Satellite Imagery Visualization System (SIVIS)
Basic Functionality

Purpose: Validation tool for cloud algorithm development

- Overlay imagery from any 3 channels (24-bit color)
- Image processing and morphological functions
- Display ecosystems, countries, lakes, rivers, etc.
- Spatial coherence
- Display brightness temperature differences
- Display temperature & humidity profiles
- Cloud classification module
- Cloud mask module

SIVIS Cloud Analysis Screen

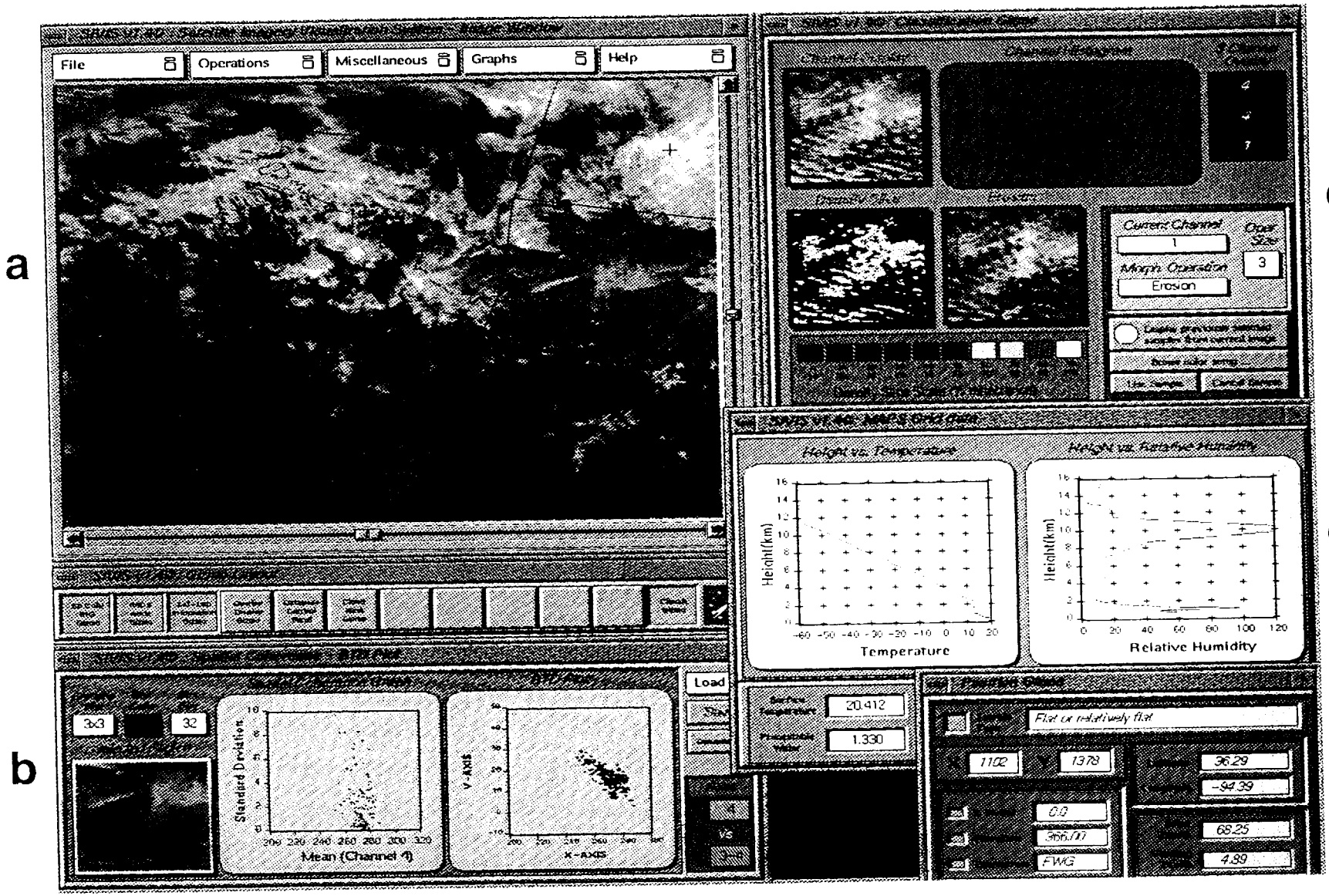


Figure 2: Example of Satellite Imagery Visualization System (SIVIS) software. In region (a) is shown false color imagery of the 28 November 1991, 2048 UTC NOAA-11 image over the central United States. The surface is black, low clouds are blue, and cirrus is white. Region (b) shows spatial coherence and brightness temperature differences for the red box in the image. Morphological operations are shown in region (c), temperature and humidity profiles for the red boxed region are in (d), and in region (e) are shown surface elevation, viewing geometry, and ecosystem types for the region of interest.

