



# FP7 HELCATS

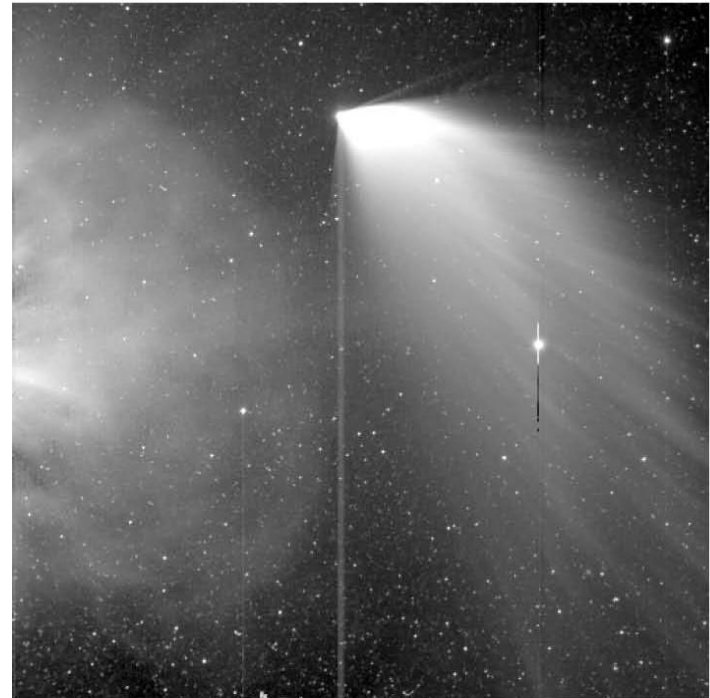
**Heliospheric Cataloguing,  
Analysis and Techniques Service**

Richard Harrison & Jackie Davies  
Rutherford Appleton Laboratory

HI-1A



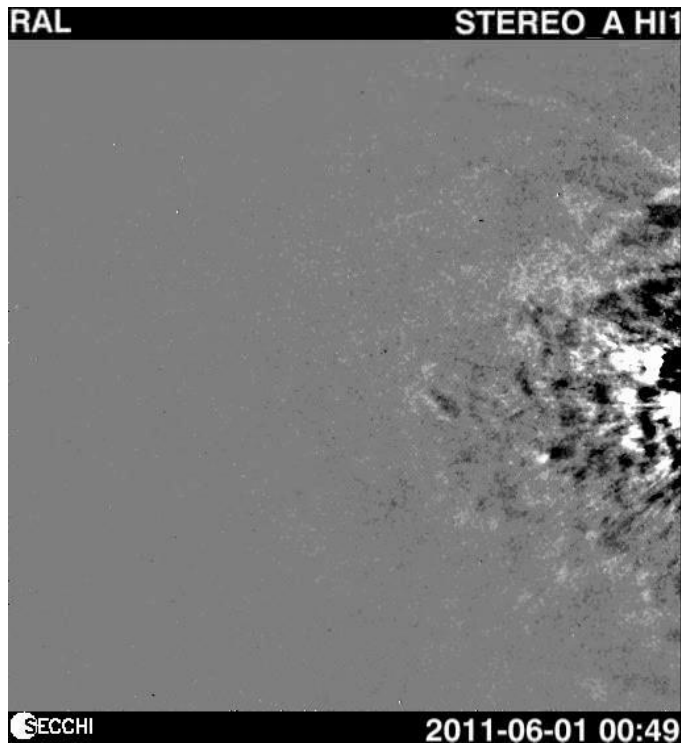
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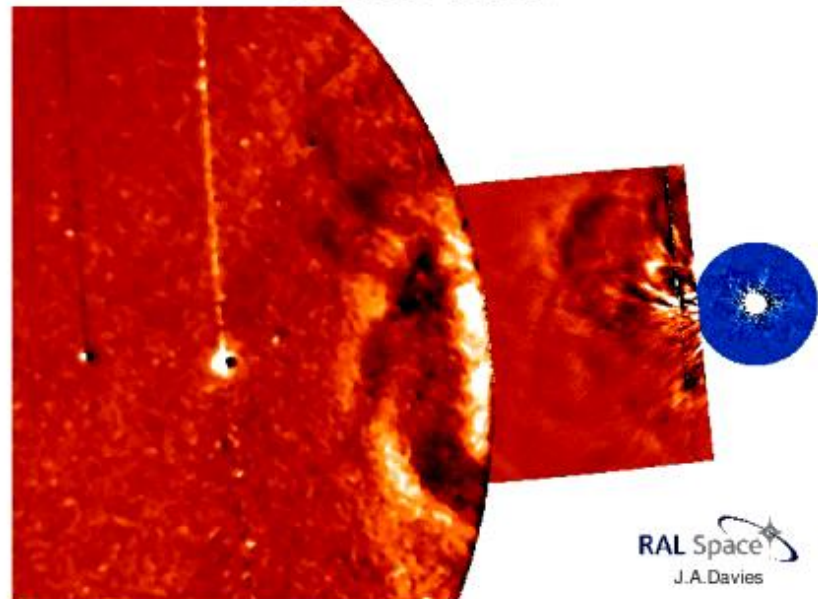
# FP7 HELCATS

