Venue: Embassy Suites, South Lake Tahoe, California
Located on the California/Nevada border
Student selection process & Diverse community

- March 15, 2011 deadline
- ~200 applications
- 60 students chosen by distributed selection committee
  - 25 EU/PRACE
  - 35 US/XSEDE
- 17 countries represented
- 30% female

Elizabeth Leake, 2011
95% post-event favorable feedback.
Student goals met—time well spent...

To what extent do you feel the Summer School met your goals, and why?

Very Useful  Useful  Somewhat Useful  Not Useful

Elizabeth Leake, 2011
The academic program...

♪ Devo, Whip it (intro) ♪
Monday, August 8

• HPC Challenges and Technology Session
  – PRACE Overview Lennart Johnsson, University of Houston, and Royal Institute of Technology, Stockholm
  – XD Overview – John Towns, NCSA
• Introduction of Participants
• Exascale Software Project
  – David Keyes, Columbia University and KAUST
• Lunch (Birds-of-a-feather lunch groupings, by discipline)
• Programming
  – Overview on Mixed MPI/OpenMP Programming, UPC, CAF, David Henty, EPCC, University of Edinburgh, UK
  – StarSs Model Alejandro Duran, Barcelona Supercomputing Center
• Electronic Poster Session
BoFs were popular

• Birds-of-a-feather lunch group topics:
  – Monday—Disciplines
  – Tuesday—Activities
  – Wednesday—Tech themes
  – Thursday—sit with someone new!

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Tuesday, August 9

- Challenges by Scientific Disciplines I
  - Parallel track 1: Materials Science
    - Thomas Schulthess, ETHZ, Zurich, & CSCS, Switzerland
  - Parallel track 2: Plasma Physics
    - Frank Jenko, Max Planck Institute for Plasma Physics, Garching

- Challenges by Scientific Disciplines II
  - Parallel track 1: Life Sciences
    - Amber: Thomas Cheatham, Univ. Utah, US
  - Parallel track 2: CFD / Engineering
    - Ulrich Rist, University of Stuttgart

- Challenges by Scientific Disciplines II
  - Parallel Track 1: Cosmology
    - Britton Smith, Michigan State University
  - Parallel Track 2: Metagenomics - Earthmicrobiome Project
    - Folker Meyer, University of Chicago

- Lunch and Team Building

- Performance Analysis & Profiling - PAPI, IPM, PerfSuite, TAU, Vampir, Scalasca
  - Philip Blood, PSC, Pittsburgh, US
  - Bernd Mohr, FZJ, Juelich, Germany

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Wednesday, August 10

- Challenges by Scientific Disciplines III
  - Parallel track 1: Life Sciences
    - GROMACS – Erik Lindahl, University of Stockholm
  - Parallel Track 2: Engineering - A Software Environment for Efficient Flow Simulations
    - Hans-Joachim Bungartz, Technical University of Munich

- Numerical Algorithms & Parallel I/O
  - Parallel track 1: Scalable fast algorithms for Coulomb interactions
    - Olaf Lenz, University of Stuttgart
  - Parallel Track 2: Parallel I/O
    - Lonnie Crosby, National Institute of Computational Sciences (NICS)

- Community Building Time
- Lunch and Team Building
- GPU/CUDA programming with Wen-Mei Hwu, NCSA
Thursday, August 11

- Challenges by Scientific Disciplines IV
  - Parallel Track 1: Numerical Libraries
    - Tony Drummond, LBNL, Berkeley, US
  - Parallel Track 2: Workflow Tools
    - Scott Callaghan, Southern California Earthquake Center, USC

- Data Intensive Computing
  - John R Johnson, Pacific Northwest Laboratory

- Scientific Visualization (hands-on)
  - Amy Szczepański, University of Tennessee/NICS

John Johnson’s “apples and oranges” exercise stimulated discussion on FaceBook, including shared notes, and positive feedback.
Who would you like to meet?...

