General Information

Seventh International Conference on School and Popular Meteorological and Oceanographic Education (EWOC 2006)

3–7 July 2006 UCAR Center Green Campus, Boulder, CO

HISTORY OF EWOC

The series of conferences now known as EWOC (Education: Weather, Ocean, Climate) began in 1984, when, from 2 to 4 July, the First International Conference on School and Popular Meteorological Education was held in an Oxford University college. The host organization was the Royal Meteorological Society and the conference was co-sponsored by the American Meteorological Society (AMS) and the World Meteorological Organization (WMO). The meeting attracted 82 participants from 22 countries, and the proceedings of the conference were published by the Royal Meteorological Society in 1985 in a volume called Weather Education. This volume contains a record of the papers presented at the conference, as well as information about the workshops and exhibitions that were important elements of the meeting. It also contains the text of the address by Professor G O P Obasi, Secretary-General of WMO, who opened the conference.

The second conference had a slightly different title, which reflected the inclusion of oceanography as a field of interest. It was called The Second International Conference on School and Popular Meteorological and Oceanographic Education (ICSPMOE) and was held in July 1989 in Crystal City, just outside Washington DC. Hosted by the AMS, it was co-sponsored by the Royal Meteorological Society and the WMO. The conference attracted 180 participants from sixteen countries, almost 100 of them teachers from the USA, supported by the AMS and a generous grant from the National Science Foundation. The papers presented at this conference were published by AMS in a pre-print volume, rather than a book of proceedings.

The third ICSPMOE was held in Toronto, Canada, in July 1993 and took place in the Ontario Science Centre. The host organization was the Canadian Meteorological and Oceanographic Society, and the co-sponsors were again the AMS, the Royal Meteorological Society and the WMO. The conference attracted 140 participants from twenty countries, and a pre-print volume was again produced by the AMS.

For the fourth conference, held in July 1996, the venue was the University of Edinburgh, Scotland, and the host organization was again, as in 1984, the Royal Meteorological Society. The co-sponsors were, once more, the AMS and the WMO, and a pre-print volume was produced by the Royal Meteorological Society. The conference attracted 124 participants from sixteen countries, many of whom took advantage of the two post-conference study days which focused upon the outstanding geology of Scotland's east coast.

The fifth ICSPMOE, the first conference called EWOC, was held in Australia in July 1999. The first two days of the conference took place in the University of Ballarat and the last two in a secondary school in Melbourne. On the third day of the conference, en route from Ballarat to Melbourne, conference delegates enjoyed visits to the Marine Discovery Centre at Queenscliff and the Australian Bureau of Meteorology in Melbourne. The conference was hosted by the Australian Meteorological and Oceanographic Society, and co-sponsors were again the Royal Meteorological Society, AMS and WMO. In addition, several Australian bodies provided support, among them the Bureau of Meteorology. The conference attracted 105 participants from twelve countries, and a pre-print volume was produced by the host organization. An innovation for this conference was a competition for Australian schools in which students undertook weather projects.

General Information

The sixth conference was held in the Universidad Europea de Madrid, Spain, in July 2003. It was hosted by the university's Physics Department and attracted 120 participants from 19 countries. The co-sponsors were, yet again, the Royal Meteorological Society, AMS and WMO and additional sponsorship was provided by a number of Spanish bodies, including the Instituto Nacional de Meteorologia. For the first time, the pre-print volume took the form of a CD, produced by the host organization. Again there was a competition for school children, this one an international competition in which children were invited to prepare a weather broadcast.

REGISTRATION

The estimated EWOC 2006 registration fee is expected not to exceed $350. It will cover all conference sessions, coffee breaks, and luncheons on Monday and Wednesday through Friday, as well as a reception/dinner on Monday evening at the NCAR Mesa Lab. The July 4 Independence Day Holiday will be recognized with a morning poster session. The afternoon will offer an optional BBQ celebration (for an additional fee)and recommendations for recreational activities in the Boulder area. Evening fire works are free and enjoyable from many vantage points in the city.

SPONSORSHIP/ORGANIZERS

University Corporation for Atmospheric Research (UCAR) in Boulder, Colorado is the local host for EWOC 2006 on behalf of the American Meteorological Society. UCAR's mission is to:

- support, enhance, and extend the capabilities of the university community, nationally and internationally
- understand the behavior of the atmosphere and related systems and the global environment.
- foster the transfer of knowledge and technology for the betterment of life on Earth.

