



The 72nd Annual Meeting of the American Scientific Affiliation



*"The earth is the Lord's and everything in it,
the world and all who live in it." –Psalm 24:1*

July 28–31, 2017

Colorado School of Mines
1500 Illinois Street
Golden, Colorado 80401

Tentative Schedule

Thursday

3:00 PM–11:00 PM
Lodging Check-in

3:00 PM–9:30 PM
ASA Meeting Registration

5:00 PM–6:30 PM
Dinner

Friday

7:00 AM–8:00 AM
Breakfast

8:00 AM–8:30 PM
ASA Registration Table

Morning and All Day Field Trips

All Day
Poster Set-Up
Exhibit and Book Room

11:30 AM–1:30 PM
Lunch

1:30 PM–5:00 PM
Workshop

Afternoon Field Trip

5:15 PM–6:30 PM
Dinner

5:15 PM–6:30 PM
First-Time Attendees Dinner
Meetup

7:00 PM–7:30 PM
Welcome Session

7:30 PM–8:30 PM
Plenary I

8:30 PM–10:00 PM
Mixer

Saturday

6:00 AM
Morning Walk

7:00 AM–8:00 AM
Breakfast

7:00 AM–8:00 AM
Student Breakfast Meetup

8:15 AM–4:30 PM
ASA Registration Table

8:20 AM–8:45 AM
Devotions

8:45 AM–9:45 AM
Plenary II

9:45 AM–5:15 PM
Poster Viewing
Exhibit and Book Room

10:15 AM–11:45 AM
Parallel Session I

11:45 AM–1:00 PM
Lunch

11:45 AM–1:00 PM
CSCA Lunch Meetup

1:15 PM–2:45 PM
Symposium, Parallel Session II

2:45 PM–3:45 PM
Poster Session

3:45 PM–5:15 PM
Parallel Session III

6:30 PM–9:00 PM
Banquet, Plenary Session III

Sunday

6:00 AM
Morning Walk

7:00 AM–8:00 AM
Breakfast

9:30 AM–10:30 AM
Worship

10:30 AM–5:15 PM
Poster Viewing
ASA Table, Exhibits and Books

11:00 AM–12:00 PM
Plenary IV

12:00 PM–1:00 PM
Lunch

12:00 PM–1:00 PM
CWIS Lunch Meetup

1:15 PM–2:45 PM
Parallel Session IV

3:15–5:15 PM
Parallel Session V

5:15 PM–6:30 PM
Dinner

5:15 PM–10:00 PM
Posters taken down

6:00 PM
Volleyball Tournament

6:30 PM
CWIS State of Women in ASA

8:00 PM
Ice Cream Social

8:30 PM
State of the ASA

9:30 PM
InterVarsity Reception / Meet the
Plenaries

Monday

6:00 AM
Morning Walk

7:00 AM–8:00 AM
Breakfast

8:20 AM–8:45 AM
Devotions

8:45 AM–9:45 AM
Plenary V

9:45 AM–11:45 AM
Exhibit and Book Room

10:00 AM
Lodging Check-out (luggage
storage available)

10:15 AM–11:45 AM
Parallel Session VI

11:45 AM–1:00 PM
Lunch

1:00 PM–5:30 PM
Field Trip

Tuesday

8:00 AM
Morning Walk
Morning Hike

10:00 AM
Lodging Check-out

Plenary Speakers

FRIDAY, July 28, 2017, 7:00 PM



Annabelle Pratt received her bachelor's and master's degrees in electrical and electronic engineering from the University of Stellenbosch, South Africa, and her PhD degree in electrical engineering from Oregon State University. She is currently a principal engineer with the National Renewable Energy Laboratory. Prior to joining NREL, she was a senior power research engineer with Intel Labs, and previously, she was with Advanced Energy Industries where she developed power supplies for the semiconductor manufacturing and architectural glass coating industries. Her research interests include autonomous energy management of flexible loads in buildings to increase the penetration of renewable energy resources. She is a senior member of the Institute for Electrical and Electronic Engineers (IEEE) and active in providing peer reviews and in standards activities.