## Heliospheric Cataloguing, Analysis and Techniques Service

Richard Harrison & Jackie Davies  
Rutherford Appleton Laboratory



STEREO-A/SECCHI  
2012-03-06 00:00UT





# Overview

“... a strategic programme that aims to empower the wider scientific community, in Europe and beyond, by providing access to advanced catalogues - validated and augmented through the use of techniques and models - for the analysis of solar wind transients, based on observations from European-led space instrumentation.”

Coordinating studies of the transients in the heliosphere as never before!

FP7 HELCATS

Heliospheric Cataloguing, Analysis and Techniques Service



# Aims of HELCATS

- Catalogue transient (CMEs) and background (SIR/CIR) features imaged by STEREO/HI, including
- Kinematic properties estimated using a variety of established & prototype modelling approached
  - geometrical modelling
  - forward and inverse modelling
  - automatic detection
- Verify these kinematic properties through comparison with solar source observations and in-situ
- Assess the potential for initialising MHD models with both the transient & background solar wind structures observed by HI
- Assess the complementarity of using radio obs (in particular Type II radio bursts and IPS) in combination with HI.

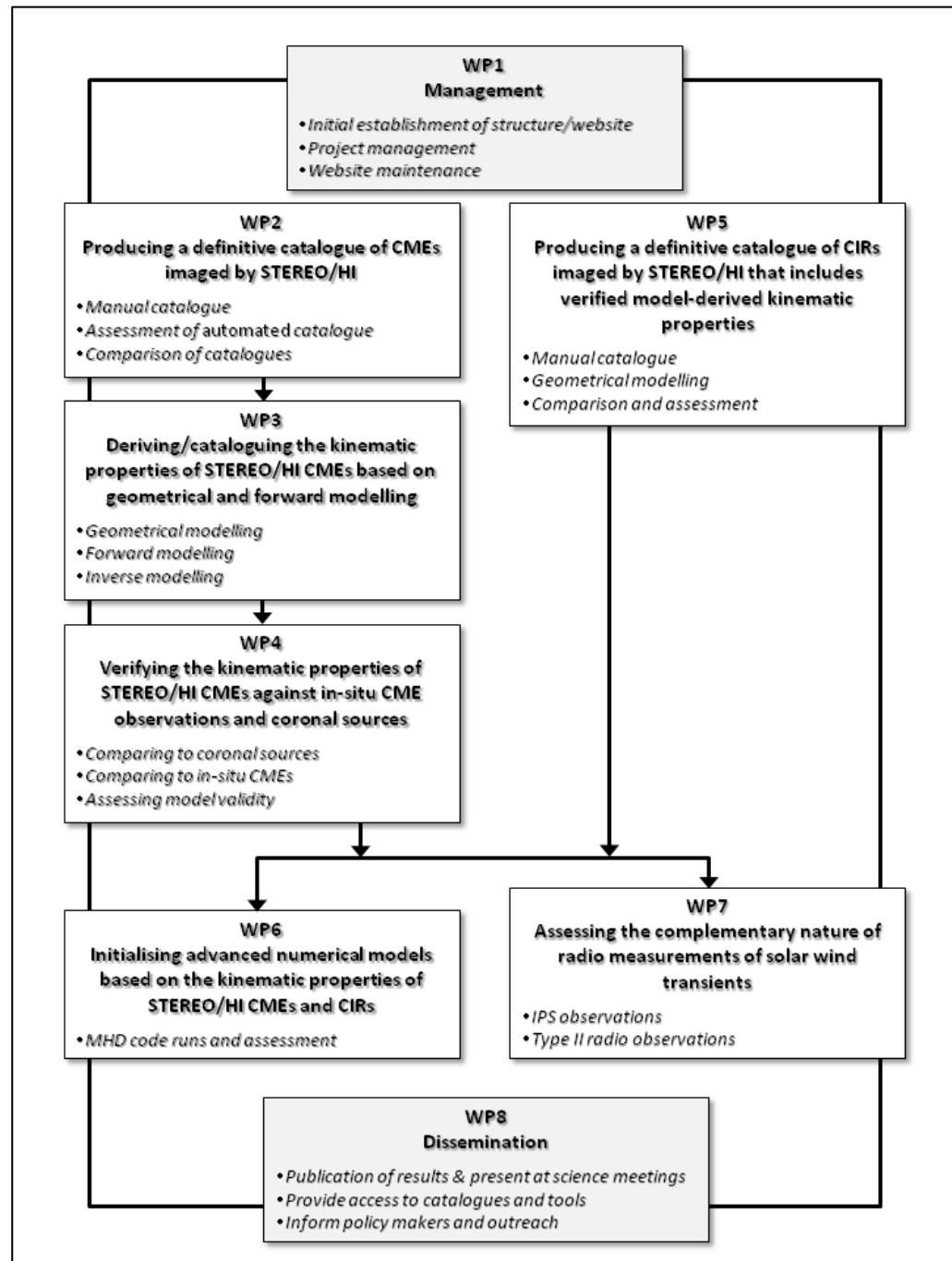


# The Team

- STFC-RAL Space, UK
  - University of Graz, Austria
  - University Paul Sabatier/CNRS, France
  - University of Göttingen, Germany
  - Royal Observatory Belgium, Belgium
  - Imperial College London, UK
  - University of Helsinki, Finland
  - Trinity College Dublin, Ireland
  - George Mason University, USA
- R. Harrison/J.A. Davies  
C. Möstl  
A.P. Rouillard  
V. Bothmer  
L. Rodriguez  
J.P. Eastwood  
E.K.J. Kilpua  
P. Gallagher  
D. Odstrčil



