Legacy ExtraGalactic UV Survey (LEGUS) catalogues are public

On May 17th 2018 the international LEGUS team has made public the photometric catalogues of the 8000 star clusters and the 39 million stars measured with the Hubble Space Telescope for the Treasury program LEGUS. LEGUS (https://legus.stsci.edu/legus_survey.html) combines new Hubble observations with archival Hubble images of 50 nearby star-forming spiral and dwarf galaxies, offering a large and comprehensive resource for understanding the complexities of star formation and galaxy evolution. For all entries we provide magnitudes in five bands: UV, U, B, V, and I. We selected the 50 targets among galaxies with distances between about 4 and 13 Mpc on the basis of their mass, star-formation rate, and metallicity. The observations were performed with the Wide Field Camera 3 and the Advanced Camera for Surveys.

All catalogues are available at https://archive.stsci.edu/prepds/legus/dataproducts-public.html. This is the most comprehensive ultraviolet-light survey of star-forming galaxies in the nearby universe (see http://hubblesite.org/news_release/news/2018-27 for the corresponding NASA Press Release, and http://www.media.inaf.it/2018/05/18/hubble-legus/ for the INAF news).

The 8000 listed star clusters have ages from 1 million to roughly 500 million years. The 39 million resolved stars have ages between 1 million and several billion years (corresponding to the Red Giant Branch evolutionary phase).

With these data scientists can investigate how star formation occurred in one specific galaxy or a set of galaxies. They can correlate the properties of the galaxies with their star formation, derive

the star-formation history of the galaxies, look for connection between star formation and the major structures, such as spiral arms, that make up a galaxy, check for correlations between field stars and star clusters properties, look at the effects of the environment on the star formation and on the clusters possibilities of survival, look for the final link between gas and star formation, which is key for understanding galaxy evolution. The ultraviolet-light images may also help astronomers identify the progenitor stars of supernovas found in the data. The LEGUS survey will also help astronomers interpret views of galaxies in the distant universe, where the ultraviolet glow from young stars is stretched to infrared wavelengths due to the expansion of space.

The LEGUS team includes many Italian scientists, including the PI Daniela Calzetti (University of Massachusetts, Amherst). Monica Tosi (INAF Bologna), Michele Cignoni (UniPI, associated to INAF Bologna), Elena Sacchi (who just got her PhD in Bologna with an INAF grant), and Alessandra Aloisi (STScI) are in charge of deriving the star formation histories of the target galaxies from the colour-magnitude diagrams of their resolved stars.