Baltimore Outreach
Computational Thinking and the Curriculum

XSEDE
Extreme Science and Engineering
Discovery Environment

September 11, 2014
Why Computational Science?

• How science and engineering is done while emerging efforts in social sciences and humanities
  – Models allow insights when systems are too large, too small, or too complex to fully understand through experimentation
  – Reduces time to solution for many types of research and design
  – Can explore virtual environments of past and present
  – Allows exploration of wide variety of digital media
  – Facilitates research that could not be done in any other way
Computational Science Skills

• Computational science provides skills needed in the present and future workforce
  – Understanding of modeling techniques that are used in research and business
  – Analytical skills
  – Teamwork skills
  – Communications skills

• Inquiry-based education approach engages students in learning
Benefits to Students

• Inquiry-based learning is more effective than traditional lecture oriented instruction
  – Students are actively engaged in the learning process
  – Students gain deeper insights and have higher retention rates for the information
  – Facilitates the integration of information across academic disciplines – math, science, engineering, computer science
Goals for the Session Today

• Demonstrate the pedagogy for computational science education
• Introduce materials and models that can be incorporated for classroom use
• Introduce simple tools that can be used to build and demonstrate modeling techniques
• Discuss approaches to incorporating computational science in the curriculum
Getting Started

• Point your browser here and bookmark:

  • https://www.osc.edu/~sgordon
    – Choose Workshop Materials
    – Then Links to other materials
    – https://www.osc.edu/~sgordon/workshop/materials
Our reach will forever exceed our grasp, but, in stretching our horizon, we forever improve our world.