What is a Landscape Mosaic?

A mosaic is a single large image, created by combining numerous smaller overlapping images, each covering a portion of the total area. This technology provides the clarity and resolution of individual pictures as well as a "landscape" view of the seabed.

What is a Landscape Mosaic?

1. Easy-to-use diver-based platform
2. High-resolution images
3. No tagging required
4. Reduced bottom time (~1 hour for 200 m²)
5. Coral colonies can be monitored without tagging

Technical Approach

1. Using an integrated camera system (video+ still) acquire down-looking imagery in a lawnmower pattern ~2m above bottom.
2. Use algorithms to match features in sequential images to estimate camera motion.
3. Refine the motion estimation by matching non sequential images.
4. Produce mosaic by blending contributions from the individual frames. (See above)
5. Integrate still images with mosaic products to provide a landscape view(A) that users can click to acquire colony-scale (B) information. Further zooming of these images (B right), allows detailed examination of colony health and identification of bottom types.

Linking Reef Ecology and Reef Mapping

Landscape mosaics provide a photographic record of the damage that can be georeferenced and used to measure the size of the injury (150 m²).

Mosaics can also be used to characterize the benthos in/out of the injury and track changes through time using repeat surveys (encroachment of seagrass between 2005 (A) and 2006(B) is shown above).

Contributions to Coral Reef Resource Mapping and Monitoring

- Provides photographic record of the state-of-the-reef
- Creates an unparalleled baseline to assess future reef changes
- Establishes an unbiased record for reef mitigation
- Promotes public awareness of reef health

Publications


For more information visit: www.rsmas.miami.edu/groups/reidlab