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Sommario/riassunto

Supercomputers play a significant and growing role in a variety of areas important to the nation. They are used to address challenging science and technology problems. In recent years, however, progress in supercomputing in the United States has slowed. The development of the Earth Simulator supercomputer by Japan that the United States could lose its competitive advantage and, more importantly, the national competence needed to achieve national goals. In the wake of this development, the Department of Energy asked the NRC to assess the state of U.S. supercomputing capabilities and relevant R&D. Subsequently, the Senate directed DOE in S. Rpt. 107-220 to ask the NRC to evaluate the Advanced Simulation and Computing program of the National Nuclear Security Administration at DOE in light of the development of the Earth Simulator. This report provides an assessment of the current status of supercomputing in the United States including a review of current demand and technology, infrastructure and institutions, and international activities. The report also presents a number of recommendations to enable the United States to meet current and future needs for capability supercomputers.