

# Inter-Disciplinary Study of Flow Dynamics and Sedimentation Effects on Coral Colonies in Faga'alu Bay, American Samoa

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# Project Outline

- Purpose: Assess the susceptibility of the coral reefs in Faga'alu to land-based sources of pollution
- Approach
- Oceanographic circulation study
  - Wave Tide Recorders on forereef and backreef
  - ADCPs on Ocean and Mountain Side of Bay
  - Coral Coring for Historical Coral Stress Data
- Benthic characterization
  - Conduct comprehensive underwater surveys for benthic cover and coral condition along forereef and backreef
  - Implement time series of photographic surveys to document potential change



# Outcomes and Deliverables



- Benthic Surveys
  - Provide preliminary understanding of the sediment effects
- Oceanographic Analysis
  - Calculation of Residence Times
  - Flow and Current Regimes
  - Provide Data to UH for Hydrographic Modeling.
- Sediment Investigation
  - Determine Run-Off and Sedimentation Calculated in Collaborative Effort with SDSU.

# Study Area



# Faga'alu Water Circulation



# Faga'alu reef

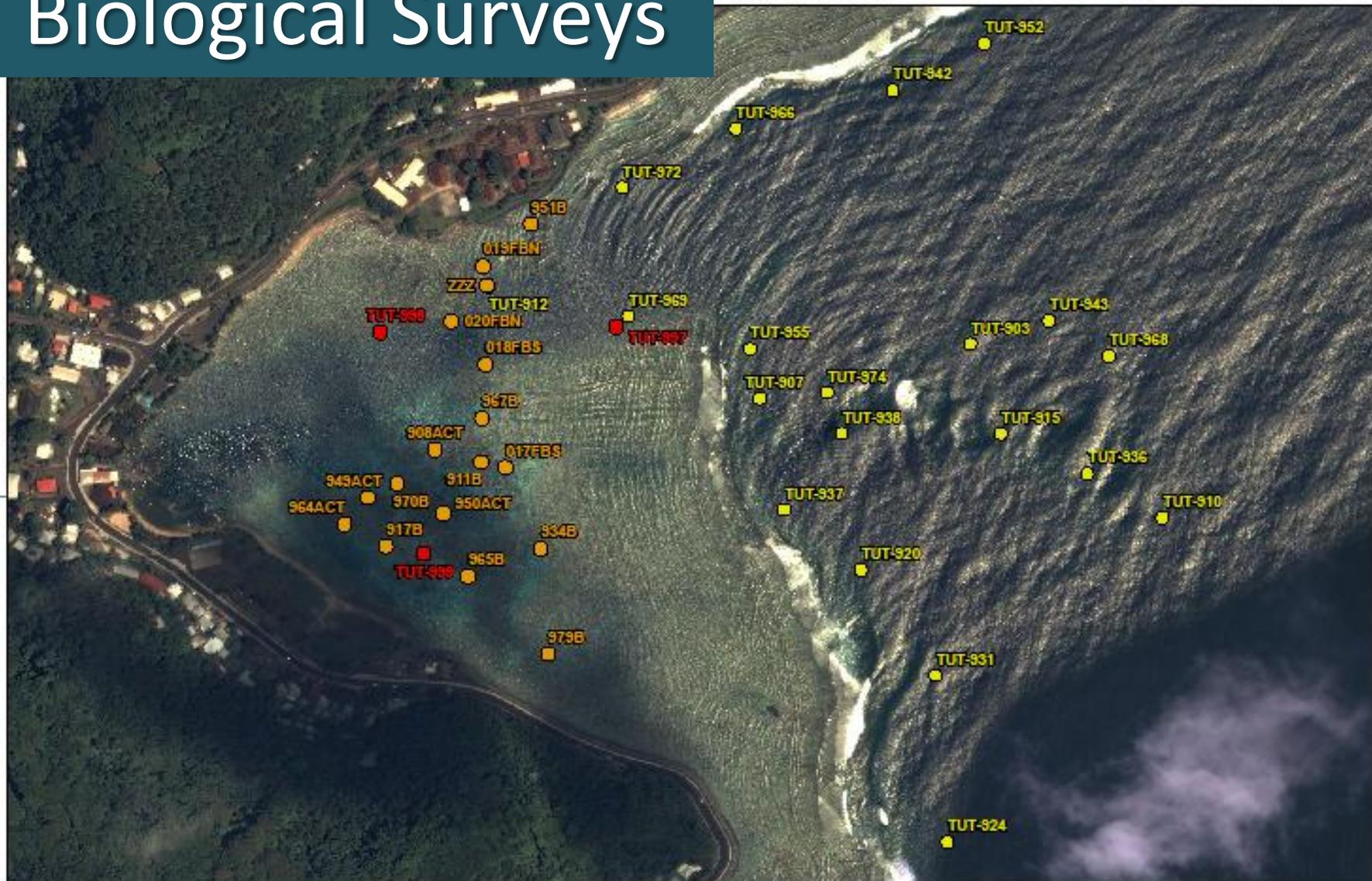
South



North

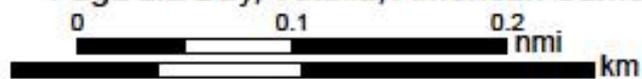