# The WP Structure





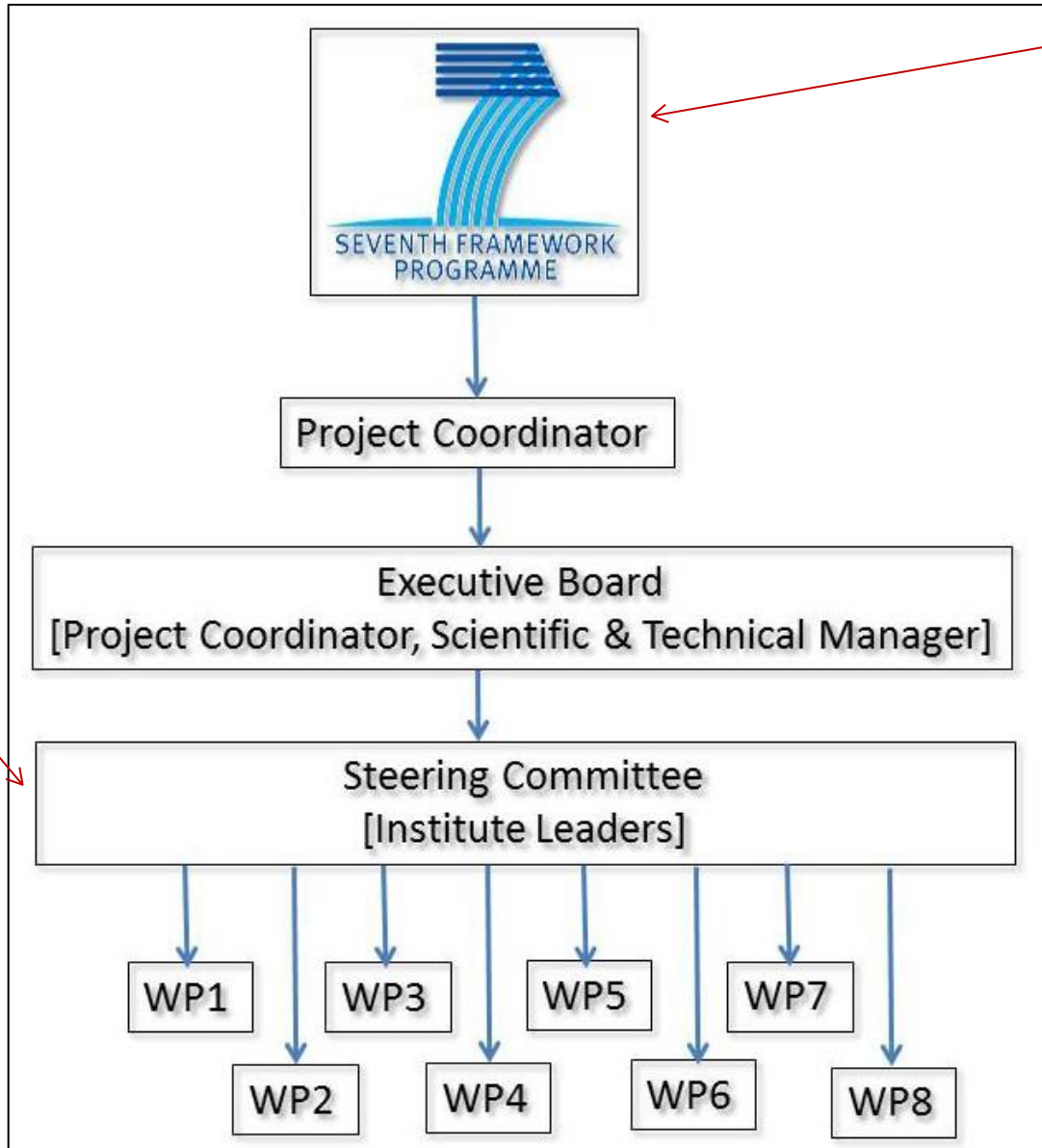
# WP Structure

Work package No.	Work package title	Type of activity	Lead beneficiary No.	Lead beneficiary short name	Person months	Start month	End month
WP1	Management	MGT	1	STFC	8.5	1	36
WP2	Producing a definitive catalogue of CMEs imaged by STEREO/HI	RTD	1	STFC	51.5	1	36
WP3	Deriving/cataloguing the kinematic properties of STEREO/HI CMEs based on geometrical and forward modelling	RTD	4	UGOE	51	7	36
WP4	Verifying the kinematic properties of STEREO/HI CMEs against in-situ CME observations and coronal sources	RTD	2	UNIGRAZ	68	10	36
WP5	Producing a definitive catalogue of CIRs imaged by STEREO/HI that includes verified model-derived kinematic properties	RTD	3	UPS	42	1	36
WP6	Initialising advanced numerical models based on the kinematic properties of STEREO/HI CMEs and CIRs	RTD	3	UPS	27	7	36
WP7	Assessing the complementary nature of radio measurements of solar wind transients	RTD	6	IMPERIAL	39.5	10	36
WP8	Dissemination	OTHER	1	STFC	21.5	1	36
TOTAL					308		



# Management

EU Project Officer – Sabri Mekaoui



Includes all institute leads and WP leads





## NEWS

LATEST FROM HELCATS

News and updates from the project

[2015-02-10: HELCATS release details of first open workshop](#)

[2014-12-10: HELCATS postdoc position advertised at IC](#)

[2014-10-01: HELCATS announcement press release](#)

[2014-06-10: Public web site launch](#)

[All news items...](#)

## Events

VISIT HELCATS

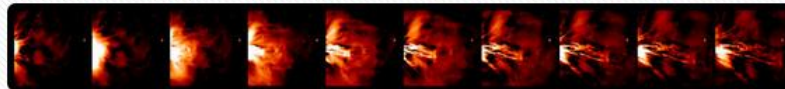
The project will be represented at

[2015-05-19/22: The 1st HELCATS annual open workshop, UGOE](#)