♫ Manu Chao, Me Gustas Tu (intro) ♫
The Social Network
lasting relationships are made outside of the classroom

- Wiki--Bios of all participants, presentations, photographs, announcements, etc;
- Dynamic exchange on FaceBook;
- FB community created July 25—time to get to know each other in advance;
- 64 members (most students, some faculty);
- FB used for announcements, social banter, homework results, and more;
- Rich repository of student photographs;
- “Friending” among participants assured continued contact;
- Survey feedback: FB highly effective tool for ~95% of the participants;
- LinkedIn group offered for professional networking.
Participants encouraged to *mix it up*

- Four course-filled days is not much time to meet 87 people;
- Tight social groupings were discouraged (in and outside of class);
- Head-shots and bios shared in advance;
- Organizers and faculty encouraged to mingle in and outside of class.

Elizabeth Leake, 2011
Multiple Levels of Interpersonal Social Engagement

• Students provided with a sheet of star stickers in a color that represented their field of study;

• Each was encouraged to share stars and collect others and to learn something unique about each person;

• First prize awarded to Adam Sullivan who had collected the most stickers and could tell us something unique about each person.
Students selected songs for a mix played in the background during evening activities.
By Thursday everyone needed a break...

Today I don’t feel like doing anything

♪ Bruno Mars, the Lazy Song (intro) ♪
Extracurricular Activities

On Thursday afternoon students chose from the following (ala carte) recreation options:

• Riverboat Cruise (20 students);
• Hiking (30 students);
• Helicopter ride (Three students);
• Casinos (Three students);
• Others had to leave Thursday evening.
In their own words...

♪ Edward Maya and Vika Jigulina, Stereo Love (intro);
Red Hot Chili Peppers, Road Trippin (in the USA-intro) ♪
The EU/US HPC summer school was the most enjoyable learning experience. Not only did we have breathtaking views of Lake Tahoe each day, the school provided me with the opportunity to learn about HPC challenges and state-of-the-art technologies. The friends I made in multidisciplinary research fields will offer future potential collaborations.

**Man (Melody) Luo**
Eshelman School of Pharmacy
University of North Carolina, Chapel Hill, US
Mohamad M. Nasr-Azadani
Ph.D. Candidate,
Department of Mechanical Engineering,
University of California at Santa Barbara, USA

My research involves numerical simulations of turbidity currents, or, simply said, underwater avalanches. Thanks to the talks presented by knowledgeable and experts in HPC about parallel I/O and visualization, I think I will be performing better research during my final academic year. I loved the diversity of people coming from different countries and various backgrounds. Thanks to organizers for choosing Lake Tahoe. I loved the hikes we all did together!
I am so grateful that I spent this wonderful week in South Lake Tahoe, and hope to meet everyone again in the future!

Shuang (Susan) Gao
PhD student at the University of Tennessee, Knoxville, USA.

Research in high performance computing (GPGPU, GPU, parallel HPC and computer architecture).

Presentations about performance tools, workflow, and software for Exascale were interesting and helpful.
The location (South Lake Tahoe) was beautiful. I was able to interact with international fellow students and experts on HPC. I was able to increase my skills on code acceleration, new tools for massively parallel codes and efficient parallel processing of large amounts of data.

Paulo Abreu
PRACE partner
Post-Doc at Institute for Plasmas and Nuclear Fusion, Technical University of Lisbon, Portugal
The EU/US Summer School provided a comprehensive overview of the different aspects of HPC. All lectures were well prepared and presented. Especially interesting to me were the presentations on tools, parallel programming, GPU programming, and the opportunity to get to know HPC experts and colleagues from around the world. The location and organization of the event were excellent, providing the perfect atmosphere. Thanks to everyone who made it possible!

Estela Suarez, Forschungszentrum Jülich, Germany
I enjoyed meeting people from different disciplines and different countries and made invaluable friendships. It was good knowing about the HPC challenges in other disciplines. I learned a lot especially from useful talks presented afternoons about some new HPC tools for programming, profiling and visualization that for sure will influence my research work.

