The University of Texas at Austin

STEMFORCE TEXAS

JACKSON SCHOOL OF GEOSCIENCES

2016 ANNUAL REPORT

Program Overview

STEMFORCE Texas is a pilot STEM initiative that models GeoFORCE Texas' methodology of increasing the number of diverse high school students pursuing Science, Technology, Engineering, and Math degrees. Started in the spring of 2015, STEMFORCE continues to provide geological field experiences to students from Austin and Dallas, TX and the Bahamas.

Methodology

Using GeoFORCE Texas' model STEMFORCE partnered with both the Austin and Dallas school districts and the Bahamian Ministry of Education, to bring opportunities for students to engage in STEM learning. Each summer, for four years, we take the students on week-long geologic field trips across Texas and throughout the United States, where they gain valuable field experience and further knowledge of the energy industry. The academic content and rigor builds each year. The trips are taught by university faculty and research scientists. Students also receive mentoring from professional geologists. Thanks to generous sponsors these trips are free to students.

In our program, 9th graders from Texas travel to Austin and the Texas Gulf Coast and 9th graders from the Bahamas travel to New Providence and Texas, to study sedimentary processes. High school sophomores go to Arizona and Utah, visiting the Grand Canyon and Zion National Park to study layered rocks and geologic time. We take juniors to the Pacific Northwest to study tectonics and volcanic rocks. They visit Mt. St. Helens, Mt. Hood, Newberry Caldera, and Crater Lake. Seniors traverse the Appalachian Mountains, learning about structural geology and metamorphic rocks.

In 2016, we ran 3 field trips with 71 students. The Austin/Dallas cohort and the Bahamas cohort both completed their second summer by visiting the Southwest U.S. region. The third and newest cohort, who are students from Akins High School and Ann Richards School for Young Women Leaders traveled though Austin and the Texas Gulf Coast. We logged over 12,500 miles in planes and buses, and served over 6,000 meals. Students studied geological concepts such as sedimentation and layering while performing tasks such as beach profiling on barrier islands on the Texas Gulf Coast or learning the Grand Canyon formed.

With more funding, our interactions with the students will not end out in the field. Mentoring will continue through high school and college. We will offer PSAT and SAT preparation between their sophomore and junior years. We will also help with college and financial aid applications, provide scholarships, and assist students with finding internship opportunities in college.

Objectives

- Engage high-achieving students from challenged high schools and keep them in the program through college.
- Provide spectacular learning experiences that broaden students' understanding of the Earth and emphasize geosciences and engineering.
- Build a large cohort of high achievers.
- Achieve high school graduation.
- Give students the tools, confidence, and motivation to pursue college.
- Help students achieve college graduation, especially in STEM fields.

STEMFORCE Austin

Austin and Texas Gulf Coast

Geological Topics:

Rivers, erosion, sediment transport, coastal erosion, barrier islands, sea-level change, uniformitarianism, superposition

A new cohort of Austin ISD students from South Austin was funded by the KDK Harmon Foundation, consisting of 11 rising 9th graders: 7 students from middle schools that track into Akins High School and 4 students from the Ann Richards School for Young Women Leaders. The initial grant called for 20 students to participate in the field course, we plan to recruit further during the 2016-2017 school year to bring to bring the number up to speed. We will achieve this by fostering relationships between the students, parents, and teachers and the STEMFORCE initiative.

Objectives

1. Introduce students to basic geological terms and processes
2. Give students the opportunity to experience life on a major university campus

Austin Field Stops

- Mt. Bonnell
- McKinney Falls
- Barton Springs
- Roy G. Guerrero Colorado River Park
- UT Austin Campus

Texas Gulf Coast Field Stops

- UT Marine Science Institute's Katy Research Vessel
- Goose Island State Park
- Mustang Island Beach
- Galveston Island State Park

Region	Austin
Date of Event	July 8 - July 15, 2017
Number of Students	11
Coordinator	Edgar Garza
Instructor	Linda McCall
Educational Coach	Michael Arratia

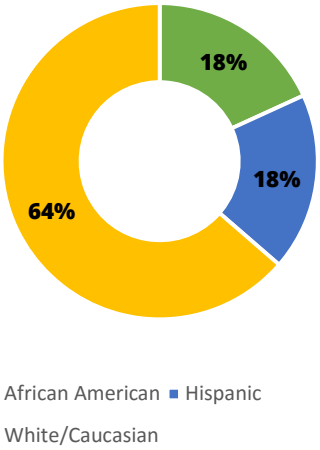
2016 Grants and Expenses

Funding was provided by the KDK Harman Foundation's Supporting STEM and Out-Of_School Time Quality Programs Initiative. KDK Harman particpates in The Central Texas Summer STEM Funder Collaborative whose goal is to engage economically challenged children in STEM learning.

Financial support was used to cover transportation, lodging, meals, learning materials. We would like to thank KDK Harman for their generous support. The remaining available funds will be used for continued retention activities such as recruitng to fill spots and a Spring 2017 Career Day.

Grantor	Amount
KDK Harman Foundation	$35,968.00
Expenses	
9th Grade Academy Trip	$27,313.41
Total Available Funds*	$8,654.59

School:	Number of Students
Ann Richards School	4
Bailey Middle School	2
Bedicheck Middle School	1
Paredes Middle School	4



2017 and beyond

STEMFORCE Texas will be reapplying for KDK Harman's inititiave to fund the second summer Austin students. The STEMFORCE 10th Grade Academy will take place in Arizona and Utah where students will learn about sedimentary structures, processes, and environments. The students will visit several national parks like Zion National Park and the Grand Canyon. They will also enjoy learning about the Glen Canyon Dam while taking a raft ride down the Colorado River.

The 2017 trip dates will be June 24 – June 30, 2017.

The University of Texas at Austin

GEOFORCE TEXAS

JACKSON SCHOOL OF GEOSCIENCES

2016 ANNUAL REPORT

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Contact Information

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Letter from the Director

Friends and future friends,

Just as GeoFORCE Texas was completing the 2016 summer field learning experiences in August for 448 high school students, the National Park Service started the yearlong celebration of its 100th Birthday on August 25. The connection to GeoFORCE Texas is that the National Parks are our classrooms where we engage students in STEM learning. GeoFORCE Texas visits geologically interesting sites in National Parks and State Parks to introduce students to geological phenomenon that are explained using physics, chemistry, biology, engineering, and mathematics. The multidisciplinary nature of geology makes it possible to use the study of the Earth to introduce students to STEM in our National Parks. GeoFORCE Texas has the highest praise and never ending thanks to all of the engineers, geologists, geochemists, geophysicists, hydrologists, paleontologists, and other such scientists who have joined the students in the parks each summer to serve as teachers and mentors.

