

Lake Kyoga, Uganda

by

Thomas Gumbrecht

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Lake level and area variations 1960 to 2002 in Lake Kyoga, Uganda

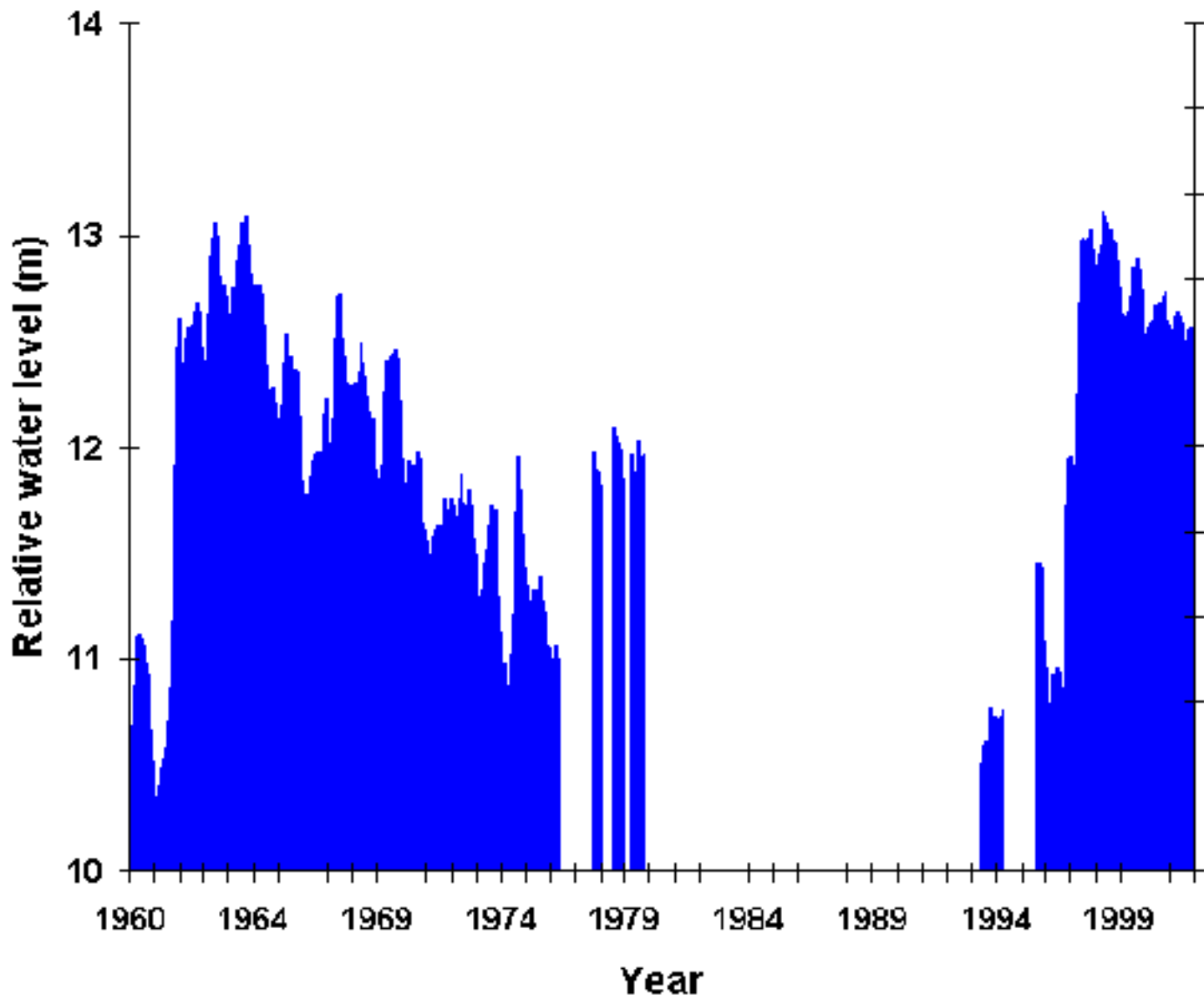
Part of the project

Integrated management of Lake Kyoga natural resources

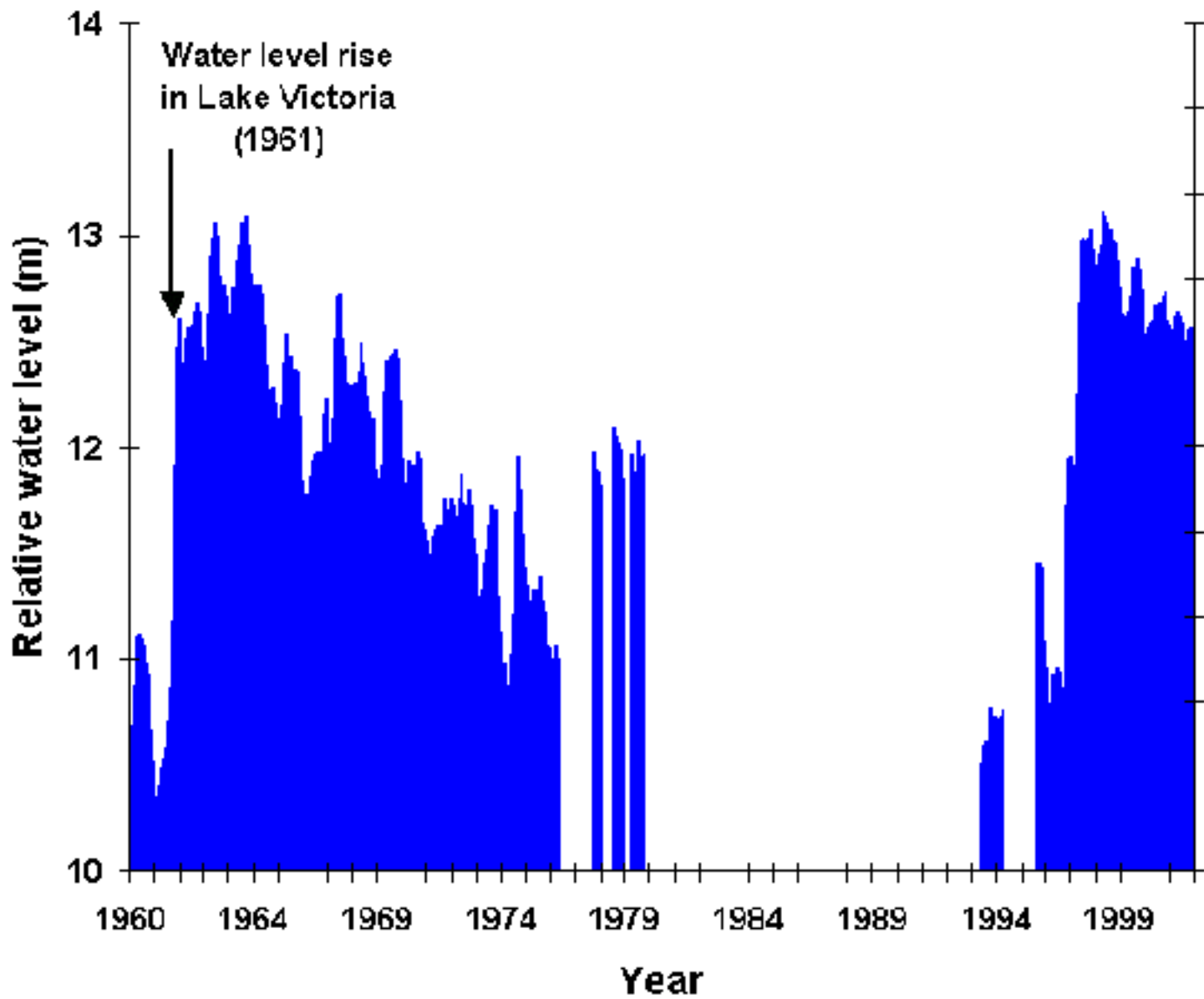
- **FIRRI (Fisheries Resources Research Institute), Uganda**
- **DWD (Directorate of Water Development), Uganda**
- **Uppsala University, Sweden**

Project financed by SIDA SAREC

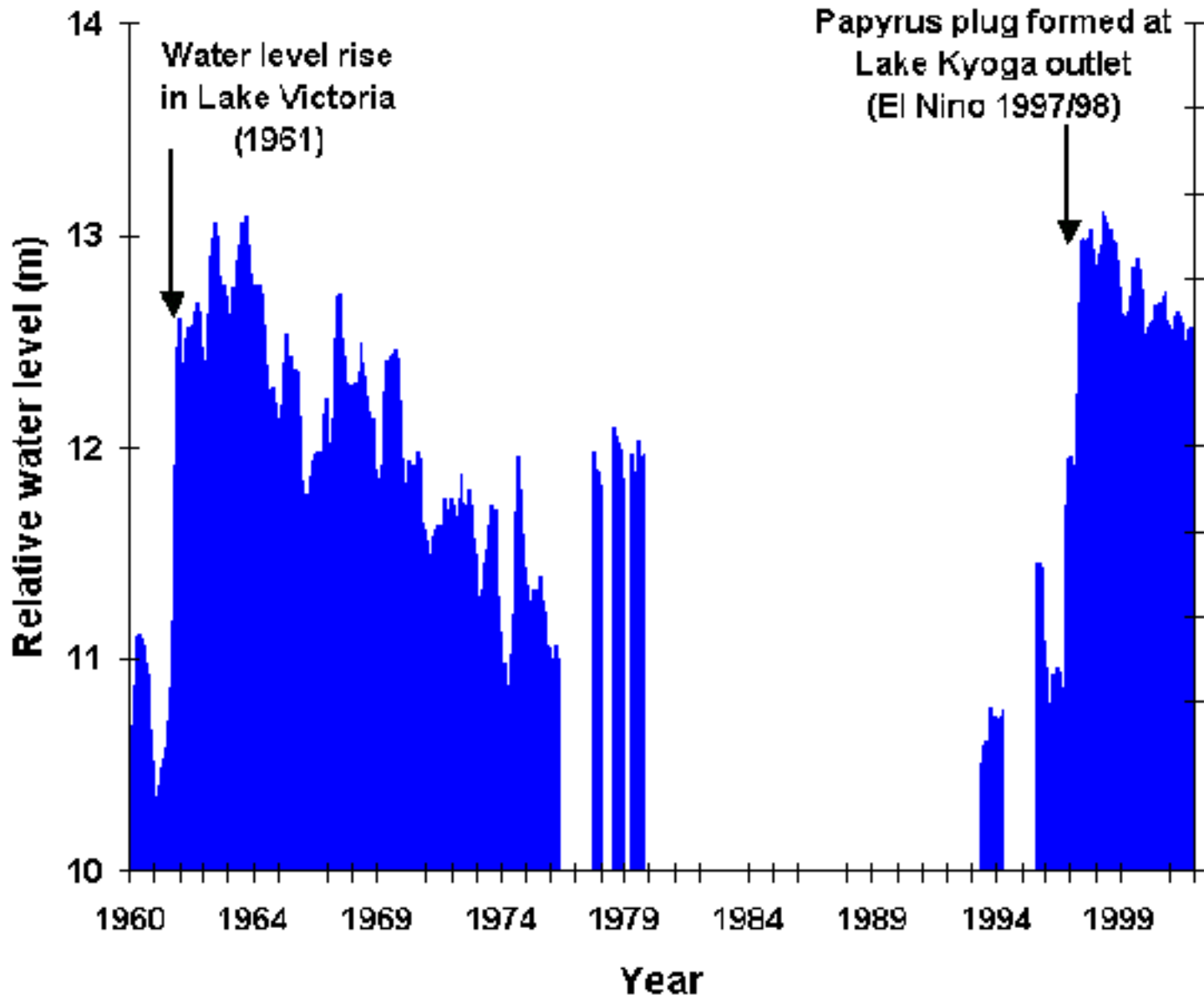
Relative water levels of Lake Kyoga, Uganda, 1960 - 2002

