Identification of Mosquito Larval Habitats using IKONOS Data

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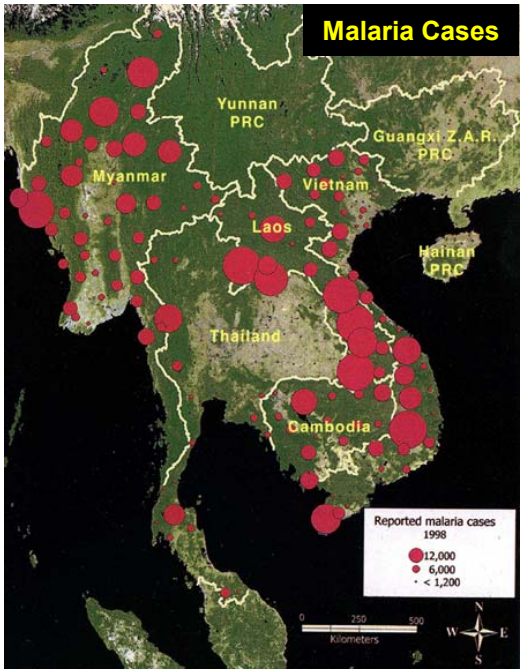
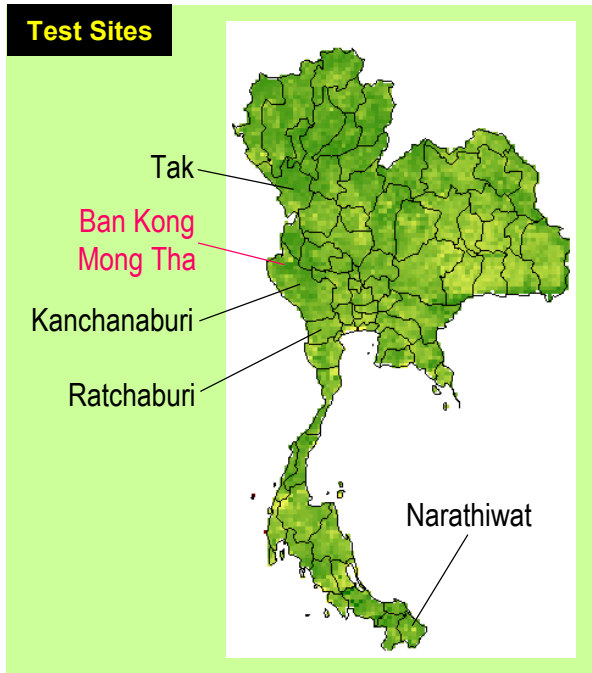
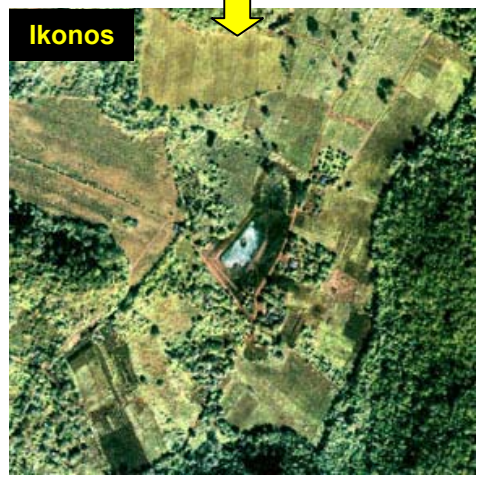
Mekong Malaria & Filariasis