This mentoring and teaching, combined with the National Parks as a place for interacting with students, has been instrumental in the success of GeoFORCE Texas. It is being true to the mission of increasing the number and diversity of students pursuing science, technology, engineering, and mathematics degree programs, especially geology and engineering, and entering the high-tech workforce. In 2016-17, we will be presenting stories of former GeoFORCE Texas participants who are now in college and in the STEM workforce. Our first story for 2016-17 is in this Annual Report and features ExxonMobil employee Jeff Sitgreaves from the small friendly Texas town of less than 2,000 residents, Brackettville. The STEM learning experiences Jeff engaged in over four summers in National and State Parks fueled him to complete his STEM education all the way through to a Master's degree in geology in 2015. It was the great idea of having McKinney Falls State Park, the Grand Canyon, Crater Lake, Mount St. Helens, and Great Falls National Park as outdoor classrooms that contributed to Jeff's path to ExxonMobil.

Film maker Ken Burns' documentary, The National Parks: America's Best Idea, takes its title from writer and historian Wallace Stegner who called national parks "the best idea we ever had." After 12 summers of engaging high schools in STEM learning in National and State Parks, with 654 GeoFORCE Texas students enrolled in college in Fall 2016, we like to think of GeoFORCE Texas as the state of Texas' best idea!

As you review the 2016 highlights of GeoFORCE Texas, you will see that it continues to "change lives" in its 12th summer of STEM learning in National Parks and State Parks.

Best Regards,

Samuel L. Moore, Ph.D.
Director of Outreach and Diversity
Jackson School of Geosciences
The University of Texas at Austin

Key Statistics

448 Students

Number of high school students who participated in GeoFORCE summer trips in 2016

654 Students Attending College

Total number of GeoFORCE students enrolled in Fall of 2016. A 13 percent addition from last year.

58% STEM Majors

Percentage of GeoFORCE College students currently pursuing STEM (science, technology, engineering, and mathematics) degrees. This is roughly double the national average (28%) of students pursuing STEM degrees. (Source: U.S. Department of Education)

34 Master or Professional programs

Number of programs being pursued by GeoFORCE College graduates

161 Bachelor's Degrees

Number of degrees earned by GeoFORCE College students

75 Associate Degrees

Number of degrees earned by GeoFORCE College students (9 Associate Degrees were earned by students who also earned a Bachelor's Degree)

*The above numbers are based on current National Student Clearinghouse and student-reported data.

GeoFORCE Overview

Mission

GeoFORCE is designed to increase the number and diversity of students pursuing science, technology, engineering, and math (STEM) degree programs, especially geology and engineering, and entering the future high-tech workforce.

Objectives

- Engage high-achieving students from challenged high schools and keep them in the program through college.
- Provide spectacular learning experiences that broaden students' understanding of the Earth and emphasize geosciences and engineering.
- Build a large cohort of high achievers.
- Achieve high school graduation.
- Give students the tools, confidence, and motivation to pursue college.
- Help students achieve college graduation, especially in STEM fields.

Method

GeoFORCE operates in both inner-city Houston and rural southwest Texas. The program capacity for a summer is determined by a cohort size of 40 students maximum times the number of trips (e.g. 40 students × 15 trips = 600 students). Each summer, for four years, we take the students on week-long geologic field trips across Texas and throughout the United States, where they gain valuable field experience and further knowledge of the energy industry. The academic content and rigor builds each year. The trips are taught by university faculty and research scientists. Students also receive mentoring from professional geologists. These trips are free to students.

In our program, 9th graders travel to Austin and the Texas Gulf Coast to study sedimentary processes. High school sophomores go to Arizona and Utah, visiting the Grand Canyon and Zion National Park to study layered rocks and geologic time. We take juniors to the Pacific Northwest to study tectonics and volcanic rocks. They visit Mt. St. Helens, Mt. Hood, Newberry Caldera, and Crater Lake. Seniors traverse the Appalachian Mountains, learning about structural geology and metamorphic rocks.

In 2016, we ran 15 field trips with 448 students. We logged over 35,000 miles in planes and buses, and served over 17,000 meals. Students studied geological concepts such as sedimentation and plate tectonics while performing tasks such as beach profiling on barrier islands on the Texas Gulf Coast or learning how to measure strike and dip in the Appalachian Mountains.

GeoFORCE does not end when students leave the field. Mentoring continues through high school and college. We offer PSAT and SAT preparation. We help with college and financial aid applications, provide scholarships, and assist students with finding internship opportunities in college.

Keys to Success

For the Students

- Engage the students over four years
- Take the students out to new environments
- Expose students to various universities
- Provide the students with role models

For the Program

- Metrics on student participants
- Strong university support
- Strong industry support
- Passionate staff

Results

GeoFORCE has completed 12 full years of activities. We track our students throughout high school and college, as well as into the workforce which allows us to know that we are meeting our objectives.

Demographics

In 2016, 57 percent of high school participants were female and over 80 percent of high school participants were minority students. About 55 percent of our students are Hispanic, primarily from the Southwest region, and about 19 percent of our students are African American from the Houston area.

STEM Fields

At the start of the 2016 college fall semester, 58% of GeoFORCE grads in college are declared STEM majors, almost double the national average. Geology (23%), Engineering (20%), and Biology (20%) are the top three major choices for our students.

Sponsors

Thank you to our generous sponsors!

GeoFORCE is a public/private partnership, receiving its funding from private industry, foundations, state and federal government, and individual donors.

- AAPG Foundation
- AEP Texas
- Anadarko Petroleum Corporation
- Baker Hughes
- bhp billiton
- BP British Petroleum
- Chevron
- ConocoPhillips
- drillinginfo
- Ed Rachal Foundation
- ExxonMobil
- Friends of GeoFORCE
- GDL Foundation
- Halliburton
- George and Mary Josephine Hamman Foundation
- Jackson School Graduate Student Executive Committee
- Jackson School Undergraduate Geological Society
- Kinder Morgan Foundation
- Marathon Oil Corporation
- Newfield
- Schlumberger
- SEG Foundation
- Shell
- Society of Independent Professional Earth Scientists
- Talisman Energy
- Texas Workforce Commission
- USGS
- Valence Operating Company
- Vulcan Materials Company

Individual Friends of GeoFORCE

Friends of GeoFORCE Endowment

Thank you for all the contributions to support GeoFORCE in continuing to build the endowment fund established in honor of Doug Ratcliff. This endowment aims to ensure that students in the future have access to the GeoFORCE experience for years to come. We congratulate our GeoFORCE supporters for truly making a difference!

