

Panels (P)

Space Weather Data: Observations and Exploitation for Research and Applications (PSW.3)

## **SOLAR ACTIVITY MONITORING OF FLARES AND CMES PRECURSORS: THE IMPORTANCE OF LYMAN-ALPHA**

Luc Damé, luc.dame@latmos.ipsl.fr

Laboratoire Atmosphères, Milieux, Observations Spatiales, Guyancourt, France

Safinaz Khaled, safinaz\_1986@yahoo.com

Helwan University, Egypt

Satoru Ueno, ueno@kwasan.kyoto-u.ac.jp

Kyoto University, Takayama, Japan

Marie Dominique, marie.dominique@oma.be

Royal Observatory of Belgium, Brussels, Belgium

Ingolf Dammasch, dammasch@oma.be

Royal Observatory of Belgium, Uccle, Brussels, Belgium

Matthieu Kretzschmar, matthieu.kretzschmar@cnrs-orleans.fr

Royal Observatory of Belgium / Solar Terrestrial Center of Excellence, Orléans, France

Kariyappa R, rkari@iiap.res.in

Indian Institute of Astrophysics, Bangalore, India

Kumara S. T, kumarapsce@rediffmail.com

Bangalore University, Bangalore, India

Events preceding the onset of a flare are called 'precursors', and one of the prominent precursors is a newly emerging bipolar region at the surface, which may interact with pre-existing magnetic field in the corona and trigger a flare. Another well-known precursor is the activation, or eruption, of a filament that is composed of relatively cool plasma (around 10000 K), floated in the hot coronal plasma. Both emerging regions and filaments are well observed in Lyman-Alpha and H-Alpha and we expect that their combination might lead to a better identification of the changes at the origin of major flares and CMEs. The objective of the study we present, carried with the LYRA/PROBA-2 instrument (observations of early 2010) and H-Alpha observations (Hida Observatory), is to monitor flares in Lyman-Alpha and to compare sensitivity difference with H-Alpha to develop better precursor indicators on the flaring region. Comparison is also made with classical EUV – X-ray indicators (GOES 1-8 Å but also LYRA channels 2-3, Aluminum 17–80 nm, and 2-4, Zirconium 6–20 nm), showing that Lyman-Alpha flares are equally sensitive and detectable, with the advantage, though, of providing significant precursors. H-Alpha - although 1000 times less intense as a flare than Lyman-Alpha (exemple of C9.9 February 2010 flare presented) - is indicative of the precursor elements to study. Many H-Alpha observations sources are available but we preferably use Peru or Hida Observatory data

when available since providing velocities (spectroheliograms). This Lyman-Alpha flares and precursors study is pursued with recent observations campaigns with a spare Lyman detector of LYRA. But this interesting possibility to open and watch for flares from a promising region implies, accordingly, to rely on good precursors indications to limit filter's degradation. These observations are pointing the interest for future Lyman-Alpha irradiance measurements coupled, for precursors identification, to solar disk imaging.