Title: Porting the Energy Exascale Earth System Model to the Chicoma LANL HPC Platform
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The Energy Exascale Earth System Model (E3SM) is an Earth system modeling, simulation, and prediction suite used to meet the scientific needs of the nation and mission needs of the Department of Energy (DOE). Through funding by the DOE, the Institutional Computing (IC) Program provides laboratory resources, such as compute time on the High Performance Computing (HPC) supercomputers at Los Alamos National Laboratory (LANL), to scientists and engineers through a peer reviewed proposal process. Chicoma will soon become IC's only HPC resource for funded projects, therefore, it's imperative to port the E3SM suite in support of climate scientists' research at LANL. Along with scientific software support, the Programming & Runtime Environments Team (PRETeam) of HPC-ENV strives to support the installation and management of E3SM on LANL HPC resources. We have ported E3SM's build system to support Chicoma's AMD Rome EPYC processors against one Cray Programming Environment (CPE) by leveraging the Intel OneAPI compiler suite and Math Kernel Libraries (MKL) and HPE Cray's HDF5, PNetCDF, NetCDF, and MPICH installations. In the future, porting to the GPU partition and adding support for more CPEs will improve the usability, versatility, and performance of E3SM, and this will enable the scientific endeavors underway to further the nation's predictive capabilities of the Earth's climate and environmental systems in order to deliver future sustainable energy solutions.