AAPG Foundation
Mr. William N. Agee, Jr.
Anadarko Petroleum Corporation
Anonymous Donor
Mrs. Sara S. Avant-Stanley
Bahamas Petroleum Company
Baker Hughes
Mr. Robert W. Baumgardner, Jr.
Ms. Annell Bay
Mr. Christopher A. Beard
Mr. Reginald D. Beasley
Mrs. Tiffany Benavidez
BHP Billiton
Mr. Robert L. Bluntzer
Dr. Robert Leigh Boyce
Mr. Alfredo Boyles
BP Corporation
Mr. Philip Braithwaite
Ms. Meredith Anne Bush
Ms. Denise M. Butler
Ms. Fidelina Carranza
Mr. Charles A. Caughey
Mr. Edward C. Cazier III
Mr. Jose Eduardo Chavez
Ms. Christina Chong
Ms. Emily E. Comer
ConocoPhillips
Mr. William D. Demis
Ms. Marion W. Deford
Ms. Laura Michelle Demott
Mrs. Susann V. Doenges
Ms. Patricia O. Downs
Drillinginfo
Dr. Laurie S. Duncan
ExxonMobil Corporation
William L. Fisher, Ph.D.
Dr. Sterling H. Fly III
George Hamman Foundation
William E. Galloway, Ph.D.
Ms. Tomica Gawlik
Ms. Belle German
Ms. Natalie B. Givens
Ms. Lisa K. Goetz
Ms. Darby Nicole Gonzales
Mr. David Luke Gorney
Mr. Christopher L. Graham
Ms. Laurie Green
Mr. Jeremy T. Greene
Dr. Charles G. Groat
Mr. Michael Ryan Grossman
Mr. Paul R. Gucwa
Halliburton Energy
Mr. Paul A. Hardwick
Ms. Cori A. Hash
Ms. Lisa Helper
Peter H. Hennings, Ph.D.
Hess Corp.
Ms. Alicia C. Hewlett
Mr. Ben P. Hooper
Mr. Gary A. Hummel
Mr. Philip B. Hunter
Mr. Stuart L. Jackson
Ms. Lisa Karki
Ms. Lauren Michelle Kasney
Kinder Morgan Foundation
Mr. Travis T. Kloss
Ms. Tingwei Ko
Mr. Bruce A. Kuyper
Ms. Elaine G. Leddy
Lehman Family Charitable Foundation
Mr. Chris S. Lerch
Mr. Bruno Maldonado
Marathon Oil
Mr. Bruce E. McCommons
Mr. Joseph A. Medina
Mrs. Martha B. Mills
Samuel Lewis Moore, Ph.D.
Mr. Alif Javidhu Musa
Newfield Exploration Company
Mr. Andrew Joseph Nicholson
Noble Corporation
Ms. Elizabeth D. Orr
Mr. Richard E. Paige
Ms. Karen Palmer
Mrs. Ana C. Pape
Ms. Rebecca Lee Peace
Ms. Madelyn Percy
Mr. Elliott Pew
Ms. Holly Pils
Mr. David A. Pustka
Rachal Foundation, Ed
Ms. Tara M. Radjef
Jay A. Raney, Ph.D.
Ms. Laura Reich
Dr. Wendy M. Robertson
Mrs. Margaret Anne C. Rogers
Thayne Shaw Rooney
Roxanna Oil Company
Evelyn Sanchez
Mr. James W. Sansom, Jr.
Schwab Charitable Fund
Ms. Lindsay Scott
Schlumberger
SEG Foundation
Steven J. Seni, Ph.D.
Shell E & P Technology Co.
SIPES - Central Texas Chapter
Ms. Christine M. Skirius
Ms. Crystal S. Sowemimo
Ms. Pamela S. Speciale
Talisman Energy
Mr. Dennis R. Trombatore
Ms. Shiela B. Winchester
Mr. Rahul Verma
Mr. Mike Vigliotti
Ms. Cristeen Ward
Mr. Nicholas A. Way
Ms. Bonnie R. Weise
Mrs. Lila M. Beckley and Mr. Mark Wiederspahn
Mr. Timothy Williams

*Those highlighted in burnt orange donated in Fiscal Year 2015-2016.

GeoFORCE Financial Status

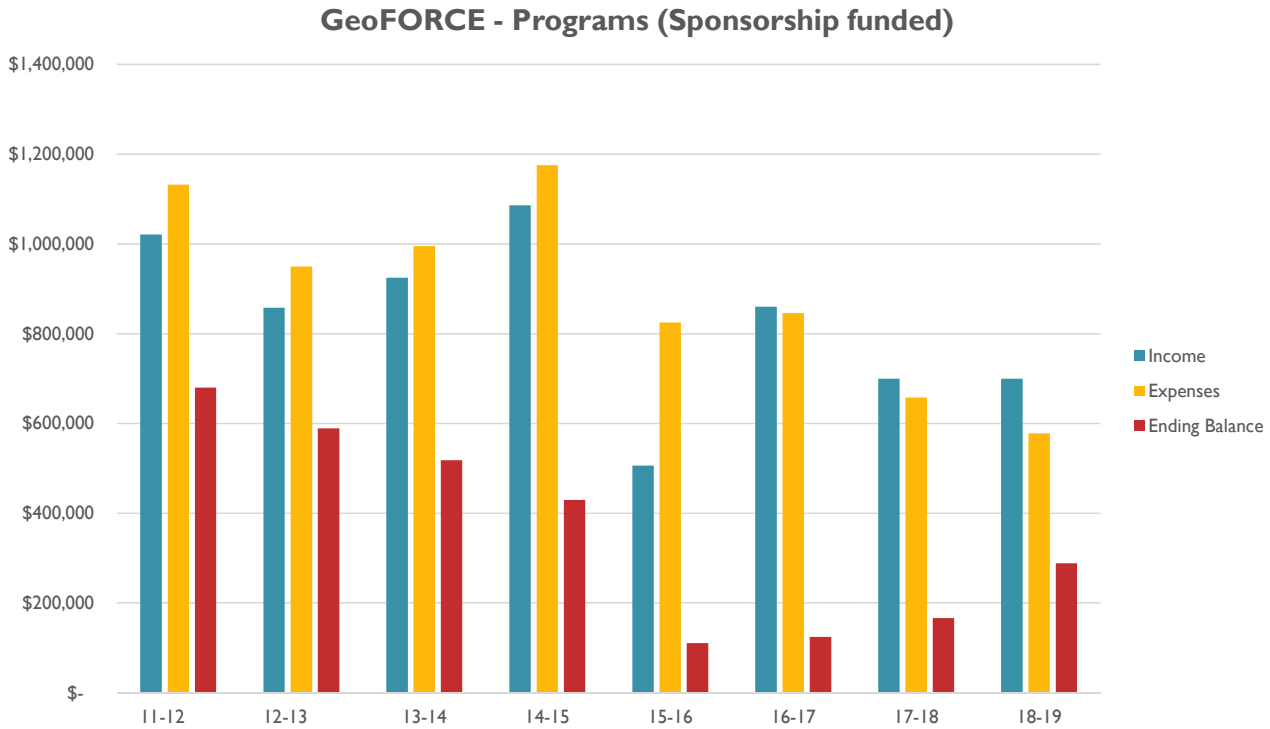
The only higher priority for GeoFORCE than stewardship of financial contributions is safety of our students. When GeoFORCE is a good steward of the financial contributions made by corporations, foundations, agencies, and individuals, then fiscally responsible decisions are made regarding the field experiences and other GeoFORCE activities. Given that the majority of contributions to GeoFORCE are from entities and individuals related to the oil and gas industry, it is fiscally responsible that our financial decisions reflect the current and forecasted vitality of the oil and gas price environment. We are providing for the first time visual "snapshots" of income versus expenses versus the ending balance to provide an "at-a-glance" understanding of the history and projections of GeoFORCE finances.

