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Flare energy build-up in a decaying active eegion near a coronal hole

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Abstract. A B1.7 two-ribbon flare occurred in a highly non-potential decaying active region near a coronal hole at 10:00 UT on May 17, 2008. This flare is 'large' in the sense that it involves the entire region, and it is associated with both filament eruption and a CME. We present multi-wavelength observations from EUV (TRACE, STEREO/EUVI), X-rays (Hinode/XRT), and Hα (THEMIS, BBSO) prior to, during and after the flare. Prior to the flare, the region contains two filaments. The long J-shaped sheared loops corresponding to the southern filament were evolved from two short loop systems, which happened around 22:00 UT after a filament eruption on May 16. Formation of highly sheared loops in the southeastern part of the region is observed by STEREO 8 hours before the flare. We also performed non-linear force free field (NLFFF) modeling for the region at two times prior to the flare, using the flux rope insertion method. The models include the non-force-free effect of magnetic buoyancy in the photosphere. The best-fit NLFFF models show good fit to observations both in the corona (X-ray and EUV loops) and chromosphere (Hα; filament). We found that the horizontal fields in the photosphere are relatively insensitive to the present of flux ropes in the corona. The axial flux of the flux rope in the NLFFF model on May 17 is twice that on May 16, and the model on May 17 is only marginally stable. We also found that the quasi-circular flare ribbons are associated with the separatrix between open and closed fields. This observation and NLFFF modeling suggest that this flare may be triggered by the reconnection at the null point on the separatrix surface.