Dendroecological Analysis of *Pterocarpus officinalis* in a Tropical Forested Wetland in Puerto Rico

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North Atlantic Ocean
Study area
SAN JUAN
Aguadilla
Arecibo
Bayamón
Carolina
Fajardo
Isla de Culebra
Isla Deseches
Mona Passage
Mayagüez
Puerto Rico
Caguas
Isla Mona
Guayanilla
Ponce
Guánica
Playa de Ponce
Guayama
Isla de Vieques
Caribbean Sea
0 10 20 km
0 10 20 mi

Pterocarpus officinalis

1. Important freshwater wetland species
2. Occurs in monospecific stands
3. Tolerates high salinity and flooding

Pterocarpus officinalis forest,
Sabana Seca, Puerto Rico

1. A critical unit in Puerto Rico
2. Unique forest type
3. Provides habitat for other species
4. Rapid rate of conversion

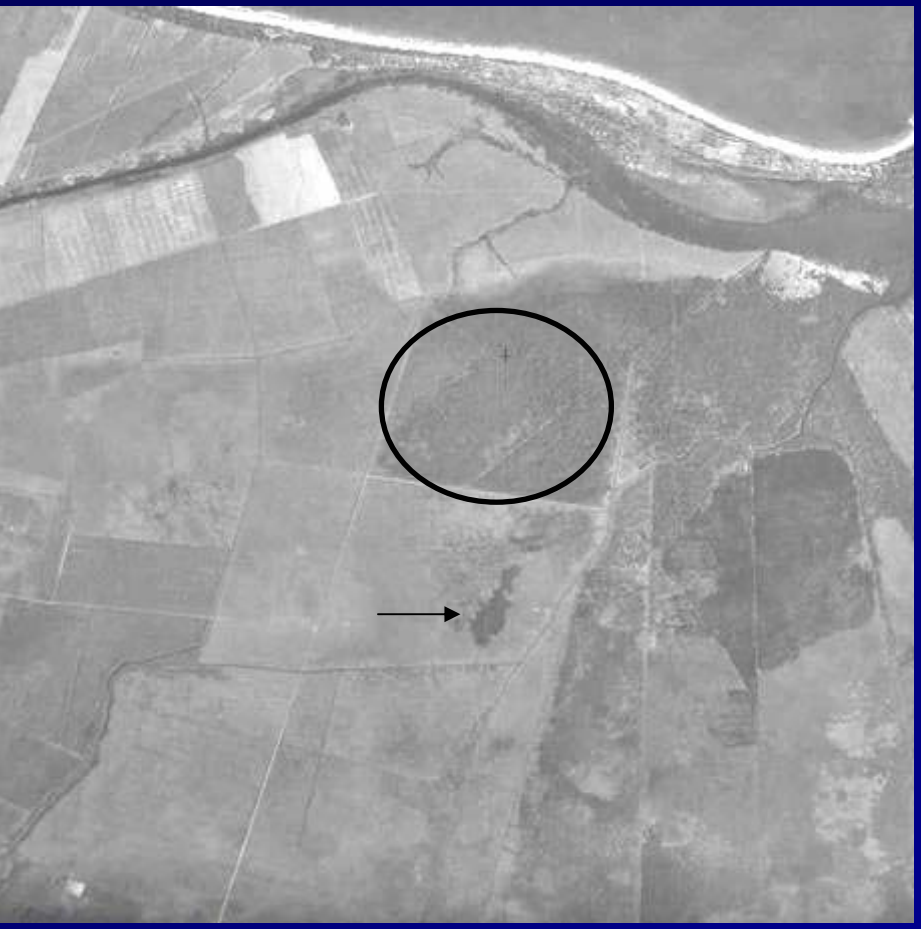
Purpose of study: To better understand potential threats

