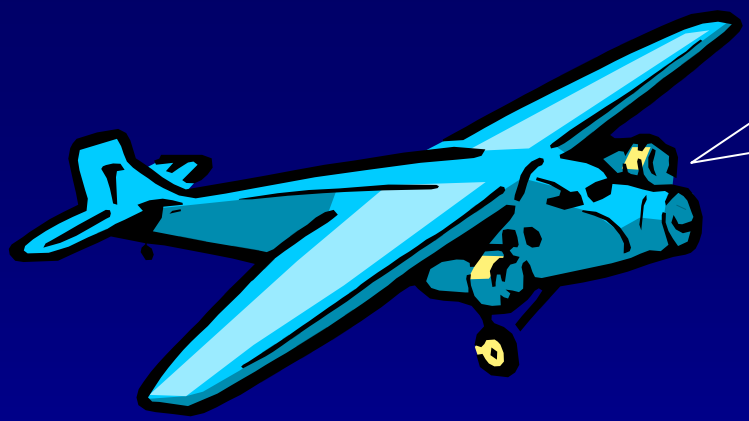

Create a benthic community type map of Aitutaki lagoon based on integration of field data and satellite image analysis.

Habitat Maps

- A habitat is the place where a particular species lives or biotic community is normally found, and is often characterised by the dominant life form (e.g. seagrass bed habitat) or physical characteristics (e.g. sandy intertidal habitat).

- Benthic habitat maps are designed to be used to understand and predict moderate depth (~10 - 20m) benthic habitats for different organisms that inhabit coral reef ecosystems.

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Field component

Planning areas for transects

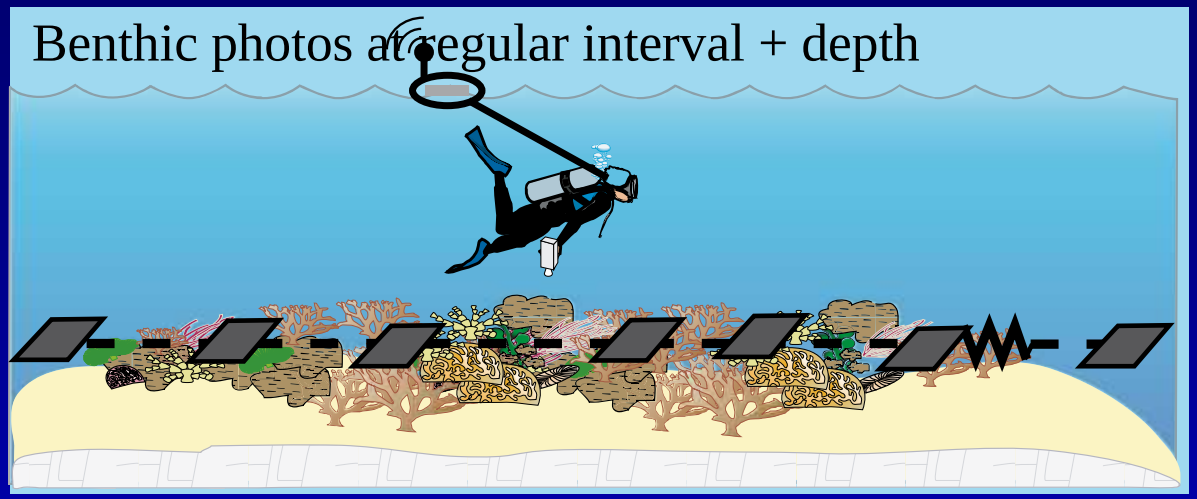
Getting control points for geo-rectification