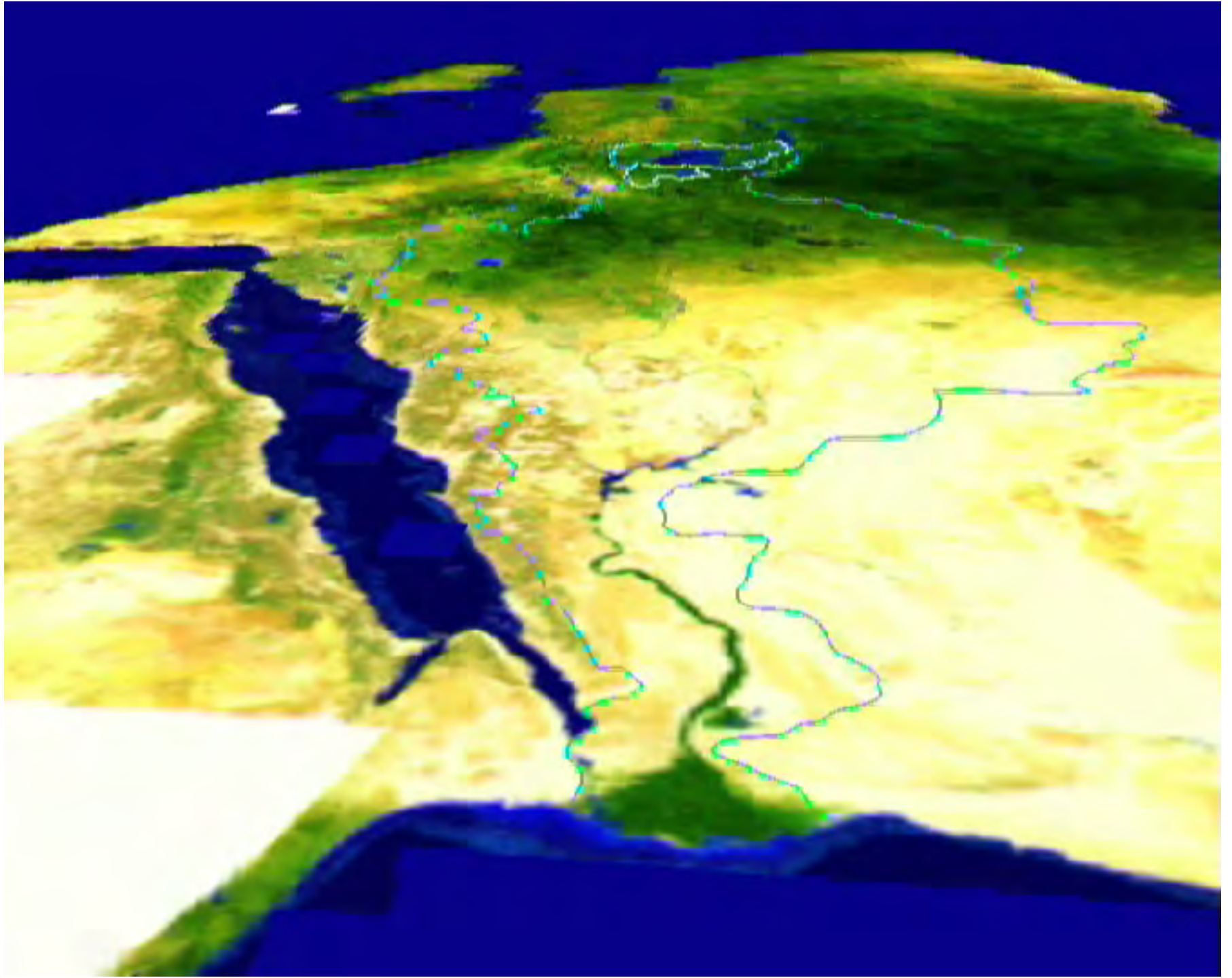


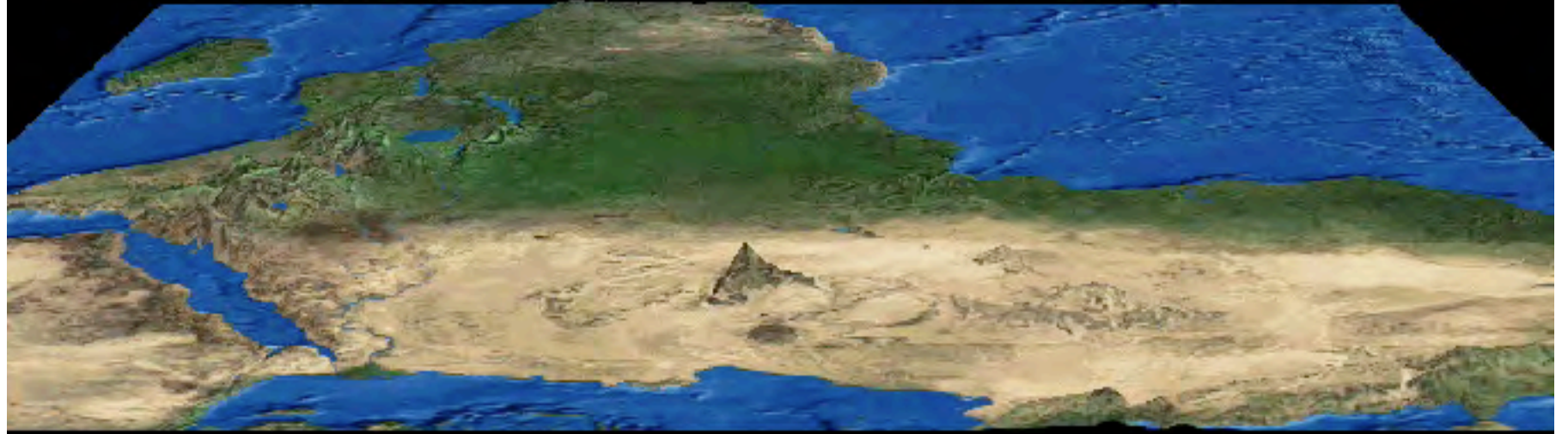
Relative water levels of Lake Kyoga, Uganda, 1960 - 2002



Relative water levels of Lake Kyoga, Uganda, 1960 - 2002





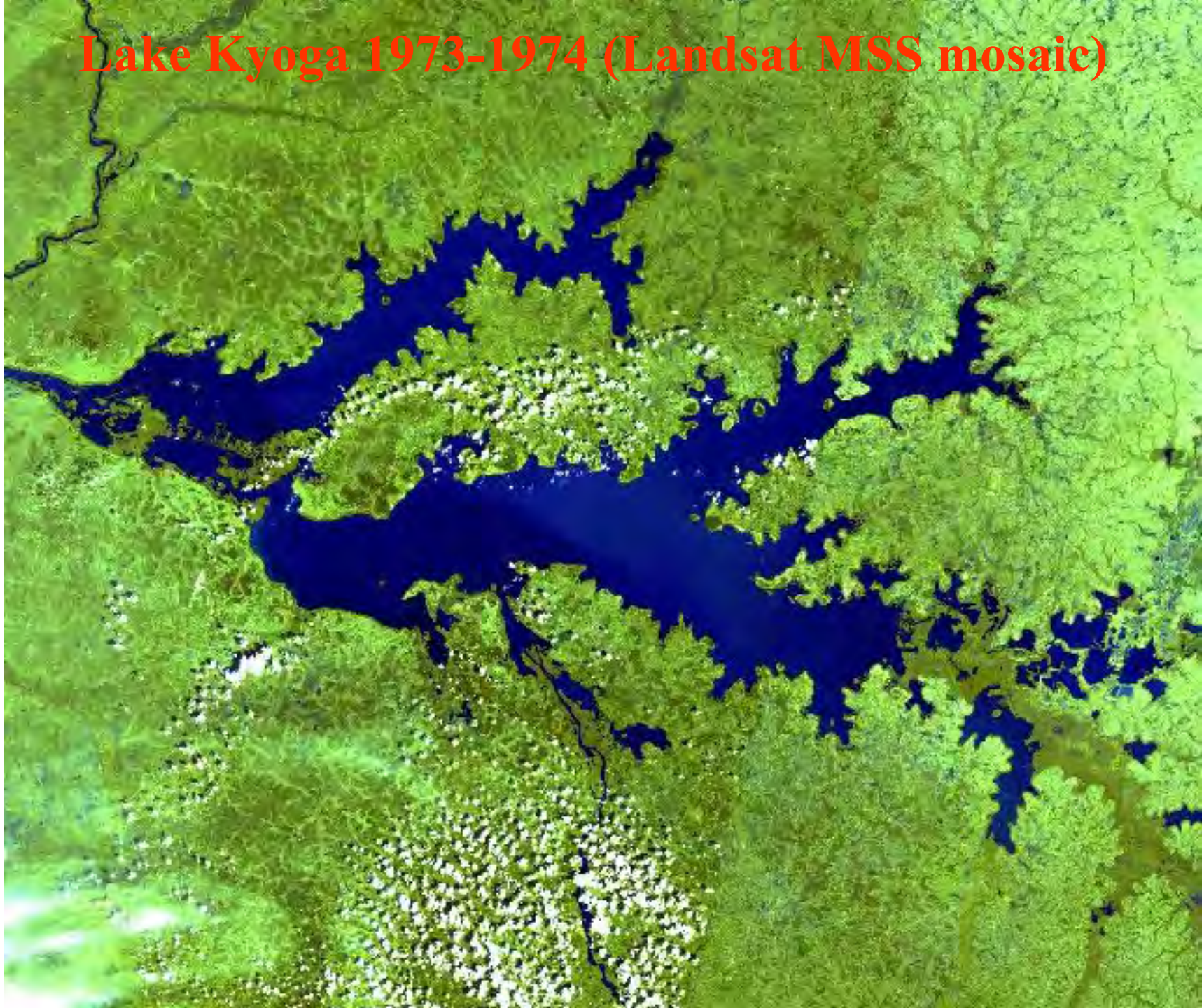


An aerial photograph of a forested area. A large, prominent tree stands in the center of the frame. The surrounding forest is dense and appears as a textured, dark grey-green area. The lighting creates highlights and shadows, giving a sense of depth and texture to the canopy.