Filariasis poster

Field work / Mahidol

Field work / AFRIMS

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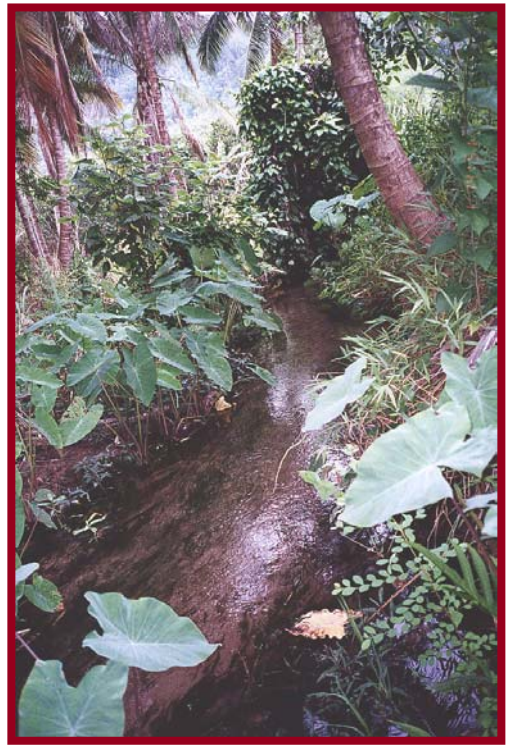
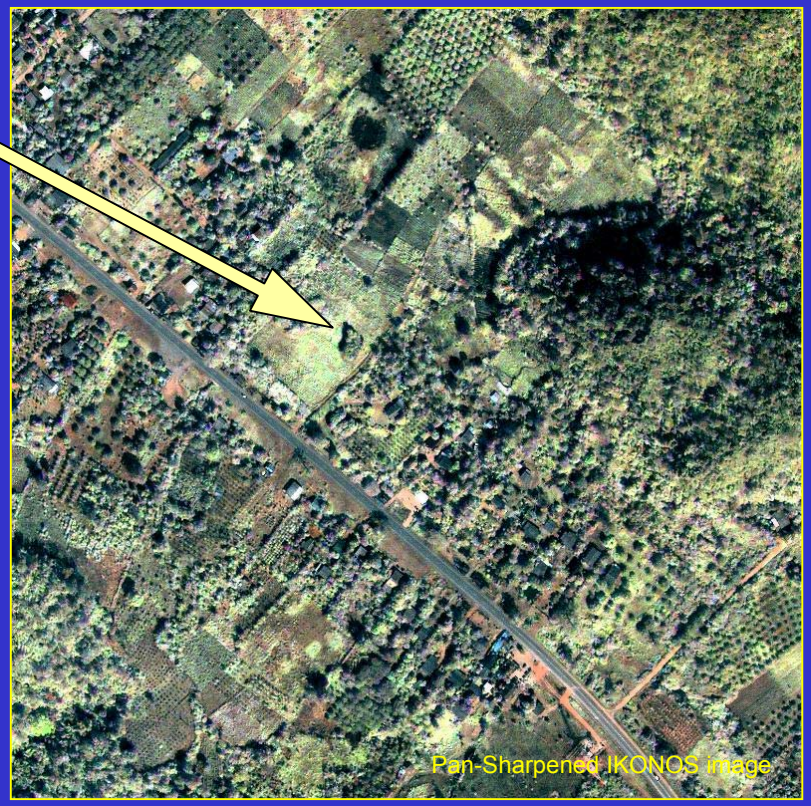
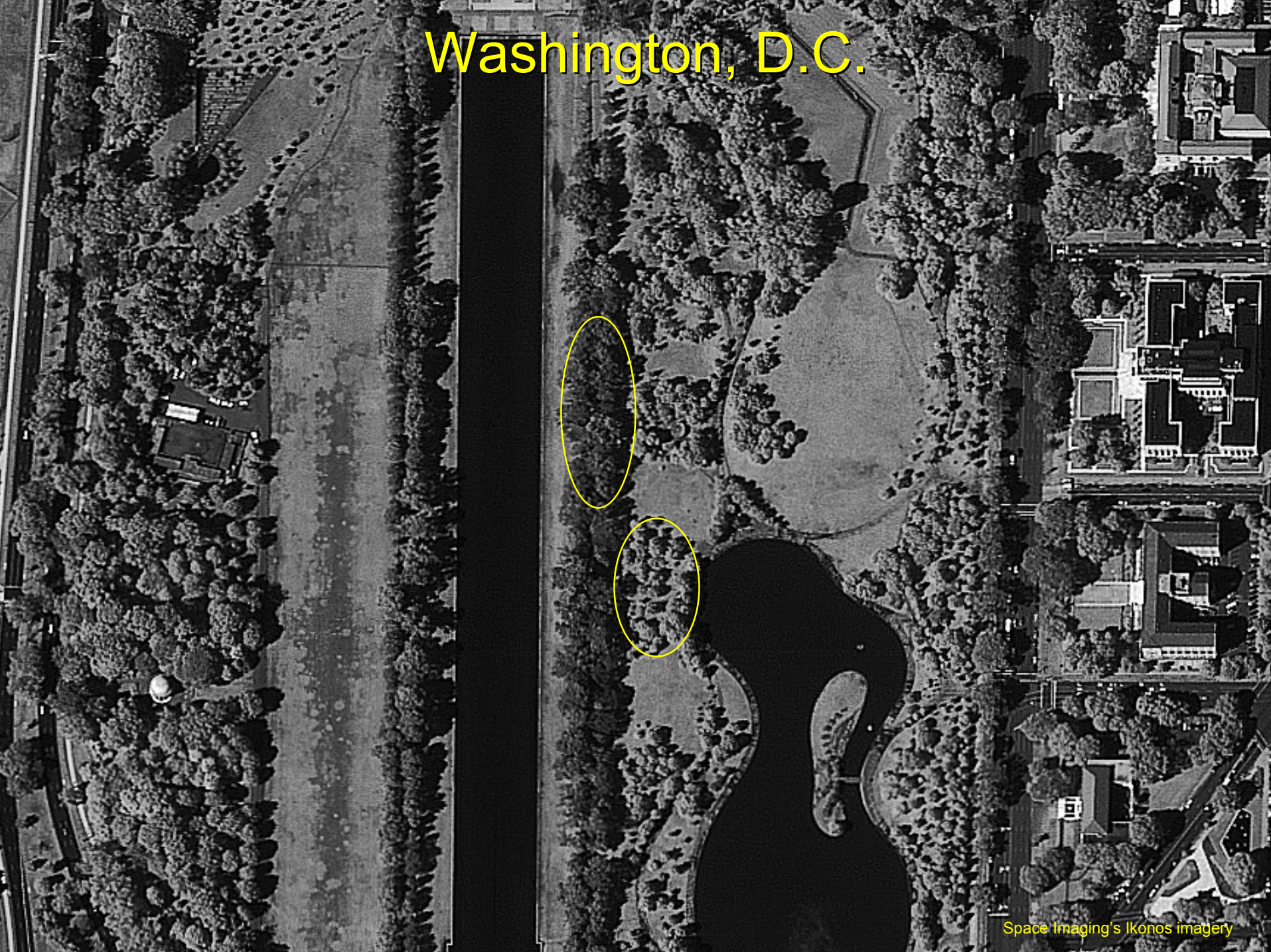