# Biological Surveys



- 2012Aug\_Fagaalu
- Permanent Transects
- Benthic Surveys

## Benthic Rapid Ecological Assessment Surveys Faga'alu Bay, Tutuila, American Samoa

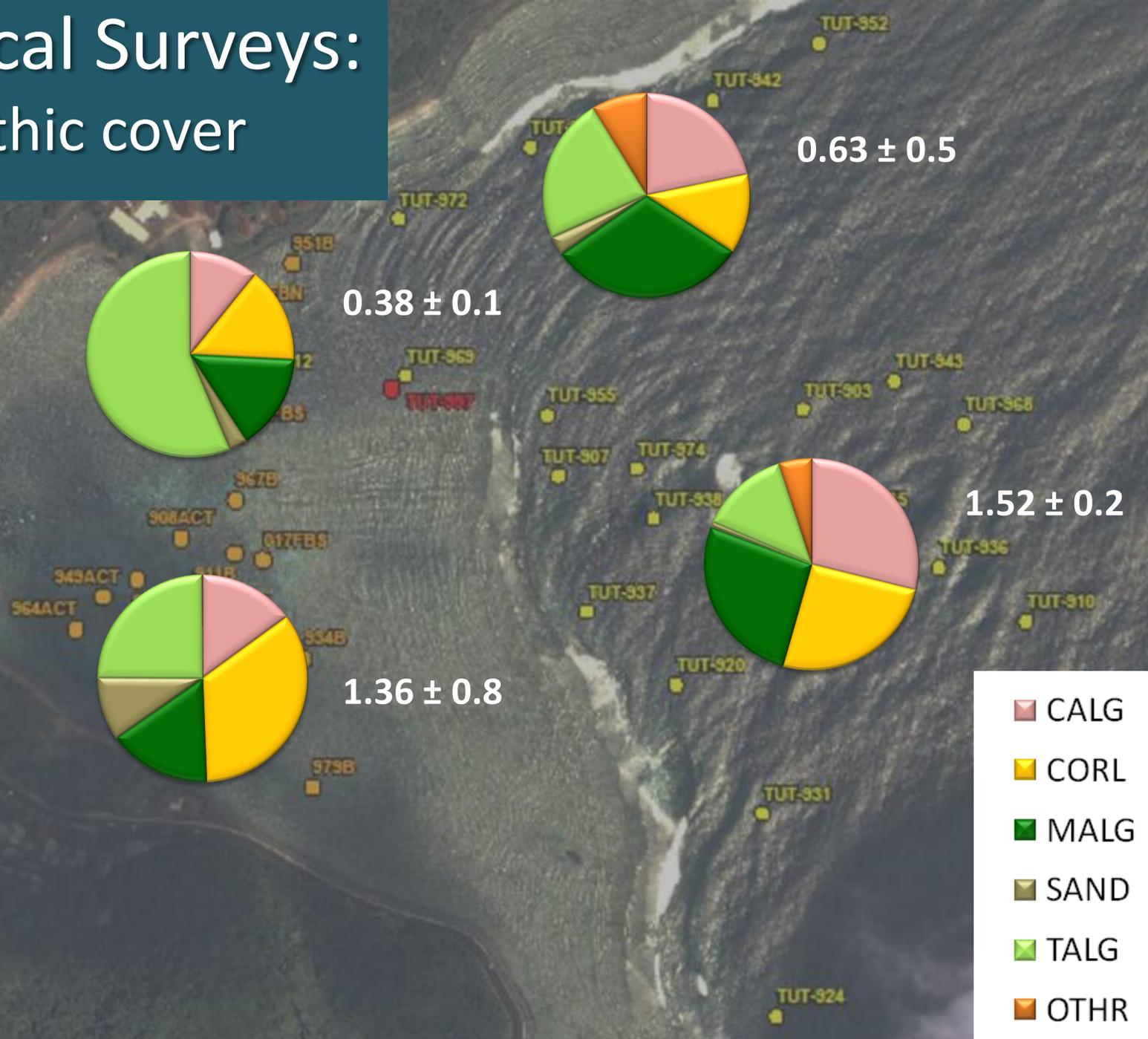


Geographic Coordinate System  
Datum: WGS84

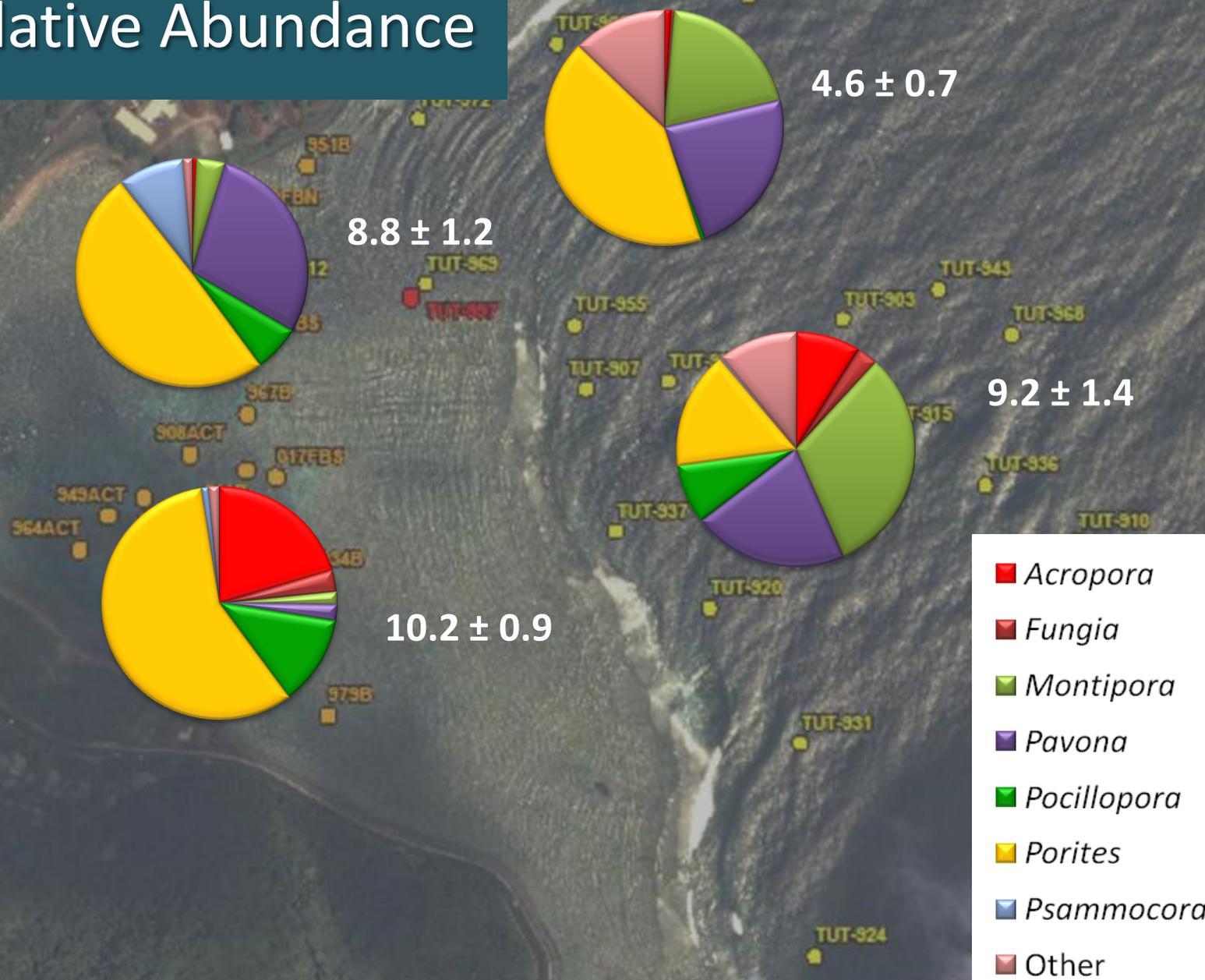