One of the immediate relationships visible is the historical annual mismatch of expenses versus income. One reason for this is that each year is a "snapshot" of the fiscal year ending on August 31 that does not reflect income intended for the fiscal year that just ended on August 31, but arrives after the close of the fiscal year.

Correspondingly, expenses from the field experiences at the end of July and beginning of August that do not post on or before August 31 do not make the snapshot for the fiscal year the expenses were incurred. These expenses appear in the following fiscal year snapshot, in which they posted in. That amount of the income and expenses that are late for their snapshot and appear in the next fiscal year is irregular. The ending balance each fiscal year will reflect this ongoing inclusion of late posting expenses and income incurred and acquired from the previous fiscal year.

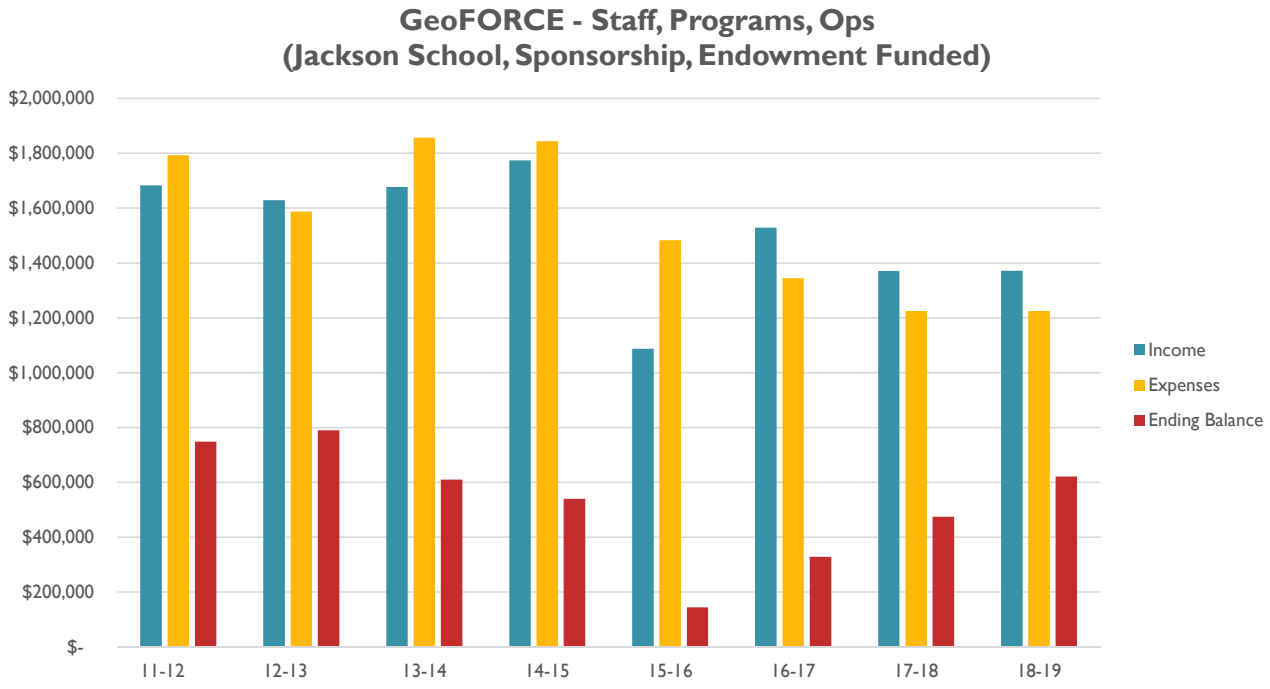
Recognizing the current energy environment, for 16-17+ we have adjusted our programs and expenses to be within our projected income to ensure long term fiscal soundness. We monitor our income and expenses throughout the year.

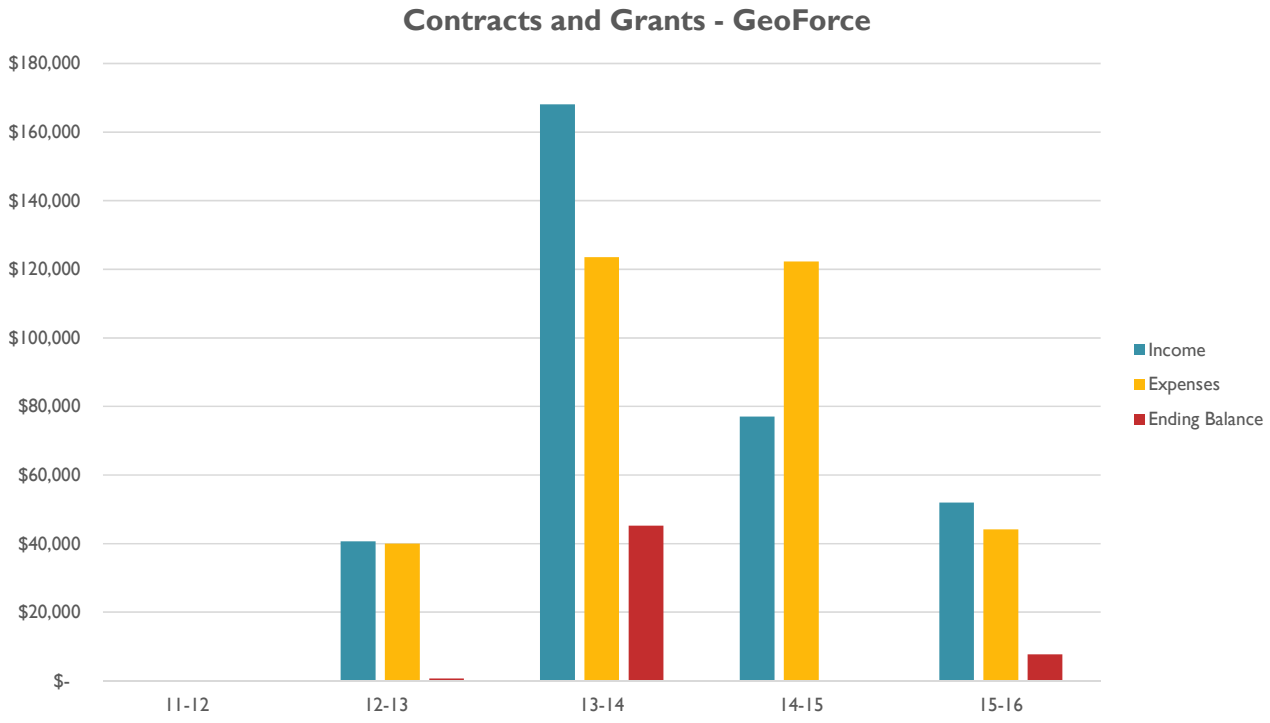
Accelerated drawdowns of the ending balance reflect accelerated expenses for the previous year, not matched with accelerations in income. Increases in expenses in fiscal years 13-14 and 14-15 includes increases in expenses for the college program and the phasing out of Young Geoscientists field experiences. This phase out included the expansion of the duration and expense of current Young Geos until they were phased out while simultaneously adding a new Academy each year to replace a phased out Young Geos. This Young Geos phasing out/Academy expansion was approved by the Advisory Committee at the start of 13-14.