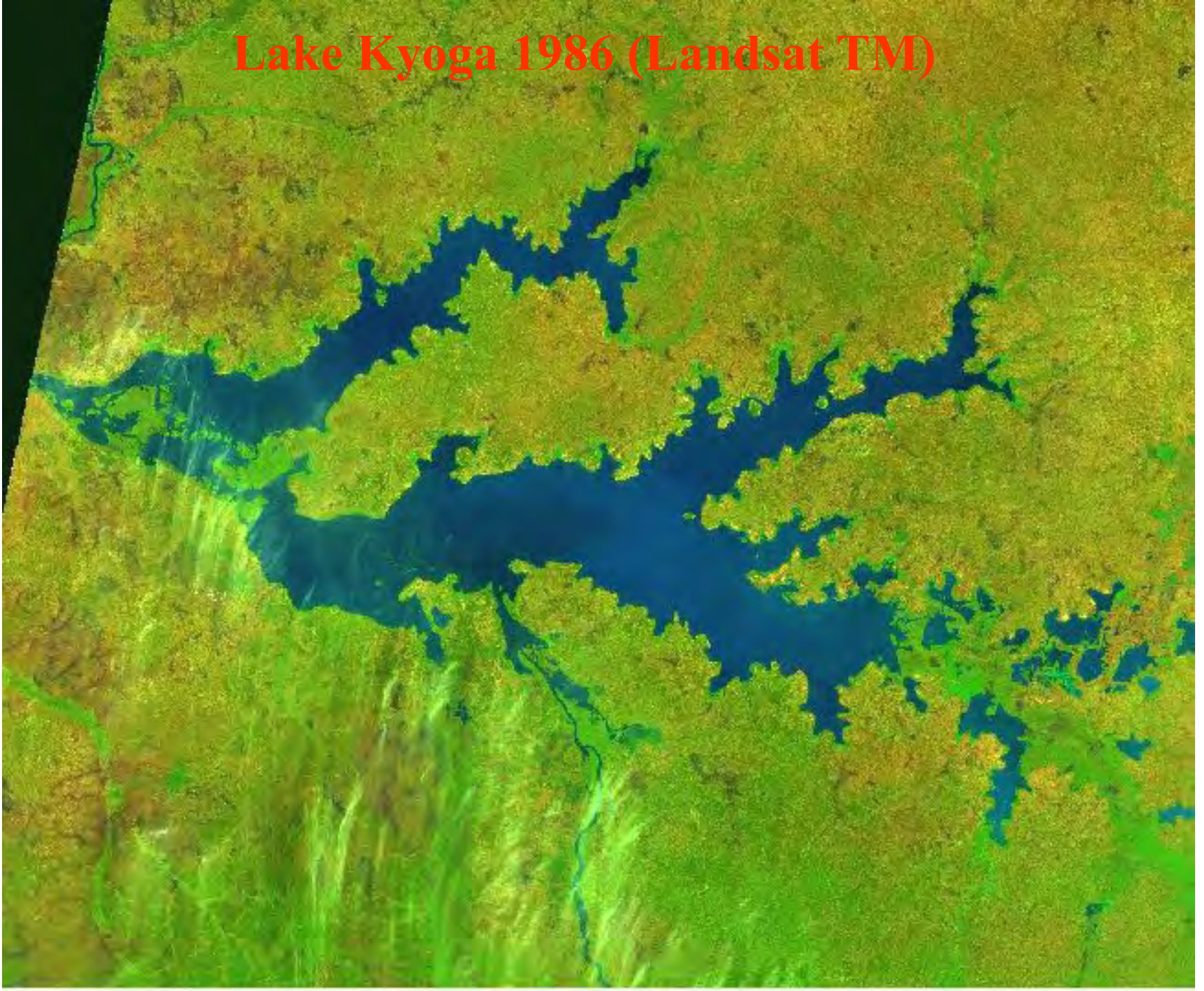
Four image types were used to map the historical area of Lake Kyoga, Uganda

- **Landsat MSS (MultiSpectral Scanner)**
- **Landsat TM (Thematic Mapper)**
- **Landsat ETM (Enhanced TM), and**
- **JERS SAR radar**

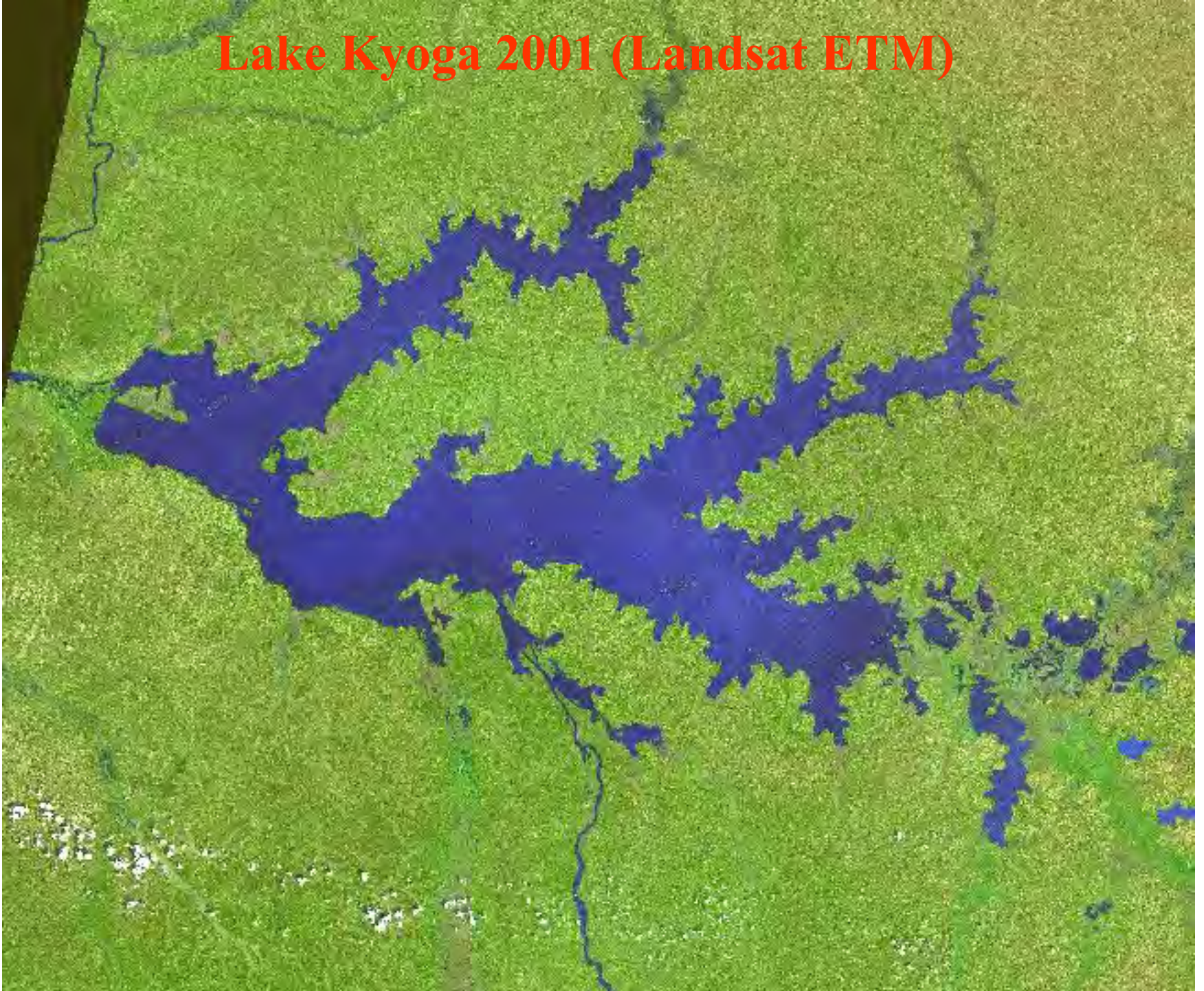
Lake Kyoga 1973-1974 (Landsat MSS mosaic)



Lake Kyoga 1986 (Landsat TM)



Lake Kyoga 2001 (Landsat ETM)





