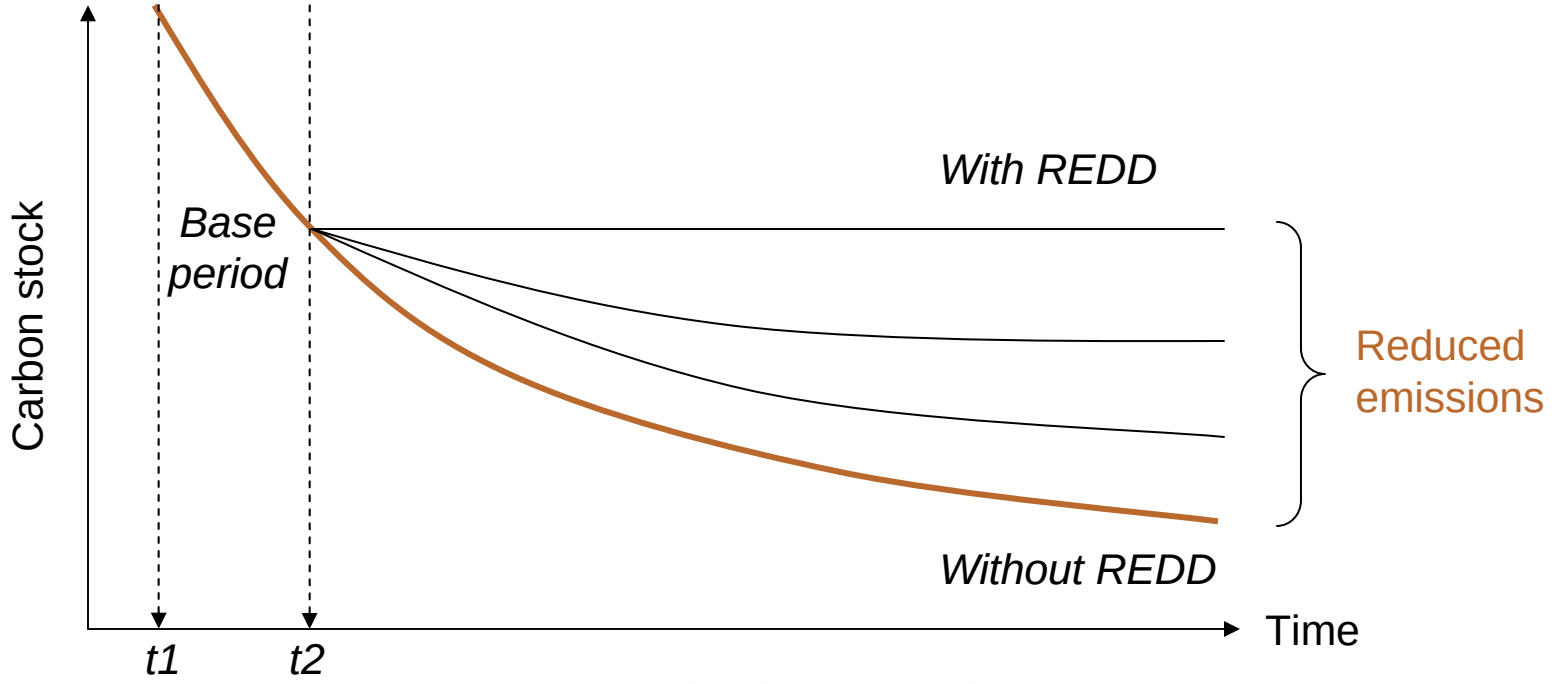
The challenges of ground-truthing





Source: Hairiah and Rahayu (2007)

Baseline(s)



- How long is the base period?
- When does it start?
- How long is it projected forward?
- What would be the target?