Note: $200K of FY1516 gifts arriving in FY1617

Fiscal year 14-15 saw an acceleration of marked rapid decrease in prices in the oil and gas industry. In response to the decline of the majority source for financial contributions to GeoFORCE, fiscal responsibility was exercised by combining remaining Young Geos of less than 42 students to realize savings in ground transportation while continuing Academy cohorts from each region. This action will work toward snapshots that show closer incomes and expenses while rebuilding the carry forwarded balances in preparation for future challenging oil and gas price environments.





Industry and Government Participation

Company/Organization	Individual
Anadarko	Robert Talley
Anadarko	Chelete Burnett
Baker Hughes	Scott Schmidt
Baker Hughes	Jenna Ponzi
BHP Billiton	Chris Lerch
BHP Billiton	Christine Skirius
BP	Kira Diaz Tushman
BP	Larry Thomas
Chevron	George Hildebrandt
Chevron	Joni Baird
Chevron	Karen Rawls
Chevron	Danielle Carpenter
ConocoPhillips	Melissa Loyd-Furnas
Drillinginfo	Mark Nibbelink
Drillinginfo	Allen Gilmer
ExxonMobil	Reginald Beasley (Retired)
ExxonMobil	Mike Loudin (Retired)
ExxonMobil	Nick Way
ExxonMobil	Julie Cogswell-Maher
Halliburton	Abayomi Olufowoshe
Houston ISD	Yolanda Evans (Retired)
Houston ISD	Karla Auzenne
Houston ISD	Hortense Campbell
Marathon Oil	Richard Deene
Marathon Oil	Dan Oakes
Marathon Oil	John Gates
Marathon Oil	Timothy Fischer
Marathon Oil	George Laguros
Marathon Oil	Donna Boyer
Marathon Oil	Kathleen Sauve
Newfield	Christina Venditti
Schlumberger	Susan Rosenbaum
Schlumberger	Paula McHann Harris
Schlumberger	Joel le Calvez
Shell	Mike Alvarez
Shell	Denise Butler (Retired)
Shell	Mark Martin
Southwest Texas Junior College	Blaine Bennett (Retired)
Texas Workforce Commission	Emily Clodfelter
Valence Operating Company	Bud Scherr

Other Professionals

Company/Organization	Individual
Antelope Island	Charity Gibson
Barton Springs Pool	Daniela Heinrich
Colorado River Discovery	Kris Sams-Kenney
Crater Lake National Park	John Duwe
Crown Point Vista	Dorothy Brown-Kaiser
Dinosaur National Monument	David Popelka
Glacial Sand & Gravel Co.	Jocelyn Lewis-Miller
Glen Canyon Dam	Rachel Dawavendewa
Grand Canyon	Roger Benefield, Nancy Reilly, Jacob Fillian
Grand Tetons National Park	Matt Selleck
Great Falls National Park	Francis Lacobucci
Goose Island State Park	Janelle Rand
Harpers Ferry National Historical Park	Roxanne Ruppenthal
KATY Research Vessel	Captain Stan Dignum
Leesylvania State Park	Karen Lambey, Maribel Cervantes
Marine Science Institute	Linda Fuiman, Lynn Ulch
Meteor Crater	Jo Nell
Mt. Hood National Forest- Timberline Lodge	Jill Monteith
Mt. St. Helens	Kristine Cochrane-Bell
Newberry National Volcanic Monument	Karen Gentry
Padre Island National Seashore	Buzz Botts
Pennsylvania State Geological Survey	Gary Fleeger
Siuslaw National Forest	Lori Robertson, Brian Hoeh
Sunset Crater/Wupatki National Monument	Steven Rossi
Texas State Aquarium	Stacy Treviño
United States Geological Survey	Randy Orndorff, Lydia Quintana, Michael Marketti, Jess Rodysill, Eleanour Snow
Valley of Fires	Albert Najar
Washburn St. Park (Heceta Head)	Debbie
Zion National Park	David Walker, Amy Esplin, Allison Christofis, Matthew Cardwell

*Park Rangers, Museum Staff, and Other Professionals Who Provided or Arranged for Learning Opportunities

Summary of 2016 Activities

9th Grade Academies

Austin and Texas Gulf Coast

Geological Topics:

Rivers, erosion, sediment transport, coastal erosion, barrier islands, sea-level change, uniformitarianism, superposition

Objectives

1. Introduce students to basic geological terms and processes
2. Give students the opportunity to experience life on a major university campus

Austin Field Stops

- Mt. Bonnell
- McKinney Falls
- Barton Springs
- Roy G. Guerrero Colorado River Park
- UT Austin Campus

Texas Gulf Coast Field Stops

- UT Marine Science Institute's Katy Research Vessel
- Goose Island State Park
- Mustang Island Beach
- Galveston Island State Park

Region	HOUSTON	SOUTHWEST
Date of Event	June 18 - June 24, 2016	June 11 - June 17, 2016
Number of Students	36	42
Coordinator	John Hash	Matt Hofer
Instructor	Steve Seni	Tiffany Caudle
Educational Coach	Tamika Ervin	Frank Vielma
Corporate Guests	Lynne & Larry Maddox	Nabiel Eldam (Marathon)
	Mike Loudin	

10th Grade Academies

Arizona and Utah

Geological Topics:

Geologic time, law of superposition, lateral continuity, cross bedding, unconformity, desert varnish, monocline, gradient, antecedent drainage, mass wasting, uniformitarianism, differential erosion, dendrochronology, cinder cone, stratovolcano, sedimentary rocks

Objectives

1. Inspire students to "think like a geoscientist"
2. Apply geological concepts to what is seen in real time
3. Expose students to sedimentary structures, processes, and environments

Arizona Field Stops

- Grand Canyon
- Balanced Rock
- Navajo Bridge
- Glen Canyon Dam
- Wupatki Ruins
- Sunset Crater
- Meteor Crater
- Horseshoe Bend Overlook

Utah Field Stops

- Zion National Park

Region	HOUSTON	MIXED	SOUTHWEST
Date of Event	May 28 - June 3, 2016	June 4 - June 10, 2016	June 11 - 17, 2016
Number of Students	38	41	42
Coordinator	Chris Graham	John Hash	Chris Graham
Instructor	MIke Prior	Jaime Barnes	Peter Flaig
Educational Coach	Cynthia Maye	Phil Caggiano	Michael Arratia
Corporate Guests	Bill Magee (Shell)	Rebecca Minzoni (Shell)	Oswaldo Cataldo (Shell)
			Jose le Calvez (Schlumberger)
			Mike & Bonnie Loudin

A Visual Snapshot of Summer 201

16

11th Grade Academies

Oregon and Washington

Geological Topics:

Plate tectonics, subduction, volcanoes, crosscutting relations, igneous rocks, magma, lava, fissure, vesicular texture, pyroclastic flow, caldera, columnar basalt, longshore current

Objectives

1. Expose students to volcanic structures, processes, and environments
2. Compare beach environments betweetn the Texas Gulf coast and the west coast of the United States
3. Reinforce geological concepts from 9th and 10th Grade Academies

Oregon Field Stops

- Columbia River Gorge
- Mount Hood
- Newberry Caldera
- Crater Lake
- Salt Creek and Multnomah Falls
- Oregon Sand Dunes
- Oregon Coast Aquarium

Washington Field Stop

- Mount St. Helens

Region	HOUSTON	MIXED	SOUTHWEST
Date of Event	July 2 - July 8, 2016	July 9 - July 15, 2016	July 23 - July 29, 2016
Number of Students	39	42	41
Coordinator	John Hash	Matt Hofer	Matt Hofer
Instructor	Wonsuck Kim	Jeff Paine	Jeff Paine
Educational Coach	Cynthia Maye	Phil Caggiano	Michael Arratia
Corporate Guests	Samantha Ewing (ExxonMobil)	Ana Pape (ExxonMobil)	Christine Skirius (BHP)
			Mark Martin (Shell)

12th Grade Academies

Pennsylvania, Maryland, West Virginia, Virginia, and Washington D.C.