Bamboo Cups

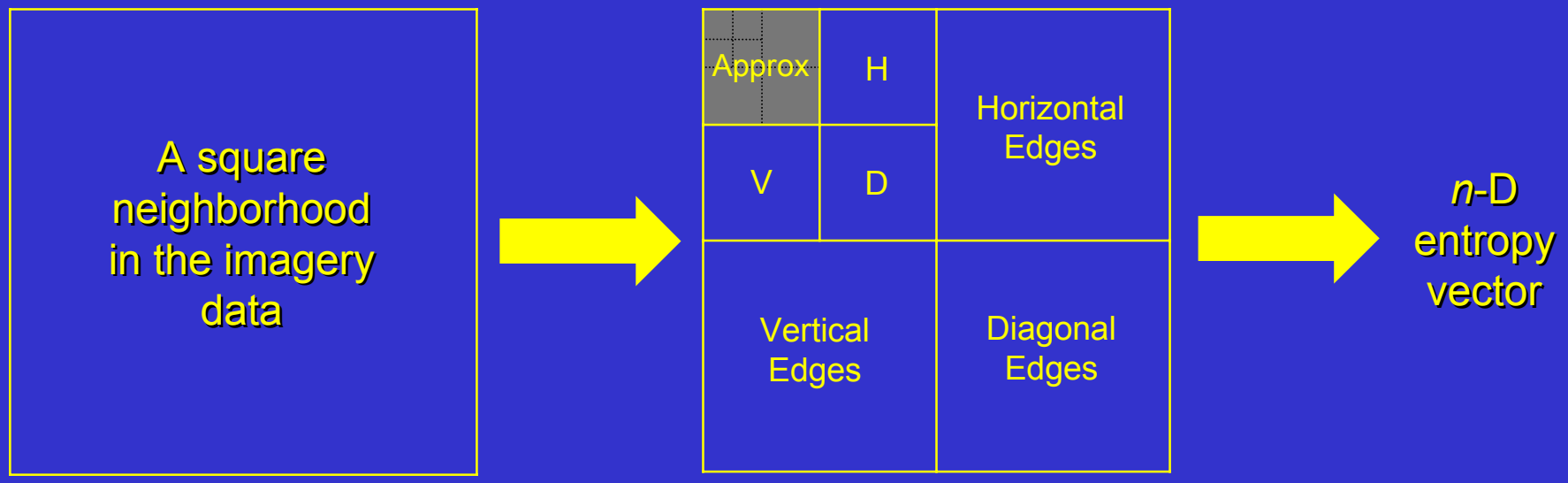
Kanchanaburi



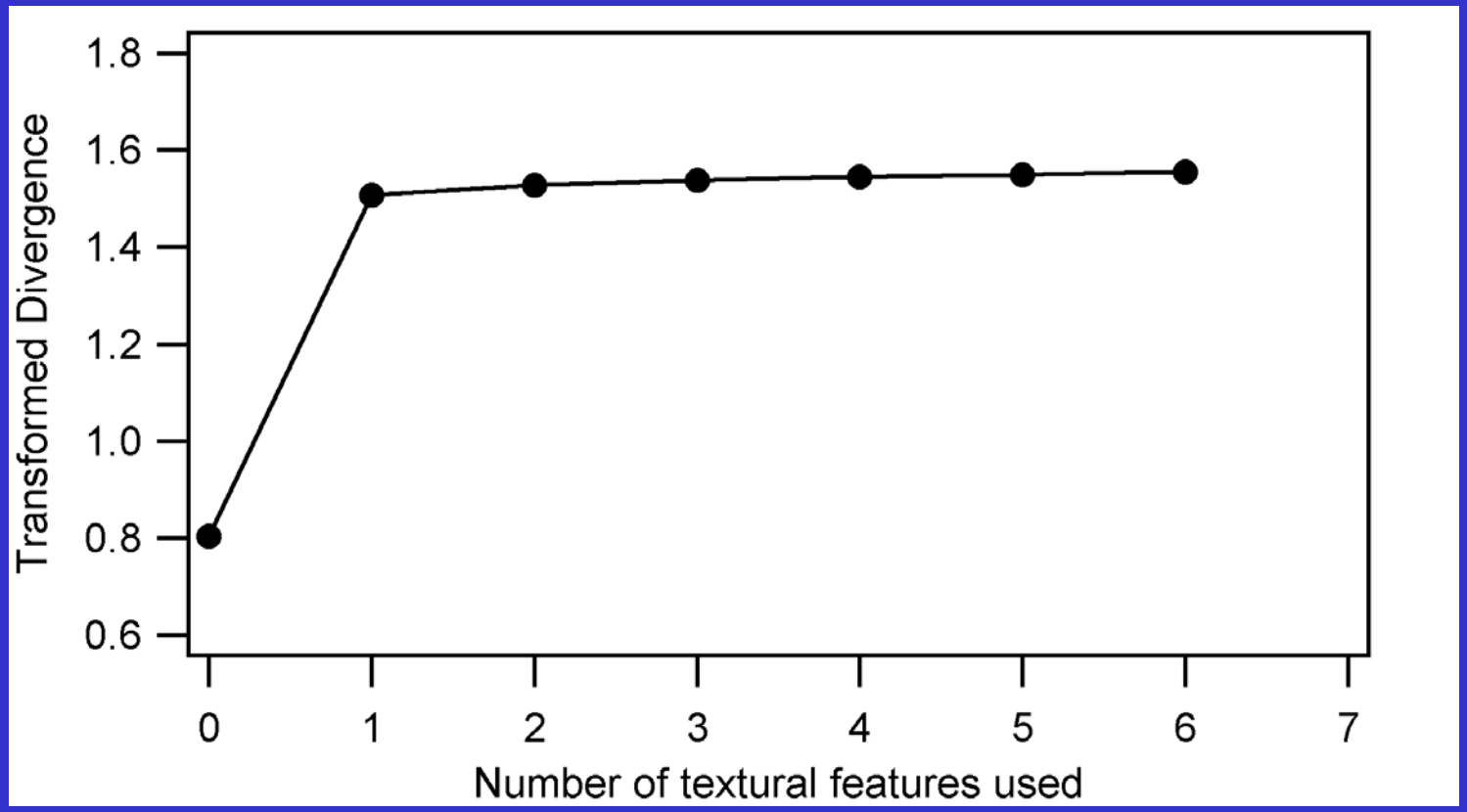
Washington, D.C.