SATURDAY, July 29, 2017, 8:45 AM



Named to *TIME* magazine's 100 Most Influential People in the World list for 2014, **Katharine Hayhoe** is an atmospheric scientist who studies climate change, one of the most pressing issues facing humanity today. But Katharine may be best known to many people because of how she's bridging the broad, deep gap between scientists and Christians. Together with her husband Andrew Farley, a professor of applied linguistics, pastor of Church without Religion, and best-selling author, Katharine wrote *A Climate for Change: Global Warming Facts for Faith-Based Decisions*, a book that untangles the complex science and tackles many long-held misconceptions about global warming. Her work as a climate change evangelist has been featured on the Emmy award-winning documentary series "Years of Living Dangerously" and "The Secret Life of Scientists and Engineers." In 2012, she was named by *Christianity Today* as one of their "50 Women to Watch"; in 2014, she was awarded the American Geophysical Union's Climate Communication Prize, and named as one of *Foreign Policy*'s 100 Leading Global Thinkers and "20 Women Making Waves in the Climate Change Debate."

SUNDAY, July 30, 2017, 11:00 AM



Ian Hutchinson is Professor and former Head of the Department of Nuclear Science and Engineering, at the Massachusetts Institute of Technology (MIT). His group's experimental research, on confined plasmas hotter than the center of the sun, was a major contributor to the international effort to generate practical energy from fusion reactions, the power source of the stars. In addition to 200 journal articles and two science text books, he has also written and spoken widely on the relationship between science and Christianity. His book *Monopolizing Knowledge* explores how the error of scientism arose, and how it feeds today's culture wars and an excessive reliance on technology. Ian is a fellow of the American Physical Society, the (UK) Institute of Physics, and the ASA.

MONDAY, July 31, 2017, 8:45 AM



Formerly holding the R. A. Hope Chair At McMaster University and serving as the president of the Canadian Scientific and Christian Affiliation, **James Peterson** (PhD Virginia) is now the Schumann Professor of Christian Ethics and Director of the Benne Center for Religion & Society at Roanoke College, the ethicist for Lewis Gale Hospital, and a professor at the Virginia Tech Carilion School of Medicine. At ASA he is a Fellow and the Editor-in-Chief of our peer-reviewed journal PSCF. He has been a clinical and research fellow in genetics funded by the National Institutes of Health, and published two books with Eerdmans on human genetic intervention: *Genetic Turning Points* and *Changing Human Nature*. Invitations to lecture have come from universities including Oxford, Queens, British Columbia, Toronto, Harvard, and Northwestern, as well as confessional colleges from Calvin to Wheaton, and the International Society for Science and Religion founded at Cambridge, has elected him a Fellow.

Banquet Speaker

SATURDAY, July 29, 2017, 8:00 PM



A native of Atlanta, Georgia, **Philip Yancey** earned graduate degrees in Communications and English from Wheaton College and the University of Chicago. He joined the staff of *Campus Life* magazine in 1971, and worked there for ten years as Editor and then Publisher.

Then Philip became a full-time writer, initially working as a journalist for such varied publications as *Reader's Digest*, *National Wildlife*, *Christian Century*, and *The Reformed Journal*. For many years he wrote a monthly column for *Christianity Today*, which he still serves as Editor at Large.

He has written over twenty-five books, including *Where Is God When It Hurts*, *Prayer: Does It Make Any Difference?*, and *Disappointment with God*. The books have won thirteen Gold Medallion Awards from the Christian Publishers Association and have sold more than fifteen million copies in English, as well as being translated into forty languages. Among his most recent books are *The Question That Never Goes Away* and *Vanishing Grace: What Ever Happened to the Good News?*

The Yanceys lived in downtown Chicago before moving to a very different environment in Colorado. They enjoy mountain climbing, skiing, wildlife, and all the other delights of the Rocky Mountains.

Symposium Leader



Dorothy Boorse is interested in wetland ecology, invertebrates, vernal pools and salt marshes. She is also passionate about increasing women and minorities in science, science and faith communities, and literary science, how science is portrayed in culture, and how people relate science and faith. Dorothy loves being outdoors and loves wetlands more than just about anything. Her college textbook co-authored with Richard Wright, *Environmental Science: Toward a Sustainable Future* (2014, Pearson) is in its 13th edition. Dorothy has been a member of ASA since 2001, was elected as an ASA Fellow in 2012, and was elected to the Executive Council in 2016.

