

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
New Worlds - Innovative Space Education and Outreach (7)

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TOUCH THIS! BRINGING HST IMAGES TO LIFE AS 3-D MODELS

**Abstract**

We present results of an innovative process we have tested to transform Hubble Space Telescope images into tactile 3-D models of astronomical objects. Starting with HST images and scientific analysis of the HST data, we have created a unique method for understanding astronomical phenomena, especially designed to make astronomy accessible to visually impaired children and adults. We start by constructing 3-D digital representations of astronomical objects and slicing them into layers. Each layer has tactile, touchable patterning and Braille characters, and is translated into a format for a 3-D printer. The pieces are used in combination, so that the user can explore the structure of the object with their fingertips, slice-by-slice, analogous to a visual fly-through. We have initiated this project with HST data on star clusters and tested the 3D printouts to see the best design for individuals to identify and spatially locate the different components of these complex astronomical objects: gas, dust and stars. This helps us formulate how to create tools for individuals to learn about the formation and composition of stellar clusters. While we believe the materials will be most useful for middle and high school blind students, we have discovered that the final materials will address a broad range of individuals with varied and multi-sensory learning styles, and will be interesting and visually appealing to the public at large.