Historical baseline

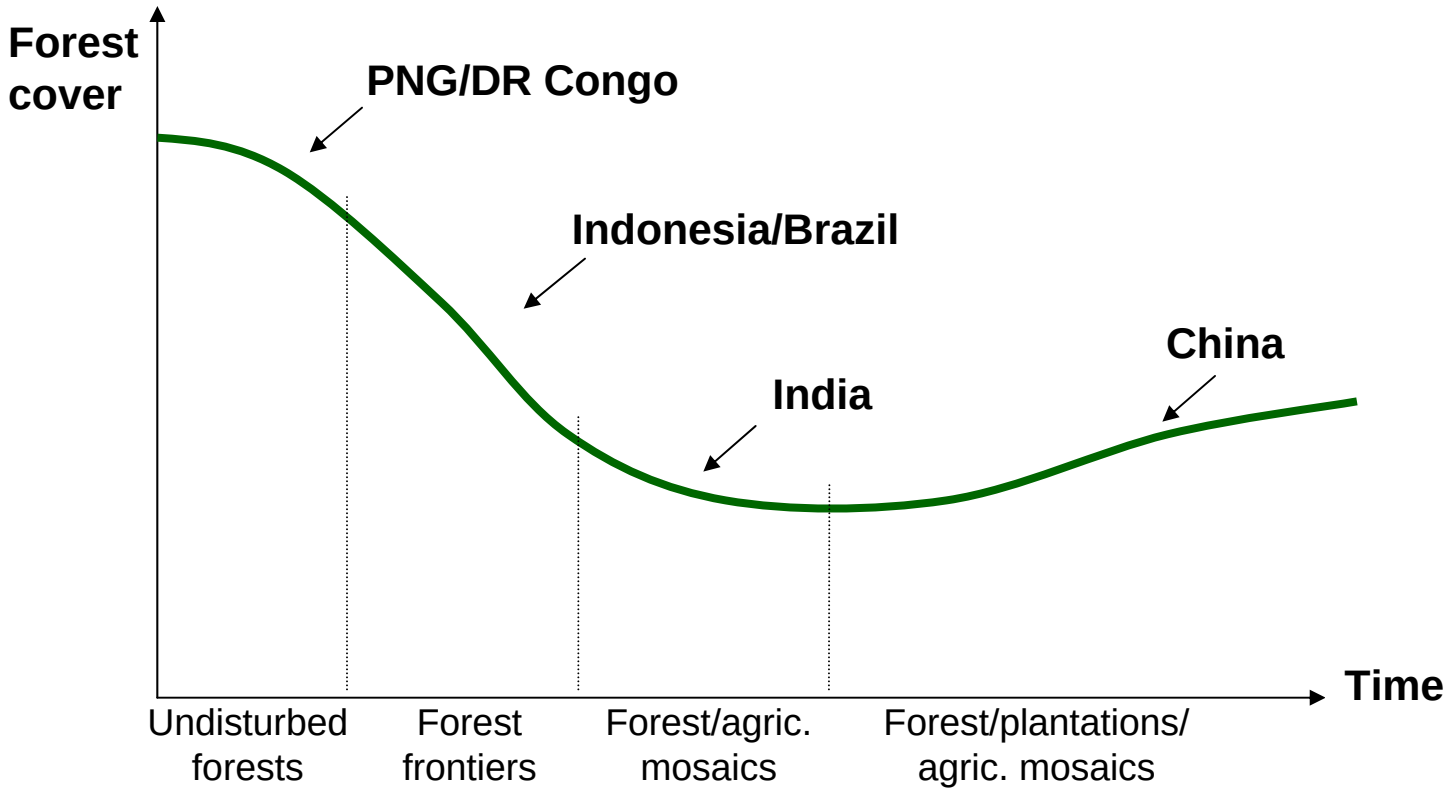
Image and Date	Forest cover	Deforestation rate (Mha/yr)	Reference
LANDSAT 1997	95,843,088	1.7	Holmes (2000)
LANDSAT 1998	95,628,800	1.8	WRI-FWI-GFW (1999)
SPOT vegetation 2000	103,793,886	1.2	JRC/EU (2000)

Model-based baseline

- Statistical approach: *e.g.* a rolling average of past emissions – trend analysis
- Standardized modeling tools which recognize economic, policy, geographic and other drivers – sub national baseline

