Larval anchovy catch distributions in the Kashimanada Sea relative to environmental features observed by satellite multi-sensor remote sensing

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1. Background

Larval Anchovy
*(Engraulis Japonica)*
Catch Fluctuations of Larval Anchovy

![Graph showing catch fluctuations of larval anchovy from 1990 to 2005. The x-axis represents the years (1990, 1993, 1996, 1999, 2002, 2005), and the y-axis represents the catch in tonnes (0 to 3,000). The graph shows significant fluctuations with peaks in 1996 and 2002.]
2. Objectives

The objectives of this study are:

① To identify the cause of larval anchovy catch fluctuations

② To clarify the relationship between the distribution of larval anchovies in the Kashimanada sea and its relation to environment factors
3. Data

**Oceanic Conditions**

1. Sea Surface Temperature (NOAA/AVHRR)
2. The Position Of the Kuroshio Axis
3. Proximity Of the Kuroshio Axis
4. Sea Surface Height (TOPEX)

**Biological Data**

1. Larval Anchovy Catch
2. Egg Distribution
3. Adult Anchovy Catch
4. Body Length of Adult Anchovies
5. Chlorophyll Concentration (SeaWiFS)
4. Results and Discussion

Relationship Between Larval Anchovy Catch and Sea Surface Temperature

- High % of Large Adults
- Low % of Large Adults

Graph showing the relationship between larval anchovy catch (tonnes) and deviation of sea surface temperature (°C). The graph indicates a positive correlation, with higher larval catches associated with deviations closer to 0°C.
Sea Surface Temperature

Warm Pattern

Cold Pattern

1998.4.10

2004.3.15

SST(NOAA/AVHRR)
Relationship Between SST and Position of the Kuroshio Axis

$y = 1.7655x - 45.813$
$R^2 = 0.7878$

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<th>SST °C</th>
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Position of The Kuroshio Axis (°N)

May 35.5 36 36.5 37 37.5 38
Relationship Between SST and Egg Distribution

\[ y = 62.144x - 836.48 \]

\[ R^2 = 0.7307 \]
Sea Surface Height and Current

1995 - Catch 757 tonnes

2004 - Catch 1 tonne

SSH(TOPEX)
Summary: Good Year

INCREASED CATCH

Kuroshi
Summary: **Bad Year**

- **LAT**
- **Kuroshi**

**DECREASED CATCH**

**Kuroshi**
Thank You !!