The long period of low solar activity in 2007-2009 was characterized by weaker polar magnetic fields and smaller polar coronal holes than during the previous minimum, while large low-latitude coronal holes persisted until 2008, started to close down at the end of 2008, and finally disappeared in 2009. These changes in the magnetic flux “open” to the heliosphere were associated with changes in the sources and properties of the solar wind with important effects for the Earth. While magnetic flux emergence at the Sun in the form of active regions remained low throughout the 2007-2009 period, the heliosphere changed significantly in response to the diffusion and decay of the existing magnetic fields.

We analyze the evolution of the polar magnetic fields and coronal holes during the extended minimum between cycle 23 and 24 and examine their effects on the Earth's near-space environment.