

Flare Likelihood And Region Eruption foreCASTing

FLARECAST: An Overview

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Sponsor: H2020 (PROTEC-1-2014)

Period of performance: 3 years

Grant amount: 2.4 MEUR



FLARECAST Objective & Data Source



FLARECAST is a European research project aiming to develop an automated solar-flare forecasting system with unmatched accuracy compared to existing facilities.

Primary source of data will be the Helioseismic and Magnetic Imager (HMI) onboard the Solar Dynamics Observatory (SDO) mission, providing:

- Near real-time full-disk LOS magnetograms (45 s cadence)
- NRT SHARP vector magnetogram cutouts (720 s cadence)



FLARECAST Architecture

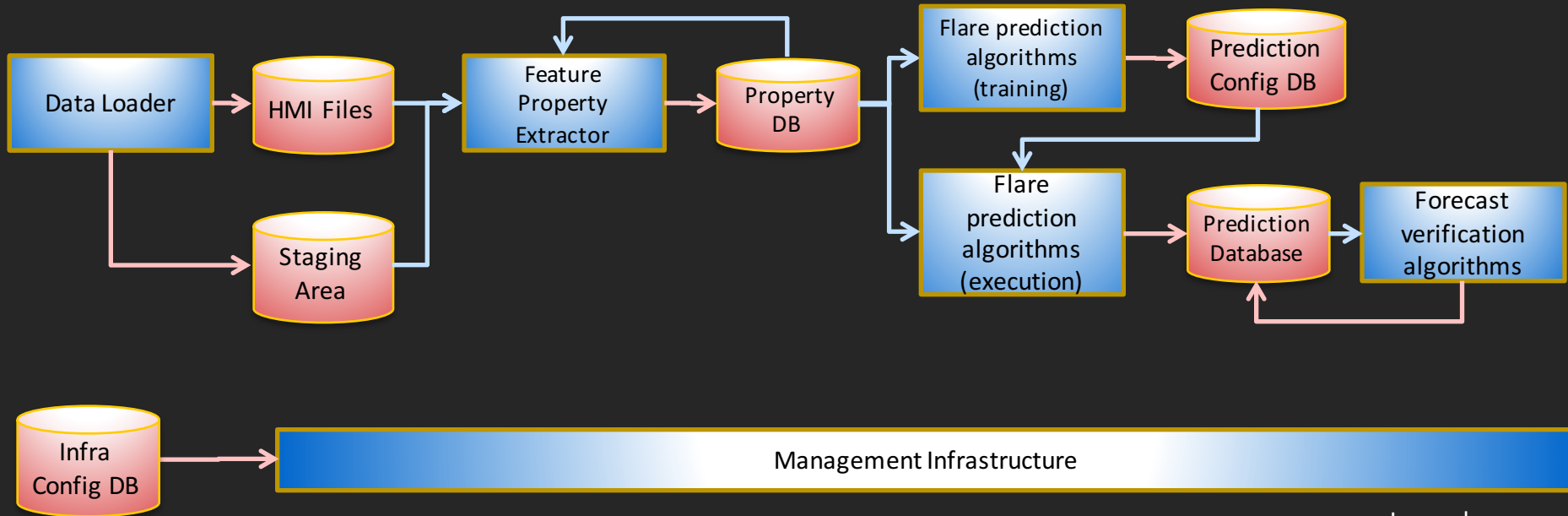


Step 1: Data acquisition

Step 2: Feature property extraction

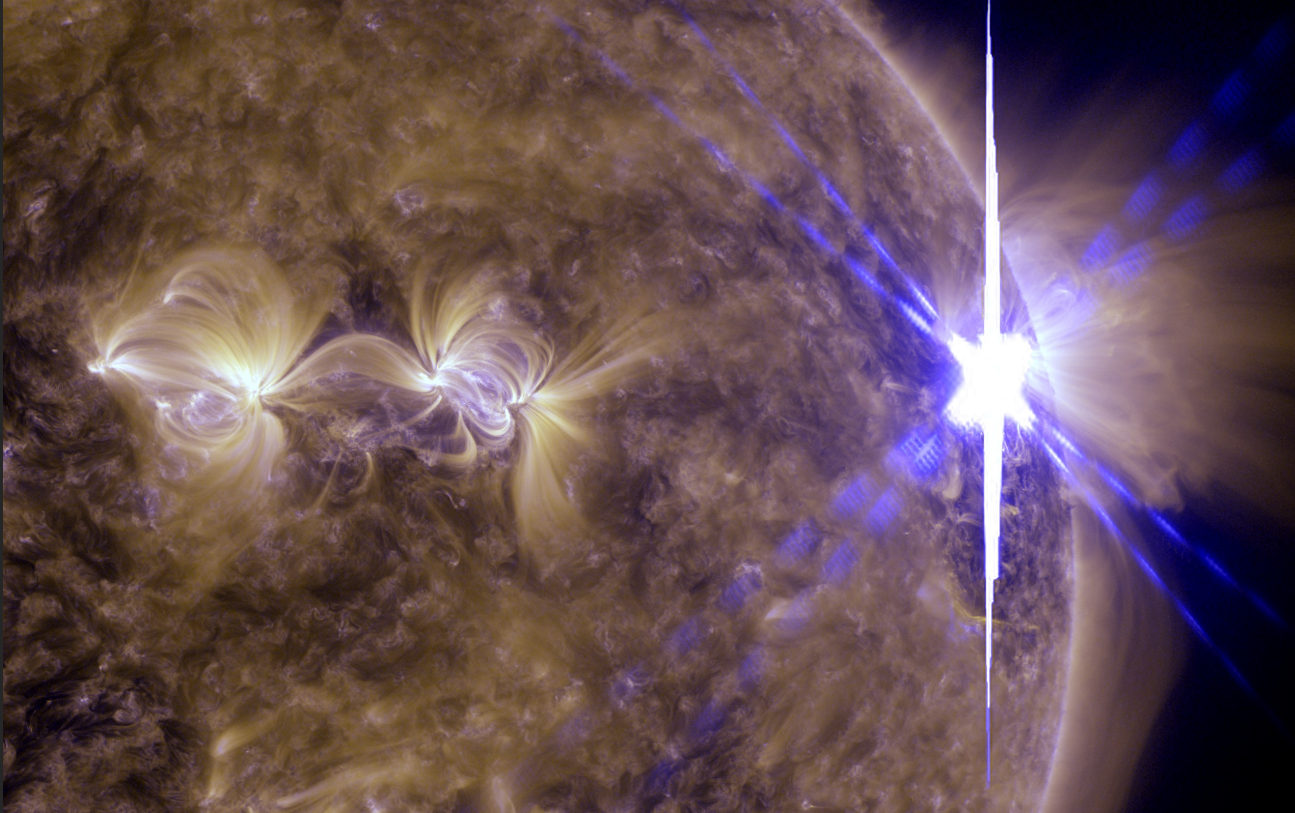
Step 3: Prediction training / execution

Step 4: Data verification



Legend
→ read
→ write

FLARECAST Feature Extraction



FLARECAST uses the latest image processing techniques to extract properties of solar magnetic regions likely to produce flares. It employs prediction algorithms and machine learning to translate them into probabilities of flaring.

Source : SDO/AIA (131 Å & 171 Å synthesis)

Expected Outcome



The FLARECAST forecasting service will be openly accessible, featuring open-source software that will allow end users to perform their own tests. In this synergistic way, FLARECAST will both revamp solar flare prediction and contribute to a better understanding of the drivers of flare activity at the Sun.

Consortium Partners:

- Academy of Athens, Greece
- Trinity College Dublin, Ireland
- Università Degli Studi Di Genova, Italy
- Consiglio Nazionale Delle Ricerche, Italy
- Centre National de la Recherche Scientifique, France
- Université Paris-Sud, France
- Fachhochschule Nordwestschweiz, Switzerland
- Met Office, United Kingdom



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