

## JIMAR ANNUAL REPORT, FY 1999

P.I. NAME: Jeffrey Polovina and Gary Mitchum

PROJECT TITLE: Evaluation of remote sensing technologies for the identification of oceanographic features critical to pelagic fish distributions around the Hawaiian Archipelago

FUNDING: NOAA(PFRP)

### 1. Purpose of the Project:

Develop methods to identify fronts and eddies with satellite altimetry and ocean color data and investigate whether these features are important to the spatial and temporal dynamics of pelagic fish catches around Hawaii.

### 2. Progress during FY 1999:

Developed methods to process ocean color data from the Japanese OCTS and the US SeaWiFS sensors for the North Pacific, 1997-99. Described the spatial and temporal dynamics of the Subtropical Chlorophyll Front which serves as the northern boundary of the longline fishing ground for swordfish. Conducted the Subtropical Front oceanographic cruise, May 1999, to validate the remote sensing data and collect subsurface data. Used the remote sensing methods and data developed together with data on satellite telemetry of loggerhead turtles to describe the foraging habitat of the turtles and the overlap with the longline fishing grounds.

Work continues on calculations using characteristics of the velocity field associated with the Subtropical Front, estimated from satellite altimetry, to describe the interannual variation in swordfish catch rates. This work extends on work presented earlier at AGU Ocean Sciences Meeting.

### 3. Plans for the next Fiscal Year: Project completed in FY 1999.

### 4. List of Papers Published in Referred Journals during FY 1999:

Polovina, J.J., Kleiber, P., Kobayashi, D.R. 1999. Application of TOPEX/Poseidon satellite altimetry to simulate transport dynamics of spiny lobster, *Panulirus marginatus*, in the Northwestern Hawaiian Islands, 1993-1996. *Fish. Bull.* 97:132-143

### 5. Other Papers

Polovina, J.J., Kobayashi, D.R., Ellis, D.M., Seki, M.P., and Balazs, G.H. In Review. Life on the edge: movement of loggerhead turtles (*Caretta caretta*) along oceanic fronts in the central North Pacific, 1997-1998. *Fish. Oceanogr.*

Seki, M.P., Polovina, J.J., Kobayashi, D.R., and Mitchum, G.T. In Prep. An oceanographic characterization of swordfish longline fishing grounds in the Subtropical Central North Pacific.

Presentation at 50<sup>th</sup> Tuna Conference: J.J. Polovina: Habitat of loggerhead turtles and an evaluation of space and area closures in the Hawaii longline fishery to reduce incidental captures of loggerhead turtles.