[All Events...](#)

# HELCATS

THE SCIENCE OF TRACKING SOLAR STORMS



The advent of wide-angle imaging of the inner heliosphere has revolutionised the study of the solar wind and, in particular, transient solar wind structures such as Coronal Mass Ejections (CMEs) and Co-rotating Interaction Regions (CIRs).

CMEs comprise enormous plasma and magnetic field structures that are ejected from the Sun and propagate at what can be immense speeds through interplanetary space, while CIRs are characterised by extensive swathes of compressed plasma/ magnetic field that form along flow discontinuities of solar origin that permeate the inner heliosphere.

With Heliospheric Imaging came the unique ability to track the evolution of these features as they propagate through the inner heliosphere. Prior to the development of wide-angle imaging of the inner heliosphere, signatures of such solar wind transients could only be observed within a few solar radii of the Sun, and in the vicinity of a few near-Earth and interplanetary probes making in-situ measurements of the solar wind. Heliospheric Imaging has, for the first time, filled that vast and crucial observational gap.



[Find out more about solar storms and space weather from NASA FAQ](#)

[Credit: NASA]

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**Jason Byrne**  
@JasonByrnePhD

20h

Kicking off the @EU\_HELCATS First Annual Open Workshop on "A new era of space science & #spaceweather observations"

[pic.twitter.com/wEpHk0G6RW](https://pic.twitter.com/wEpHk0G6RW)

Retweeted by HELCATS





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