Sunday Worship Speaker



Rev. Peter Hiett is the pastor of The Sanctuary Denver, as well as a husband and father of four. Peter holds a bachelor's degree in geology from the University of Colorado and a Masters of Divinity from Fuller Seminary. He has authored four books including two recent creative commentaries on Genesis chapters one and two—*The History of Time and the Genesis of You* and *God and His (Sexy) Body*.

Pre-Meeting Field Trips

Registration for the NREL tour closes **June 30, 2017**, or until full; the others close on **July 12, 2017**, or until full.

FRIDAY, July 28, 2017

Denver Front Range Geology Tour



After boarding a motorcoach at 8:30 AM, you will spend an informative full day with geologist Steve Smith from the US Geological Survey. Steve will include stops at Red Rocks Amphitheater and Dinosaur Ridge (with dinosaur bones and tracks). You will have time to enjoy your boxed lunch from CSM at the Ridge Visitors Center and Museum. After lunch you will walk Triceratops Trail (~1 easy mile) and then finish with a stop atop Lookout Mountain where you will have a view of the entire Denver area and also see Buffalo Bill's Grave. During the trip, as you scan the beautiful scenery and rocks, Steve will describe Colorado's geologic history, mining history, dinosaur remains, and modern geological hazards. The bus should return to CSM around 4:00 PM.

Cost includes transportation and a boxed lunch\$65

Rocky Mountain National Park



The mountains are calling and we must go! At 8:00 AM, hop aboard a bus and travel north to Rocky Mountain National Park. The Park has 400+ square miles of spectacular scenery, more than 100 mountain peaks, and some of the best wildlife viewing anywhere. En route, biologist Angela Kantola will review the history, flora, and fauna of the park, and we'll have time to get to know our

fellow travelers. Within the park, our route will include Trail Ridge Road, one of the highest paved roads in the world, peaking at a magnificent 12,183 feet on the Continental Divide. Although this is a bus tour, we will have opportunities for photography, some strolling about, and, of course, time to enjoy our box lunches. Don't miss the chance to experience this gem of Colorado's Rocky Mountains. The bus will return to CSM at about 5:00 PM.

Cost includes transportation, admission, and a boxed lunch\$65

National Renewable Energy Laboratory (NREL) Tour **SOLD OUT**



Photo by Dennis Schroeder, NREL 26954

NREL is one of 21 national laboratories and technology centers overseen by the US Department of Energy, and is the only federal laboratory dedicated to the research, development, commercialization, and deployment of renewable energy and energy efficiency technologies. This tour will make its way through a few of the buildings on campus, led by scientists and subject matter experts in the areas of energy efficient buildings, 3-D visualization, data mining, solar energy research, and others.

US citizens must show government-issued photo identification (such as a driver's license). Foreign nationals (including Canadian citizens, permanent resident aliens, and resident aliens) must show their passport and visa. All participants are required to wear closed-toe shoes and long pants. Safety glasses will be provided onsite must be worn when directed. NREL is ADA compliant but is designed primarily as a "walking campus." Be sure to note any ambulatory issues on your registration. Cameras are allowed. Cars will depart at 8:30 AM and return around 12:00 PM.

Cost includes transportation and bottled water\$25

Coors Brewery Self-Tour

Attendees are welcome to take a Coors Brewery Tour any time Friday beginning at 10:00 AM. The tours close at 4:00 PM. This is a 30-min self-guided tour; free samples of beer (must be 21 or over on the day of the tour with a valid, government-issued ID) and non-alcoholic drinks are

available afterward. The tour starting point is a 0.6 mile (12 min) walk from the Parker Student Center; maps will be available at the ASA registration table.

No cost, but registration requested to connect with other attendees

Pre-Meeting Workshop

FRIDAY, July 28, 2017

1:30 PM–5:00 PM

The Energy, Environment, and Ethics Nexus

Brent Nelson, Facilitator

Each year the world consumes more energy than the year before. This growing demand for energy presents a variety of environmental and ethical challenges. This workshop presents an overview of the various primary energy sources, both consumable (coal, oil, natural gas, and nuclear) and renewable (wind, geothermal, ocean, bioenergy, hydropower, and solar), discussing the “blessings and curses” of each. We will also touch on how these primary energy sources fan out into secondary energy technologies such as fuel cells, the smart grid, energy efficiency, energy storage, and thermoelectrics, as well as to energy uses such as heating and cooling, transportation, lighting, and industrial processes. Energy extraction, production, and use have profound impacts on economies and jobs, national security, climate change, land and water use, and the environment. The workshop will end with a discussion around the question: “What is the Christian responsibility with regard to energy production and consumption?”