Founded in 1960, UCAR is a nonprofit consortium of North American member universities, each of which grants doctoral degrees in the atmospheric and related sciences, plus an increasing number of international affiliates offering comparable degrees, and North American academic affiliates offering pre-doctoral degrees. UCAR's Office of Education and Outreach is the local organizer of EWOC 2006 on behalf of the AMS.

UCAR manages the National Center for Atmospheric Research (NCAR) and with primary support from the National Science Foundation. NCAR supports the community of atmospheric and geoscience researchers with tools such as aircraft and radar, to observe the atmosphere, and technology and assistance necessary to to interpret and use these observations, including supercomputer access, computer models, and user support. NCAR's research projects cover a vast array of topics and are collaborations between NCAR scientists and university researchers:

- atmospheric chemistry—such as the chemical structure of healthy and polluted air.
- climate—including temperature, rainfall, winds, and extreme events over decades or centuries, from prehistoric times to the present and into the future.
- weather ingredients—such as cloud physics, storm structure, and other keys to im proved weather forecasting.
- weather hazards to transportation—including detection and warning systems for turbulence and icing in the air and on the ground.
- interactions between the Sun and Earth—including solar weather.
- computer science innovation—for understanding and visualizing the whole Earth system.
- the role of humanity in both creating change and responding to weather and climate.

TRANSPORTATION

Shuttles Between Hotels and Meeting Spaces: Daily shuttle service will be provided between the UCAR Center Green Campus and lodging facilities listed on the conference web site.

TRAVEL TO BOULDER

Air: Denver International Airport (DIA) is an international hub for air transportation. It is located 40 miles, less than an hour's drive, from Boulder. Ground transportation options include the RTD buses, airport shuttles, and rental cars.

General Information

Train: AMTRAK provides service to Denver's Union Station. A 2 block walk will bring you to the RTD's Market Street Station where there is frequent bus service to Boulder.

Auto: Major car rental agencies are located at DIA. There is no charge to park at the conference hotels. There is a weekly parking fee (currently $20) for those staying at the University of Colorado Williams Village Residence Halls. A permit can be arranged at the University upon your arrival.

GROUND TRANSPORTATION

Shuttle: Ground transportation is provided on an hourly schedule between DIA and Boulder by Supershuttle (http://www.yellowtrans.com). The shuttle cost is currently $38 per person round trip, assuming drop off and pick up at one of the conference hotels or the University of Colorado Williams Village Residence Halls. To check the schedule and make reservations call Boulder Supershuttle (303) 227-0000. Shuttle drivers accept payment in cash, travelers checks, and major credit cards.

Bus: The Regional Transportation District (RTD) (www.rtd-denver.com) provides excellent bus service between DIA and Boulder (about a 1-hour trip) every day of the week. Depending on whether your luggage comes to baggage claim in the East or the West Terminal, you will need to check to see when you arrive where you should meet the bus. If you wish to take the bus to Boulder from downtown Denver, it can be boarded at the Market Street station located just two blocks east of Union Station on 16th Street. The RTD schedule for buses between Boulder and Denver can be accessed by calling (800) 366-7433 or accessing the RTD web site. The current fare is $10.00 one way. You should get off the RTD bus at the Boulder Foothills Park and Ride. A short tax ride will bring you to your lodging.

Taxi Cab: Taxis serving the Boulder/Denver area include: Yellow Cab (303) 777-7777 and Metro Taxi (303) 333-3333.

LODGING OPTIONS

Boulder Millenium Hotel
1345 Twenty-Eighth Street
Boulder, CO, USA 80302-6899
tel: (303) 443.3850 Fax: (303) 443-1480
Reservation: +1 (866) 866-8086
email: boulder@mhrmail.com
$93.00 per night double and single plus 10.25% occupancy tax

The Millenium Hotel is located on 16 acres of beautifully landscaped grounds next to Boulder Creek and its associated pedestrian/bike path. The rooms, many with a view of the mountains, have one king or two double beds and are designated smoking or nonsmoking rooms. The property includes: 15 tennis courts, five covered courts, indoor and outdoor pools, two whirlpools, an indoor restaurant, outdoor terrace restaurant, and lounge, and a pro shop where bicycles, tennis rackets, and in-line skates are available. The Millenium is the location for the July 4th morning poster session and afternoon BBQ festivities. Evening fireworks can be viewed from the grounds or from seating at the neighboring CU stadium. See the hotel's web site for a list of guest room amenities. A full breakfast is included. Guest parking is free.

