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New wide image of universe called unprecedented

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Astronomers have released a panoramic image of the universe that they call unprecedented in scope.

The image is the most detailed picture taken of a region large enough to be representative of the distant universe, according to the researchers behind the work. Galaxies seen at vast distances are also seen as they were long ago, since their light takes time to travel.



On this color composite of the UltraVISTA image ([click](#) for full-screen view), the large white objects with haloes are foreground stars in our own Milky Way Galaxy. A host of other galaxies can be seen, from relatively nearby galaxies which appear large enough to discern their structures, to the most distant galaxies which appear as red dots in this image. (Credit: UltraVISTA/Terapix/CNRS/CASU)

“Until recently our view back to the first epoch of galaxy formation has been limited to tiny, ‘pencil-beam’ images made with the Hubble Space Telescope,” said James Dunlop of the University of Edinburgh in Scotland, who led the scientific team. “Now VISTA, with its panoramic imaging capability, is providing us with the first view of truly representative regions of the young Universe.”

VISTA is the Visible and Infrared Survey Telescope for Astronomy, a new instrument located at the Paranal Observatory in Chile. The image was taken using near-infrared light, a type of light somewhat less energetic than what the human eye can detect, although it can be converted to visible form in images.

The picture shows more than 200,000 galaxies, including the most distant and thus youngest seen to date, astronomers said. The objects formed less than one billion years after the Big Bang, a sort of explosion scientists consider to be the birth of our now almost 14 billion-year-old cosmos.

The image comes from the first year of data taken as part of a five-year survey dubbed UltraVISTA. It was made by combining more than 6,000 images, part of a huge collection from VISTA being made available to astronomers worldwide by the European Southern Observatory, which operates the Paranal Observatory.

To create the panorama, VISTA was trained on the same patch of sky repeatedly to slowly accumulate the very dim light from the most distant galaxies. The survey area coincides with the location of the largest visible-light image taken with the Hubble Space Telescope, called the COSMOS survey. This covers an apparently almost empty patch of sky, but the combination of the Hubble imaging and the new VISTA data has revealed it as a treasure trove of data, astronomers say. The final UltraVISTA image is expected to reveal objects five to ten times fainter still, enabling the study of galaxy evolution over the history of the universe.