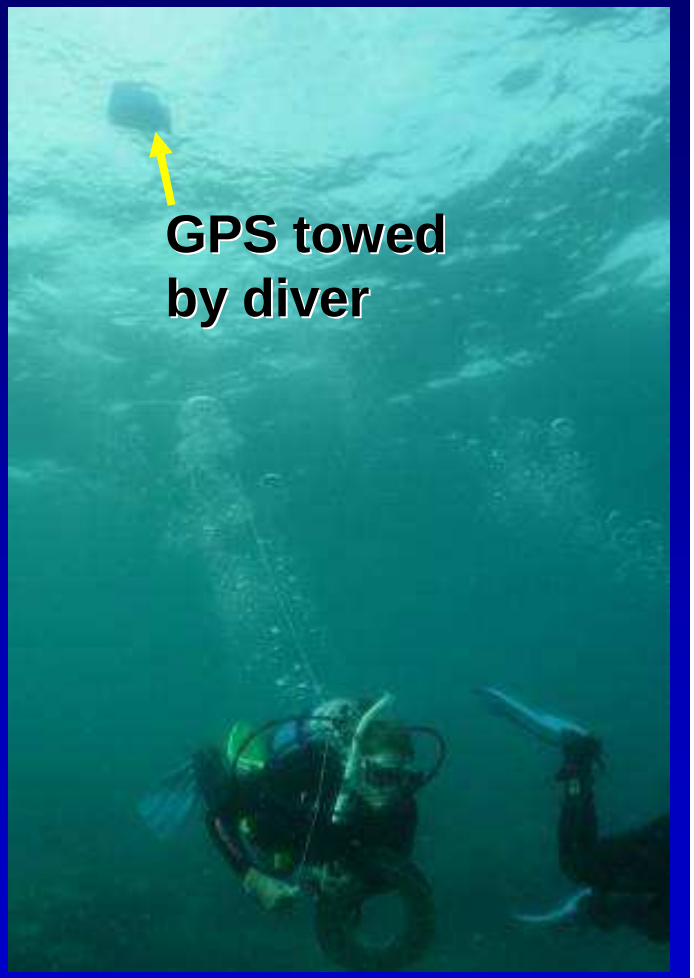
The actual field work

SOPAC

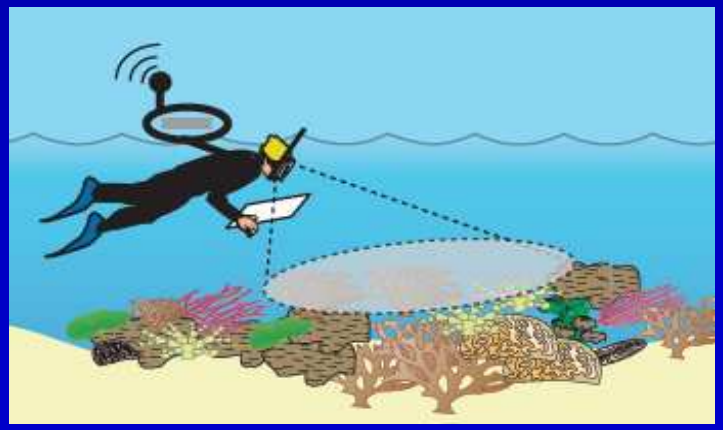
Field Data Collection

Photo Transect





Spot Check



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Field Data Analysis

Photos and GPS track are downloaded and GPS-Photo Link software used to generate a co-ordinate for every photo by referring to the time it was taken.

