Massive Simulation and Sensing Devices Generate Great Challenges and Opportunities

- Cameras
- BlueGene/L
- Satellite
- EM
- Jaguar
- Retinal Connectome
- Hydrodynamic Inst.
- Molecular Dynamics
- Climate
- Carbon Seq. (Subsurface)
- Turbulent Combustion
- Earth Images
ViSUS Provides: Efficient Data Management and Processing

- Advanced data storage techniques:
  - Data re-organization.
  - Compression.

- Advanced algorithmic techniques:
  - Streaming.
  - Progressive multi-resolution.
  - Out of core computations.

- Scalability across a wide range of running conditions:
  - From laptop, to office desktop, to cluster of PC, to BG/L.
  - Memory, to disk, to remote data access.
ViSUS Enables: Remote Climate Analysis and Visualization

- ViSUS data streams allow to merging multiple datasets in real time
- Time interpolation of and concurrent visualization of climate data ensembles defined on different time scales
- Server side and client side computation of statistical functions such as median, average, standard deviation, .......

Standard Deviation and Average of ten climate models