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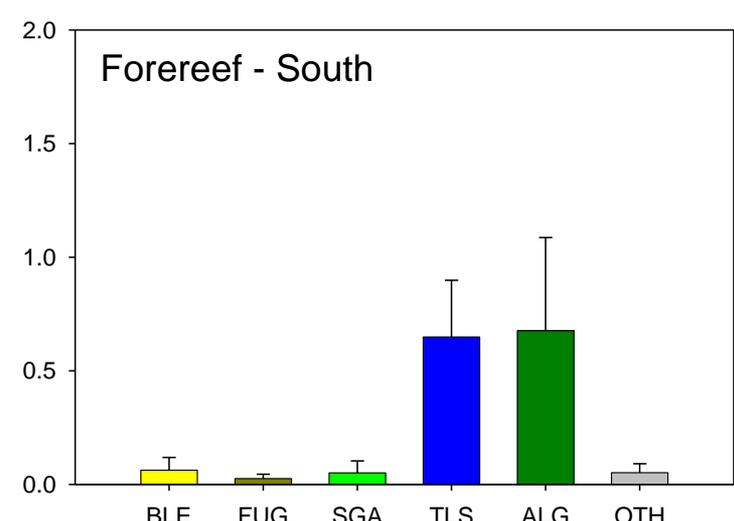
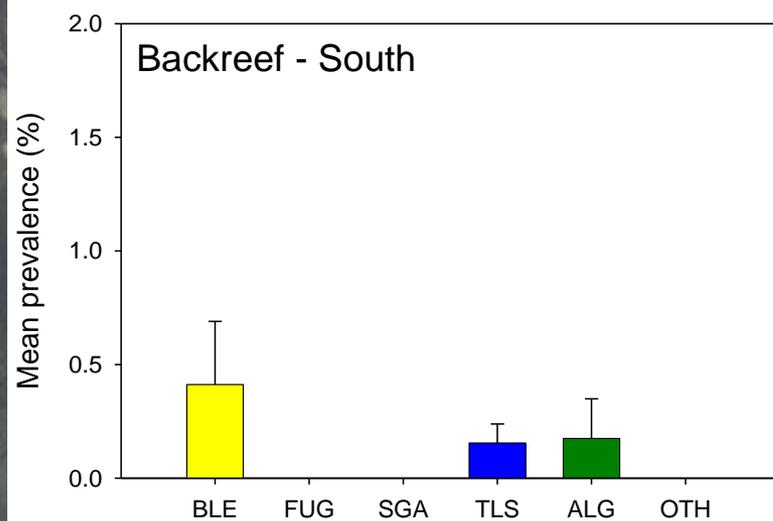
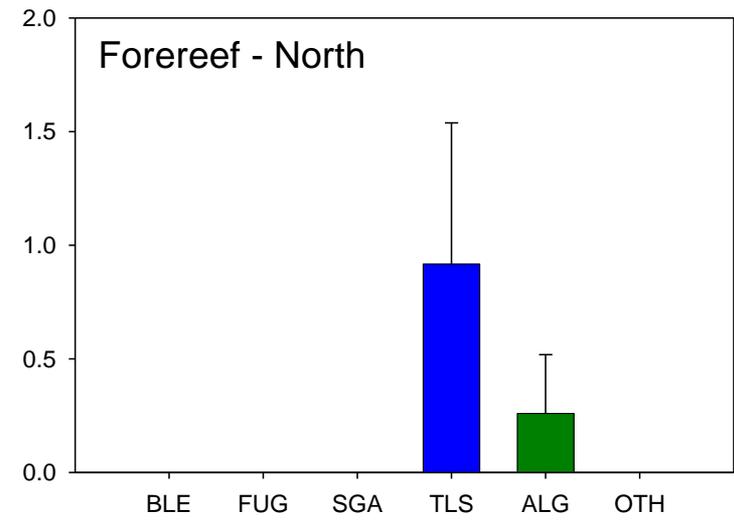
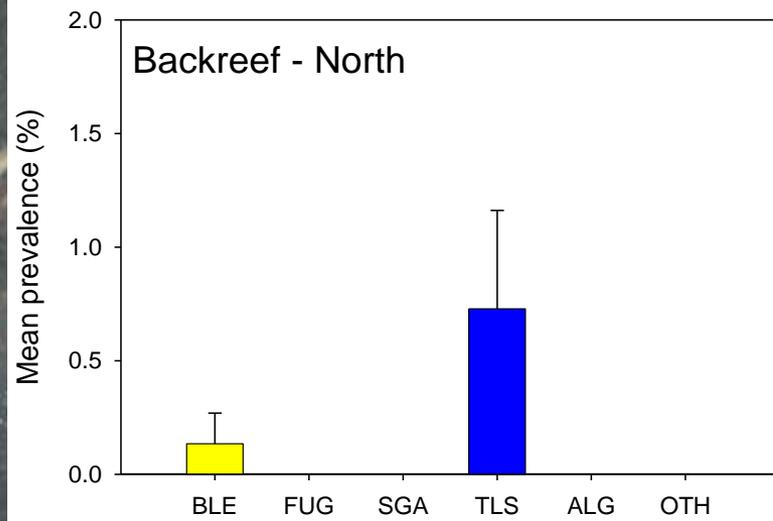
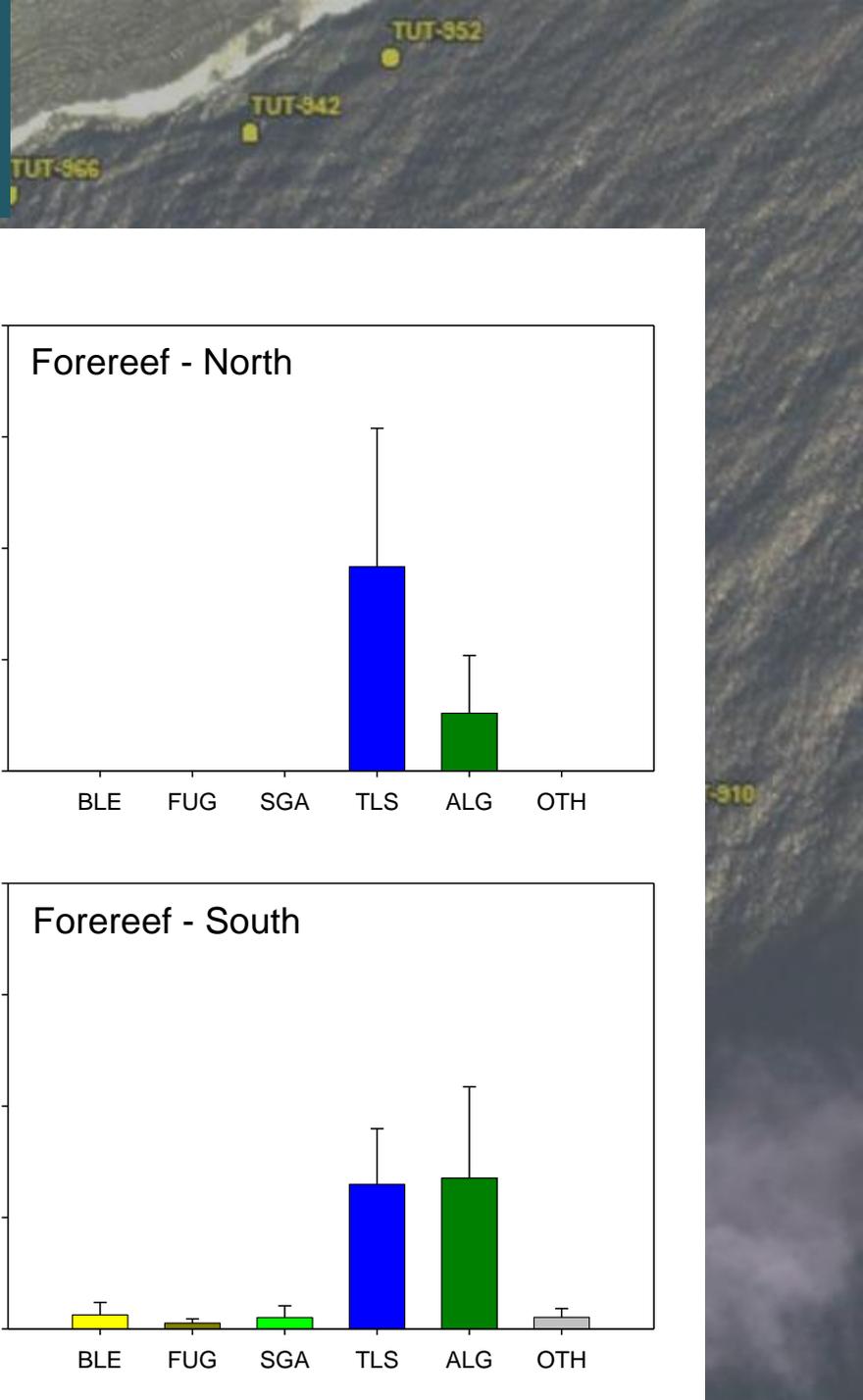
# Biological Surveys: Benthic cover