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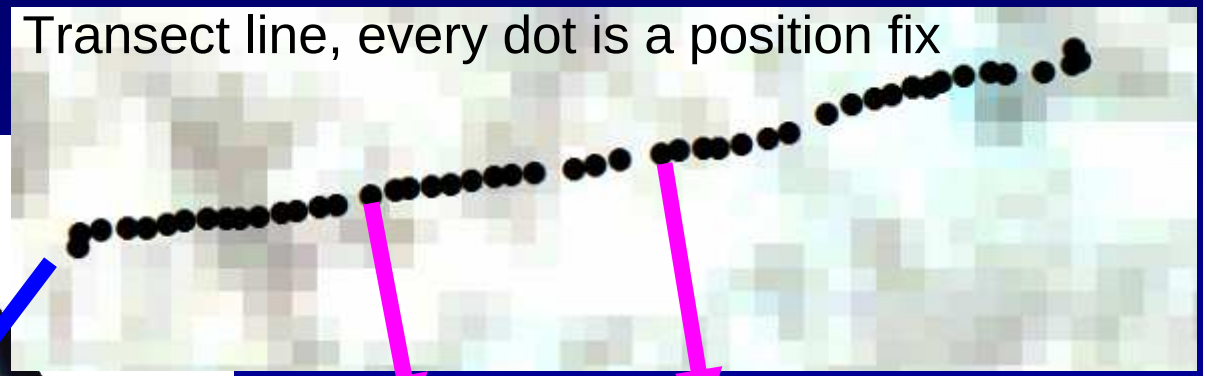
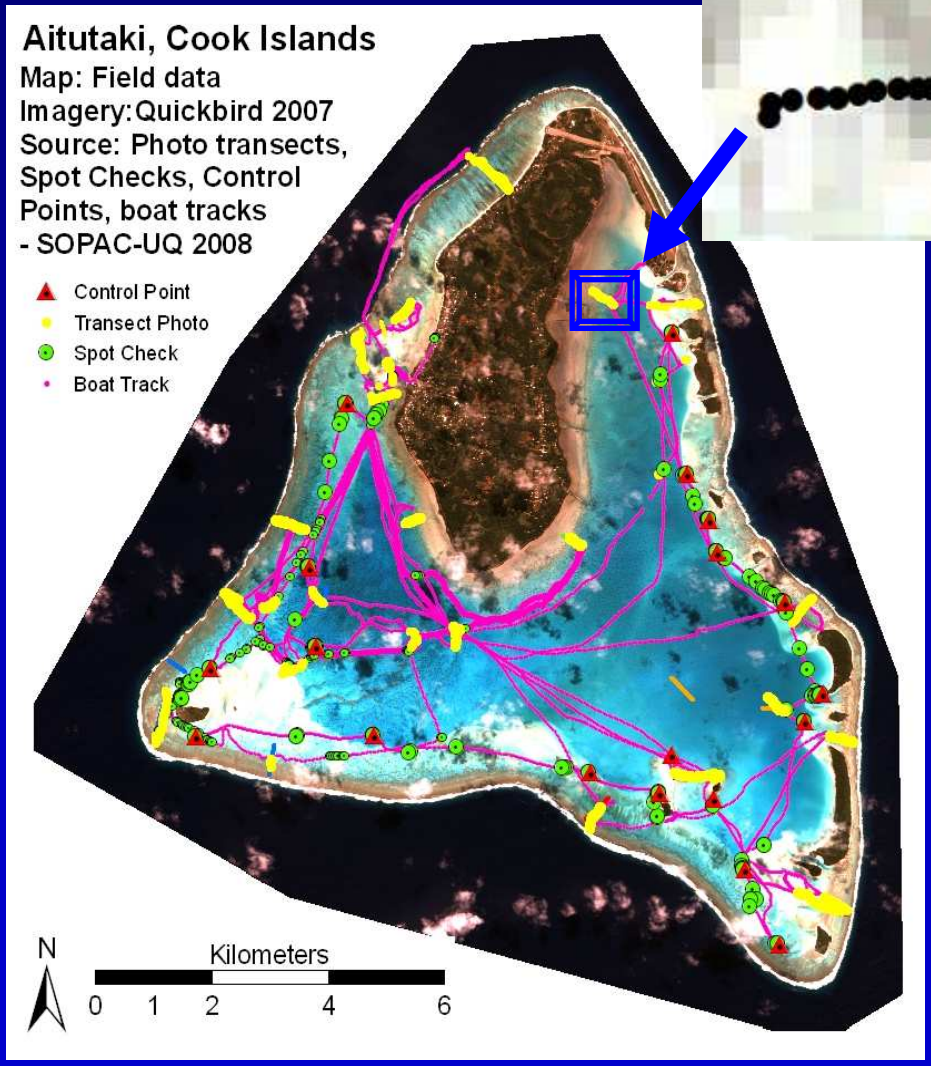
Office component

Transect line, every dot is a position fix





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Categorising photos via CPCe

