

# Collaborative High Performance Computing Course Using the Access Grid

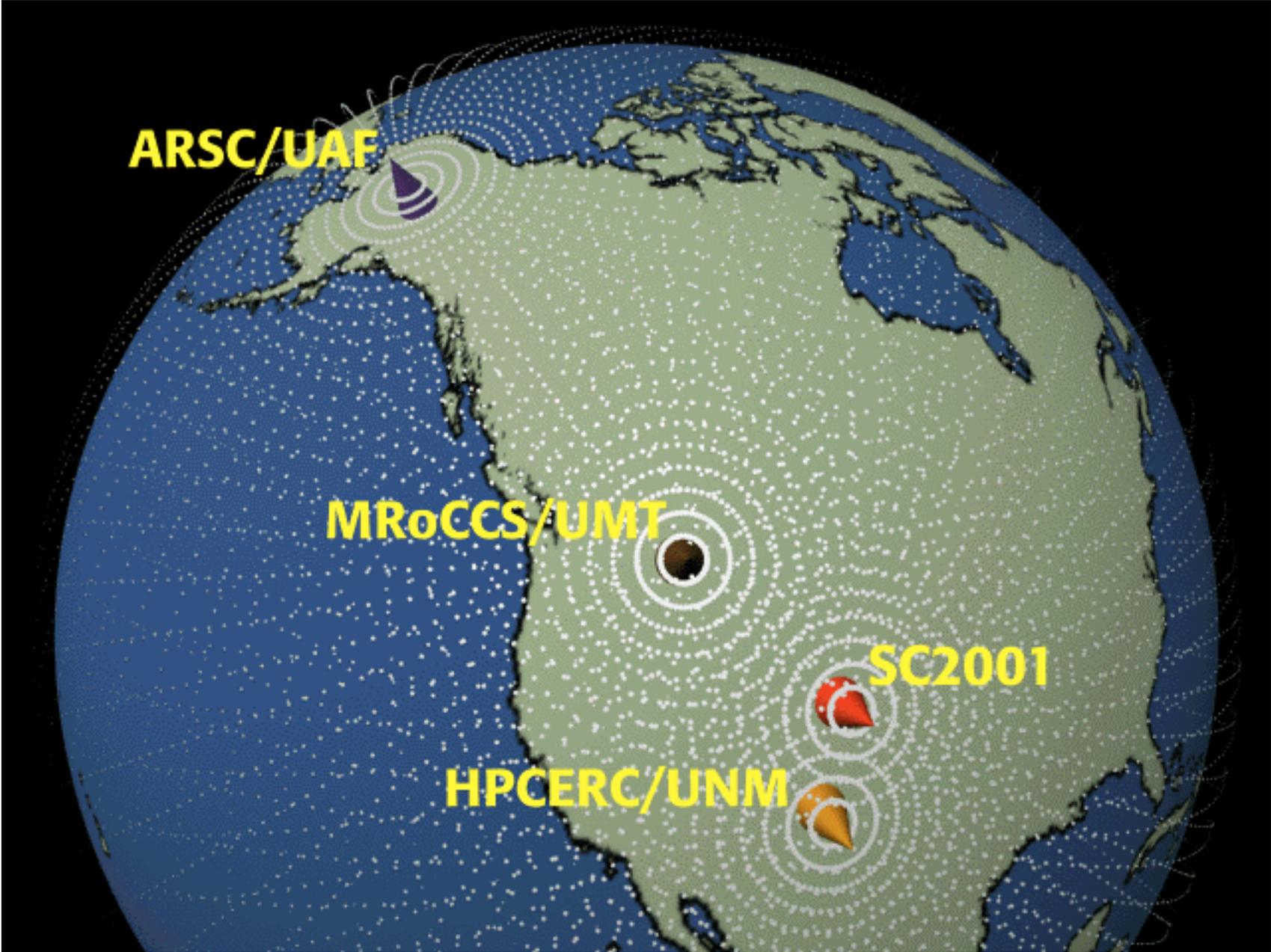


Arctic Region Supercomputing Center,  
University of Alaska Fairbanks

Montana Rockies Center for Computational Science,  
University of Montana

High Performance Computing, Education and  
Research Center,  
University of New Mexico

