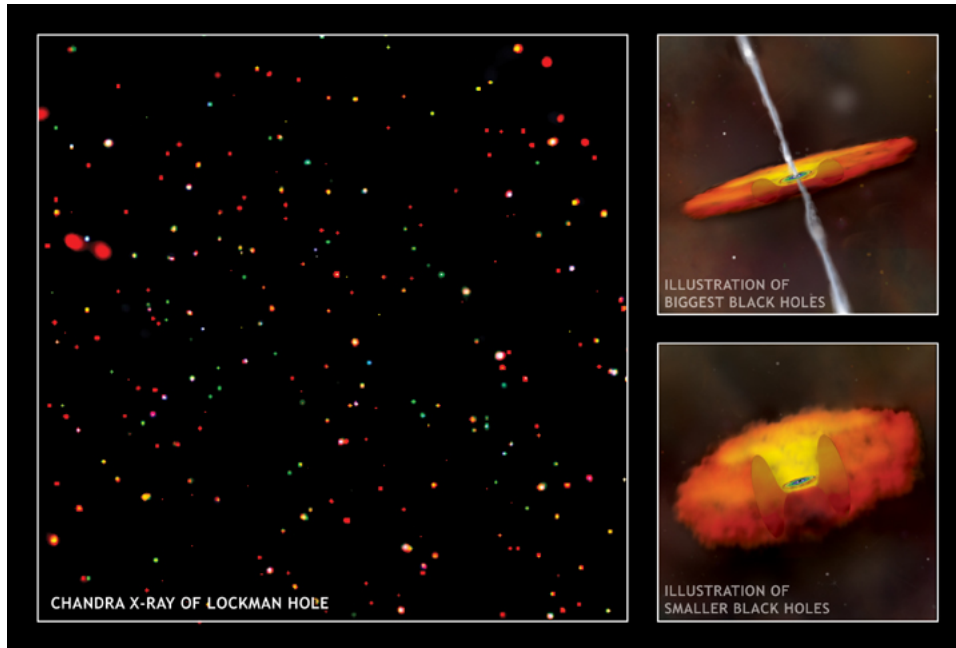




Chandra Science Highlight

Weight Limits for the Biggest Black Holes

Chandra X-ray Observatory ACIS Image



- These data and data from the Chandra Deep Field-North and Chandra Deep Field-South have enabled astronomers to study the rate at which supermassive black holes in the centers of galaxies grow by accreting gas from their surroundings.
- On average, the most massive black holes appear to have grown rapidly until they attained a mass of a few hundred million to a few billion Suns and then stopped. Intense heating produced by their rapid growth could have caused a blowback effect that cleared away much of the gas and dust around the black hole (illustration, upper right).
- In contrast, smaller supermassive black holes grow more slowly and retain most of the gas and dust around them (illustration, lower right).

This Chandra image of the Lockman Hole – a region of the sky where the column density of neutral hydrogen is a minimum – is a mosaic that shows hundreds of X-ray sources, many of which are supermassive black holes in distant galaxies.

*Reference: A. Barger et al. 2005, *Astronomical Journal*, 129:578-609*

(Credit: X-ray: NASA/CXC/U.Wisconsin/A.Barger et al.; Illustrations: NASA/CXC/M.Weiss)