Brent Nelson spent the first part of his career studying second-generation photovoltaic (PV) devices; primarily hydrogenated amorphous silicon and its alloys at National Renewable Energy Laboratory (NREL). He has authored numerous scientific publications, refereed papers for various journals and conferences, and been on the organizing committee for several domestic and international scientific conferences. Currently Brent manages the Engineering and Informatics group for the Materials and Chemicals Science and Technology directorate at NREL. This is a group of engineers and technicians that keep research equipment “experiment ready” and state-of-the-art. Through the years Brent has volunteered with several nonprofit organizations, helping found three, including the Fellowship of Home Churches.

Cost.....\$35

Special Activities

CWIS Walk: We are exploring the possibility of an early morning walk (Saturday, Sunday, and/or Monday) in the area around CSM campus. Would you be interested in such a walk with fellow CWIS members?

Volleyball: We are carrying on the ASA tradition of an annual volleyball tournament. Because there are no sand volleyball courts on campus, we will be playing lawn volleyball. Would you be up for joining us for some fun games on Sunday night?

Meal Meetups: We have reserved the private dining room in the dining hall for special group meal meetups, such as CWIS, CSCA, students, and first-time attendees. Stay tuned for details!



Post-Meeting Field Trip, Walk, and Hike

Registration for field trip, walk, and hike closes on **July 12, 2017**, or until full.

MONDAY, July 31, 2017

SOLD OUT

~~Climate Change Tour Package: National Center for Atmospheric Research and the National Ice Core Laboratory~~



The National Center for Atmospheric Research (NCAR) is a federally funded research and development center devoted to service, research, and education in the atmospheric and related sciences. This 90-min tour includes a short introduction to their visualization facility, plus time in their visitor center exhibits and on their weather trail. We will leave CSM after lunch at 1:00 PM, with the tour starting at 1:45 PM. After the completed tour at 3:15 PM, we will board the bus and drive to the National Ice Core Laboratory (NICL) in Lakewood.



The National Ice Core Laboratory (NICL) is a facility for storing, curating, and studying meteoric ice cores recovered from the glaciated regions of the world. NICL provides scientists with the capability to conduct examinations and measurements on ice cores, and it preserves the integrity of these ice cores in a long-term repository for future investigations. This is a 30-min tour, with 15-min overview talk, and 10 min or so in the freezer, either in the working area (-10°F, -24°C) or in the main storage area (-36°F, -38°C). The bus will return to CSM about 5:30 PM.

Cost includes transportation and bottled water **\$25**

TUESDAY, August 1, 2017

South Platte River Wetlands Walk

Join the Audubon Society of Greater Denver (Kate Hogan) for a walk along the wetlands of the South Platte River! Explore our native plant gardens, ponds, riparian forest, and grassland habitats for resident and migratory birds, frogs, turtles, butterflies, and more. We always have a surprise! This is a great opportunity to learn about the birds and other local wildlife of the Denver area, as well as visit our North American beaver habitat. Trails are moderately easy, but do contain rocks and tree roots. Hiking boots recommended! Meet at the Maple Hall entrance at 8 AM.

No cost, registration requested to arrange transportation

Mt. Galbraith Hike

Join some local residents on a 4.6-mi balloon-loop hike around Mount Galbraith, with a 938-ft elevation gain.



Mt. Galbraith (Jefferson County Open Space Park) is a hiker-only destination, boasting nearly five miles of steep, rocky trails that reward the hardy with commanding views of Golden, the plains and the Continental Divide.

Bring hiking boots, plenty of water, sun hat and sunscreen, and maybe a trekking pole. Meet at the Maple Hall entrance at 8 AM.

No cost, registration requested to arrange transportation

Registration

All registrations must be submitted online. Payment in **US dollars**, however, may be made online or by mail. To register, go to www.asa3.org. We recommend using Firefox or Chrome browsers. If you are an ASA member, sign in to receive your member discount. No refunds after **June 30, 2017**.