We studied aerial photos to determine impact of land use practices

We examined two sites with different levels of salinity and flooding

We related radial growth to climate

Study site: Naval Security Group Activity
Sabana Seca, Toa Baja, Puerto Rico



1937

1995

Pterocarpus officinalis
high salinity site

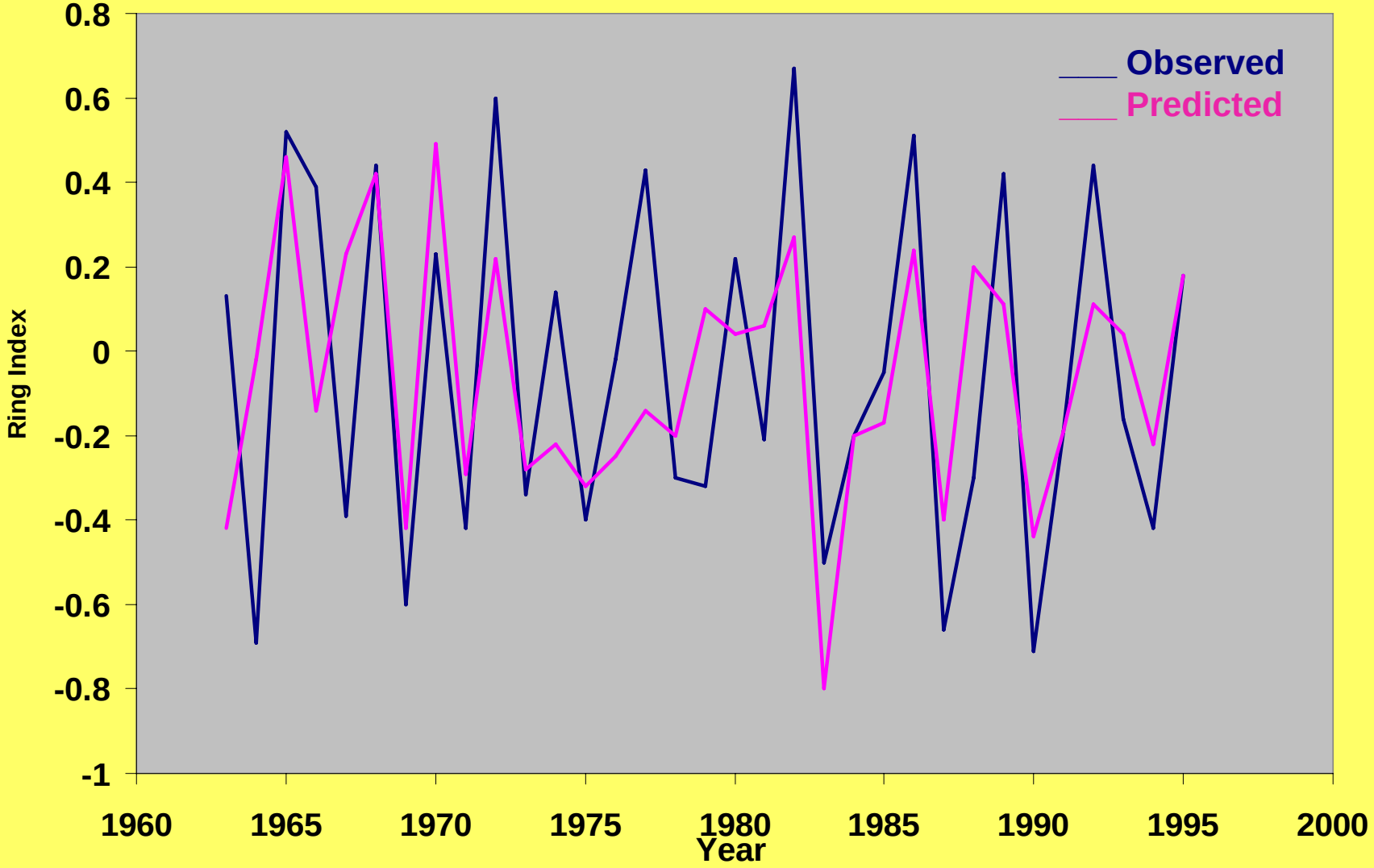
March and May precipitation, June precipitation lagged two years

Valid cases:	32	Dependent variable:	Y
Missing cases:	0	Deletion method:	None
Total SS:	5.47	Degrees of freedom:	28
R-squared:	0.37	Rbar-squared:	0.31
Residual SS:	3.44	Std. error of est:	0.35
F(3,28):	5.53	Probability of F:	0.004

