



Investigating multi-scale coupling in space plasmas

Matthew Taylor (1,*) and the Cross-Scale Science Study Team

(1) European Space Agency, ESTEC, Keplerlaan 1, Netherlands (mtaylor@rssd.esa.int), (*)

Most of the visible universe is in the highly ionised plasma state, and most of that plasma is collision-free. Three physical phenomena are responsible for nearly all of the processes that accelerate particles, transport material and energy, and mediate flows in systems as diverse as radio galaxy jets and supernovae explosions through to solar flares and planetary magnetospheres. These processes in turn result from the coupling amongst phenomena at macroscopic fluid scales, smaller ion scales, and down to electron scales. Cross-Scale is dedicated to quantifying nonlinear, time-varying coupling via the simultaneous in-situ observations of space plasmas performed by a fleet of 12 spacecraft in near-Earth orbit.