*Many thanks to everybody who provided this wonderful opportunity for me!*
Thanks to NSF for this wonderful opportunity! I’ve met inspiring and very knowledgeable people, learned the difference between OpenMP and MPI, got both amazed and frightened by CUDA, and discovered many new fields of interest where my analytical skills can be applied!
The 2nd EU-US HPC Summer School exposed me to several tools and techniques, specially in parallel programming with MPI and GPUs, that can be very useful to my research. Very prominent professors, researchers, and organizers made this summer school a successful event.

Cuauhtemoc Munoz  
University of Texas at El Paso  
Ph.D. student in Computer Science
Thank You!
The 2011 HPC Summer School at Lake Tahoe, California was an amazing and enriching experience for me. The talks by the experts, discussions with fellow attendees and the light fun moments made it a cherished one too! 😊

Prachi Pradeep
PhD student in Computational Sciences
Marquette University, Milwaukee, USA
Benjamin Payne
PhD Candidate
Missouri University of Science and Technology

I attended the 2010 EU/US HPC Summer School in Catania Sicily, and was invited to return as a student mentor, and technical assistant. I also helped organize some of the extra-curricular activities.

It was great to meet the staff, attendees, and presenters. I especially enjoyed talking with Scott Callaghan about GridFTP client setup and documentation. It was good to learn that I am already using version control and automated workflow best practices, and that metadata standards are needed, but have not yet been developed.

The experience will benefit me in the future, as I plan to apply for a Computational Physics Postdoctoral position with a national laboratory.
Ripple Effect:

- Student Ben Payne teaches fellow Missouri students what he learned at HPC Summer School:

Attending the EU/US HPC Summer School in Lake Tahoe was a valuable learning experience. The skills I learned will help me streamline and improve my research in the future. The friends I made will make my research in HPC more enjoyable in the future. And, of course, the location in beautiful Tahoe added a wonderful spice to the mix.

Organizers – thank you for all of your work in creating this excellent event!

Vera Dadok
PhD Candidate
University of California, Berkeley
The EU/US HPC Summer School was a fantastic experience. Working at the interface of theory and experiment within an experimental research group, I seldom get chances to talk in depth with colleagues about computation. The summer school gave me a chance not only to learn about cutting-edge hardware and software used to solve scientific problems but also to absorb some of the unwritten lore in developing high-performance code and ultimately getting computational science done.

The chance to make new friends throughout Europe and the USA and to work in a beautiful and stimulating setting was also a pleasure. Now back home, I am refreshed and more productive than ever!
I wish to thank the EU/US HPC summer school program organizers for their outstanding effort! They chose a beautiful location and selected a diverse group of attendees and faculty. I appreciate the creative ways they encouraged us to mingle. By meeting so many new people, the exchange of ideas will surely form future collaborations. Thanks to the speakers for taking time to prepare up-to-date content that broadened my knowledge. I had such a meaningful and fun week. I hope the summer school will continue in the future so that many more young researchers will benefit as I have!

Xuefei Rebecca Yuan
Petascale Postdoctoral Fellow
Lawrence Berkeley National Laboratory
During this amazing summer school, in an amazing location, I had the chance to meet colleagues in the field of HPC. I also had the opportunity to increase my knowledge thanks to impressive lectures/talks by experts. It was a great experience!
As if breathing in fresh mountain air, taking invigorating lake dips and meeting peers and potential collaborators were not enough reasons to appreciate this summer school; my research course has also been influenced, particularly from the following experiences:

- Learning where-to-start/how-to-do performance engineering by using the tools and procedures outlined by Philip Blood
- Dirtying my hands with CUDA after an extremely informative heterogeneous computing session facilitated by Wen-mei Hwu
- Figuring out which tools to use with regards work flow structure as explained by Scott Callaghan

Many thanks to all involved.