Textural Feature Extraction using Discrete Wavelet Transform

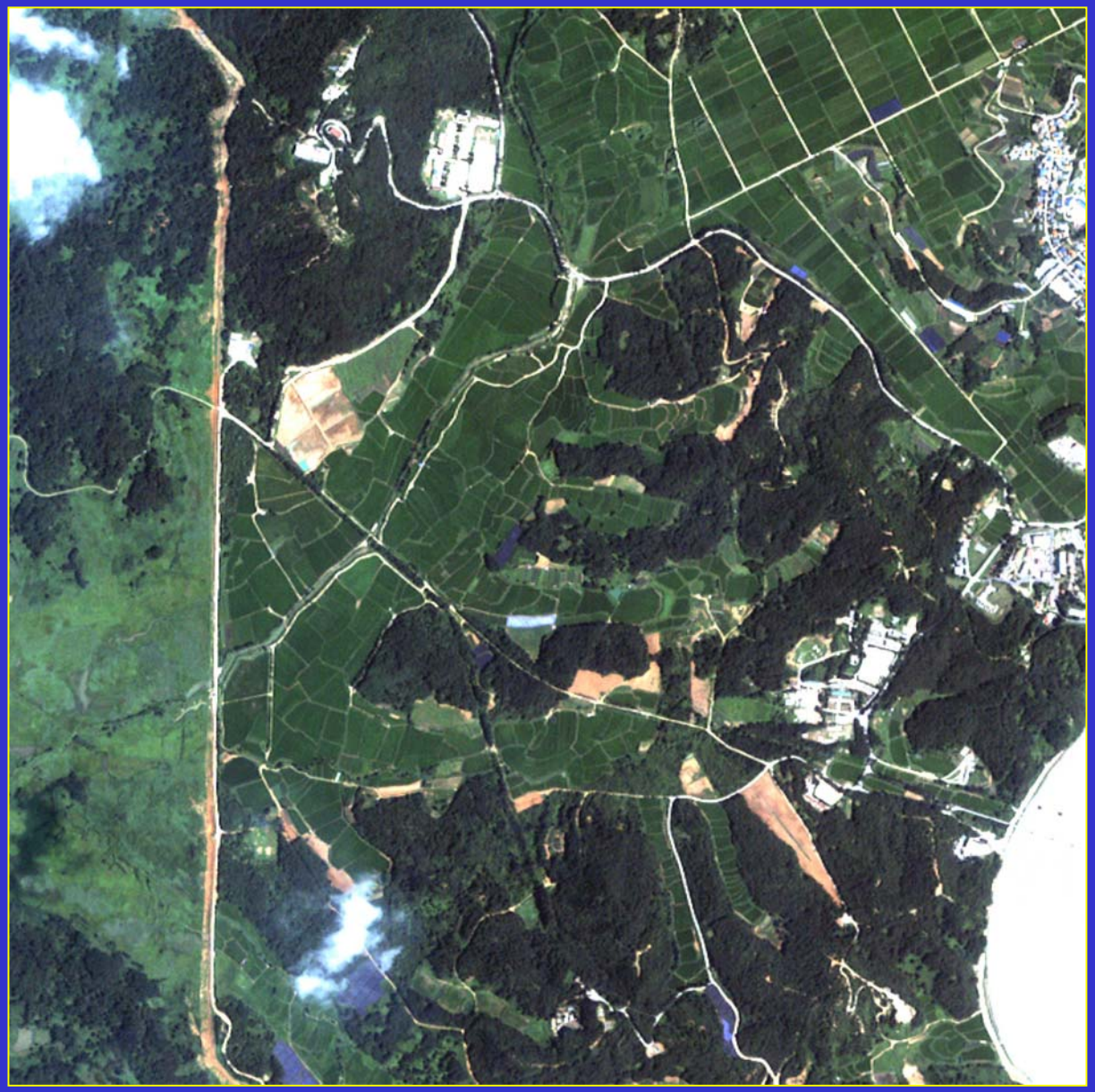


Class Separability with Textural Features Included



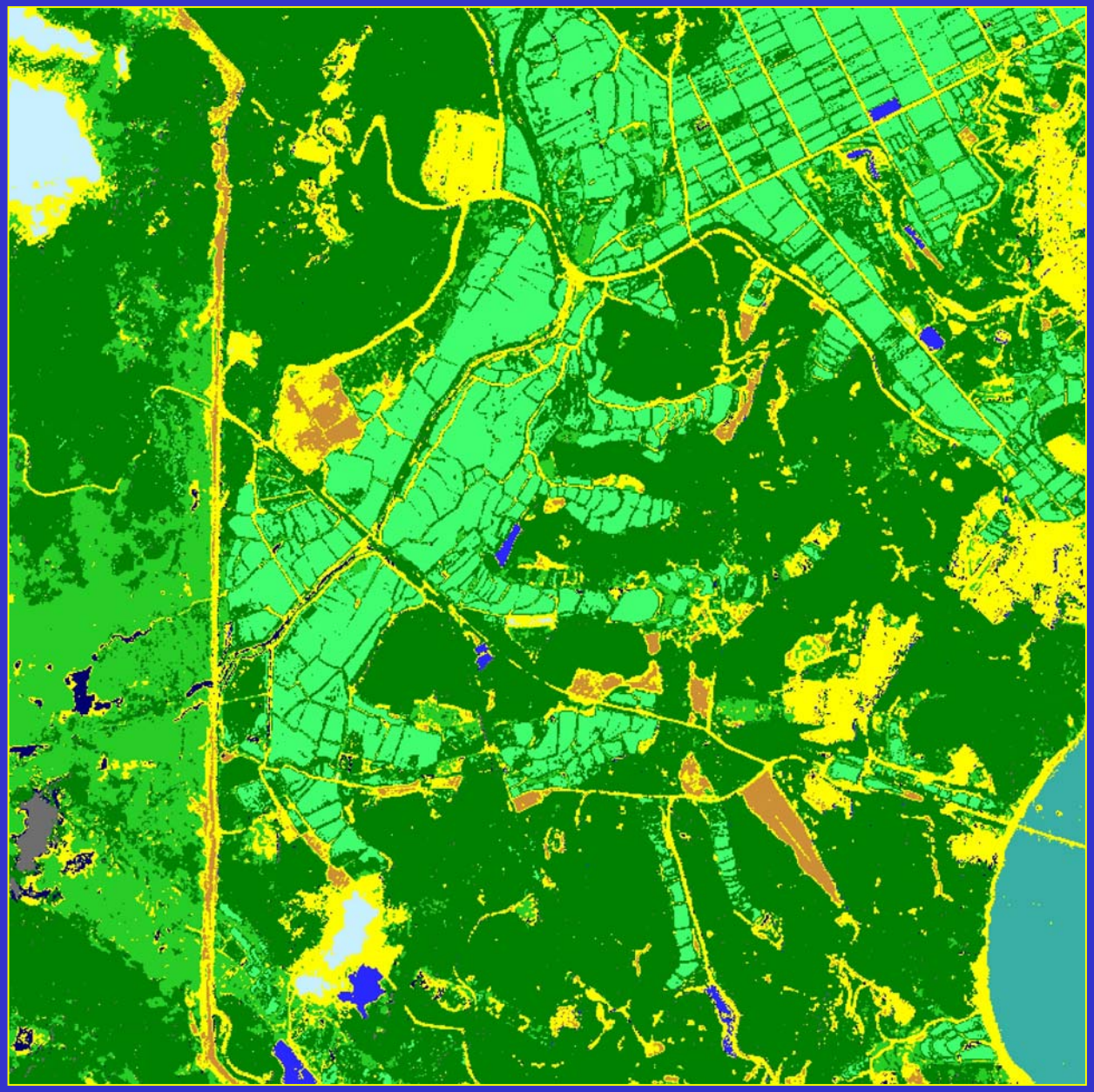