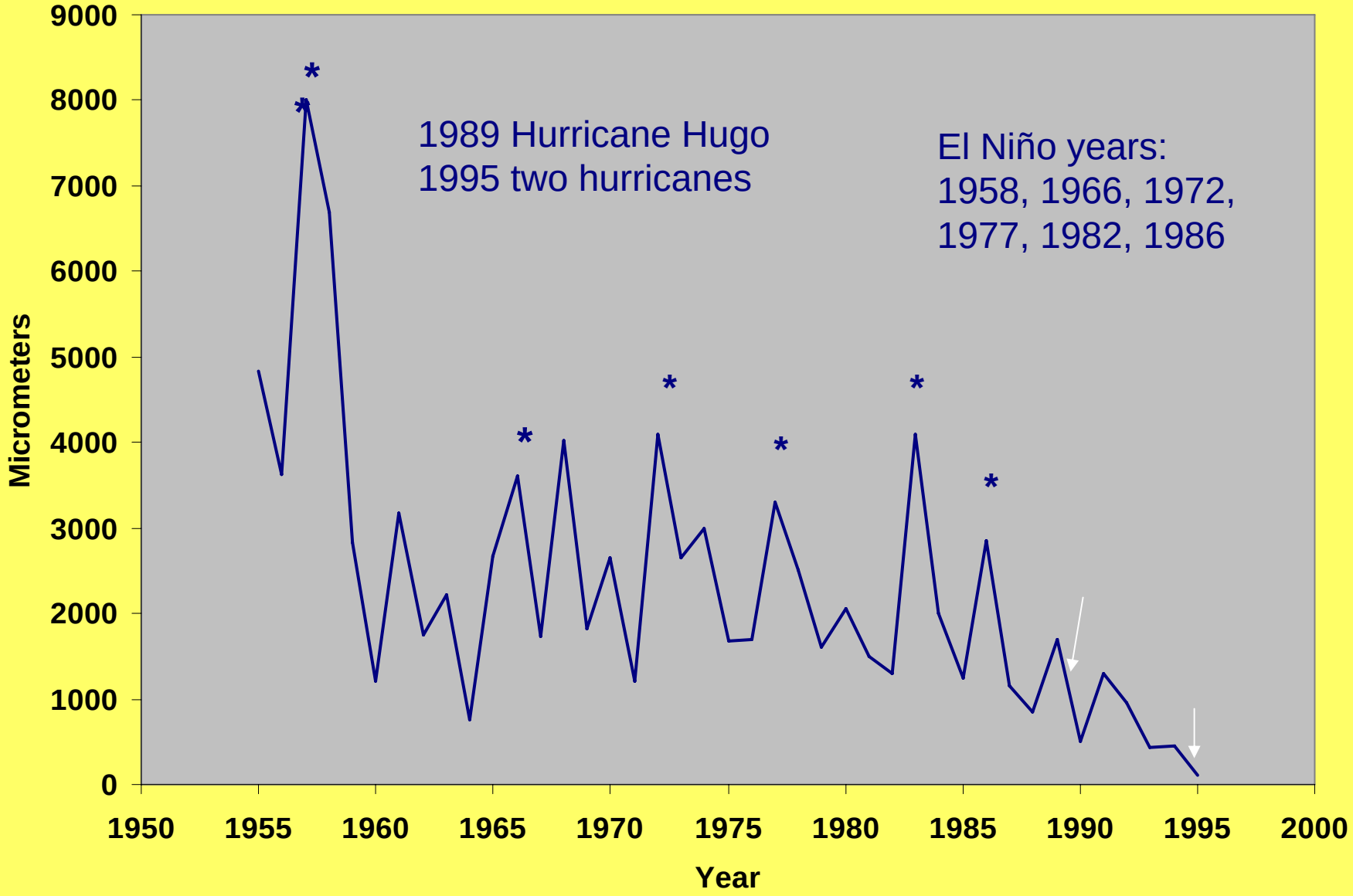
Variable	Estimate	Standard Error	t-value	Prob >|t|	Standardized Estimate	Cor with Dep Var
Constant	-0.44	0.22	-2.01	0.06	----	----
X1	-0.00	0.00	-2.12	0.04	-0.32	-0.35
X2	0.00	0.00	2.73	0.01	0.43	0.28
X3	0.00	0.00	2.68	0.01	0.43	0.33

Resid has 32 rows and 1 cols.

