Preparing for the El Capitan Programming Environment

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El Capitan Programming Environment

- **Compilers:**
  - Cray PE (C/C++ are LLVM-based; Cray Fortran)
  - AMD ROCm (LLVM open source, including flang)
  - GCC

- **Primary Programming Languages and Models**
  - C, C++, Fortran
  - RAJA/Kokkos
  - OpenMP
  - HIP (Cray PE and ROCm)

- **At LLNL, RAJA is the preferred model for most large multi-physics codes**
  - OpenMP is preferred for Fortran codes and libraries
  - Some HIP/CUDA

- **Expect capabilities very similar to Frontier**
Livermore computing supports both open and secure systems

LLNL has consistently provided open computing with the same architecture as our most advanced systems

<table>
<thead>
<tr>
<th>Open</th>
<th>Secure</th>
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<tbody>
<tr>
<td>Vulcan</td>
<td>Sequoia</td>
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<tr>
<td>Lassen</td>
<td>Sierra</td>
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<tr>
<td>Tuolumne</td>
<td>El Capitan</td>
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https://hpc.llnl.gov/hardware/platforms
The computing scholar program is a great way to bootstrap collaboration with LLNL.

We rely on our scholar program to bring in the best and brightest students and to develop a pipeline for full-time hires.

198 total students in 2019
~30% returning students
~27% female students
55% graduate students
43% undergraduate students
2% faculty scholars
87 universities; 8 outside U.S.

81 full-time hires since 2016

Microprograms: Data Science Summer Institute, HPC Cluster Engineer Academy, Earth Sciences Academy