North Korea – Malaria Risk Map

Kyunggi, South Korea



Space Imaging's Ikonos imagery

Ground Truth



(R+G+B)/3

(N+R+B)/3

Panchromatic Intensity

Space Imaging's Ikonos imagery

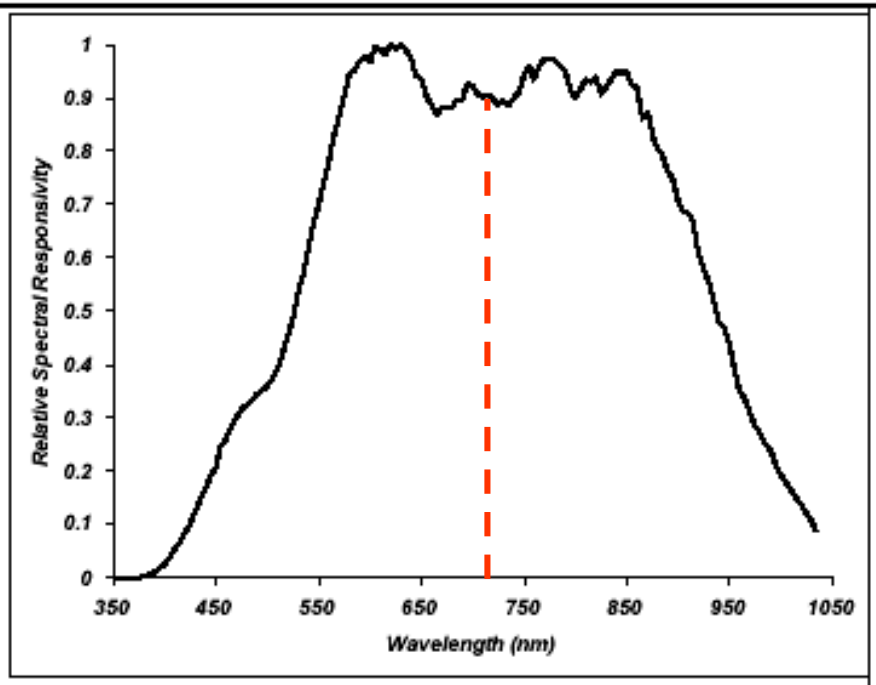


Figure 1. IKONOS Panchromatic Band Relative Spectral Response

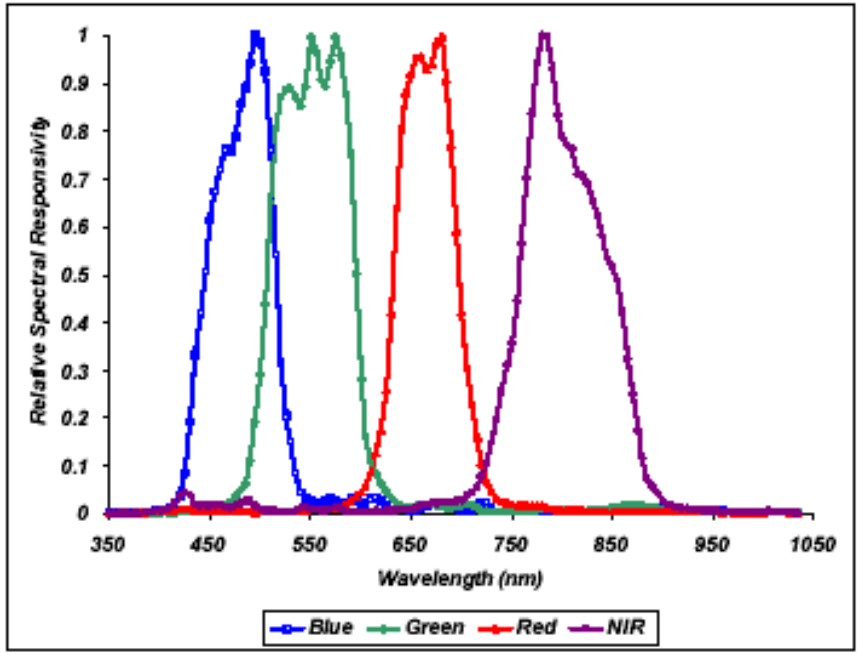
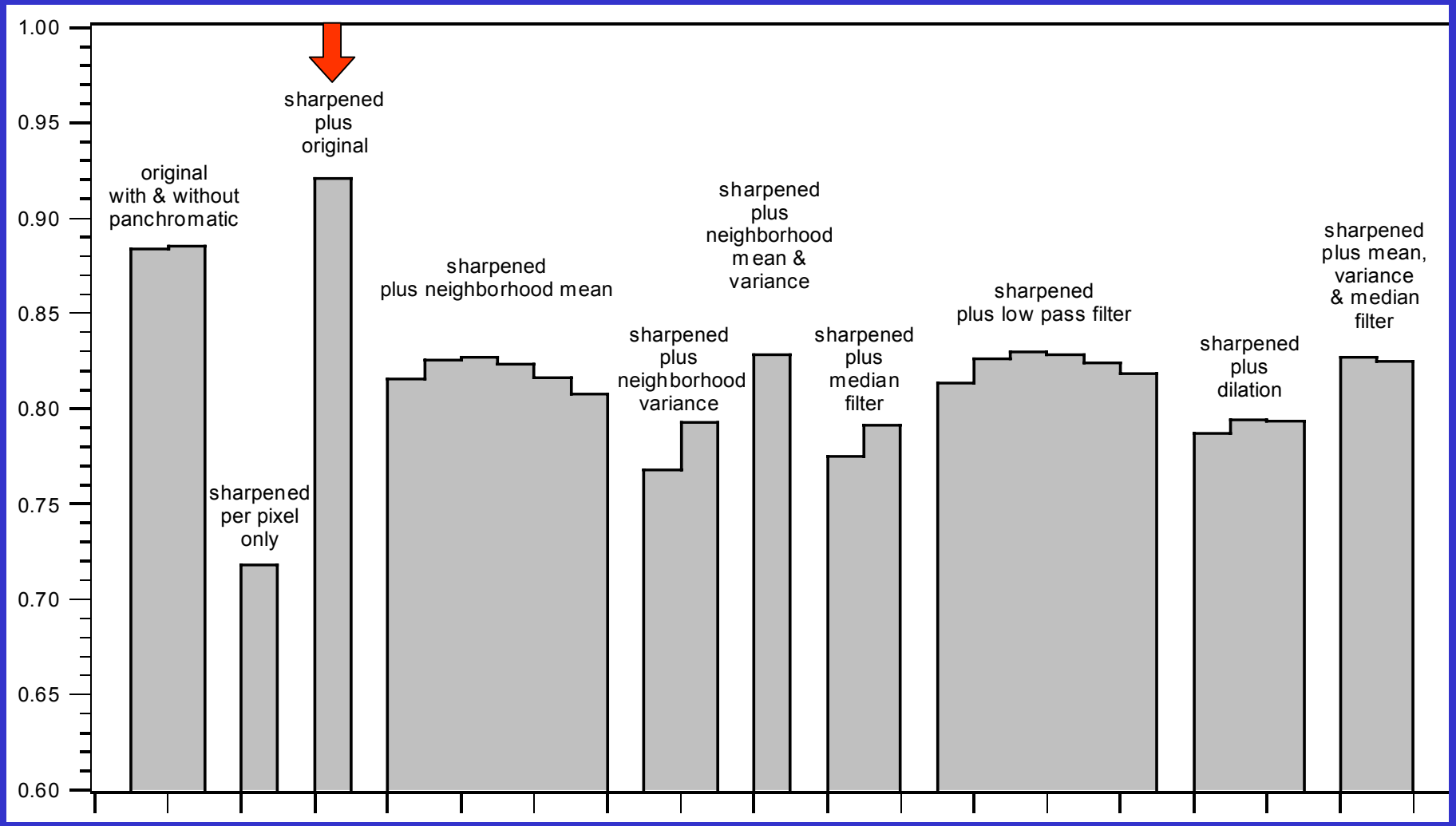