All images were

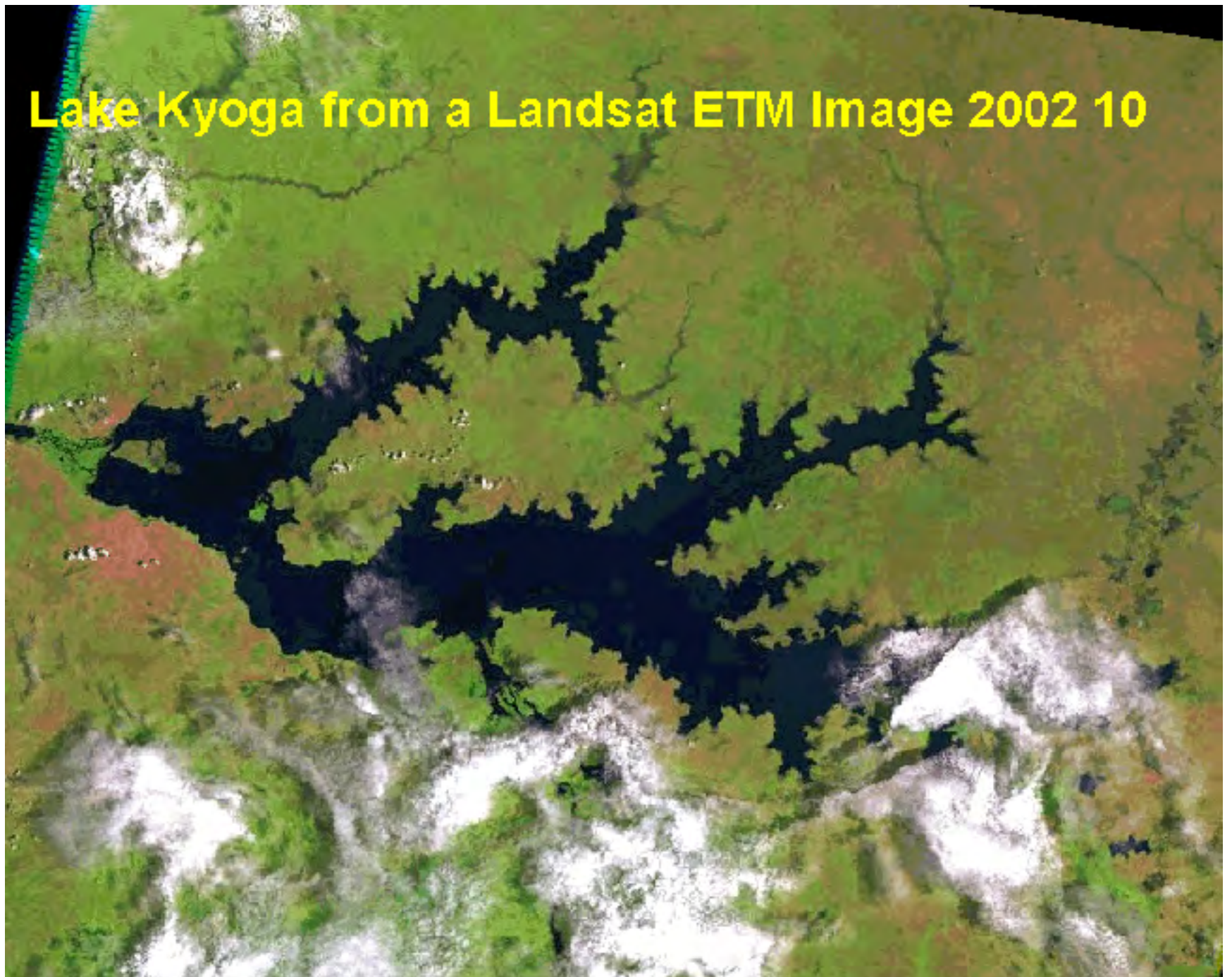
- **Geocorrected**

- **Resampled to a resolution of 250 m**

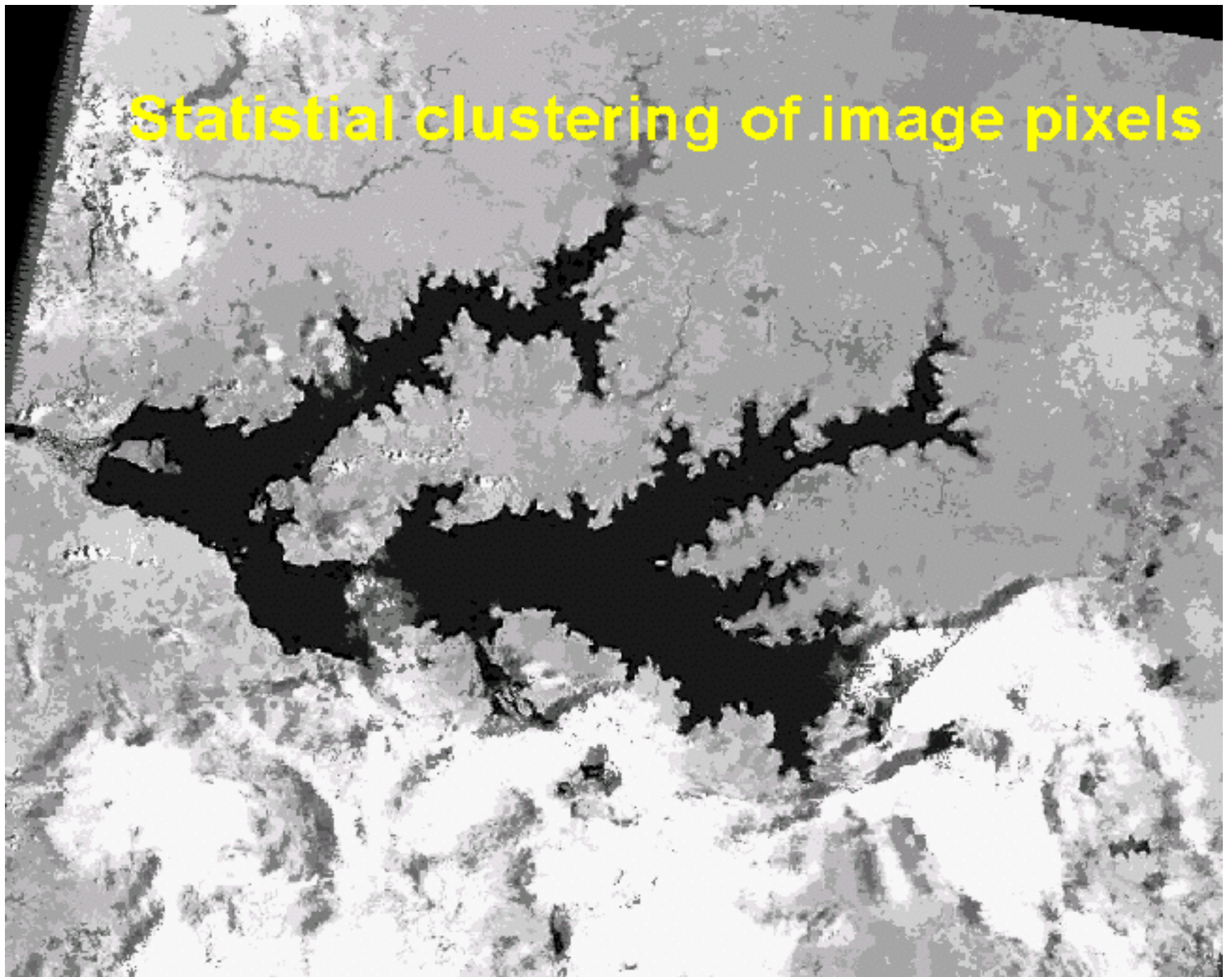
- **Classified to Water, Wetland, Land, Cloud**

- **Areas under cloud were classified from nearby dates with cloudfree conditions**

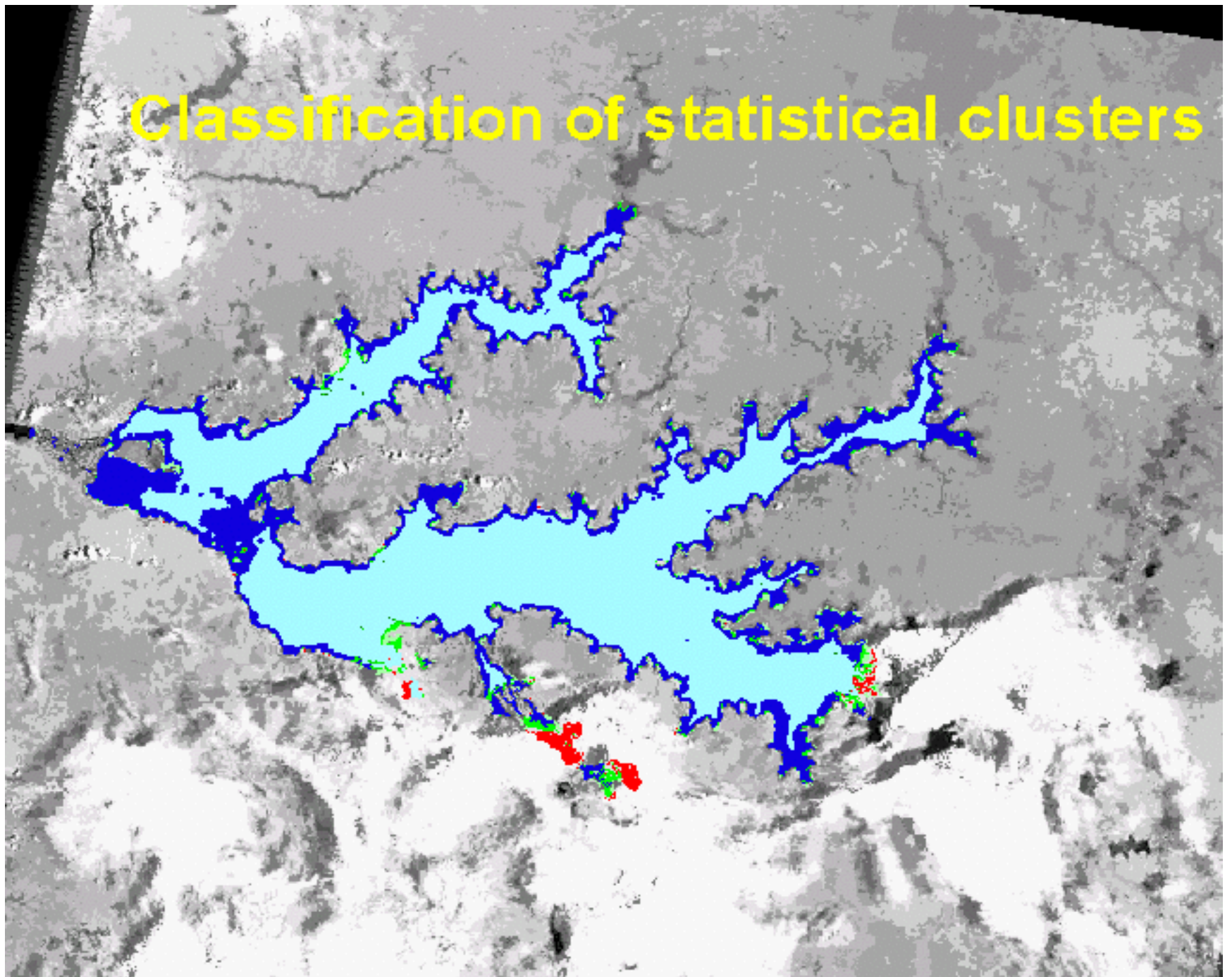
Lake Kyoga from a Landsat ETM Image 2002 10