Anne Meade
Doctoral Researcher
University of Limerick, Ireland
The school provided a unique environment and an excellent opportunity to come in contact with members of the international HPC community. I developed new friendships and partnerships with both the presenters and attendees that will foster the exchange of ideas and collaboration.

Theo Christoudias
Computational Scientist
Cyprus Institute
I not only learned about new topics and computing resources through lectures, but I also had a chance to try them out first hand. These hands-on workshops were a wonderful way for me to come away with a better knowledge of GPU acceleration, Coarray Fortran, and more!

Anjali Tripathi
PhD Student in Astronomy
Harvard University
USA
Thank You!

Adam Orłowski
PhD student in biophysics
Department of Physics
Tampere University of Technology
Finland

The EU/US HPC Summer School broadened my knowledge and will definitely improve my research.

I had a chance to meet wonderful people and spend time with them in a beautiful place. The organization was perfect.

Each lecture and hands-on session was well prepared. It was an interesting and unique meeting.
Many thanks to the EU/US HPC Summer School organizers for a great location and choice of attendees/presenters! People were very open and friendly. Hmm, a joint proposal to EU/FP7 funds in the near future sounds good! The tools presented in the profiling talks like TAU, Vampir and Scalasca will definitely be discussed in my research group. We'd also like to go forward with GPU programming. A short course on GPU programming helped a lot.

Miloš Ivanović, PhD
Assistant Professor
Faculty of Science
Department of Mathematics & Informatics
University of Kragujevac
Serbia
This summer school allowed me to be inspired by experts and colleagues in the HPC field and to learn about different programs that I can utilize in the future. It has helped me create valuable relationships that will continue to help me as I pursue a career in this field. Thank you for this wonderful opportunity!

Theresa Foster
Doctor of Pharmacy Student
University of New England, Portland, Maine
Thank You...

...for showing HPC put to work....
...and outside my field......
great teamwork during workshops...
...and superb team spirit out of class...
...I firmly believe...
...that this intensive training...
...helps me become...
...well, somewhat more valuable player

Michal Stepniewski
Helsinki University, Faculty of Pharmacy/Centre for Drug Research
After five days in idyllic Lake Tahoe, not only did I learn from talks by experts in the field and see a variety of tools that might be useful in my future work, I met people from other disciplines and countries and had really interesting discussions with them!

Peng Bai
Department of Chemical Engineering and Materials Science
University of Minnesota, USA
Second EU/US Summer School on HPC Challenges:

Interesting lectures and hands-on sessions, especially the programming, profiling, and visualization exercises;

Nice talks with students and staff over coffee or during lunch and dinner;

Inspiring and motivational atmosphere;

Superb accommodations and Organization;

Great group activities!

Thank you to all the organizers and participants for the great time!

Andrea Beck, Institute of Aerodynamics and Gasdynamics, University of Stuttgart
The supercomputing resources that are available to the world are limited and expensive.

Often, the solution to the problem is not to build a larger or faster machine but to use currently available resources in a smarter way: we will need to use collaborative and creative strategies.

Ben Madej
University of California San Diego, San Diego Supercomputer Center
AMBER and molecular dynamics
HPC challenges require thinking outside the box.

A case study about “oranges”, intense discussions with colleagues, Lake Tahoe as the very inspiring background...

I would like to thank the organizers, the speakers and my fellow students for opening the box.

Konstantin Koschke
PhD Student at the Max Planck Institute for Polymer Research, Mainz, Germany

Using HPC to improve icecream
The EU/US Summer School was a great opportunity for me to interact with others who use HPC resources so that I could begin to learn how to incorporate them into my research. The GPU/CUDA class was particularly useful to my work. Thank you for the opportunity to participate.

~ Ryan Field, PhD student, Bioelectronic Systems Laboratory, Columbia University.
EU-US HPC Summer School
August 7-12, 2011
South Lake Tahoe, California

Elizabeth Leake, 2011