Scientists have discovered a new way in which the Earth’s magnetic field protects us against dangerous particles from the Sun, thereby causing a ‘spacequake’. The Earth has a magnetic field that acts as a very effective shield against the ever-present stream of energetic particles emanating from the Sun, the so-called solar wind. At times, small fractions of solar wind energy manage to enter the Earth’s magnetosphere and to come close to Earth from its rear side, the so-called ‘magnetotail’. These energetic particles form a plasma jet, racing towards the Earth with a speed exceeding 1,000,000 km/h. These plasma jets create field-aligned currents and auroras at low altitude by precipitating particles along the magnetic field.

For the first time ever, using data from the THEMIS satellite, it was possible to observe what happens when the kinetic and thermal energy in the fast plasma jets encounter the tension and energy of the inner magnetospheric dipolar field. To keep a long story short, flexibility wins. The Earthward plasma jet is repelled by the inner magnetosphere and flows back away from the Earth, tries again with lower velocity, but is repelled again, and so on and so forth. This causes the dipolar field to shake and rattle, in effect creating a spacequake.

In this press conference, the speakers will describe the THEMIS spacecraft observation of the plasma jet causing spacequakes, its underlying mechanisms, a supporting computer simulation, the THEMIS mission and the impact of spacequakes on human life.

THEMIS Mission [http://themis.ssl.berkeley.edu/index.shtml](http://themis.ssl.berkeley.edu/index.shtml)
EGU 2010
Press conference:

Spacequakes

Monday 3 May, 15.00-16.00
Press room, yellow level