Implication of HPCchallenge

- Current focus of HPCS execution time people
- Work in progress
- Comments and feedback welcomed

Near term goals:
- Define the axes
- Add the implied “z” axis
- Locate HPC challenge
- Locate DOD applications

HPCS Program Goals & The HPCchallenge Benchmarks

Changing the Axes

1. Switch Axes
2. Invert Ranges
System B/W vs. spatial/temporal locality

Earth Simulator
Data from Erich Strohmaier (LBNL APEX-Map)

Where Are We Going With This?

Performance Requirement

RandomAccess

HPL

STREAMS

RandomAccess

HPL

STREAMS

RandomAccess

HPL

STREAMS
Where Do You Plot Applications?

It’s harder than it looks!!!

```c
for ( i = 0; i < N; i++) {
    add = random_number;
    table[add] ^= random_number;
}
```

Load + Store (temporal)
Two loads + Store
Load + Store (spatial)
Update (design goal)

HPC Challenge Benchmarks on axes of spatial and temporal locality

Data from Allan Snavely (SDSC PMaC Project)