Satellite Imagery Visualization System (SIVIS)
Ancillary Data Sets

- Elevation (Navy)
  10-minute map, 30-m vertical resolution

- Land/Water Percentage (Navy)
  10-minute map

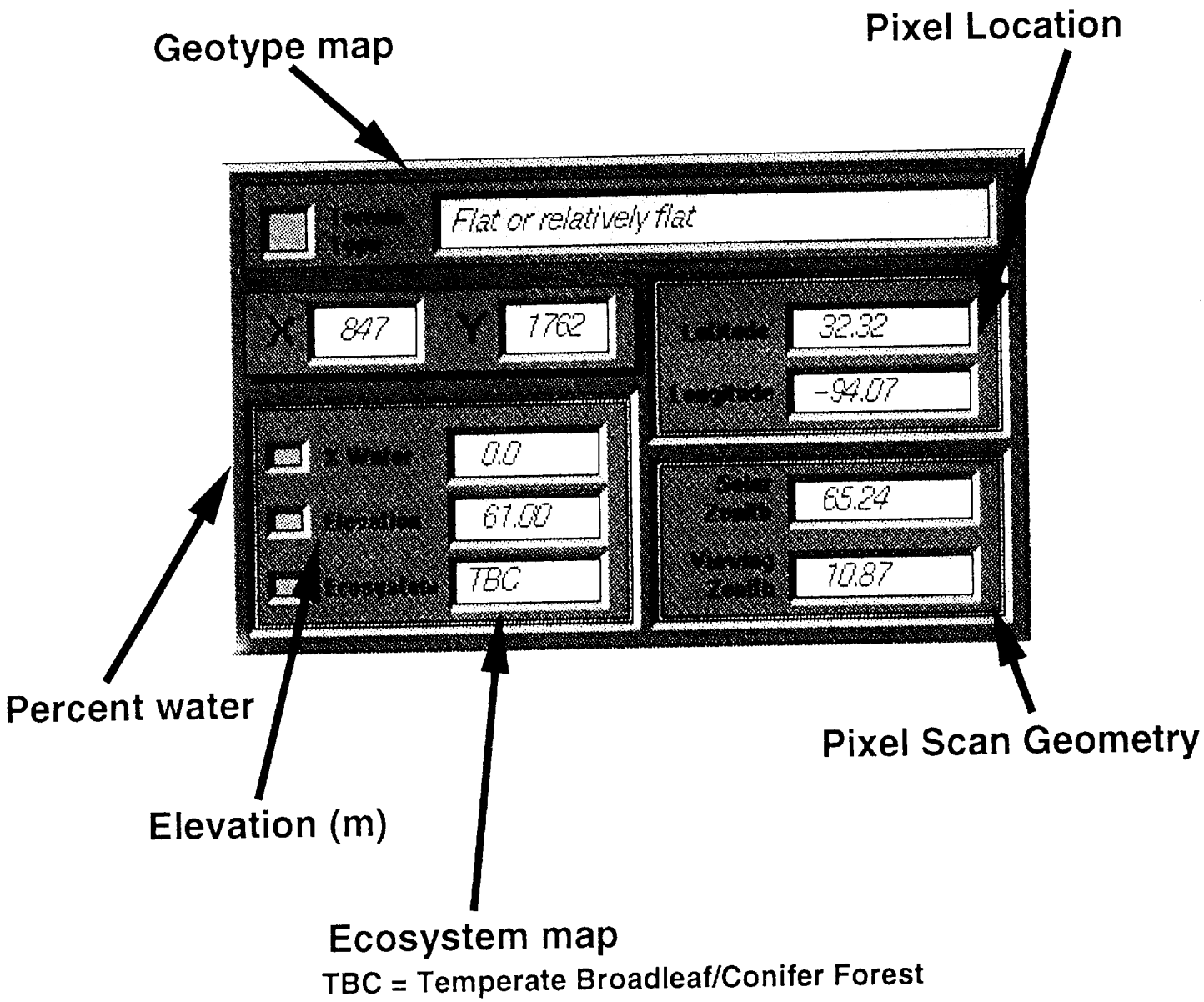
- Terrain Map (Navy)
  10-minute map of salt or lake bed; flat or relatively flat; desert; marsh; lake country; river beds or valleys; isolated mountain; low, average, or extremely rugged mountains; or ocean