REGISTRATION: (per person)

ASA/CSCA/CiS Member

Nonmember

Spouse

Student Member

Not attending any talks*

Conference Rates

☐ \$375

☐ \$425

☐ \$150

☐ \$ 0

☐ \$ 0

One Day Only

☐ \$125

☐ \$150

☐ \$ 65

☐ \$ 0

*This registration is for those not attending any talks *and* who will be an exhibitor or who purchase tickets for the Saturday night banquet, a field trip, a workshop, meals and lodging, and/or an off-campus meal package.

Please note: To make a change after your registration has been submitted, you will need to contact Sharon at sharon@asa3.org.

Conference Packages for Campus Lodging and Meals

Conference packages are *per person*. For double occupancy, each individual must purchase a package separately.

The conference package includes lodging for Friday through Sunday nights, a linen package, and nine meals. Linens provided include 1 pillow, 1 pillowcase, 2 flat sheets, 1 blanket, 1 washcloth, 1 hand towel, 1 bath towel and shower soap. Please be advised that no other amenities are provided either in the rooms or bathrooms. Guests must provide their own toiletries, alarm clocks, irons, hangers, reading lights, cups, and extra linens.

The meals begin with Friday dinner through Monday lunch, including the Saturday night banquet. For those who wish to extend their stay, Thursday night lodging includes three meals: Thursday dinner, Friday breakfast, and Friday lunch. Lodging only is available for Monday and Tuesday nights.

We will be staying in **Maple Hall**, a fully air-conditioned, four-story building that has free wireless internet access and an elevator. Each room accommodates up to two guests and every pair of rooms share a connecting bathroom. We have a limited number of rooms reserved for married couples who wish to have a private bathroom.

If you select a double occupancy room and do not have a roommate, we will do our best to match you with a roommate. Each resident will receive a room key and a card for Maple Hall and meals; replacement of lost room key and card is \$150. Lodging check in starts at 3 PM and check out ends at 10 AM daily. If you fail to check out by 10 AM on the day of departure, you will be charged an *additional* night's lodging. Luggage storage is available for those leaving campus later in the day.

Please note: Prices are in **US dollars**. Lodging and meals are not guaranteed after **June 30, 2017**.

Conference Package Lodging and Meals (per person)	Married Double Occupancy, Private Bath (per person)	Double Occupancy, Shared Bath (per person)	Single Occupancy Shared Bath
Fri–Sun (9 meals)	\$335	\$295	\$335

Extended Stay (per person)	Married Double Occupancy, Private Bath (per person)	Double Occupancy, Shared Bath (per person)	Single Occupancy Shared Bath
Thurs (3 meals)	\$100	\$90	\$100
Mon (no meals)	\$60	\$50	\$60

Off-Campus Meal Package

For those staying off campus, there is a six-meal package: Friday dinner, Saturday lunch, Saturday banquet, Sunday lunch, Sunday dinner, and Monday lunch. Meal cards are required and will be given out at ASA registration; replacement meal cards are \$25.

Please note: Prices are in **US dollars**. Meals are not guaranteed after **June 30, 2017**.

Six-meal package..... \$110

Saturday Night Banquet

Our Saturday night catered dinner will be followed by a presentation from Philip Yancey. The banquet is included in the conference packages for lodging and meals and in the off-campus meal package. Banquet tickets can be purchased separately.

Dinner entrées are the following:

Lemon Basil Chicken

Chicken marinated in fresh basil, lemon juice and lemon pepper seasoning

Balsamic Marinated Portobello Mushrooms

Marinated Grilled Portobello Mushrooms stuffed with garden vegetable quinoa and garnished with a balsamic vinegar drizzle

Banquet ticket for those *not* purchasing lodging and meals or an off-campus meal package \$40

Campus Map

Click [here](#) for the campus map.

Campus Parking and Parking Passes

CSM is a Pay-to-Park [campus](#), MON thru FRI, 7 AM–5 PM, evenings and weekends are free. Visitor parking is authorized in the blue and yellow lots where the "pay and display" parking meters are located. Parking meters appear as orange circles on the campus [map](#). You can park in any unrestricted space, but not a faculty/staff space or red zone (can result in a ticket that's reported to the Colorado DMV). To park in a handicapped space, hang an official sign (from CO or another state) on your front-windshield mirror.