AL	Algae
ALRO	Algae and Rock
ALRU	Algae and Rubble
ALSD	Algae and Sand
BSRO	Rock
BSRU	Rubble
BSSD	Sand
LC	Live Coral
LCAL	Live Coral and Algae
LCDC	Live Coral and Dead Coral
LCRO	Live Coral and Rock
LCRU	Live Coral and Rubble
LCSD	Live Coral and Sand

Using CPCe, each photo was labeled with 1 out of 32 options (e.g. coral, algae, sand, coral and rock etc)

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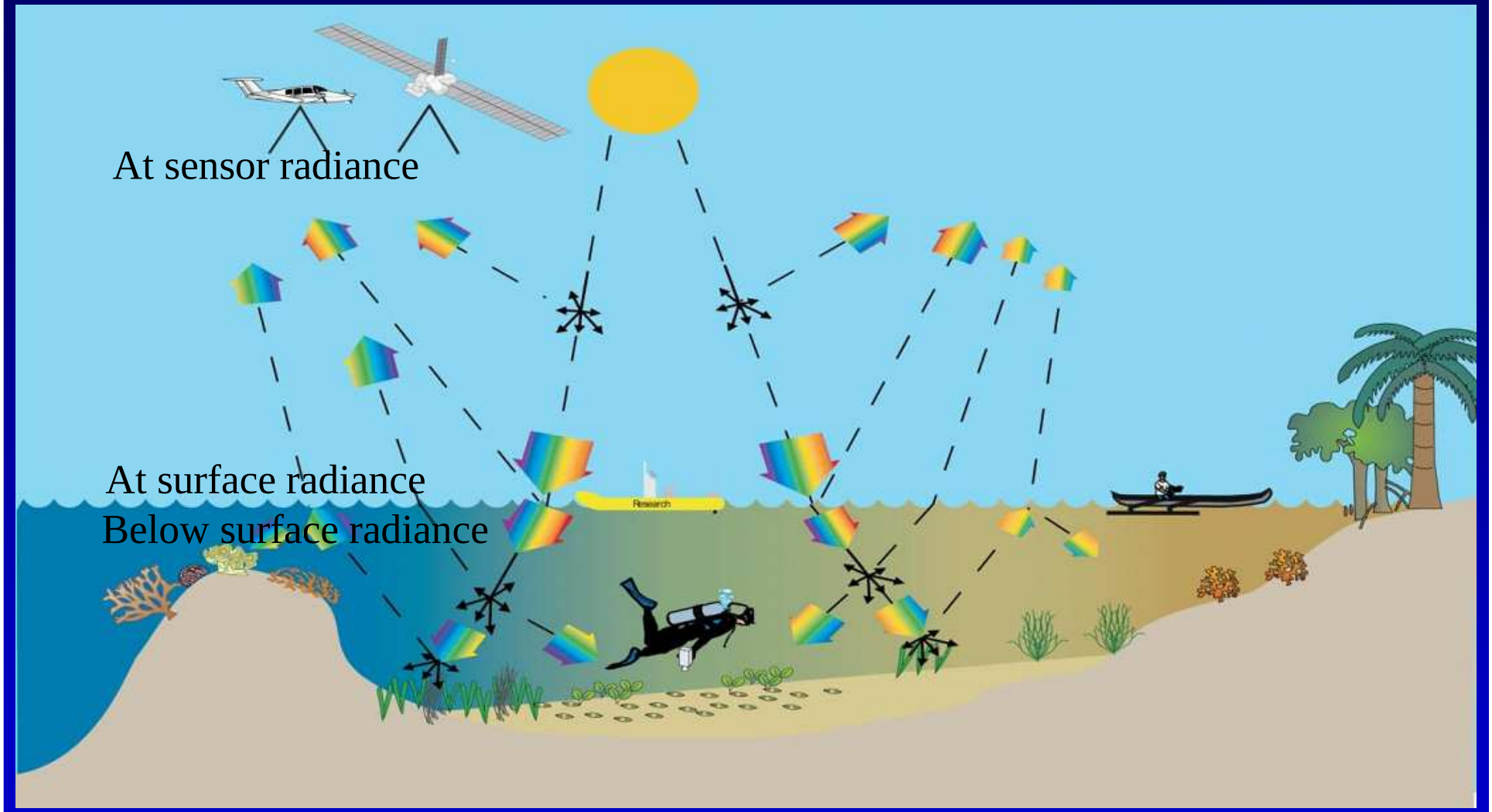
Marine Remote Sensing