- Continental boundaries, states, countries, rivers, etc.
  1-minute map

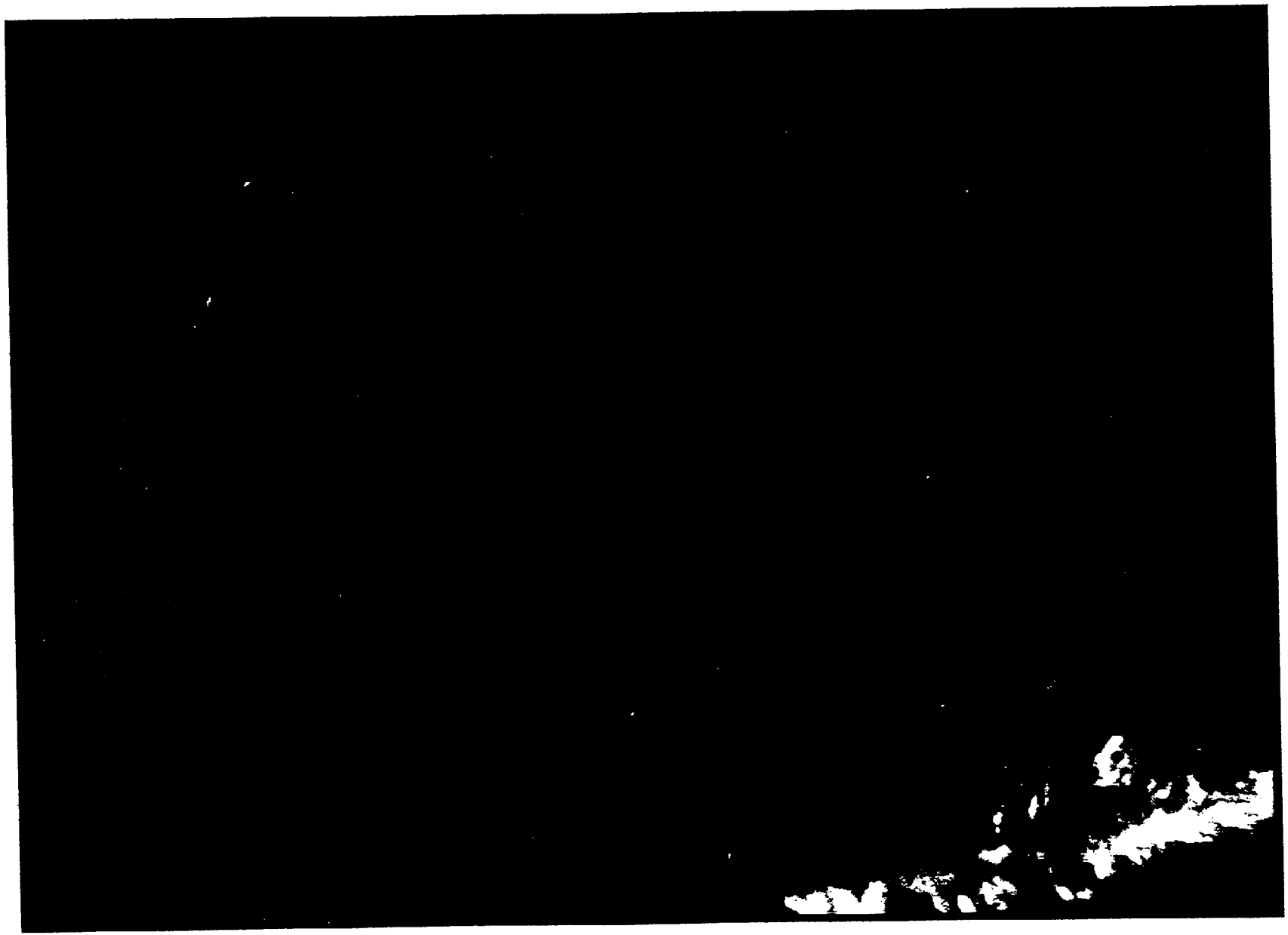
- EPA Ecosystem Map
  National Geophysical Data Center; over 50 ecosystem types; 10-minute map