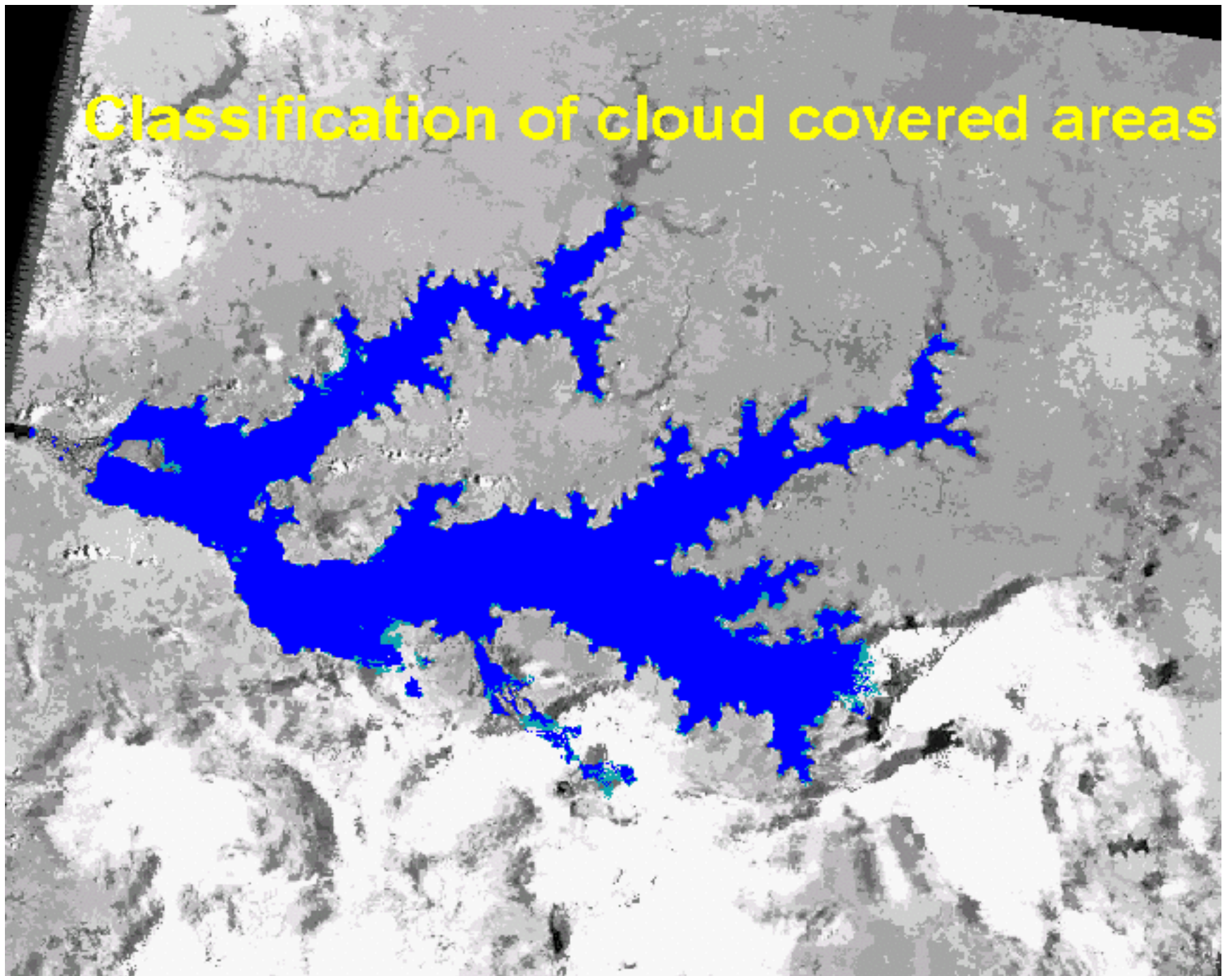
Statistical clustering of image pixels



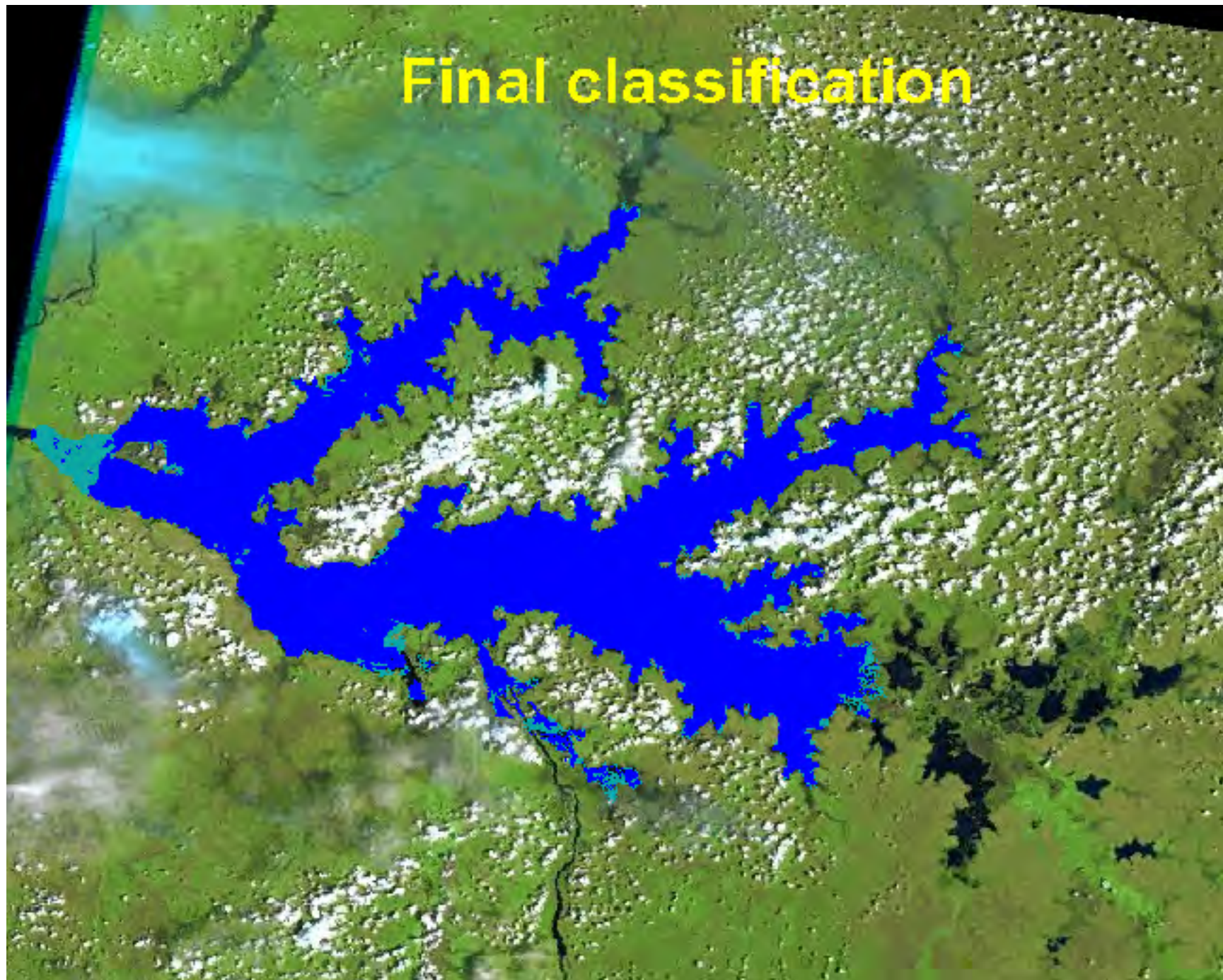
Classification of statistical clusters



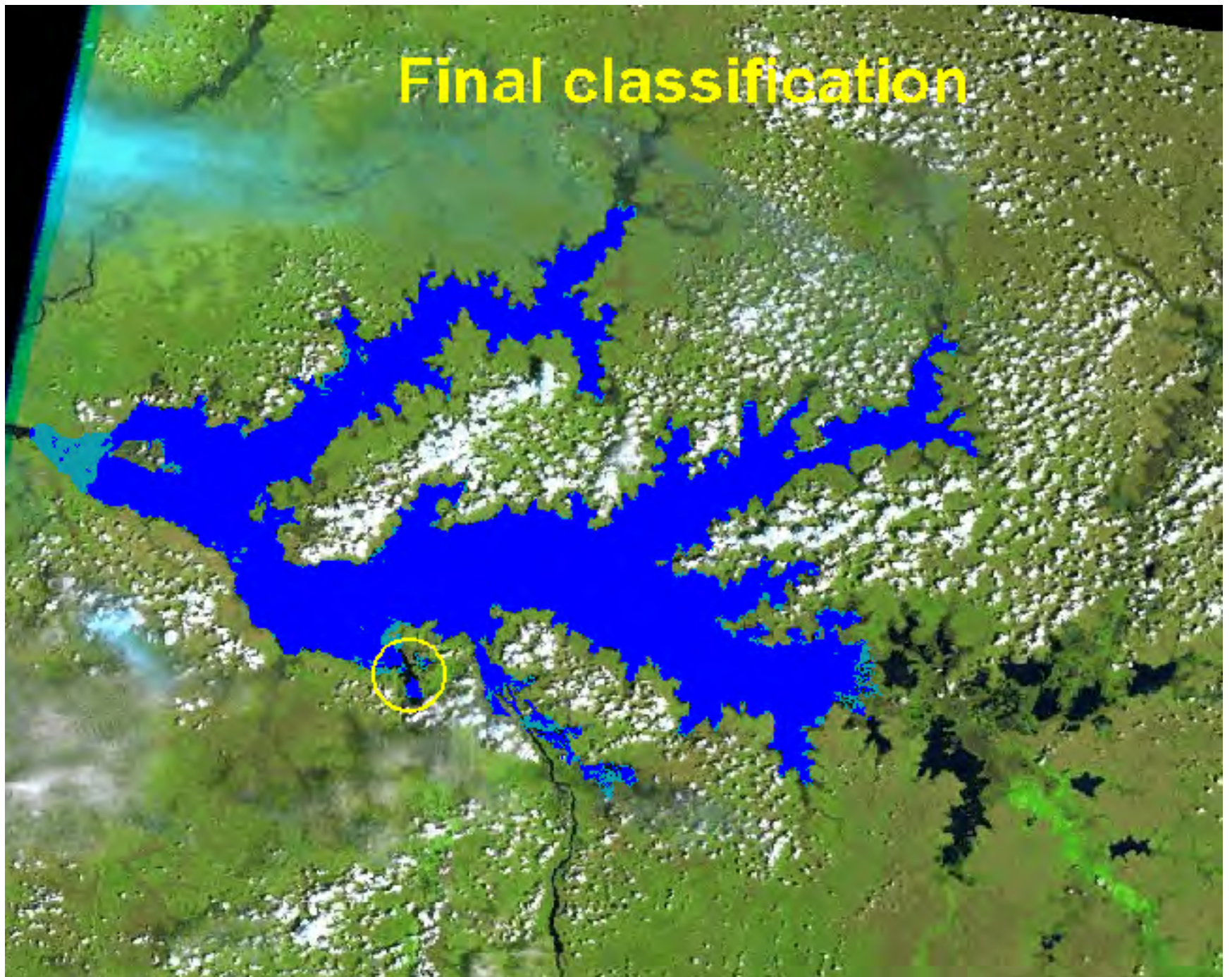
Classification of cloud covered areas



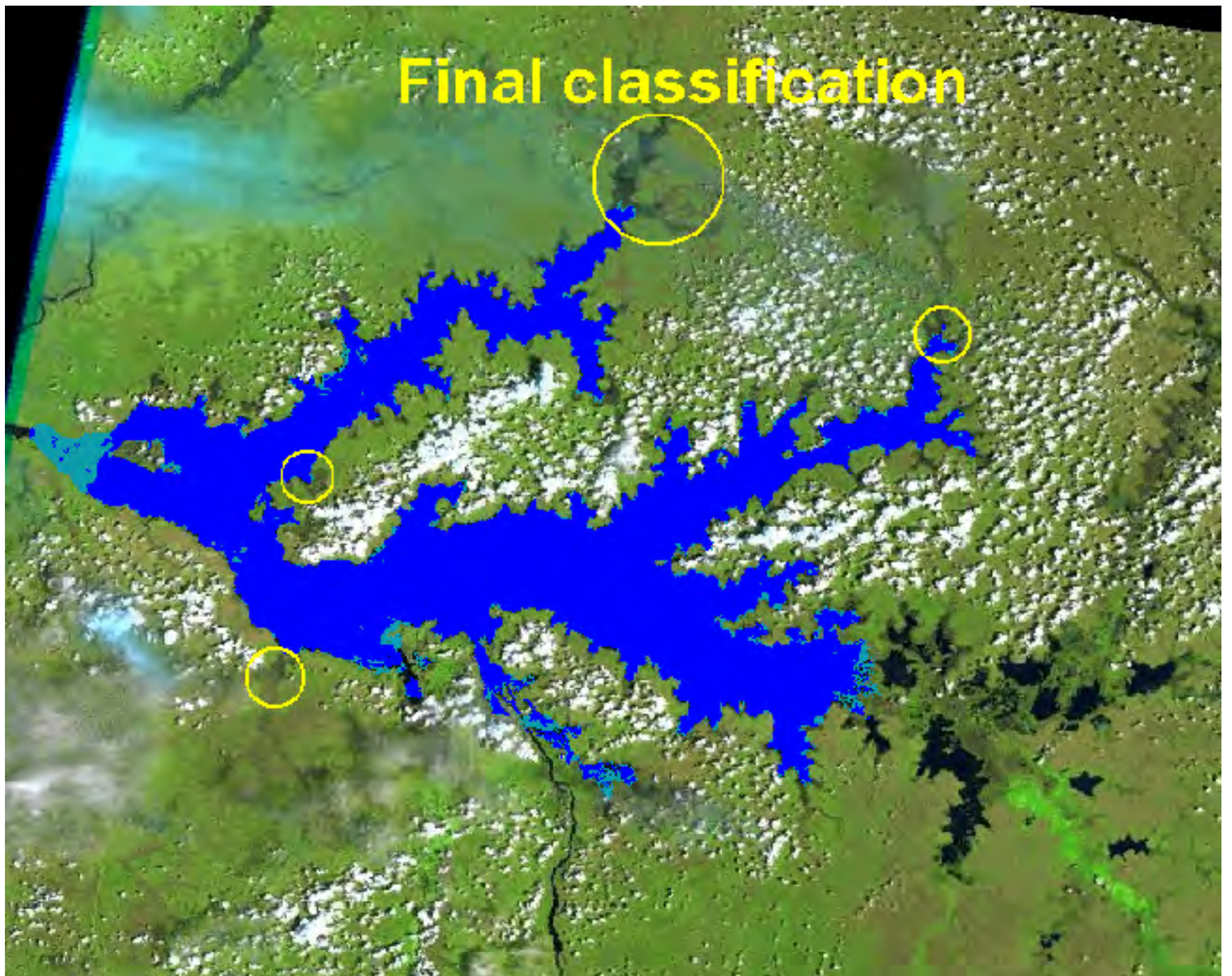
Final classification



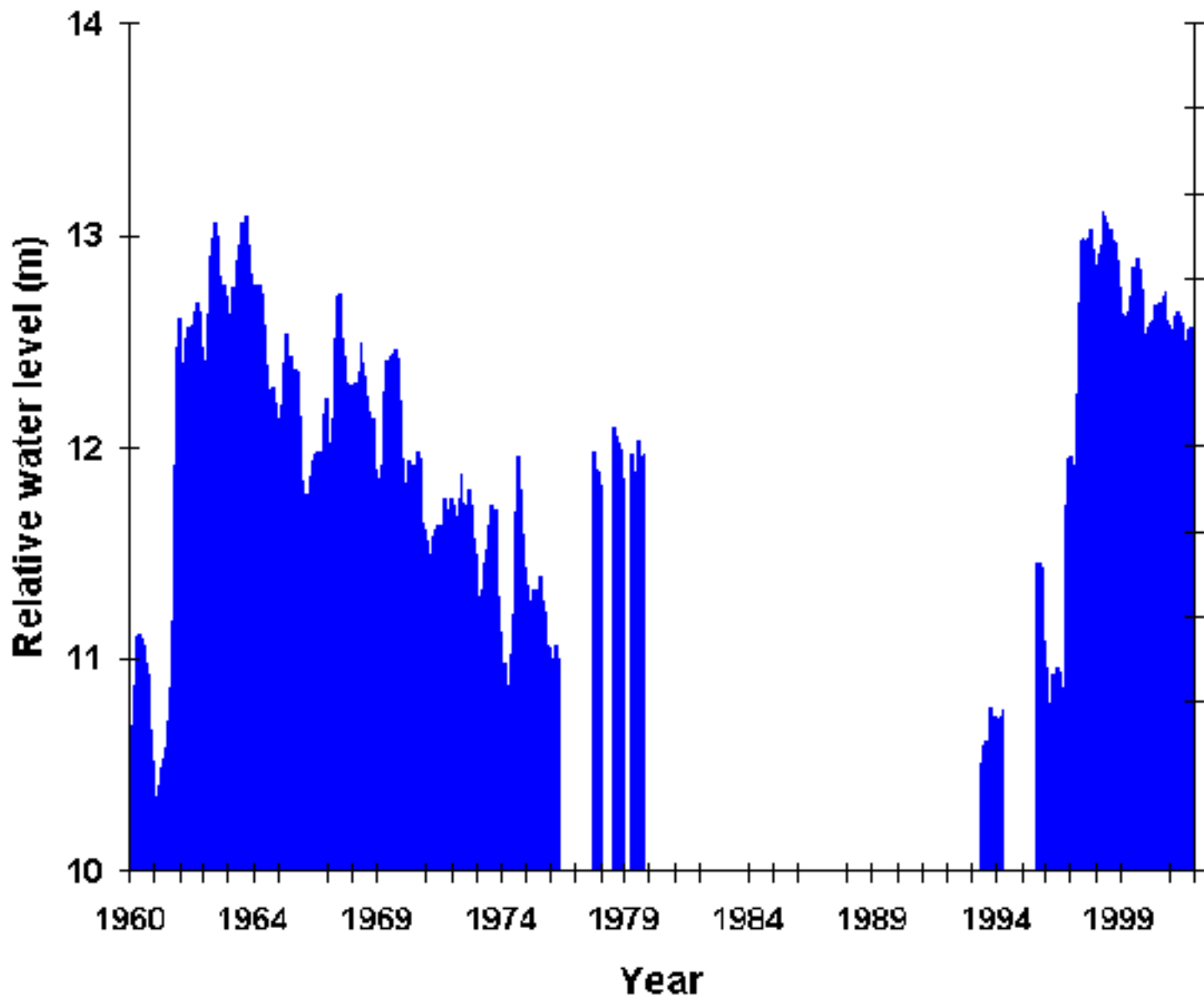
Final classification



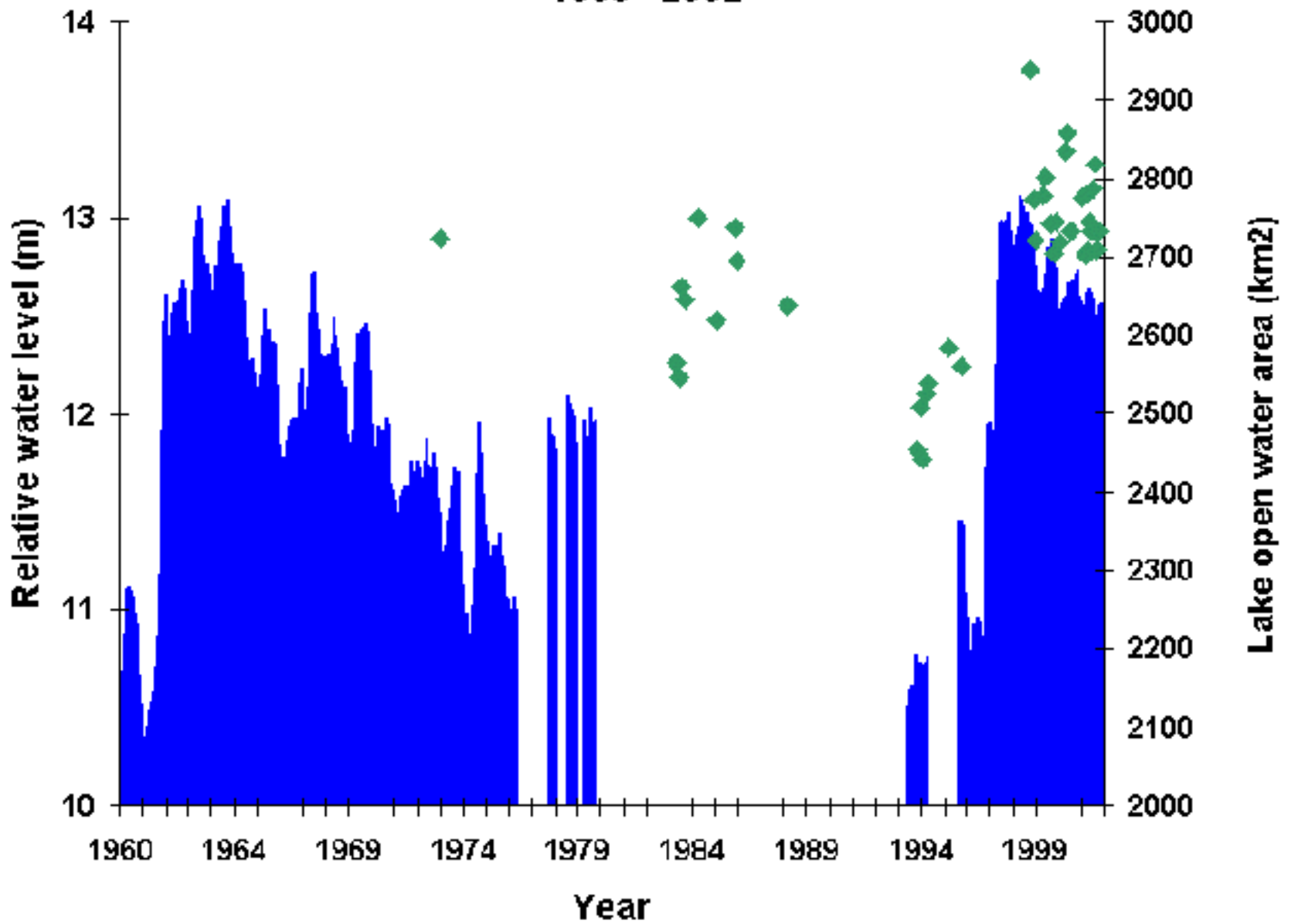