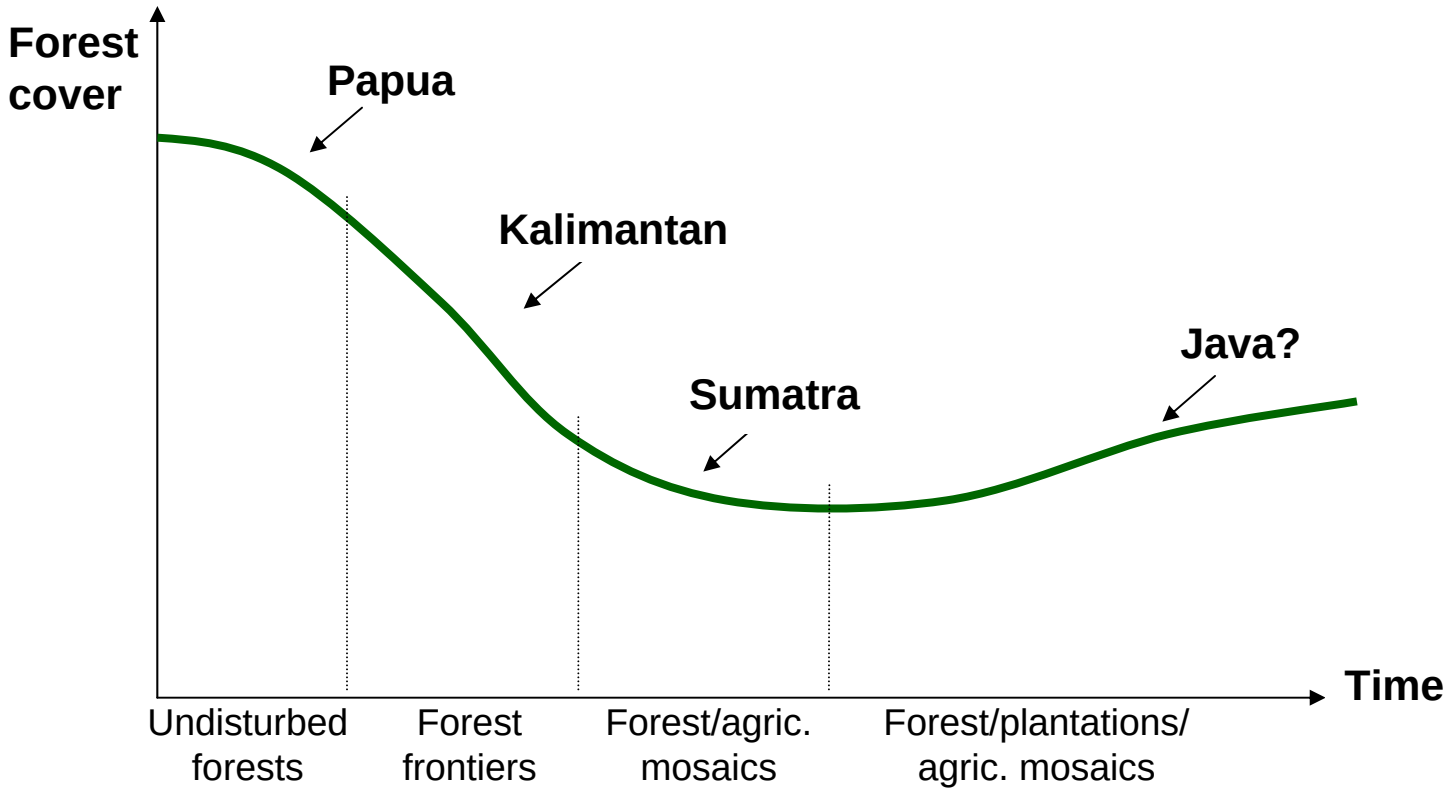
Baseline……? Balinese…..!

Forest transition



Adapted from: Angelsen (2007)

Forest transition



Adapted from: Angelsen (2007)

Concluding remarks

- The choice of satellite imageries implies transaction costs
- Ground-truthing could generate additional income and social capital
- Base period should be determined with transparent and credible manner
- Baseline can be used to establish emission reduction targets