- Convert to at-sensor radiance
- Dark pixel correction
- Reduce sun-glint

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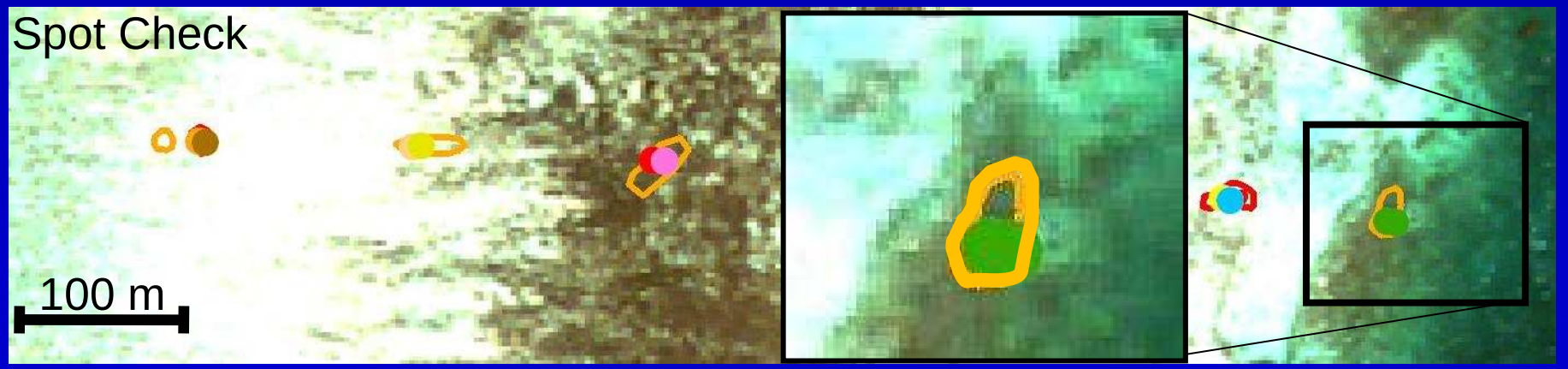
Creation of areas of interest

- Data point is labeled with map category based on its composition
- Data points (& photos) + image colour & texture, are used to create areas of interest (AOI)



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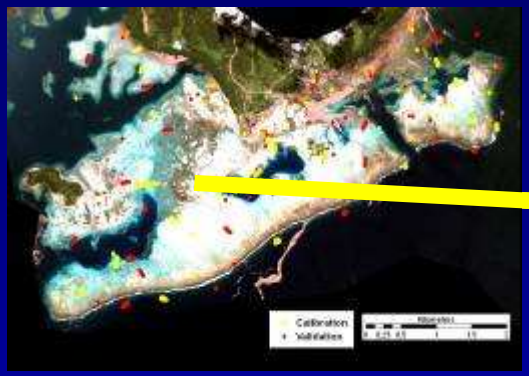
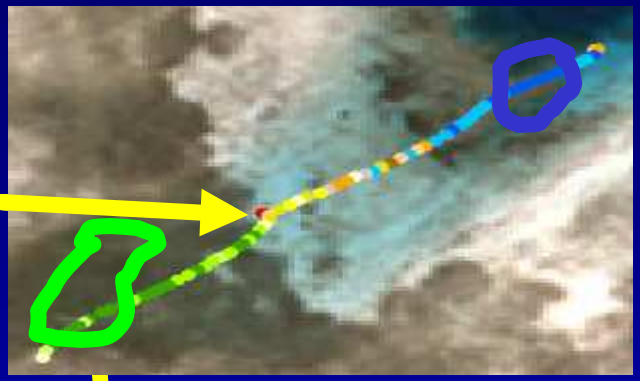
Supervised classification