- Atmospheric profiles from ECMWF, NMC, sondes, or MAPS

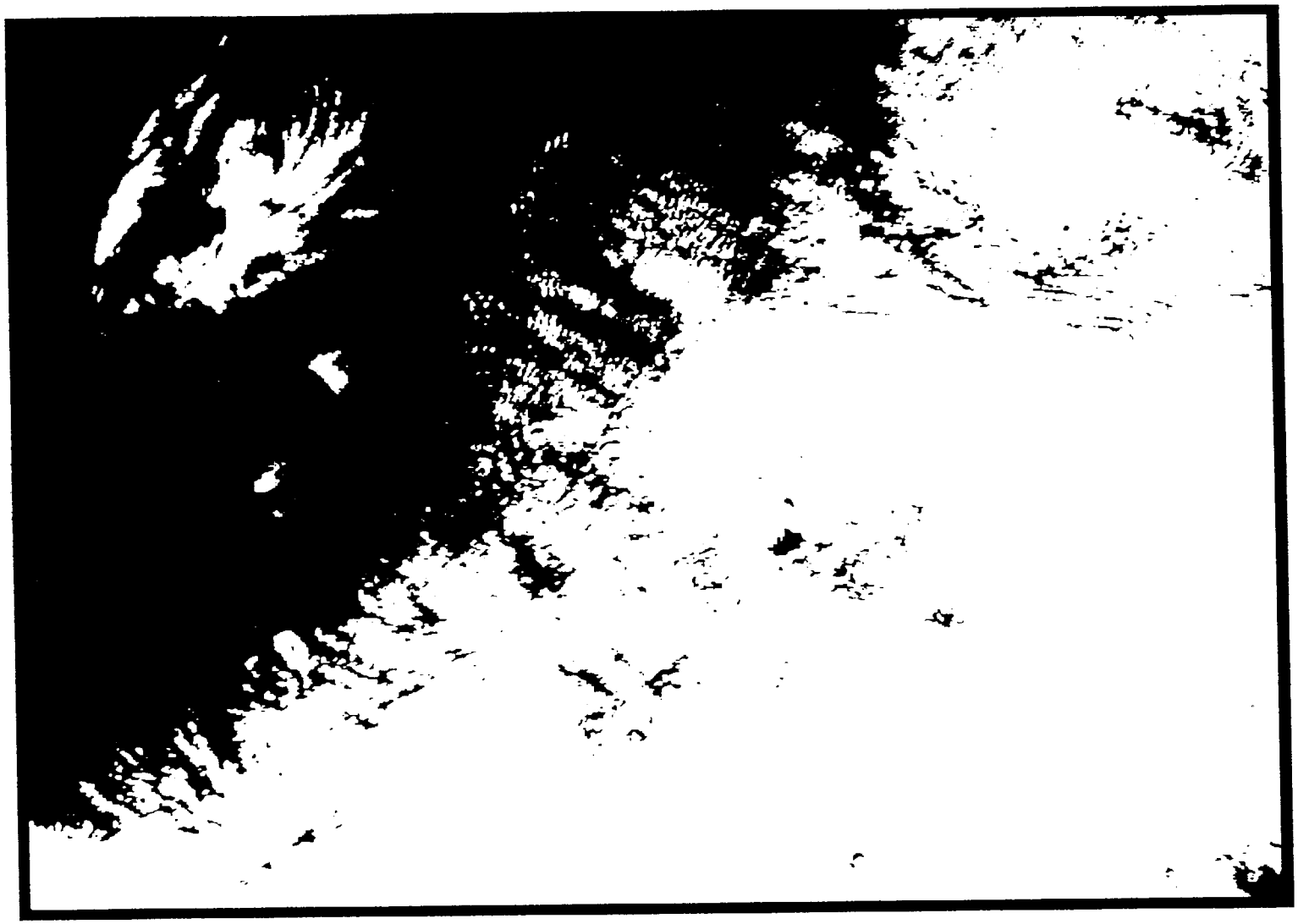
SIVIS Pixel Information "Gizmo"