Final classification

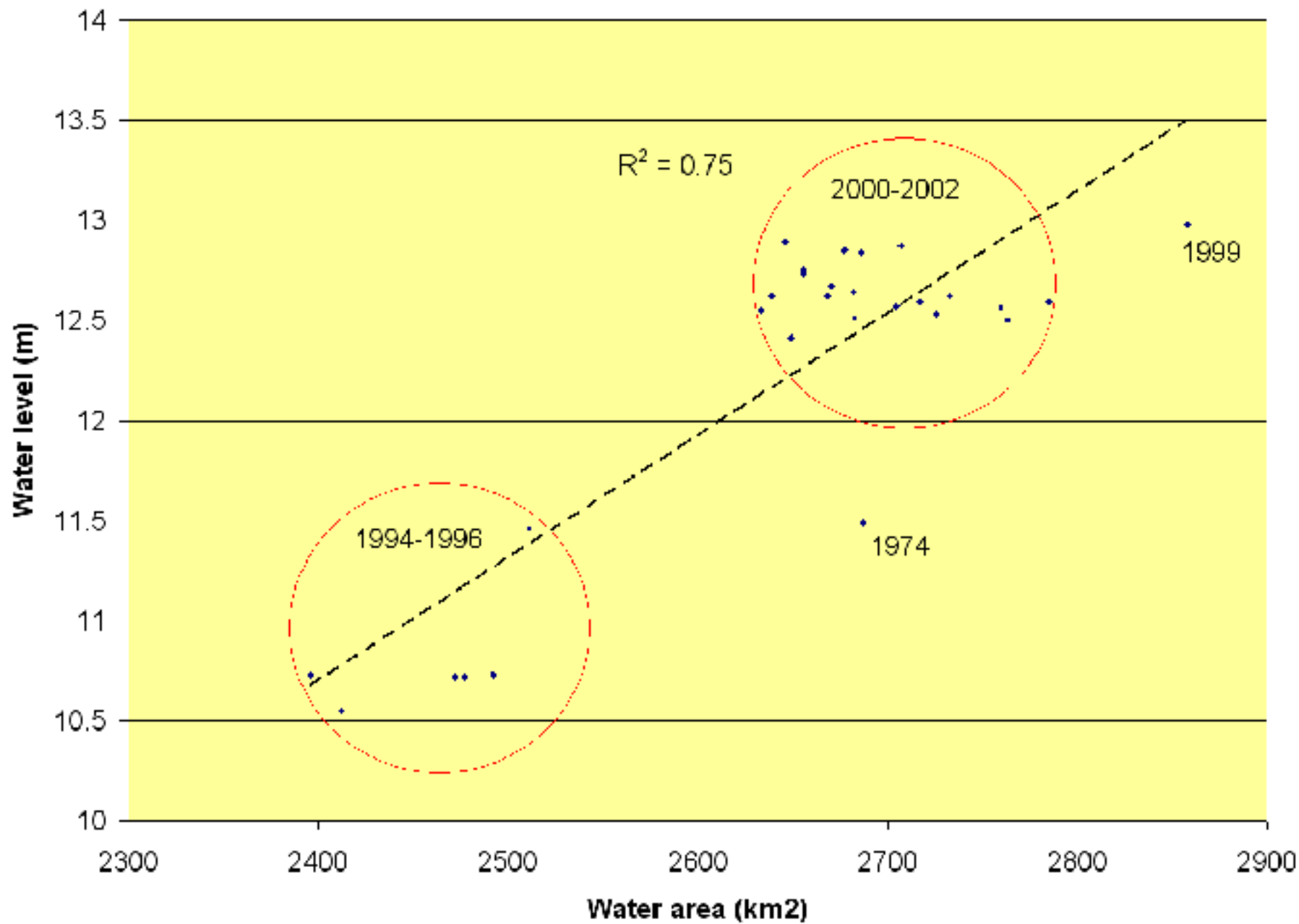


Relative water levels of Lake Kyoga, Uganda, 1960 - 2002

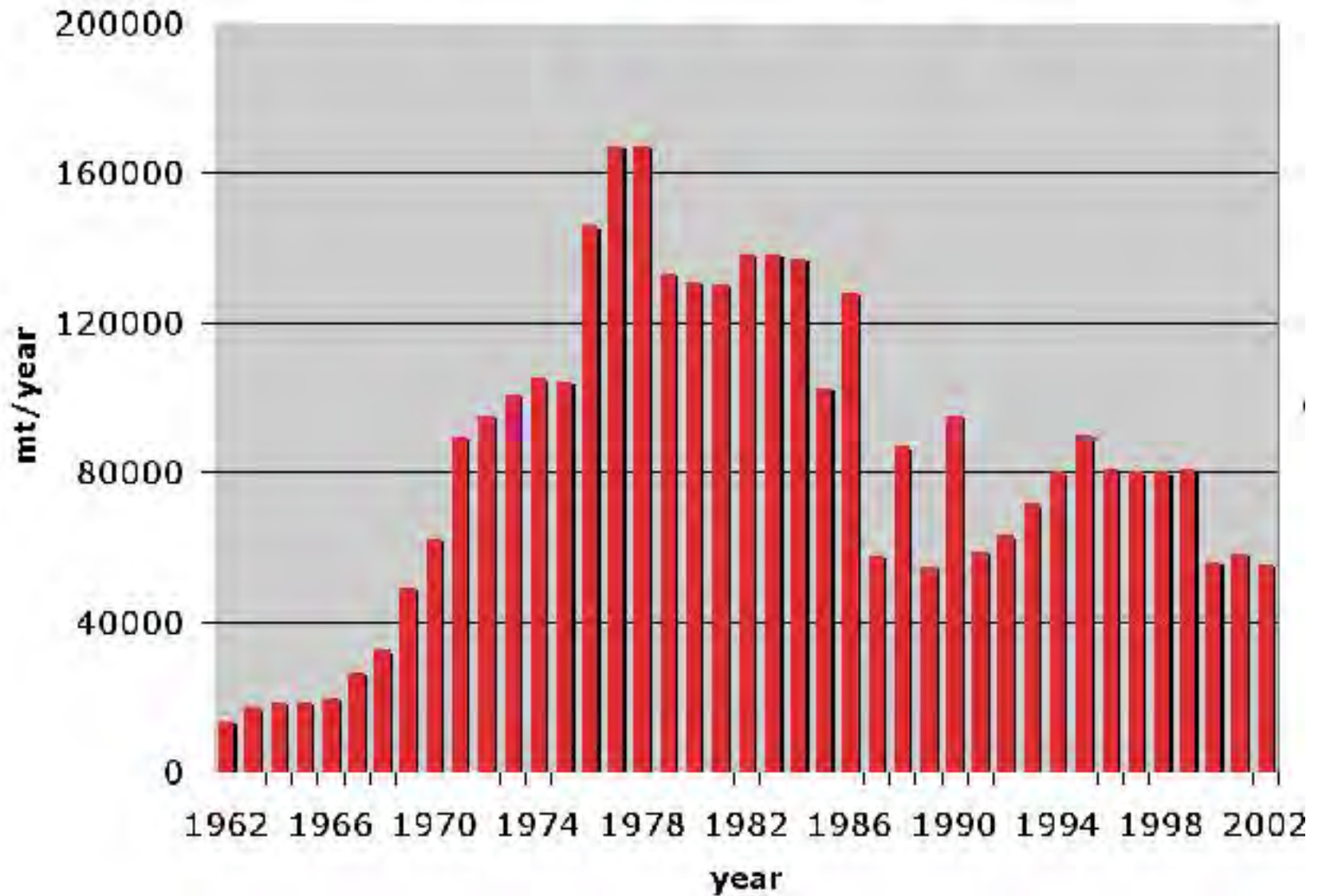


**Relative water levels and Lake area of Lake Kyoga, Uganda,
1960 - 2002**

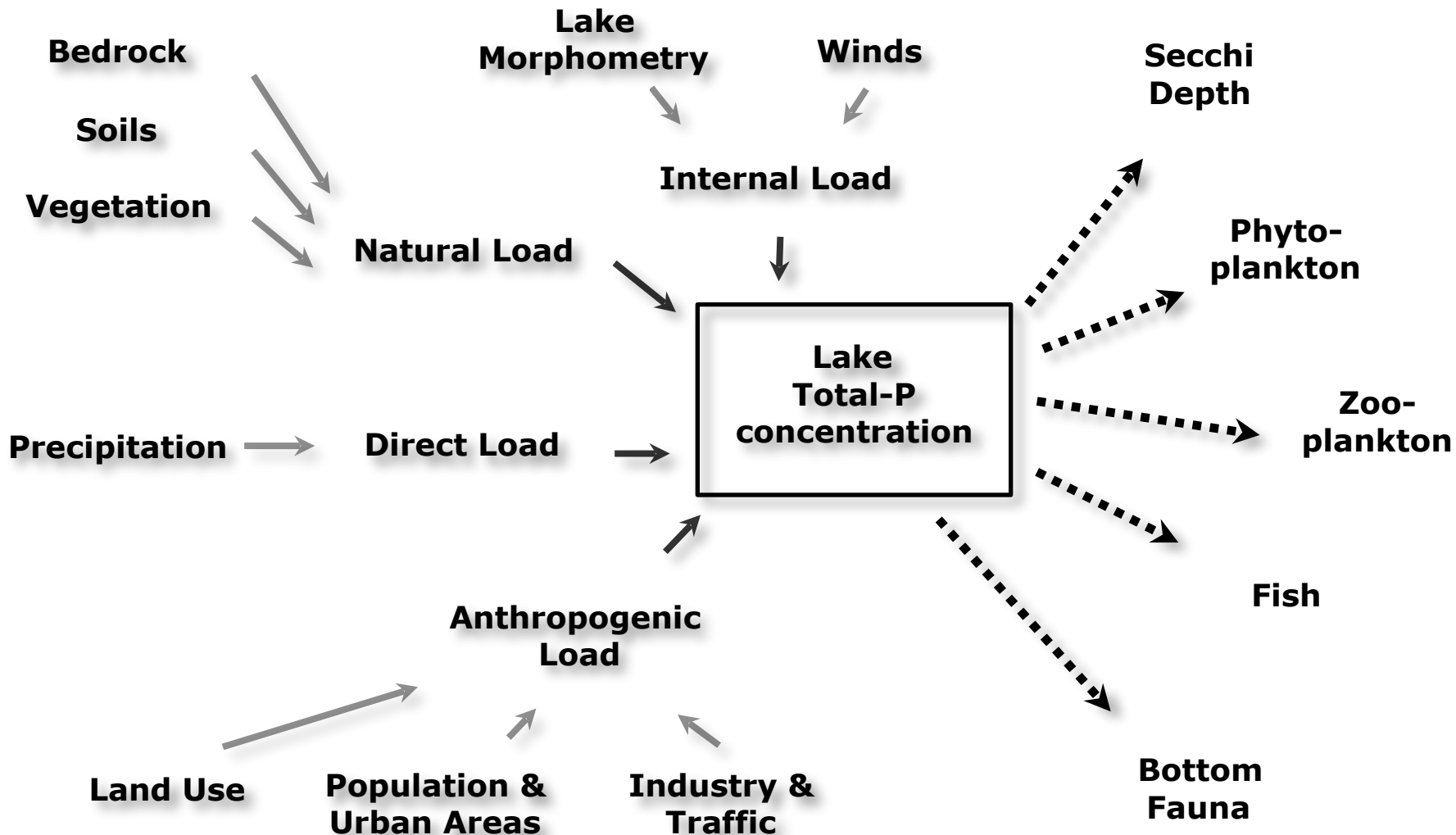




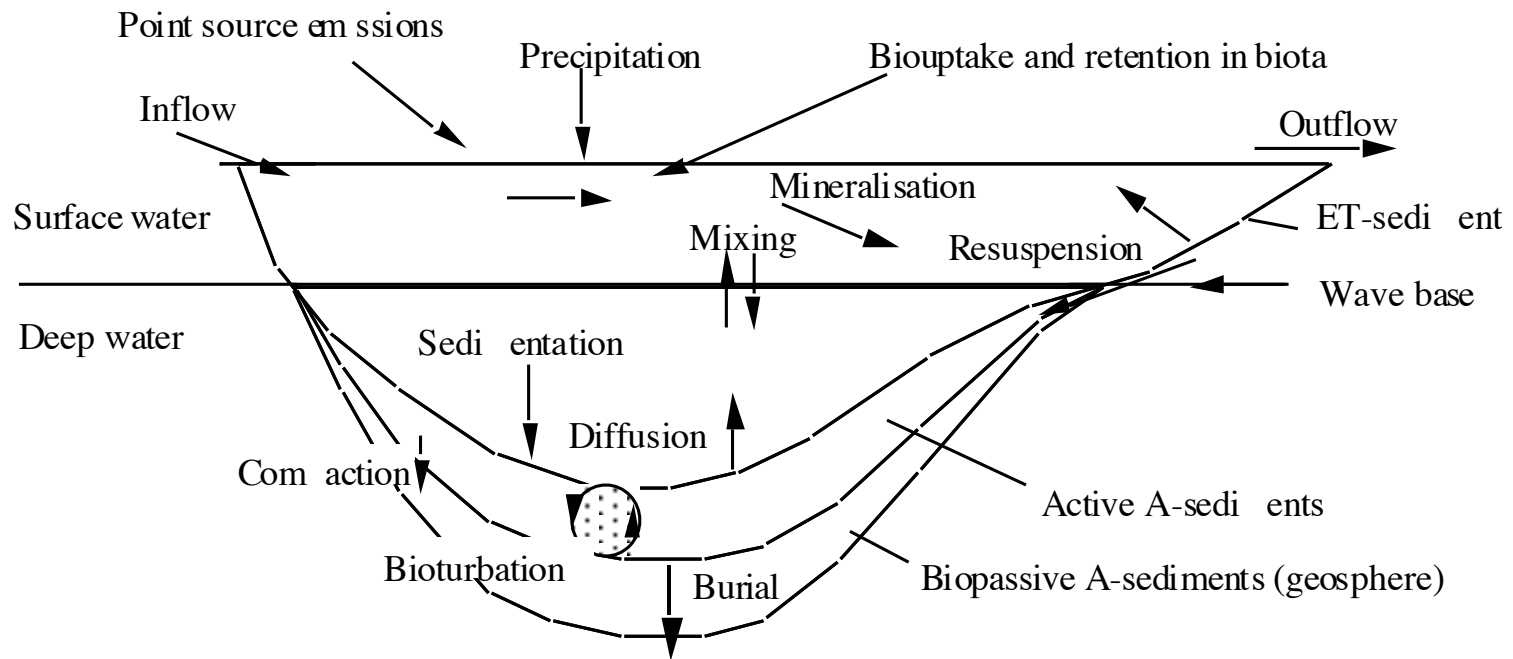
Lake Kyoga fishing



Lakeweb - System Analysis of Lake Kyoga fish ecology