Pterocarpus officinalis **High Salinity Tree Ring Series**



Pterocarpus officinalis **High Salinity Untransformed Chronology**



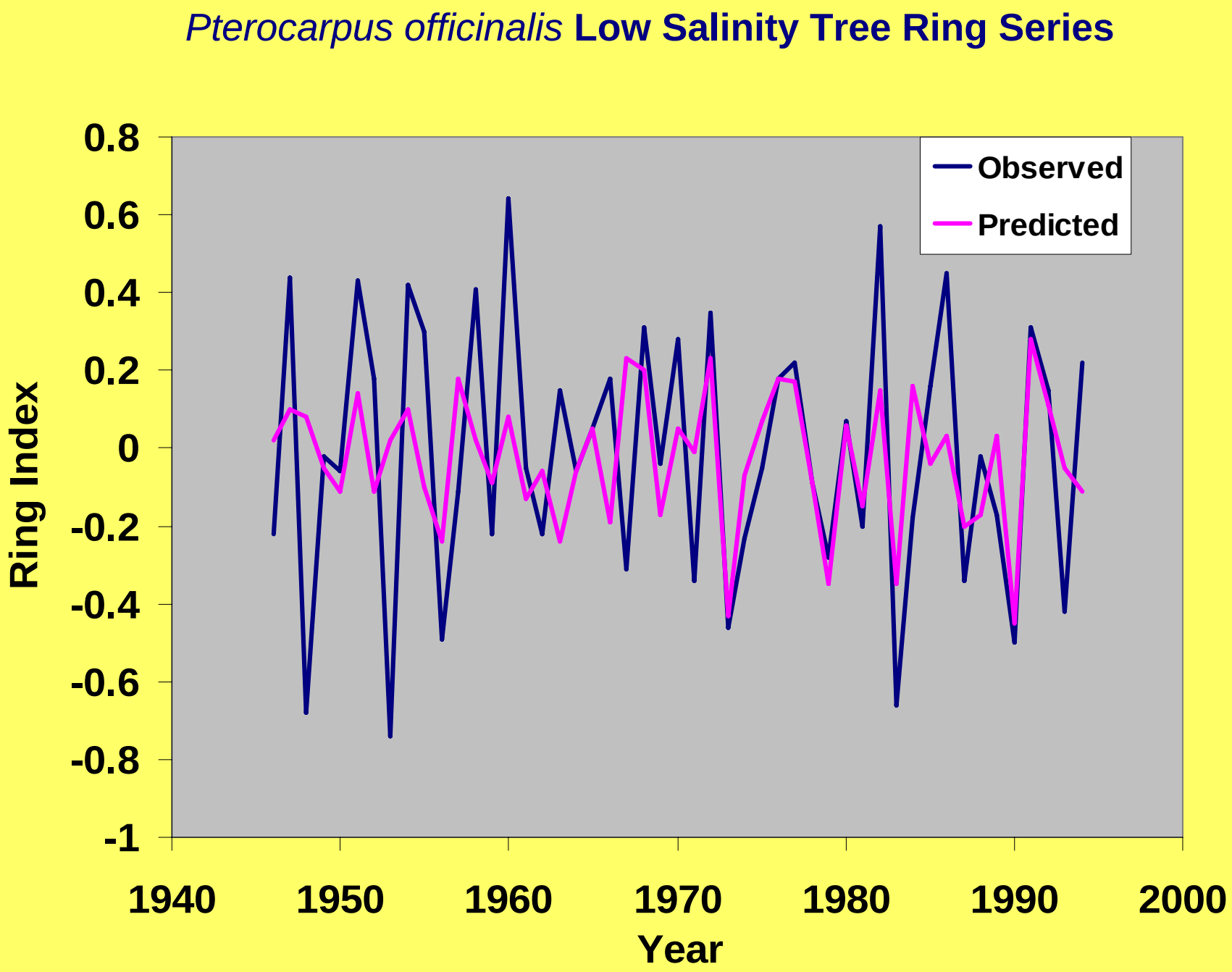
Pterocarpus officinalis
low salinity site

