Corotating interaction regions (CIRs) can be understood, to a large extent, from the consequence of solar rotation acting on a spatially-variable velocity profile near the Sun, leading to parcels of plasma with different plasma and magnetic properties becoming radially aligned. Compressive regions are produced where high-speed wind runs into slower plasma ahead, while rarefactions are produced where slower wind is outpaced by faster wind ahead. These interactions are one of the principal dynamic processes that shape the structure of the interplanetary medium, and in a sense, they connect coronal-hole structure at the Sun to recurrent geomagnetic phenomena. In this talk, I explore our current understanding of the three-dimensional structure of the quasi-steady, large-scale inner heliosphere, focusing on: (1) the formation and evolution of CIRs, and (2) their potentially geo-effective properties. This understanding is based on the interpretation of a wide array of remote-sensing observations and in-situ measurements, in conjunction with sophisticated numerical models. Observations by the STEREO and Ulysses spacecraft, in particular, have yielded valuable insight. Moreover, global MHD models of the solar corona and heliosphere have matured to the point that they can: (1) reproduce a wide variety of measurements with reasonable fidelity; and (2) be used to provide a global context for in-situ measurements. To illustrate the properties of CIRs, we discuss some structural features of the inner heliosphere from the recent solar minimum, which has, at least on the timescale of the space age, displayed a number of unique characteristics.