Figure 2. IKONOS Multispectral Band Relative Spectral ResponsesRadiometric Calibration

From Cook et al. "Ikonos Technical Performance Assessment" 2001 SPIE Proceedings, Algorithms for Multispectral, Hyperspectral, ..., p.94.

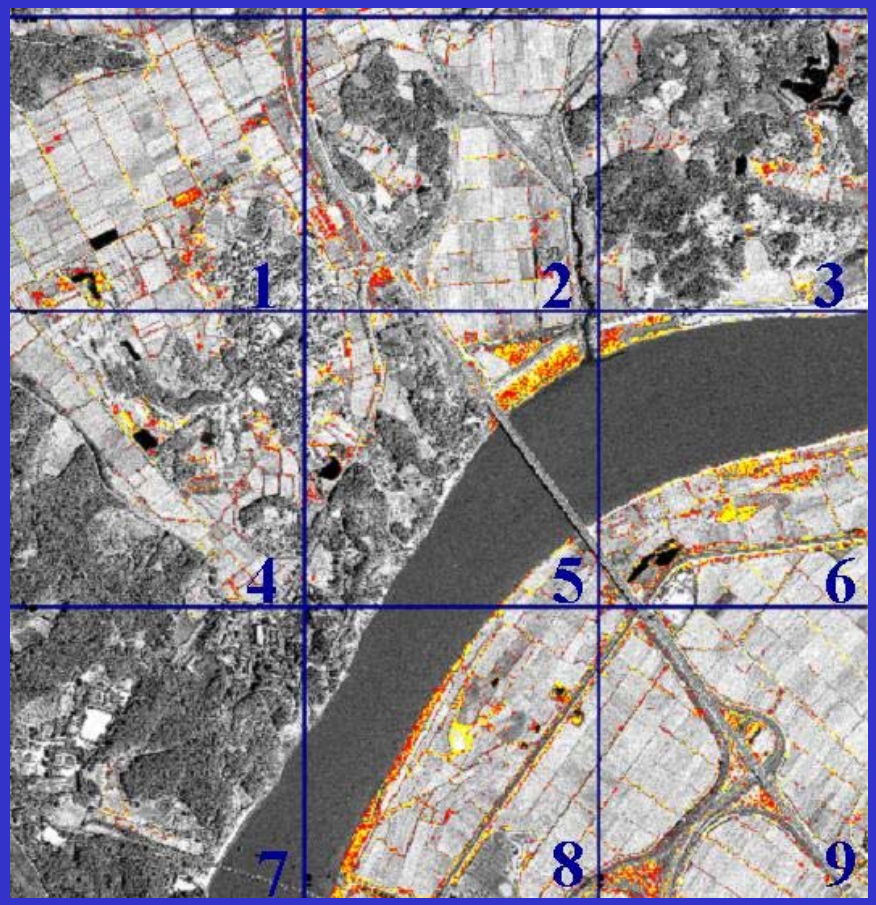
Overall Classification Accuracy using Pan-sharpened Data (1m Resolution)