Geological Topics:

Orogeny, metamorphic rocks, geologic provinces, Appalachian geology, continental collision, Pangaea, fossil fuels, valley and ridge, coastal plains, faults, folds, rifting, anticlines and synclines

Objectives

1. Compare the ancient convergent plate boundary of the Northeast with the active convergent plate boundary of the Northwest
2. Reinforce geological concepts from past three summers

Pennsylvania Field Stops

- McConnells Mill State Park
- Graff North Mine

Maryland Field Stops

- Roundtop Hill
- Sideling Hill

West Virginia Field Stop

- Harpers Ferry National Monument

Virginia Field Stops

- Rift Basin
- Great Falls National Park
- Leesylvania State Park
- USGS Headquarters

Washington D.C. Field Stops

- Smithsonian Museum
- National Mall

Region	HOUSTON	SOUTHWEST
Date of Event	July 16 - July 23, 2016	July 16 - July 23, 2016
Number of Students	41	40
Coordinator	John Hash	Chris Graham
Instructor	Paul Betka	Paul Betka
Educational Coach	Tamika Ervin	Lauren Oefinger
Corporate Guests	Bud Scherr (Valence)	Danielle Carpenter (Chevron)
	Tom Griffith	Jess Errico (BHP)

12th Grade Young Geoscientist

Utah, Wyoming & Montana

Geological Topics:

Orogeny, metamorphic rocks, geologic provinces, plate tectonics, Basin and Range, geysers, hydrothermal, caldera, faults, folds, rifting, anticlines and synclines

Objectives

1. Study the ancient convergent plate boundary of the Northwest and how it relates to the topography today
2. Expose students to hydrothermal features
3. Reinforce geological concepts from past three summers

Wyoming Field Stops

- Grand Tetons
- Yellowstone National Park
- Mammoth Hot Springs

Utah Field Stops

- Antelope Island
- Little Cottonwood Canyon
- Castle Gate
- Dinosaur National Monument

Region	MIXED
Date of Event	June 23 - July 29, 2016
Number of Students	46
Coordinator	Chris Graham
Instructor	Laura DeMott
Educational Coach	Frank Vielma
Corporate Guests	Keith Mahon (Anadarko)

GeoFORCE Annual Events

PSAT and SAT Prep

This year, GeoFORCE provided an SAT workshop for high school juniors and seniors along with a PSAT workshop for all freshman and sophomores. This is the third time GeoFORCE has provided PSAT information for younger GeoFORCE students and have had great responses from students and parents. Since the PSAT determines the National Merit Scholars, we feel this is another opportunity to prepare our students in college readiness.

College Prep Workshops

GeoFORCE provided two college admission workshops in the fall of 2015 to high school juniors and seniors along with their parents. Throughout these presentations, GeoFORCE staff provided information concerning the college admission process, financial aid and scholarship opportunities. In the future, GeoFORCE will invite parents of freshman and sophomores to our college admission workshops. Since many college applications require information from freshman year and beyond, it is important that we all encourage our students to engage in activities earlier.

High School Senior Events

In the fall of 2015, GeoFORCE hosted our annual Career Day for all GeoFORCE seniors to consider possible career paths. Both the Houston and Southwest cohorts visited the headquarters of BP and ConocoPhillips in Houston. Both companies provided panels consisting of various employees to give insight to all the employment opportunities provided by an energy company.

For Spring 2016, GeoFORCE hosted two Spring Senior Celebrations in Houston and Uvalde, TX in place of the Austin trip we've held in past years. The two events this year were focused more on the transition to college workshops rather than merely a celebration. We had several presentations focused on academic success in college, future career preparation, and time management as well as a college student panel where the seniors were able to ask GeoFORCE College students about their own adjustment to and success in college. Many students continued asking questions throughout the evening about college life in general and about future internships and other career-development opportunities.

Educator Professional Workshops

Without dedicated teachers GeoFORCE would not be able to recruit the outstanding students we have in the program. Our educators play a tremendous part in just about every process. They are our biggest advocates for the program.

During the recruitment phase, teachers help to identify and encourage those students they believe to be great candidates. They guide students through the application process and monitor these students throughout their high school years once the are accepted in the GeoFORCE program. This process is why we recruit education professionals as well to assist us in our GeoFORCE Academy field courses every summer as Educational Coaches.

GeoFORCE hosts one major event every year for teachers from our target schools. Educator Professional Workshops are free and available to our math and science teachers. They provide educators with hands-on field exposure to STEM topics taught in the outdoor classroom, as well as lessons they can take back to their schools.

The GeoFORCE 2015 Fall Educators Workshop provided an overview of the Earth Labs module, Climate and the Carbon Cycle. Teachers engaged with activities about biogeochemical cycles, carbon sources and sinks, and emerging technological solutions that may mitigate the problem of increased CO2 in our atmosphere. They related what they learned to a field trip to the Lake Waco Wetlands.

Valedictorians and Salutatorians

Our graduating GeoFORCE students leave a legacy of success. Their perseverance and hard work, sets the stage for further leadership in their college endeavors. We congratulate our GeoFORCE students, the Class of 2016 Valedictorians & Salutatorians!

Joseph Arias
Carrizo Springs HS
Salutatorian

Gabriela Cervantes-Gonzales
Uvalde HS
Salutatorian

Alexandra Garcia
Dilley HS
Valedictorian

Jennifer Gomez
Barbara Jordan HS
Salutatorian

Ylianna Gonzalez
Carrizo Springs HS
Valedictorian

Aitor Alim Jimenez Delgado
Reagan HS
Salutatorian

Brittany Lopez
Dilley HS
Salutatorian

Chalo Martinez
Eagle Pass HS
Valedictorian

Alexandra Mena
Eastwood Academy
Salutatorian

Iram Olivares
CC Winn HS
Valedictorian

Briana Orozco
Scarborough HS
Salutatorian

MaterDolorosa Osueke
Sharpstown IS
Valedictorian

Emma Palmer
Brackett HS
Valedictorian

Adilem Perez
Cotulla HS
Valedictorian

Jeyson Price
Brackett HS
Salutatorian

Charles Reagor
Leakey HS
Salutatorian

Miranda Robles
Sabinal HS
Valedictorian

Diana Sandoval
High School for Law Enforcement and Criminal Justice
Valedictorian

Shivani Trivedi
Houston Academy for International Studies
Valedictorian

Valarie Verstuyft
Sabinal HS
Salutatorian

Connor G. Zimmerman
Uvalde HS
Valedictorian

GeoFORCE College Program

GeoFORCE College

As of Fall 2016, GeoFORCE has over 650 students attending colleges across the nation. Since our first high school graduates started college in the fall of 2009, our college matriculation has risen every year.