March and April precipitation, June precipitation lagged two years

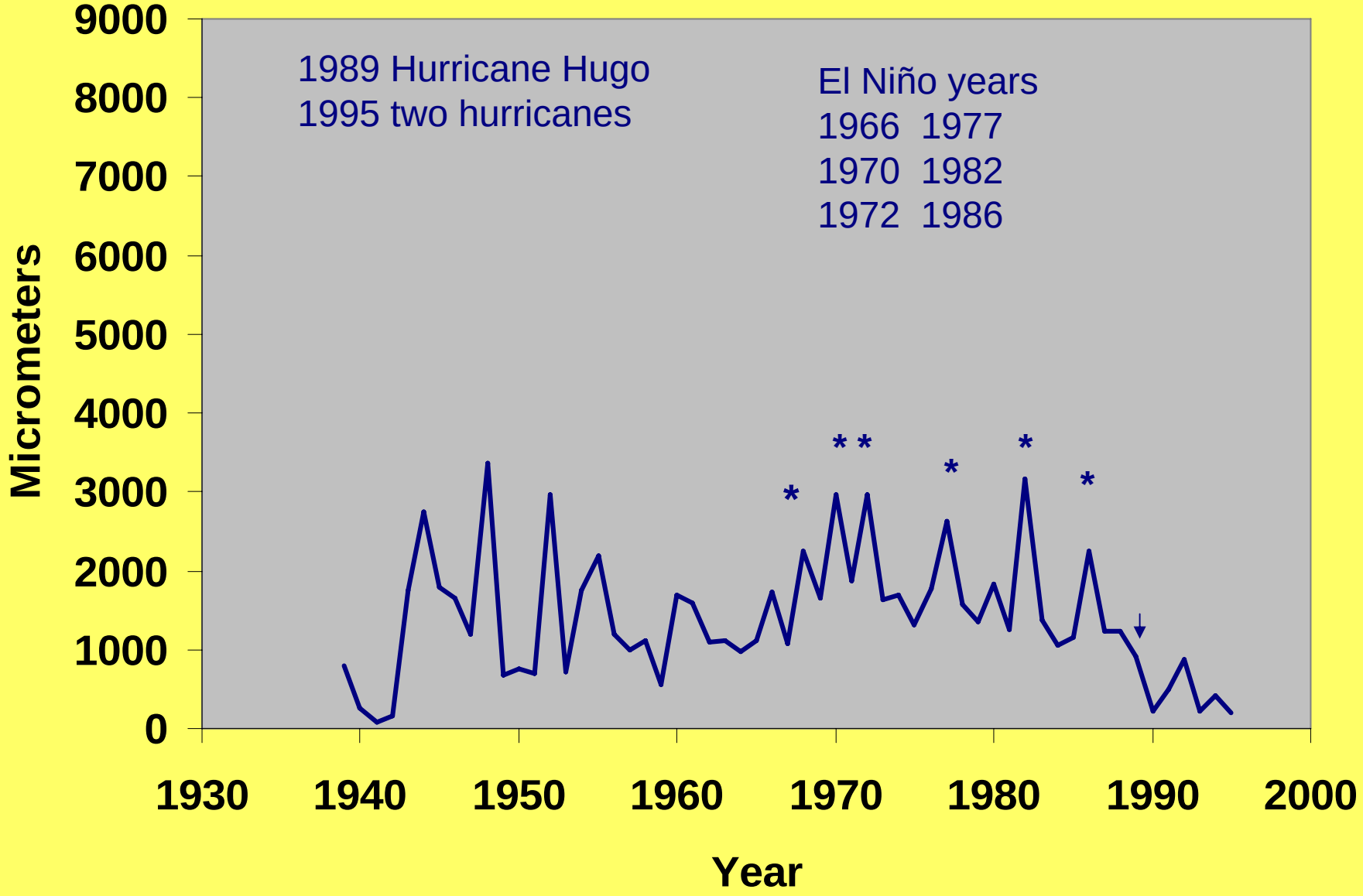
Valid cases:	49	Dependent variable:	Y
Missing cases:	0	Deletion method:	None
Total SS:	5.34	Degrees of freedom:	45
R-squared:	0.23	Rbar-squared:	0.17
Residual SS:	4.14	Std. error of est:	0.30
F(3,45):	4.38	Probability of F:	0.009

Variable	Estimate	Standard Error	t-value	Prob >|t|	Standardized Estimate	Cor with Dep Var
Constant	-0.16	0.11	1.43	0.16	----	----
X1	-0.00	0.00	-1.88	0.07	-0.25	-0.24
X2	-0.00	0.00	-3.03	0.01	0.42	-0.35
X3	0.00	0.00	1.68	0.10	0.23	0.09

Resid has 32 rows and 1 cols.


Pterocarpus officinalis **Low Salinity Tree Ring Series**
Observed
Predicted
Ring Index
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
1940
1950
1960
1970
1980
1990
2000
Year

Pterocarpus officinalis **Low Salinity Untransformed Chronology**



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