



## Overview of the HELCATS project

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Understanding solar wind evolution is fundamental to advancing our knowledge of energy and mass transport in the solar system, whilst also being crucial to space weather and its prediction. The advent of truly wide-angle heliospheric imaging has revolutionised the study of solar wind evolution, by enabling direct and continuous observation of both transient and background components of the solar wind as they propagate from the Sun to 1 AU and beyond. The EU-funded FP7 Heliospheric Cataloguing, Analysis and Techniques Service (HELCATS) project combines European expertise in heliospheric imaging, built up over the last decade in particular through lead involvement in NASA's STEREO mission, with expertise in solar and coronal imaging as well as the interpretation of in-situ and radio diagnostic measurements of solar wind phenomena.

HELCATS involves: (1) cataloguing of transient (coronal mass ejections) and background (stream/corotating interaction regions) solar wind structures observed by the STEREO/Heliospheric Imagers, including estimates of their kinematic properties based on a variety of modelling techniques; (2) verifying these kinematic properties through comparison with solar source observations and in-situ measurements at multiple points throughout the heliosphere; (3) assessing the potential for initialising numerical models based on the derived kinematic properties of transient and background solar wind components; (4) assessing the complementarity of radio observations (Type II radio bursts and interplanetary scintillation) in the detection and analysis of heliospheric structure in combination with heliospheric imaging observations.

We provide an overview of the achievements of the HELCATS project, as it reaches its conclusion, and present selected results that seek to illustrate the value and legacy of this unprecedented, coordinated study of structures in the heliosphere.