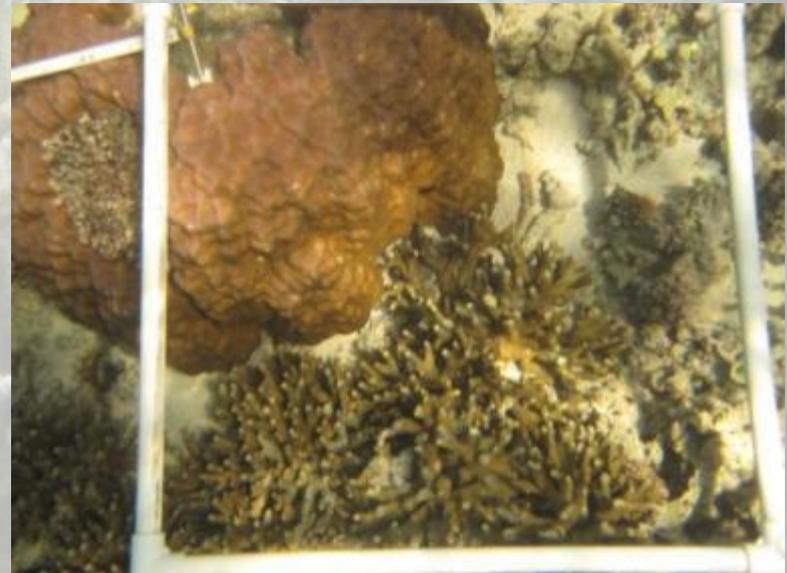
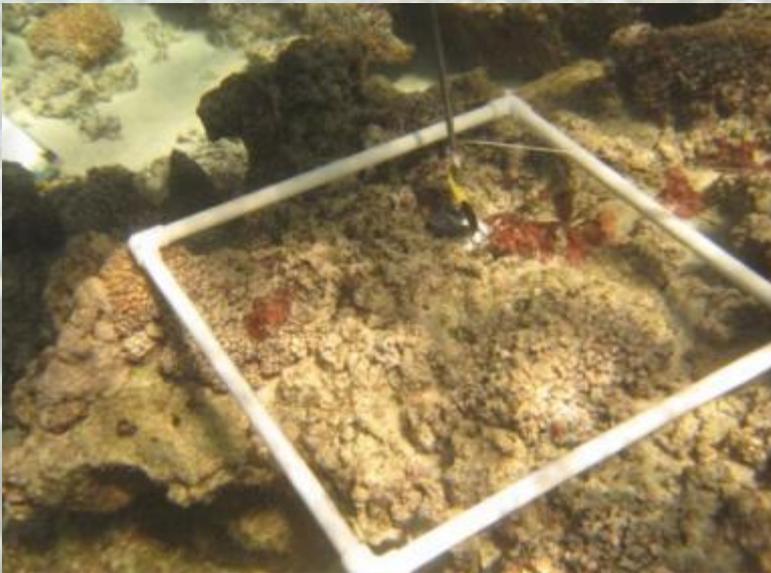
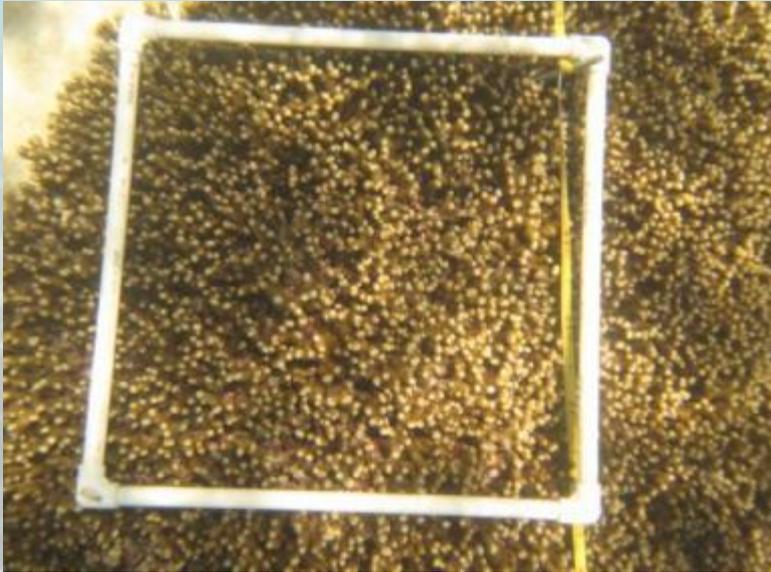
# Biological Surveys: Coral Relative Abundance



