

# The Kabar project

*Mapping of coral reefs using hyperspectral data: focus on bathymetric mapping;  
a case study: Fordata, Tanimbar, Indonesia*

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Information on the **bathymetric structure** of a coral reef is not only important to understand its **ecological functioning**; it also is necessary **baseline data** for the development of **marine protected area (MPA)** zoning plans.

Unfortunately, **conventional echo-sounding techniques** are difficult to implement in the shallow reef waters. Here, **remote sensing** brings the solution.

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## Field campaign

August-29 till September-10 2005

→ Collection of ground truth information:

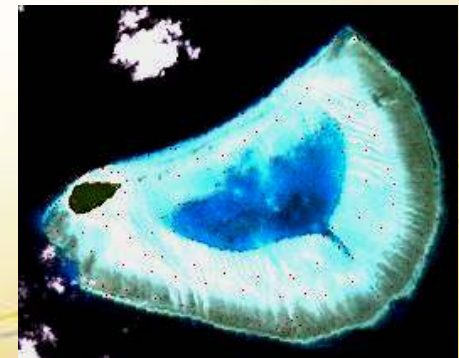
300 depth measurements (+ D-GPS post-processing)

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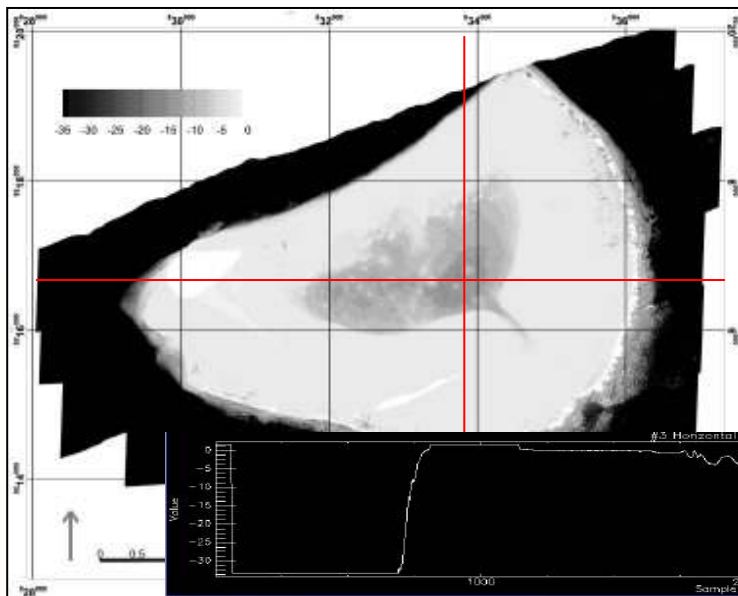
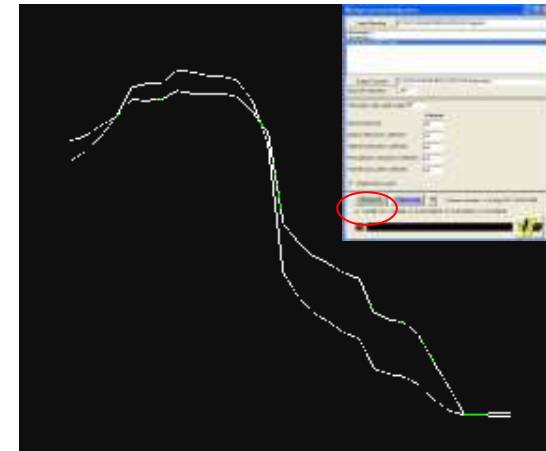
*AIS workshop, Bruges, Belgium, October 10, 2006*

Standard pre-processing of the data

Tidal correction of ground truth data (EasyTide)

Semi-analytical radiative transfer model of **Lee et al. (1998; 1999)**

**Iterative optimisation process** to derive depth and water column optical properties from hyperspectral data



Although some problems were encountered during pre-processing, a detailed bathymetric model, **up to a depth of 35m**, was obtained. When resampled to 28.5m and compared with independent in situ depth measurements, the result proved relatively **accurate** and **consistent** with the seabed topography.

The applied **semi-analytical model** appears to be an outstanding **generic methodology** to derive **detailed** bathymetric information on coral reef structures using **hyperspectral data**, **without** needing a **large set of ground truth data**.

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