More students are interested in diverse disciplines and are engaging in many career-building activities while pursuing their higher education. GeoFORCE will continue to offer opportunities for students to build their portfolios and gain invaluable experience through internships, philanthropy, and mentoring while in college. (Working as a GeoFORCE high school counselor for example!)

The program is now growing & shifting to cover any past gaps to help students make the transition to graduate programs. This year, GeoFORCE will continue to include programs for GMAT & GRE courses, professional mentoring with professors in their fields, as well as GeoFORCE Coordinator internships during the summer.

Scholarships

For many GeoFORCE high school seniors, getting into college is a challenge, but it only sets the stage for a more formidable obstacle—paying for it. GeoFORCE is fortunate to have donors who understand this problem.

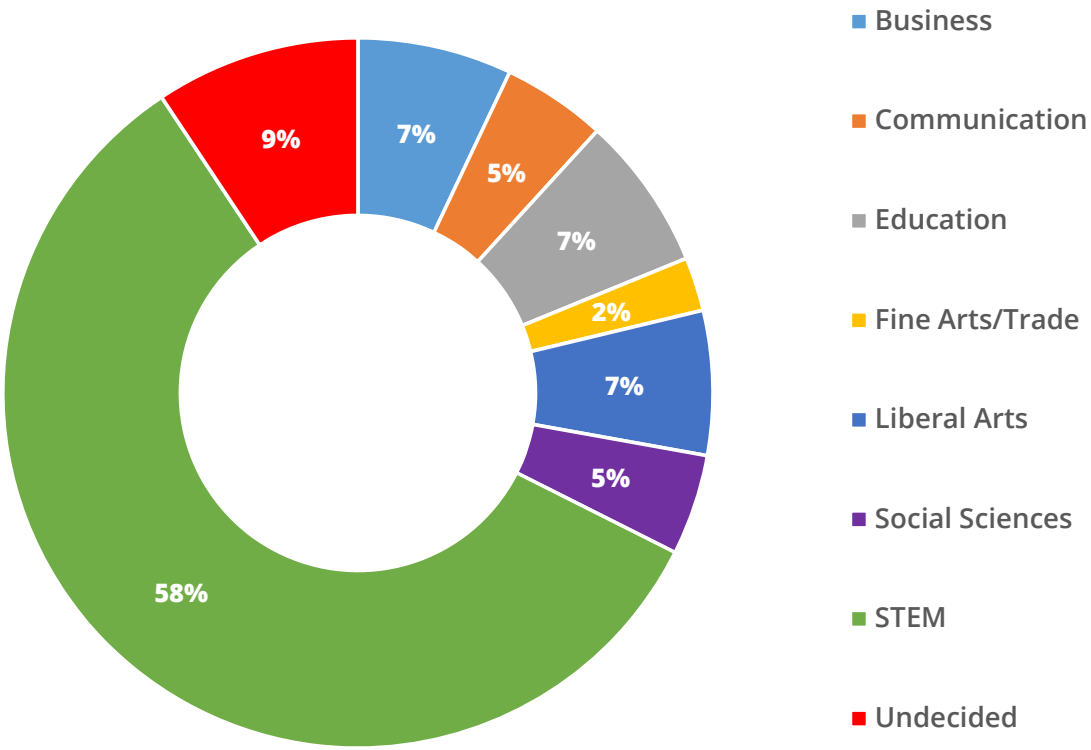
In 2016, thanks to generous donor support, we were able to continue with the current cohorts of the GeoFORCE Graduate Scholars. The class of 2016 was able to apply to the Transition to College award this year, sponsored primarily by Chevron. This partnership is open to participation by other donors and the program continues to promote the funding opportunity to all available potential donors. The goal of these college scholarships is to provide financial resources to GeoFORCE alumni who are outstanding students and have demonstrated the potential to become future leaders in their fields.

We now have over 120 scholars who have chosen to major in STEM fields and who have unmet financial need. The scholarships provide four years of funding. Student recipients are required to live on campus for the first year of college, meet monthly with their assigned mentor, and serve as peer mentors for younger scholars on their college campuses.

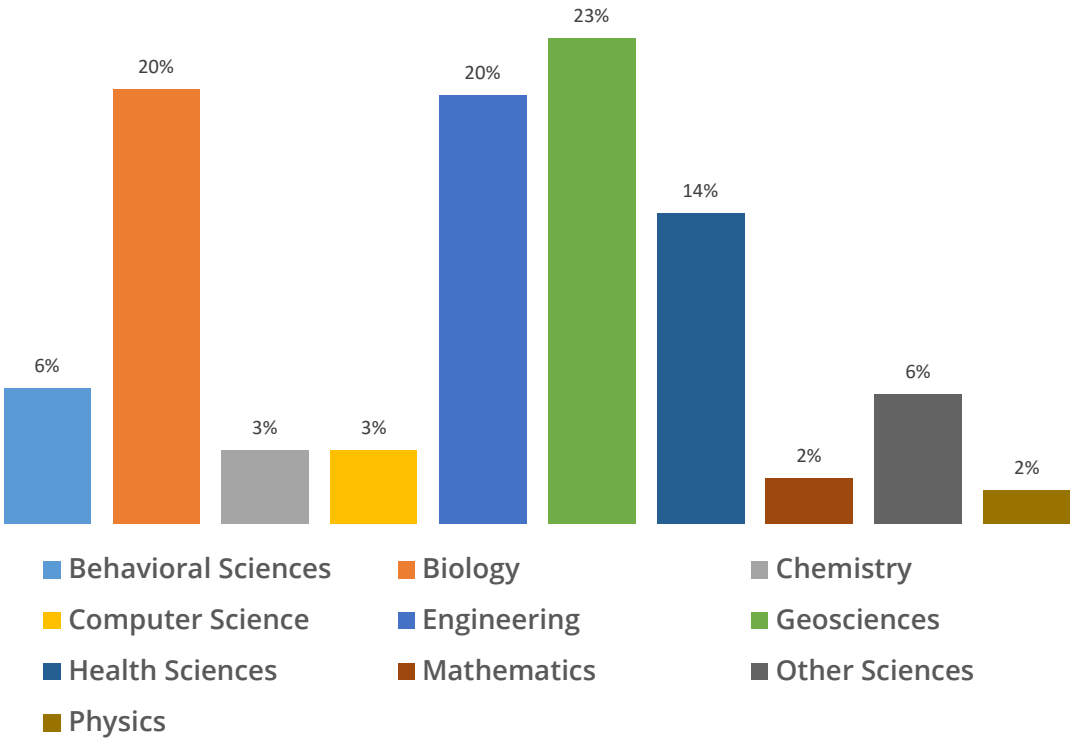
GeoFORCE Statistics

For 2016 the breakdown of college majors is mostly focused in the pursuit of STEM fields. This continues to be a major result of GeoFORCE's mission and goals as 58 percent of our college students are in STEM. The geosciences continue to be an attractive STEM major, our data shows that 23 percent of students are currently studying in that field. Biology and Engineering are the second and third highest, respectively.