Detection of Ditches

Space Imaging's Ikonos imagery

Detection of Ditches

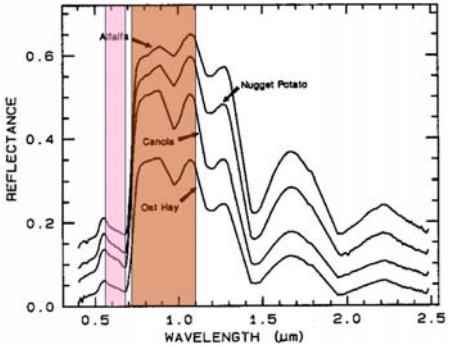


Space Imaging's Ikonos imagery

NDVI from AVHRR Measurements

NDVI = Normalized Difference Vegetation Index

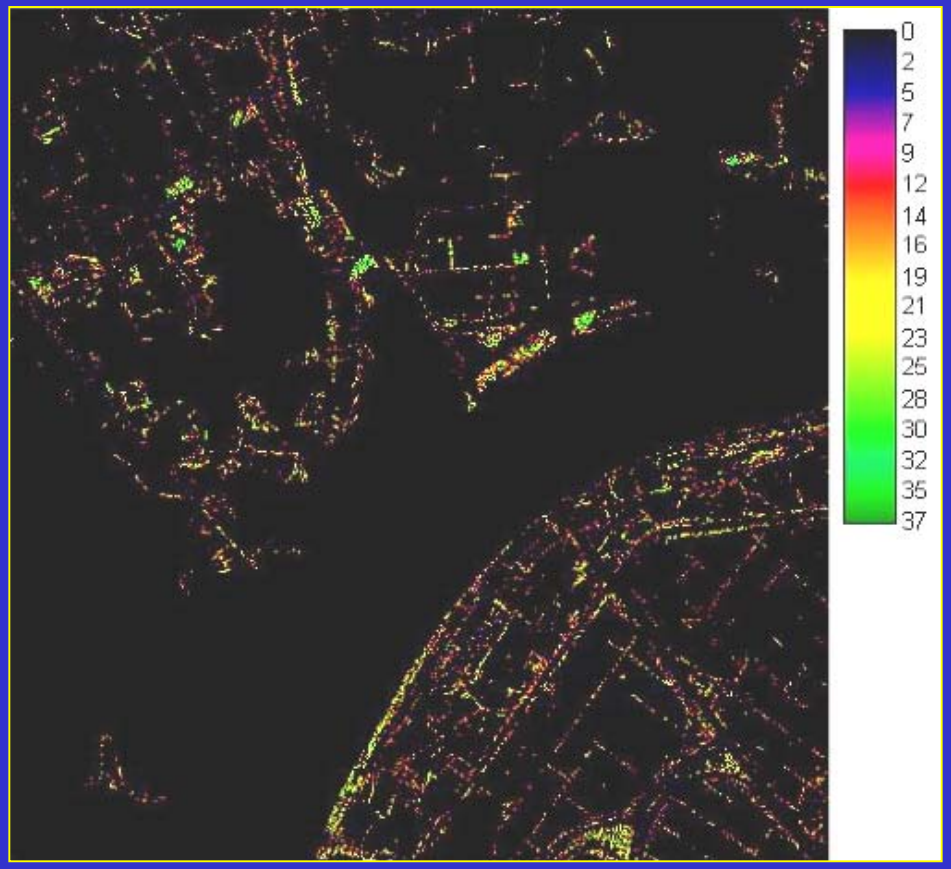
AVHRR = Advanced Very High Resolution Radiometer



- NDVI = (near infrared – red) ÷ (near infrared + red)
- Can be used to infer ground cover and rainfall.
- Can be derived from other sensors as well.

Compiled by NOAA/NESDIS for Feb. 13, 2001

Post-Processing with Class Frequency Filters



Space Imaging's Ikonos imagery

Conclusions

- Pan-sharpened Ikonos data can be used to detect irrigation and drainage ditches, which are the important larval habitats for *Anopheles sinensis* that carries *Plasmodium vivax.*

- Pan-sharpening enhances visual cue, but it may also make clusters in feature space more diffused. This may result in lower classification accuracy in per-pixel classifications.

- Per pixel classification alone does not fully utilize the potential of pan-sharpened data. With spatial characteristics included, classification accuracy may surpass those for unsharpened data.

Acknowledgement

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