

# **When does the first CME from an emerging active region occur?**

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Recently we have found that in a statistical sense the preflare value of the coronal magnetic helicity of active regions producing CME-associated big flares is larger than the value of magnetic helicity of those producing big flares that do not have associated CMEs. The obvious question arising from the above result is whether CME initiation is controlled by the amount of the magnetic helicity stored in the corona. This problem can be investigated by studying whether the active region itself that forms after a bipole emergence erupts or not and what magnetic helicity has to do with the eruption. To this end we have studied several active regions that emerge on the visible side of the solar disk. For each active region, its magnetic helicity content is monitored from its emergence until it reaches a heliographic longitude of 45-50 degrees or until the occurrence of the first CME associated with it (whichever happens first). The main statistical result of our study suggests that when CMEs occur, the coronal magnetic helicity is larger than the coronal magnetic helicity of those active regions that do not produce any CMEs. This result is independent of the strength of CME-associated flares. As a byproduct of this study we have developed a new technique that is able to recover a significant part of the magnetic helicity injected into the corona which is not detectable using conventional techniques. The new method has been tested against synthetic data and it will be briefly presented.