# Biological Surveys: Coral Bleaching and Disease

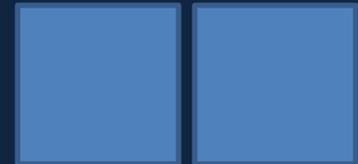
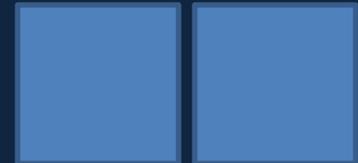
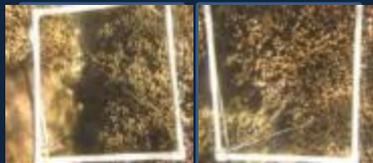


**March 30, 2012**

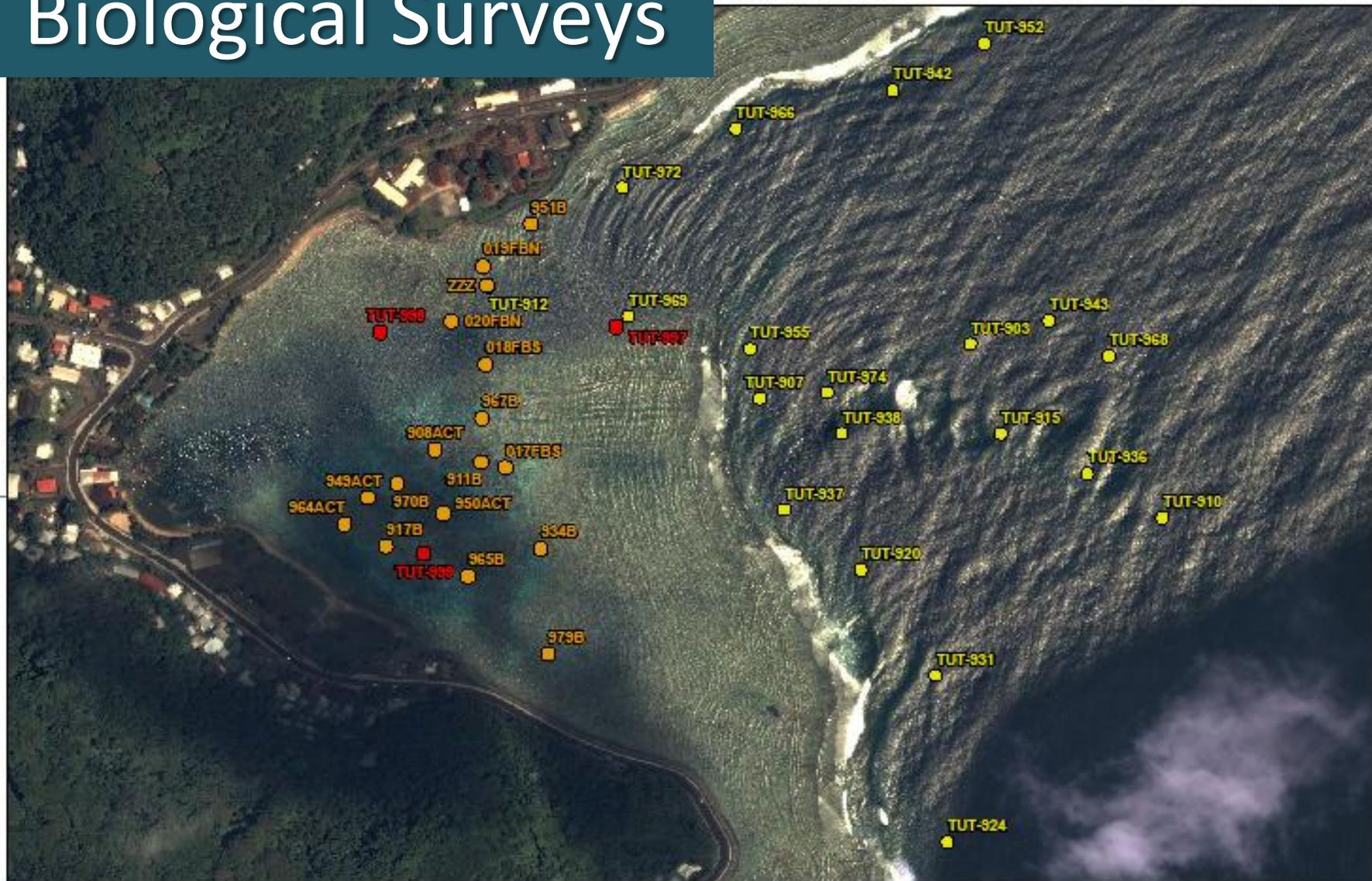




# Photographic time series

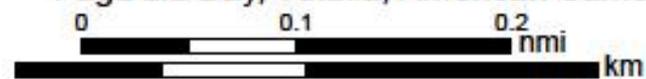


# Biological Surveys



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# Instrument Deployments



Fagaalu

Current, Salinity & Temperature Logger 2

Current, Salinity & Temperature Logger 1

Wave, Tide & Temperature Logger

Image © 2012 GeoEye



# Coral cores





# Funded Future Work Within Scope of Project



- During Next 12 Months
  - Repeat Surveys by American Samoa Community College and DMWR
- CRED Field Mission in 1 year
  - Removal of Oceanographic Instrumentation
  - Final Benthic Surveys
- Analysis Of Data After 1 Year
- Presentation of Report, Data, and Results to Community

# Acknowledgments and Partners



- NOAA's Pacific Island Regional Office
  - Fatima Sauafea-Leau
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- Department of Marine and Wildlife Resources
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  - Alex Messina
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  - Oliver Vetter
  - Bernardo Vargas-Angel
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