

HSTSAT.GIF is a Hubble Space Telescope image of Saturn in the Graphics Interchange Format.

Contents of the image:

The Saturn image is a composite of three images taken with the Wide Field Camera of the Hubble Space Telescope. These images were taken on August 26, 1990. The approximate center wavelengths of the filters and the exposure times are as follows:

439 nm	0.4 seconds	(blue)
547 nm	0.2 seconds	(green)
718 nm	0.2 seconds	(near infrared)

The exposure times are so short that the telescope was not guided during the exposure. The intervals between successive exposures were six minutes.

Each separate image was cleaned up with a Lucy deconvolution algorithm to minimize the effects of the spherical aberration in the telescope. The composite color image was made by treating the near infrared image as a red image, so the colors in the composite image are approximately the true colors of Saturn.

Each pixel in the image is 0.1 arcseconds by 0.1 arcseconds and this is the approximate resolution of the image. Because Saturn is such a bright object, computer processing (deconvolution) is able to compensate for the loss of sharpness caused by spherical aberration and restore the expected resolution of the telescope. Such processing is not effective for faint objects.

The image is oriented so that the North pole of Saturn is visible towards the top of the image.

The image demonstrates some of the potential scientific uses of the HST and Wide Field/Planetary Camera for solar system studies. For example, the fact that the hexagonal feature around the North pole, first seen by Voyager in the early 1980s, is visible in this image indicates that it is a long lived structure in the atmosphere of Saturn. With a series of such high resolution pictures, astronomers will be able to measure wind speeds and track changes in the zonal structure of the atmosphere.

Edward J. Groth for the WFPC team, October 11, 1990.