

INTRODUCTION TO CHINA'S SPACE ENVIRONMENT GROUND-BASED MONITORING NETWORK — CHINESE MERIDIAN PROJECT (CMP)

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Space weather seriously affects human space activities and some ground facilities. Therefore, monitoring and researching the space environment has important scientific significance and application value. In order to gain a comprehensive understanding of the space environment from the sun to the earth,

China is building a large-scale ground-based space environment monitoring system, known as the Chinese Meridian Project (CMP). The CMP adopts a well-designed monitoring architecture, known as “One Chain, Three Networks, and Four Focuses”, to achieve stereoscopic and comprehensive monitoring of the entire solar-terrestrial space. The “One-Chain” component utilizes optical, radio, interplanetary scintillation, cosmic ray instruments to cover the causal chain of space weather disturbances from the solar surface to near-Earth space. For the ionosphere, middle and upper atmosphere, and magnetic field, instruments are deployed along longitudes of 120°E and 100°E, and meridians of 30°N and 40°N, forming the “Three Networks”. Furthermore, more powerful monitoring facilities or large-scale instruments have been deployed in four key regions: the high-latitude polar region, mid-latitude region in northern China, low-latitude region at Hainan Island, and the Tibet region. These four regions are crucial for disturbances propagation and evolution, or possess unique geographical and topographical characteristics.