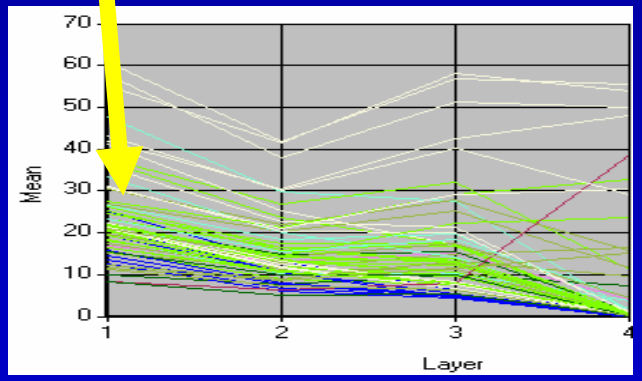


Calibration Data
(50% of AOI's)



Selection of training areas

Image Data

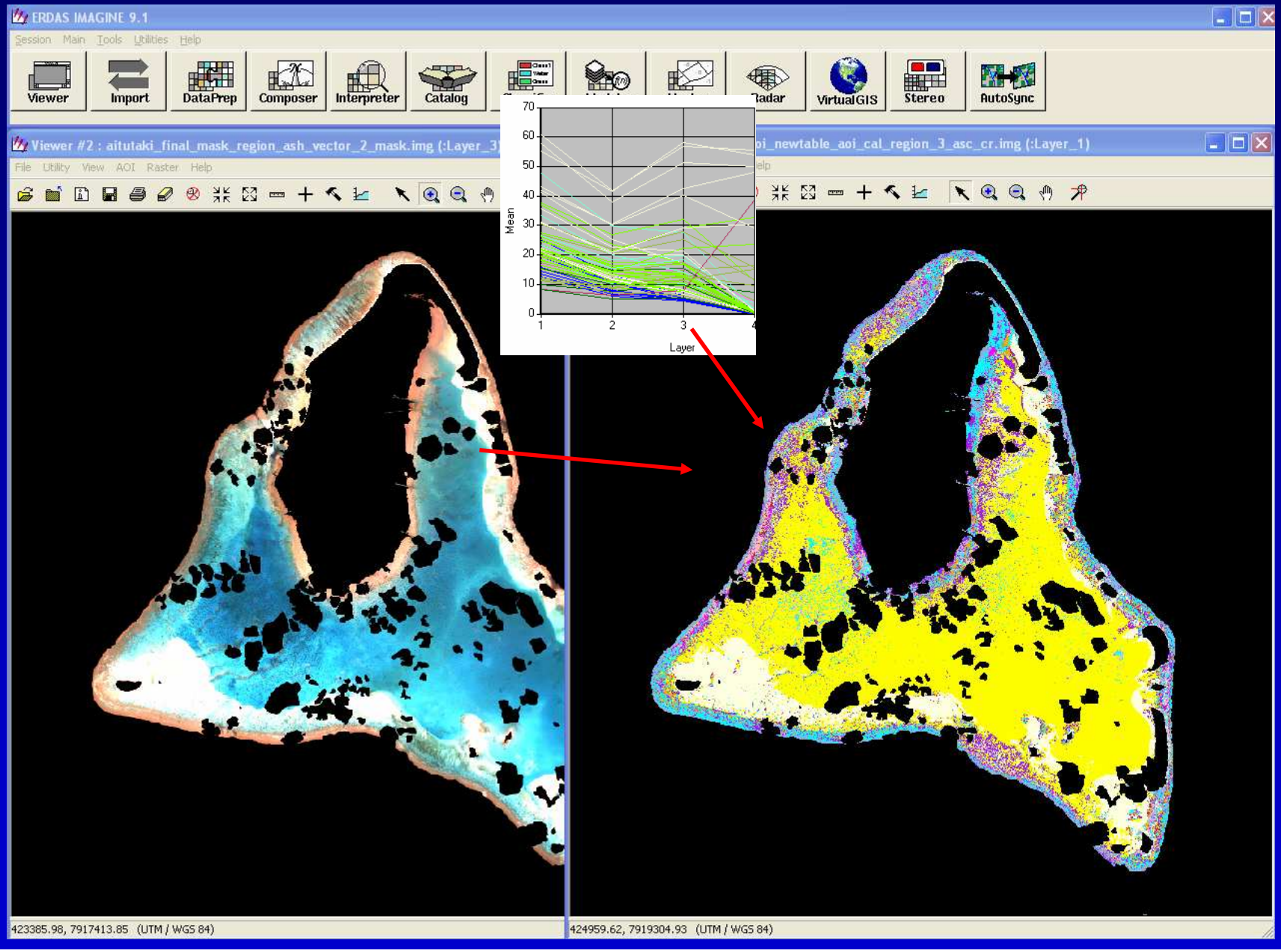


Extraction of signatures for each training areas

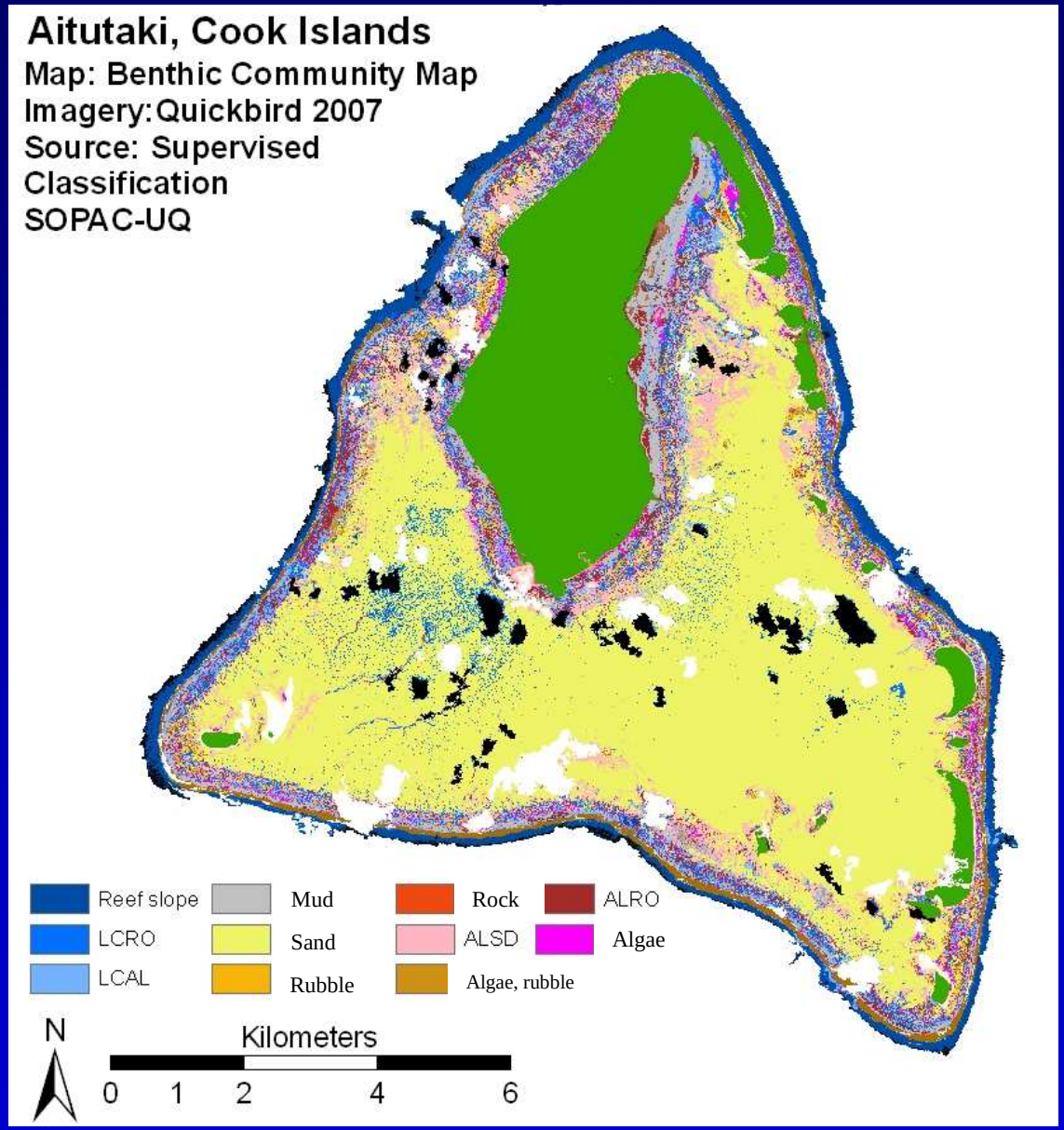
AOI's - Signatures

- *Assessment*
- *Merging*

Supervised classification



Outcome



- Accuracy assessment

Map scale 1:20 000