Boulder Outlook Hotel & Suites
800 28th Street
Boulder, Colorado 80303
800-542-0304, 303-443-3322; Fax: 303 443-0397
www.boulderoutlook.com
email: talk-to-us@boulderoutlook.com
$84.99 single and double occupancy, $94.99 for 3 or 4 per room, plus 10.25% occupancy tax

Within easy pedestrian access to the CU campus and neighborhood restaurants, the Boulder Outlook's rooms are furnished with one double, two doubles, or one king bed. They are designated as smoking or non-smoking rooms. The rooms have outside or inside entrances and

General Information

may be in the main building or in an adjacent building. A complimentary continental breakfast is offered based on double occupancy. The Outlook has an indoor pool and restaurant, a climbing wall, and a business center. Guest parking is free. See the hotel's web site for a list of guest room amenities.

University of Colorado Williams Village Residence Hall
2005 rate: $54.50 plus tax single, $29.00 per person for double occupancy, plus 10.25% room tax

Guest "dormitory" rooms include sheets, mattress pads, blanket or bedspread, pillow, towels, washcloths, and soap. Daily housekeeping service is provided during the week. Each room contains a micro fridge and telephone. Local telephone calls are free. Most sleeping rooms have two extra long beds, two dressers, two closets, and two desks. Same sex bathrooms are conveniently located on each floor. Participants would need to bring an alarm clock since wake-up service is not provided. All rooms are non-smoking and are air-conditioned. The current rate for a parking permits is $20 per week.

LOCAL AREA INFORMATION

Boulder is a small city with a population of 100,000 people, with the addition of about 30,000 university students. It is located at an elevation of 5,430 feet (1,672 m), at the eastern foothills of the Rocky Mountains (known as Colorado's "Front Range"). It is the home of the University of Colorado (www.colorado.edu), Naropa University (www.naropa.edu), and several federal-funded research laboratories, including the National Center for Atmospheric Research (NCAR: www.ucar.edu), the National Oceanic and Atmospheric Administration (NOAA- www.noaa.gov), and the National Institute of Science and Technology (NIST- www.nist.gov).

The weather forecast for a summer day in Boulder is frequently "clear to partly cloudy with a chance of afternoon showers." Air temperature can range from the 50's to 100 degrees F, and it can cool quickly after sunset. Therefore, bring a sweater to ensure your comfort in air-conditioned rooms and a rain jacket, in case there is a shower. Casual dress is always appropriate in Boulder.

Extensive city and mountain parks, scenic vistas and close proximity to remarkable natural landscapes and wildlife, make Boulder a perfect place to enjoy outdoor recreation. Hotel accommodations are immediately accessible to miles of hiking/biking/rollerblading trails that connect to excellent shopping and dining spots, including the Pearl Street Mall. Boulder is the summer home of the University of Colorado (CU) Shakespeare Festival (www.coloradoshakes.org/), the Colorado Music Festival (www.coloradomusicfest.org/), the Colorado Chautauqua Association (www.chautauqua.com/programs.html), and a magnificent, free-to-the public, 4th of July fireworks celebration at the CU stadium.

General Information

FIELD TRIPS AND OUTINGS

July 4 BBQ Luncheon
$15/person, 12:30 p.m.
On the grounds of the Millennium Harvest Hotel

Saturday, July 8, 7 AM to 9 PM, PostConference
Field Trip
Weather, Flash Floods, and Natural History on the East Slope of the Colorado Rocky Mountains
Saturday, July 8, 2006, 7 AM - 7 PM

Fee: $75 includes bus transportation, entrance to Rocky Mountain National Park, picnic lunch, and snacks. Meet in the lobby of the Millennium Hotel at 7 AM.