NOAA–11 AVHRR LAC image December 7, 1991 2048 UTC

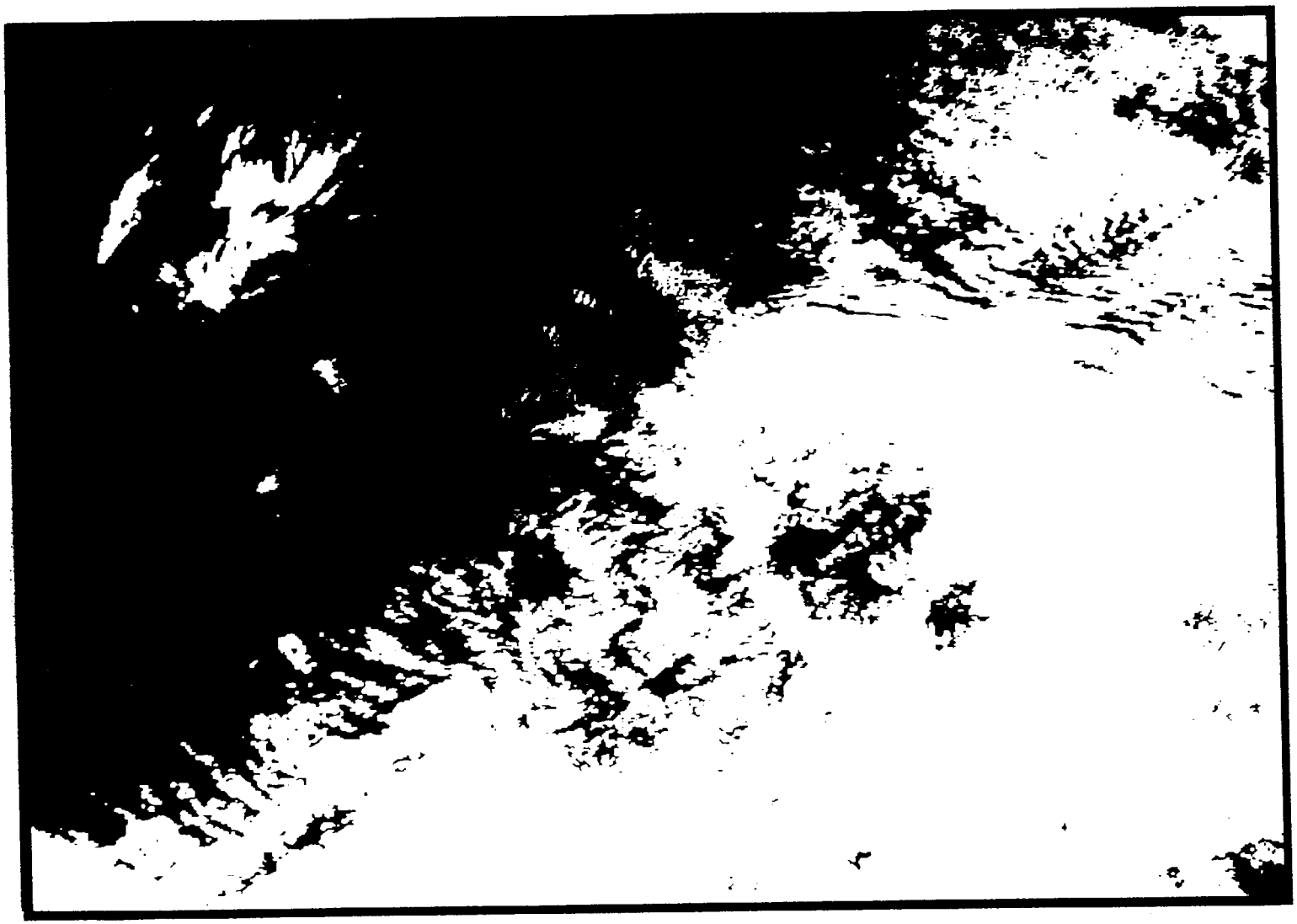


Cloud Masks for NOAA–11 AVHRR LAC Image
December 7, 1991 2048 UTC



– neither
– channel 1 reflectance > 0.17
– channel 4 brightness temperature < 288 K
– both

Cloud Masks for NOAA–11 AVHRR LAC Image
December 7, 1991 2048 UTC



– neither
– channel 1 reflectance > 0.20
– channel 4 brightness temperature < 285 K
– both

CERES/MODIS Cloud Mask Heritage Projects

ISCCP: (International Satellite Cloud Climatology Project)

CLAVR: Clouds from AVHRR

SERCAA: Support of Environmental Requirements for Cloud Analysis and Archive

U. Wisconsin: Global cirrus climatology

Satellite Data Sets

MAS
AVHRR
HIRS
Landsat
GOES-8 (Anticipated)