Assessing flare productivity from sunspot data

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The solar flare forecast techniques are usually based on magnetogram data, they mostly consider a solar active region as a whole and disregard its temporal variation. These techniques are also applicable to sunspot data but besides the global treatment the most detailed Debrecen sunspot databases make also possible to scrutinize the internal structure and dynamics of the solar active regions. This means the identification of the subdomains of strongest horizontal gradients of the magnetic field and to track them with a temporal resolution of 1.5 hours. The detailed data allow to make flare forecast for different time periods ahead, i.e. for the next couple of hours and days and with lower reliability for the next rotation. These procedures make possible a versatile system of flare forecast techniques. The program is supported by ESA.