

3D VISUALIZATION DEPICTING THE FAR SIDE OF THE SUN: RADIATION RISK ASSESSMENT

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Making use of the SWAN (Solar Wind Anisotropies) data from the SOHO Spacecraft we have been analyzing the far side images of the solar disk in the pursuit of solar activity predictions of one to two weeks prior to their appearances in the visible part of the solar disk. The SWAN Instrument is designed to observe the solar Lyman alpha photons (121.6 nm) backscattered by the neutral hydrogen atoms present in the interplanetary medium. These spatial variations are correlated to the actual activity on the solar disk. Because SWAN observes backscattered photons, it is actually possible to 'see' those which are originating from the far side of the Sun. We collected data of the far side images from SWAN instrument from 2010 thru present and developed 3D rendering of the Sun to "pre-see" the active regions, and to predict perceivable solar activity contribution for possible radiation risk. These model depictions are being correlated with the solar particle events occurred and measured by the spacecrafts.

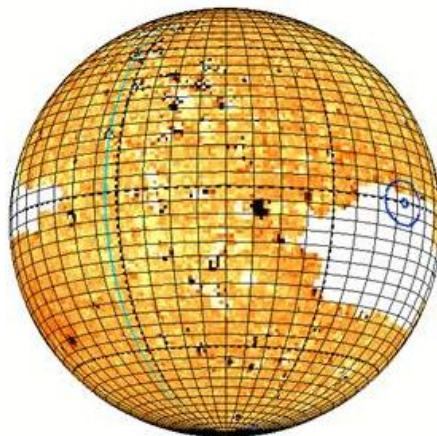


Figure-1: 3D visualization of the solar disk depicting the far side of the sun with March 17, 2012 data (nearly 14 days prior to the near side appearance on the solar disk)

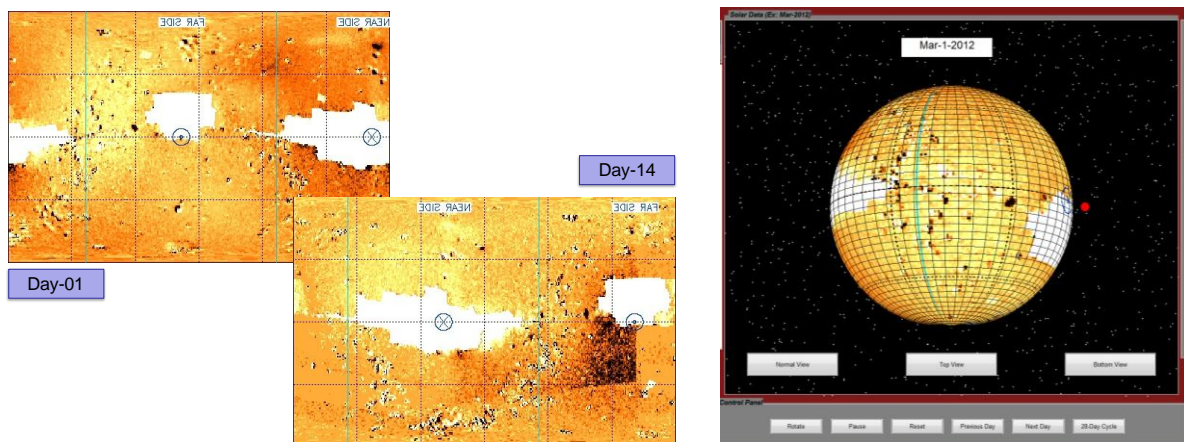


Figure-2: Data on the far side for Day-01 and Day-14 shown on the left panel and the automated GUI developed on the right.