Description: This full day field trip will feature dramatic geology, mountain vistas, weather stories, and wildlife viewing. The route explores the sites and circumstances of three devastating flash floods that have occurred on the eastern slope of the Colorado Rocky Mountains in during the month of July over the past three decades. We will retrace the path of floodwaters that destroyed lives and property in the City of Ft Collins on the evening of July 28, 1997. Flood control structures will be assessed that are common in cities around the world. We then leave the eastern plains to enter the dramatic Big Thompson River Canyon where a wall of flash flood waters killed 145 people who were camping and living there on the night of July 31, 1976. We will discuss features of the rebuilt highway through the "Narrows," visit the ruins of a power plant, and observe other evidence of this disaster. Pausing on the shores of Lake Estes, we will admire the surrounding mountain ranges of Rocky Mountain National Park and the architecture of the Stanley Hotel, before proceeding into the Park to the final flood site. Here we will walk on a massive alluvial fan deposited on the valley floor by waters released from Lawn Lake located at 11,000 ft (3385 m) where an earthen dam failed on the morning of July 15, 1982. There will be time to enjoy beautiful waterfalls above the alluvial fan, and if time and weather permits, we will drive to the alpine tundra on Trail Ridge Road before returning to Boulder. Wildlife viewing should include elk and mule deer with the possibility of seeing bighorn sheep, yellow-bellied marmots, and many mountain birds. Early July is the peak time for enjoying mountain wildflowers.

Field Trip Leader: Matt Kelsch has lived in Boulder since 1986. He is currently with UCAR's Cooperative Program for Operational Meteorology, Education and Training (COMET) where he coordinates and serves as an instructor for hydrology-related courses. He has also worked in mesoscale meteorology, emergency management, aviation weather, and winter weather. Matt's interests include communicating weather and climate phenomena to the media and the public, the impacts of land use on hydrologic responses, climate change, and environmental protection. He is the cooperative climate observer for Boulder, helping to train several hundred volunteer precipitation observers in Colorado's Community Collaborative Rain, Hail and Snow (CoCoRaHS) network. Matt is a media contact who receives local to national exposure. In 2005 he was interviewed or quoted by the National Institutes of Health, National Public Radio, CNN, the Associated Press, and National Geographic. He has an M.S. in meteorology from the University of Oklahoma, and a B.S. from the State University of New York at Oswego. As a Long Island, NY native Matt was always rooting for the blizzards and hurricanes that were headed his way, and though wishing it rained more in Boulder, he enjoys the area's windstorms, snowstorms, lightning, and spectacular rainbows. Matt is an avid hiker, gardener, and bicycle commuter who makes a point of rescuing older dogs that need a place to call home.

General Information

EWOC 2006 Evening Field Trips – July 5, 2006

1. The Story Rocks Tell – Hiking Table Mesa to the Flatirons - ($20 – Limited to 14)
Tuesday, July 5, 7:00 – 9:30 PM, Meet in the lobby of the Millennium Hotel.

Description: The hiking trail from NCAR Mesa Lab to the Flatirons presents exceptional views of the eastern plains as well as opportunities to explore the geological history of the Rock Mountains. We will traverse rock units from about 300-80 million years old. The oldest rocks record the uplift of the Ancestral Rocky Mountains. The rocks also tell the story of the complete erosion (removal) of this ancient mountain range, eventual flooding of Colorado by an inland sea, and the uplift of the present Rocky Mountains (64-40 million years ago). This field trip will focus on interpretation of the ancient environments and past climates preserved in the rocks along the trail. Sturdy shoes/ hiking boots are recommended. Carry a quart or liter of drinking water. The trail has some steep, switchback portions and is about 2 1/2 miles round trip.

Field Trip Leader: Dr. Sue Hirschfeld is a retired Professor of Geological Sciences from California State University, East Bay. She received her BS in Biology in 1963, her MS in Geology in 1965 from the University of Florida, and her Ph.D. in Vertebrate Paleontology in 1971 from the University of California, Berkeley. Her research specialty was the Hayward fault and earthquake hazards in the San Francisco Bay Area. Her concentration on emergency preparedness resulted in production of several educational videotapes including "Academic Aftershocks" (a documentary on the impact of the 1994 Northridge earthquake on California State University, Northridge and the long-term recovery process). Sue now lives in Boulder, Colorado. She volunteers as a naturalist for the City and County of Boulder, where she presents programs and field trips on local geology, and also serves as Outreach Chair for the Colorado Scientific Society. She loves birding, hiking, and exploring Colorado.

2. In Search of Pleistocene-Relict Plant Communities and Associated Wildlife in the Boulder Mountain Park (Limited to 14)

Tuesday, July 5, 7:00 – 9:30 PM. Meet in the lobby of the Millennium Hotel.