Map with accuracy of 60%

To be used in conjunction with a hydrodynamic model to see how water levels will affect different habitats.

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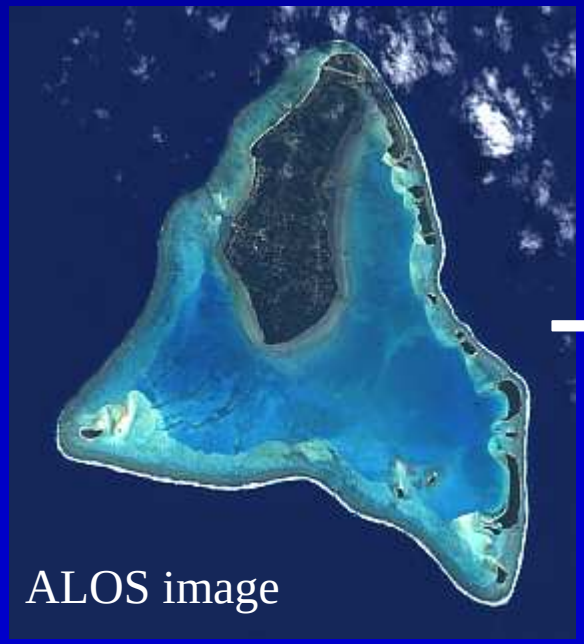
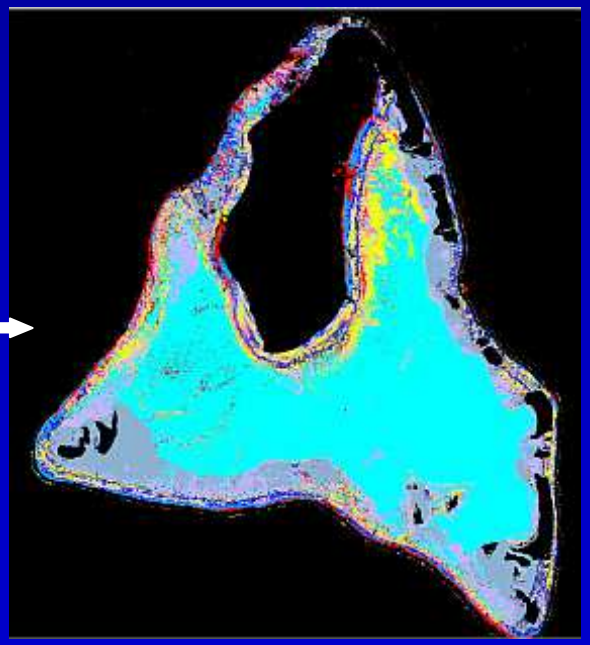
Conclusion

HABITAT MAPPING

- Characterisation of the seabed serves as baseline information for ecosystem-based management and sustainable resource extraction.
- Habitat maps have multiple uses: coastal development, conservation, tourism, fisheries, etc.
- Repeatable for monitoring purposes.
- List of users and benefits is growing with distribution of datasets





- ALOS Image
- Cheaper
- 10m pixels compared to Quickbird 2.5m pixels
- Low costs for repeatability

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