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The active Sun and its implication for the heliosphere
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Solar Wind and Large-Scale Solar Wind Structures in the Rising Phase of Solar Cycle 24

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We have done long-term study of solar wind and large-scale solar wind structures, interplanetary CMEs (ICMEs), stream interaction regions (SIRs), and their associated shocks at 1 AU over 1995-2010. At this writing, the solar polar field is nearing its reversal, indicating the approach of solar maximum 24. However, currently, the sunspot number is only about 60, and the solar wind dynamic pressure and magnetic field are still weak, lower than the conditions at the beginning of 1998, suggesting a peculiar rising phase for Solar Cycle 24. We compare this rising phase with the one of Cycle 23, and study how the weak solar cycle affects the solar wind and large-scale solar wind structures, and their possible influence on geomagnetic activity.