Description: Cool, moist canyons in the Boulder Mountain Park shelter plant communities found nowhere else in the southern Rockies. Small groves of paper birch and mountain ash suggest how local forests might have looked 12,000 years ago. Ten species of wild orchid bloom in these canyons, along with wood lilies, Colorado columbines, shooting stars, dwarf raspberries, and wild sarsaparilla. Our two-mile hike will take us into the lushest of these canyons, an enchanting refuge from the heat of July. Steve Jones will describe how these forest communities survived 10,000 years of climate change as he also points out wildflowers and wildlife of special interest. Carry drinking water. The trail is moderately strenuous.

Field Trip Leader: Steve Jones is author of The Last Prairie, a Sandhills Journal and Owls of Boulder County, and co-author of The Shortgrass Prairie, Colorado Nature Almanac, and the recently published Peterson Field Guide to the North American Prairie. Recognized by the National Wildlife Federation as "one of ten volunteers who make a difference," Steve organized the first small owl and wintering raptor surveys in Colorado and helped plan and carry out the Colorado Breeding Bird Atlas. His consulting work includes more than a dozen breeding bird studies for city, county, and state open space programs. He has led field trips and taught nature classes for 25 years, and he taught in the Boulder Valley Public Schools for 33 years.

General Information

3. Colorado Mining History Field trip to Jamestown, Colorado ($20 – Limited to 14)
Tuesday, July 5, 7:00 – 9:30 PM. Meet in the lobby of the Millennium Hotel.

Description: An early evening field trip to the historic Jamestown, Colorado (elevation 6929 ft, 2132 m), provides a glimpse of the past and present affects on the James Creek Watershed resulting from Colorado's mining heritage. We will explore the legacy of past mining for gold and fluorite and related water quality issues in this foothill community of 200 residents which relies on a pristine mountain stream for its drinking water. A twilight visit to an abandoned mine will reveal fascinating aspects of the animal, vegetable, and mineral world seen only with portable ultraviolet lights. Should its hours of business align with the field trip, the itinerary will include a stop at the Jamestown Mercantile Store (know locally as "the Merc"), where locals enjoy swapping tales over simple meals, beverages, and live music. (The field trip fee does not include food or beverages purchased at the Merc.). This field trip is not strenuous.

Field Trip Leader: Dr. Peter J. Modreski is a geochemist with the U.S. Geological Survey, Lakewood, Colorado. Pete is responsible for public communications and educational outreach for the USGS, and is the USGS geologic resource specialist for gemstones, abrasives, quartz, beryllium, cesium, and rubidium. His interests include mineralogy, Colorado geology, ore deposits, alkaline igneous rocks, luminescence, volcanoes, caves, hiking, and photography. Pete is a co-author of *Minerals of Colorado* (1997), an Executive Editor of Rocks & Minerals magazine, and a Research Associate with the Denver Museum of Nature and Science, Department of Earth Sciences.

4. Come Join Us for a Night Under the Stars! (No fee)
Thursday, July 6, 9 – 11 PM, Sommers-Bausch Observatory, University of Colorado. Meet at 8:45 PM in the lobby of the Millennium Hotel for the short walk to the Observatory

Description: Spend an evening exploring the Colorado skies at the Sommers-Bausch Observatory (SBO) on the campus of the University of Colorado here in Boulder. Dennis and Cheryl Ward, staff astronomers, will be your guide for the evening. Weather permitting, you will observe the Moon, Jupiter, & Pluto, as well as other deep sky wonders using the 16- and 18-inch research-grade telescopes on the observing deck. You will also have the opportunity to tour the dome housing the 24-inch telescope. We will gather at the observatory at 9 pm to enjoy the end of the Boulder sunset and watch the stars come out, and will observe until approximately 11pm.

Field Trip Leaders: Dennis Ward has been a staff astronomer at Sommers-Bausch Observatory (SBO) for 11 years. He holds a Masters Degree in Astronomy from Swinburne University in Melbourne, Australia. His interests include astronomical education, archaeoastronomy, and observational techniques. Dennis is an Educational Technologist with the UCAR Office of Education and Outreach. Cheryl Ward is an accomplished amateur astronomer who, with Dennis, has been hosting public viewing sessions at SBO for 11 years. Her interests include astrophotography and comet-hunting. She holds an MBA and is a Certified Public Accountant. She serves as an Accounting Supervisor at Denver Water.