Lake Web Processes



Lakeweb - Functional Groups

Primary producers

Phytoplankton

*Benthic
Algae*

Macrophytes

Zooplankton

*Herbivorous
Zooplankton*

*Predatory
Zooplankton*

Decomposers

Bacterioplankton

Zoobenthos

Zoobenthos

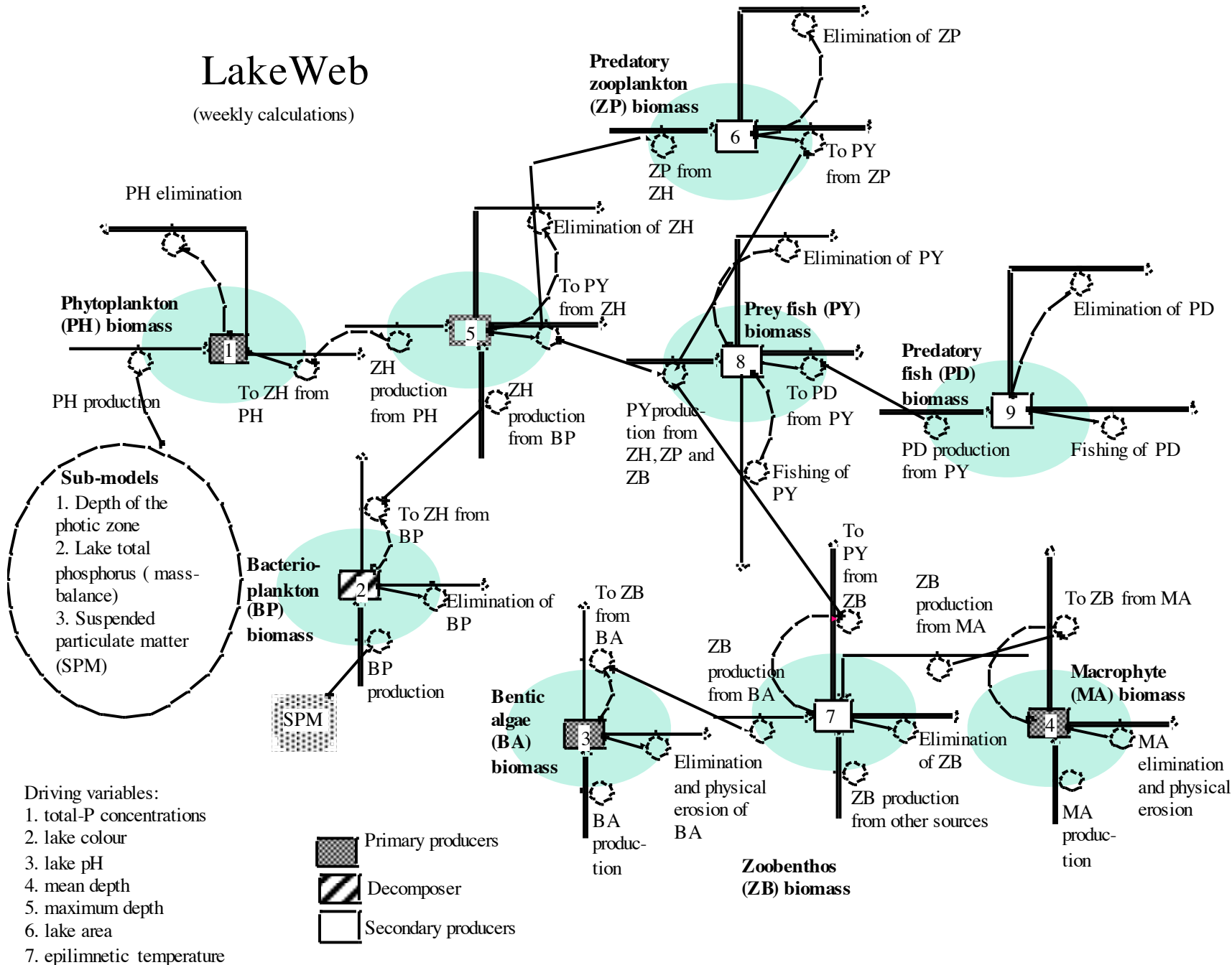
Fish

Prey Fish

Predatory Fish

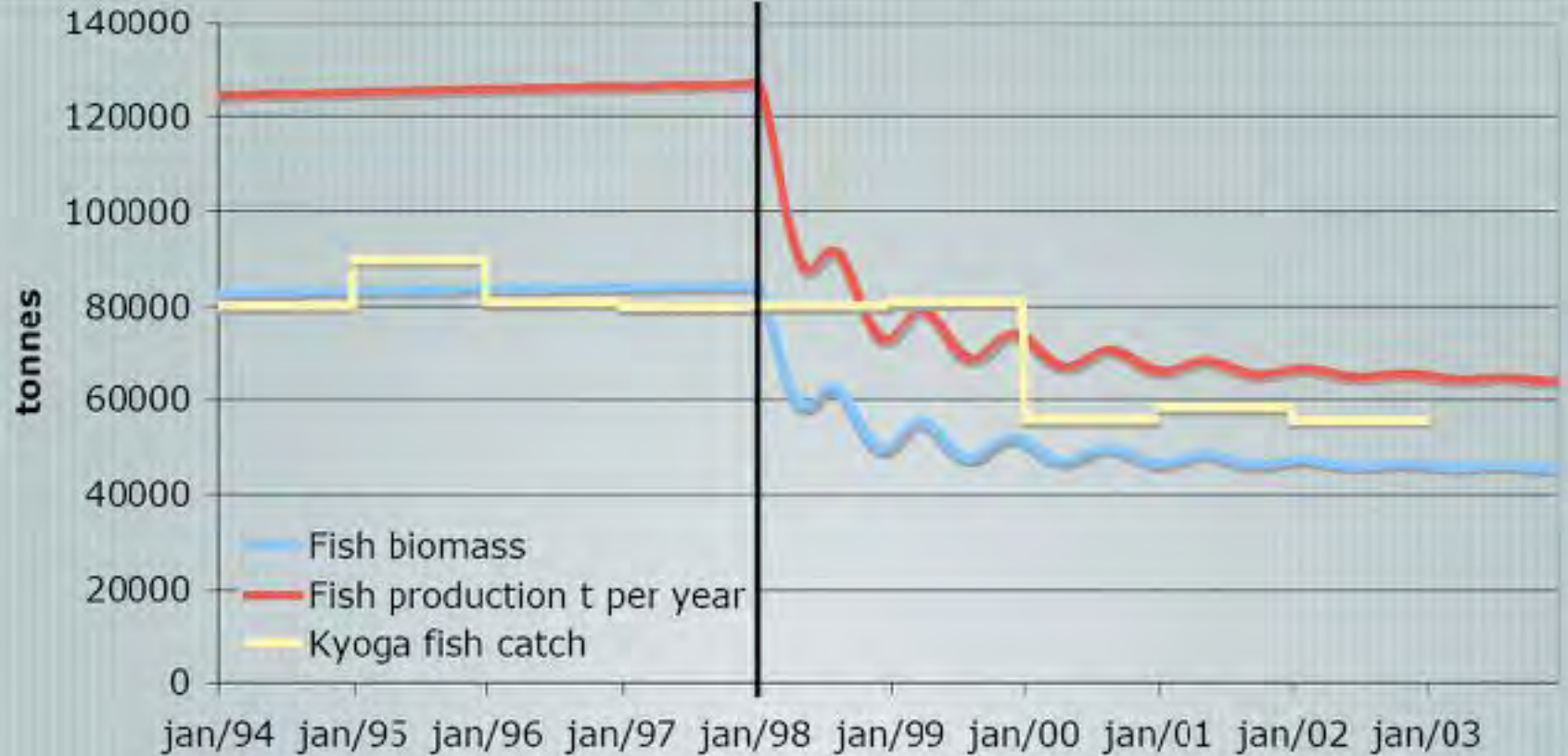
LakeWeb

(weekly calculations)



Lake Kyoga model results

plug formation
in 1998



Lake Kyoga Aquatic Foodweb

Dynamic Modelling with LakeWeb

Andreas Gyllenhammar

PhD, Environmental Analysis

MSc, Aquatic & Environmental Engineering

Uppsala University of Sweden

Dept. of Earth Sciences

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more about
Lakeweb? –
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