Access Grid Retreat (4-5 March 2002)



# Course Format

Fall Semester 2002

Three Institutions: Three Programs

Site	Course Title	Instructors	Exp.
UAF	PHY693: Parallel Scientific Computation	Guy Robinson	Comp. Physics, CFD, MPP
UMT	CS495: High Performance Computing For Scientists	Jennifer Parham, Don Morton	CS, MPP
UNM	CS471/ME471: Introduction to Parallel Programming	Tim Warburton, Brian Smith	CS, HPC

# Course Format

- Weekly AG class meetings supplement lecture/lab program
  - Thursdays, 12-2pm AK time, 2-4pm Mountain Time
- Instructor teleconference: Wednesdays
- Instructor role rotates between Alaska, Montana, New Mexico

# Course Experiences

- AG enhanced “diversity” for all involved
- New and unexpected interactions
- Fun and interesting for all
- AG technology is still cumbersome
- Instructors faced new challenges
- A single, virtual classroom did not materialize
- The AG did not magically bridge distance
- Social/environmental factors are important

## Course Experiences: continued

- Planning and coordination are critical
- Multi-way AG collaboration has to fit the administrative constraints of each participant
- Time zone differences matter (!)
- Dedicated AG classroom is essential
- Tools like VNC, Mimeo White Board worked well
- Murphy's Law scales with the number of nodes and number of people involved

## Course Experiences: continued

- NCSA Scheduler (or similar tool) is good, could be great...
- SC Global requirements sometimes conflicted with the class
- Course and SC Global required a lot of work, but gave worthwhile experience

# Student Response

<b>Question:</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Mean</b>	<b>STDEV</b>
The AccessGrid has potential to improve communications.	9	5				4.6	2.8
The AccessGrid enhanced the course.	3	5	1	3	2	3.3	1.5
The students on the remote ends felt like they were in my class.	1	2	3	6	2	2.6	1.9
The quality of instruction from remote instructors was equal to or better than the local instructor.	2	5	4	3		3.4	1.3
The technical glitches and audio quality affected my learning.	3	2	4	4	1	3.1	1.3
The technical glitches and audio quality affected my enjoyment of the class.	1	6	2	4	1	3.1	2.2

# Student Response

- AccessGrid has potential.
- Audio glitches distracted.
- Interactions do not feel natural.
  - Students at the local sides did not see far-end students as classmates. However, they did place strong credibility in the far-end instructors.
  - Recommend methods of getting students comfortable with technologies and interactions.
- Assignments matter.
  - Future classes might build student-student collaborations through assignments. Students felt they were the most important element of learning.

# The Future

- ARSC/University of Alaska Fairbanks:
  - AG visualization course
  - VE-Art collaborations
  - distance management
- University of Montana and Motorola:
  - AG accessibility and usability project with Motorola
- University of New Mexico:
  - statewide AG deployment, 14 nodes
  - Tribal Virtual Network

# The Future: Wish List

- Closer integration of the AG with HPC resources:
  - Supercomputer, MPP, cluster systems
  - Grid computing resources
  - graphics, CAVE, distributed visualization, etc.
- Easier node operations
  - Fewer controls to deal with
- Take the AG to the desktop of the user
  - Full feature set perhaps not needed
  - Easy to use
- Platform-neutrality

# The Team

Nodeops	Bob Huebert, Steve Munk, Paul Mercer (AK) Jeremy Sauer (MT) Jeff Shuckra (NM)
Instructors	Guy Robinson (AK) Jennifer Parham, Don Morton (MT) Tim Warburton, Brian Smith (NM)
Coordination	Roger Edberg, Jim Long (AK)
Direction	Barbara Horner-Miller, Virginia Bedford, Frank Williams (AK) Ray Ford, Thomas Storch, Jerry Esmay, (MT) Frank Gilfeather (NM)