The solar wind is controlled and organized by the Sun’s three-dimensional magnetic field, and when open magnetic flux (as evidenced by coronal holes) is present at low latitudes, high-speed streams (HSS) repeatedly intersect the Earth with periodicities arising from the Sun’s rotation period of ~27 days. For the past few solar cycles, HSS have been observed to be at their most dominant during the declining phase of the solar cycle. However, the current solar minimum was notable for the continuation of HSS at the Earth even after sunspot numbers had dropped to extremely low values. This was due to the prevalence of large, long-lived, and low-latitude coronal holes through most of 2008, which in turn was due to the distribution of magnetic flux at the solar surface. This magnetic flux distribution continued to evolve as the unusually long minimum continued, and as a result so did the location and characteristics of low-latitude coronal holes. I will discuss the unusual length and complexity of the recent solar minimum, and describe how observables in different regimes reacted to the continued evolution of magnetic flux after sunspots stopped emerging.