The conference parking rates are based on *days*, not hours. If your car is parked in the lot any time after midnight up until 11:59 PM, you need to purchase parking for that day. For example, if you arrive Friday night and leave any time on Monday, you need to purchase parking for Friday and Monday. Without a parking pass, campus parking is \$8 per vehicle/per day or \$1.50 per vehicle/per hour. Conference parking passes are **\$6 per vehicle/per day**.

ASA Ride Board and Travel Information

ASA has a [travel page](#) with information about getting to campus and to help you find others for shared traveling.

Promotional Opportunities

Exhibit Hall Space: The facilities at Colorado School of Mines are outstanding, and exhibits will be located in close proximity to the plenary and breakout sessions. The table size is 6' long x 30" wide. Exhibit space is open throughout the conference, providing maximum opportunities for connecting with scientists, educators, and students. There are five opportunities for your organization to display at the conference, and we strive to ensure that you will receive a strong return on your investment.

Program Advertising: An extensive program book is provided to all conference attendees and contains detailed information on speakers, workshops, and symposium presentations. Advertisements are available in multiple sizes and offer premium exposure to a wide range of academic and industry professionals.

Conference Sponsorship: There are many opportunities for sponsorship during the Annual Meeting. Groups, organizations, or individuals may underwrite a specific program or feature of the Annual Meeting to partner with ASA and enhance the conference experience for attendees.

Click [here](#) for more information.

Off-Campus Lodging

Hampton Inn by Hilton, Denver–West Golden

17150 W Colfax Ave, Golden, CO 80401
303-278-6600

3.9 miles from Colorado School of Mines

Amenities: free Wi-Fi, complimentary breakfast, indoor pool, fitness room

Discounted Room Rate: \$139/night plus 7.5% tax

ASA has reserved a block of rooms (nonsmoking) for check in July 28, 2017–check out July 31, 2017. The discounted room rate will be available until **June 28** or **until the group block is sold-out**, whichever comes first.

Please note: The discounted room rate may be extended three days prior to arrival and post departure *if available and requested by phone*.

To make a reservation:

1. **Call the front desk:** contact the hotel directly at (303) 278-6600 to make a reservation, being sure to identify yourself by using the group name of **American Scientific Affiliation** or
2. **Book online** at www.denverwestgolden.hamptoninn.com. Select the date you would like to check in and check out, then click on "Add Special Rate Codes" arrow. Next, you must enter the "Group Code" **ASC**. Finally, click on the "Check Rooms and Rates Button" and your discounted rate should appear to book.

Holiday Inn Express, Golden–Denver Area

17140 W Colfax Ave, Golden, CO 80401
303-278-2388

3 miles from Colorado School of Mines

Amenities: free Wi-Fi; complimentary hot breakfast; outdoor pool and Jacuzzi; 24-hour fitness/business center, laundry; refrigerator, microwave, Keurig in all rooms

Room rates starting at \$159/night, plus 7.5% tax

- King or two queens (per availability)
- No pre-payments/deposit
- 6:00 pm day of arrival cancellation policy

To make a reservation:

1. **Call 800-HOLIDAY** / Group code: ASA or
2. **Book [online](#)** now.

Days Inn and Suites Golden/West Denver

15059 W Colfax Ave, Golden, CO 80401
303-277-0200 or 800-255-3297

3.6 miles from Colorado School of Mines

Amenities: free Wi-Fi, free breakfast, fitness center, outdoor pool

Discounted room rates: \$99/night for one king size bed; \$107/night for two double beds, plus 7.5% tax

ASA has reserved a block of rooms for check in July 28, 2017–check out July 31, 2017. The discounted room rate will be available until July 14 or until the group block is sold out, whichever comes first. *Please note:* The discounted room rate may be extended three days prior to arrival and post departure, if available and requested by phone.

To make a reservation:

1. **Call the front desk:** contact the hotel directly at 303-277-0200 or
2. **Call central registration** at 800-255-3297,

Be sure to identify yourself by using the group code **CGASA1** and group name **American Scientific Affiliation**.