The solar wind presents an ideal opportunity to study fundamental plasma processes through large data sets of detailed in situ spacecraft measurements. Here, I will present recent results making use of this data to understand two such processes. (1) A large part of our experimental understanding of plasma turbulence comes from the scaling properties of fluctuations, however, solar wind results show that velocity and magnetic fluctuations scale differently. This difference is known as residual energy and is, therefore, fundamental to understanding how plasma turbulence operates. I will describe recent progress we have made in understanding this residual energy, at both MHD and kinetic scales, through solar wind observations. (2) The solar wind also has pressure anisotropies and drifts between species which can give rise to a variety of plasma instabilities, such as the firehose and mirror. The stability of the plasma depends on all species (electrons and various ion populations) together, meaning that a combined analysis is required. I will present an analysis using a new data set which contains the anisotropies and drifts between all major solar wind species. This allows for the first time the overall stability of the plasma to be assessed as well as the contributions of each species to the long-wavelength firehose and mirror instabilities.