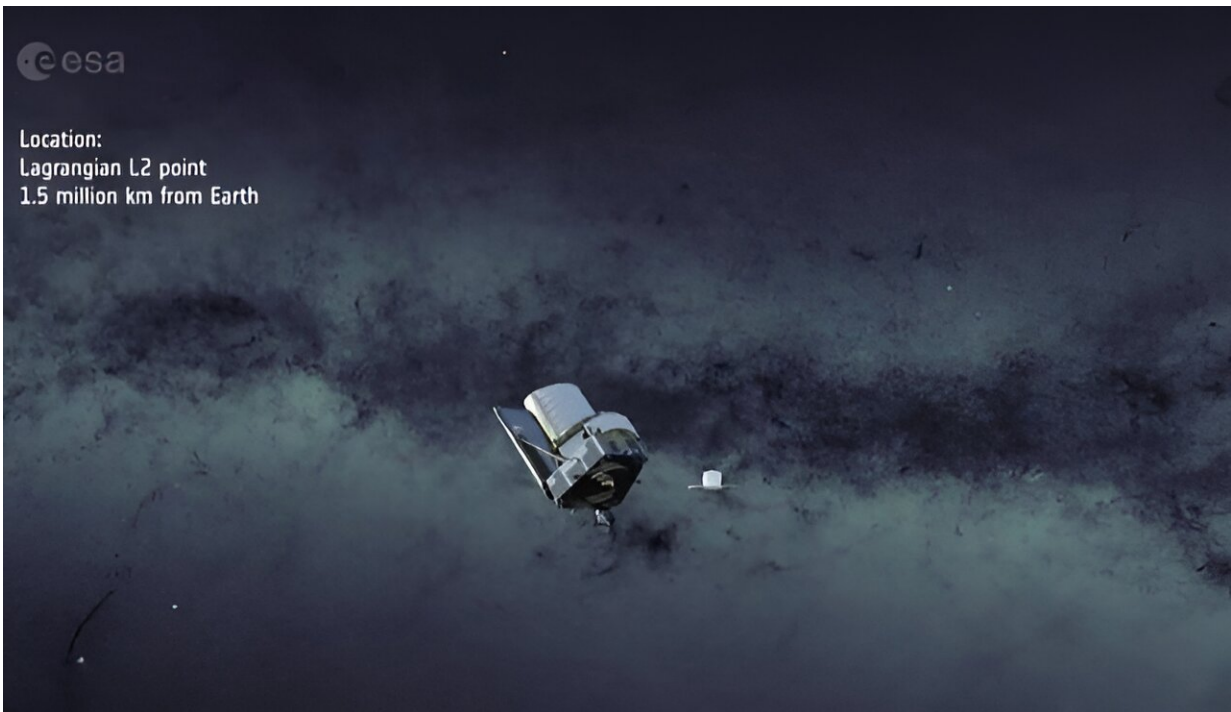


# Video: The universe in a box: Preparing for Euclid's survey

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Credit: European Space Agency

ESA's Euclid mission will create a 3D-map of the universe that scientists will use to measure the properties of dark energy and dark matter and uncover the nature of these mysterious components. The map will contain a vast amount of data, it will cover more than a third of the sky and its third dimension will represent time spanning 10 billion years of

cosmic history.

But dealing with the huge and detailed set of novel data that Euclid observations will produce is not an easy task. To prepare for this, scientists in the Euclid Consortium have developed one of the most accurate and comprehensive computer simulations of the large-scale structure of the universe ever produced. They named this the Euclid Flagship simulation.

Running on large banks of advanced processors, [computer simulations](#) provide a unique laboratory to model the formation and evolution of large-scale structures in the universe, such as galaxies, [galaxy clusters](#), and the filamentary cosmic web they form. These state-of-the-art [computational techniques](#) allow astrophysicists to trace the motion and behavior of an extremely large number of [dark-matter](#) particles over cosmological volumes under the influence of their own gravitational pull. They replicate how and where galaxies form and grow, and are used to predict their distribution across the celestial sphere.

Explore the Euclid Flagship simulation in this video and get a sneak preview of the structure of the dark universe, as we currently model it. New insights will be brought to you by the Euclid mission in the coming years.

Provided by European Space Agency

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