College Majors



STEM Majors



GeoFORCE College Students

American Musical and Dramatic Academy	1
American University	1
Amherst College	1
Angelo State University	3
Art Institute of SA	1
Austin College	1
Austin Community College	3
Barnard College	1
Baylor University	5
Beloit College	1
Bowdoin College	2
Brown University	1
Bryn Mawr College	1
Bucknell University	1
BYU	1
BYU Idaho	1
Carleton College	2
Case Western Reserve University	1
Colby College	1
Colorado School of Mines	1
Colorado State University	1
Culinary Institute Of America	1
Darthmouth College	1
DePauw University	1
Devry University	1
Dillard University	1
El Paso Community College	1
Embry-Riddle Aeronautical University	1
Emory University	1
Franklin Pierce University (Rindge NH)	1
Harvard University	1
Harvey Mudd College	1
Houston Baptist University	3
Houston Community College	25
Howard University	2
Johns Hopkins University	1
Knox College (IL)	1
Lamar University	4
Lone Star College	4
Liberty University	2
McMurry University	1
Middlebury College	1
Midland College	1
Mount Holyoke College	1
Northwest Louisiana Technical College	1
Northwest Vista College	3
Northwestern University	1
Oberlin College	1
Occidental College	1
Olin College of Engineering	1
Our Lady of the Lake	2
Prairie View A&M	6
Presentation College	1
RI School of Design	1
Rice University	6
Rochester Institute of Technology	1
Sam Houston State University	13
Samford University	1
San Antonio College	2
San Jacinto College	2
Sanford-Brown College	1
Schreiner University	1
Smith College	1
Soka University	2
South Plains College	2
Southern University and A&M College	1
Southwest Texas Junior College	22
Stanford University	1
St. Edward's University	1
St. Mary's University	6
Stephen F. Austin	7
Sul Ross State University	5
Tarleton State University	2
Tennessee Wesleyan	1
Texas A&M Commerce	1
Texas A&M Corpus Christi	8
Texas A&M Galveston	5
Texas A&M International	4
Texas A&M San Antonio	1
Texas A&M Kingsville	8
Texas A&M University	89
Texas Christian University	1
Texas Lutheran University	1
Texas Southern University	7
Texas State University	24
Texas Tech University	24
Texas Woman's University	2
Trinity University	3
UCLA	1
Ultimate Medical Academy	1
University of Alabama	1
University of Chicago	1
University of Houston	33
University of Houston-Clear Lake	1
University of Houston-Downtown	18
University of Houston-Victoria	1
University of Minnesota	1
University of North Texas	6
University of Oklahoma	1
University of Oregon	1
University of the Incarnate Word	9
University of Wisconsin	1
UT Arlington	5
UT Austin	140
UT Dallas	1
UT San Antonio	56
UT Tyler	1
Yale University	1
Washington and Lee University	1
Washington University	1

Total GeoFORCE College Students	654
Total Number of Different Colleges	110

Adventures in Geology

Energy Factor By ExxonMobil

Geosciences come alive through GeoFORCE

The edge was a line of improbable contradictions. Above it, the high summer sky stretched to oblivion, pale and merciless. Below, a landscape carved by time itself—thousand-foot cliffs describing the course of an ancient river, two billion years of history demarked in light and shadow. Jeff Sitgreaves stood between the two feeling insignificant yet grasping for the first time the significance. "So this is what geology is all about," he thought as he gazed into the Grand Canyon.

It was 2007 and he was 16 years old, a high school sophomore from a small Texas town, and he was on an adventure that would change his life in ways he couldn't yet understand: a field trip organized by GeoFORCE Texas, a summer outreach program designed to get kids excited about the geosciences. And obviously it was working.

Sitgreaves walked among monuments of stone. All around rose the epochs of the earth, frozen in stratified rock. Here, millions of years ago, protozoa wriggled in primordial seas. There, dinosaurs roamed the earth and, much later, humans lived, the distant ancestors of the Hopi and the Navajo. And here was Jeff Sitgreaves observing firsthand this living record of the earth's past.

"GeoFORCE is a four-year program for high school students and this was my second trip with the program," said Sitgreaves. "We had been to the Appalachians the summer before and I thought it was pretty interesting. But I hadn't been blown away by geology until that week at the Grand Canyon."

Launched in 2005 by the University of Texas at Austin's (UT) Jackson School of Geoscience, GeoFORCE coordinates 15 annual field trips to geologic sites across the U.S. These trips allow students in small, often rural and underprivileged school districts in southwest Texas and Houston to meet new, inspiring people and learn about geology. The program's ultimate goal is to increase the number and diversity of students pursuing science, technology, engineering and math (STEM) degree programs.

Today, more than 570 students go through GeoFORCE each year, and it boasts a 100 percent high school graduation rate for participants who go through all four years. As of 2015, more than 95 percent of those graduates have gone on to college, with about 60 percent in STEM fields.

Sitgreaves hails from Brackettville, TX, a town of fewer than 2,000 people. What first drew him to GeoFORCE wasn't geology, but the prospect of a fun summer trip outside the Lone Star State. If he happened to learn a little about rocks along the way, so be it.

The Grand Canyon changed that.

"After the Grand Canyon trip, I knew that the geology itself could be an adventure and a career," said Sitgreaves. "The next year we went to the Pacific Northwest and visited Crater Lake and Mt. St. Helens. On the final trip we went to Florida and studied modern carbonate sediments on the beaches to unlock the secrets of the ancient rock record, a concept I use every day in my job as an exploration geologist."

While his sophomore trip to Arizona ignited his passion for geology, it was on the beach in Florida that Sitgreaves found his calling and decided to turn his passion into a profession.

In 2010, he enrolled at UT. Many kids who had gone through the program with him were there as well. They were a source of support while Sitgreaves transitioned from high school to college. He earned a bachelor's in geophysics in 2013 and a master's in geology in 2015.

Today, Sitgreaves is an example of GeoFORCE coming full circle. He was recruited out of UT by ExxonMobil, a founding sponsor of the program and an active participant in the summer trips. He began his career as a geologist with the company in January this year, using his knowledge of the earth to help find new energy sources. He's currently exploring for new resources in the Brazilian salt basins.

"GeoFORCE is unique in the way it opens doors and presents opportunities that wouldn't be there otherwise," he said. "I wouldn't have gotten into geoscience. I wouldn't have worked with some of the best scientists in the world. And I wouldn't have found a career in the energy industry."

All those possibilities opened up to Sitgreaves as he stared at the impossible beauty of the Grand Canyon on that one summer day back in 2007.

Staff

Dr. Sam Moore, Director of Outreach and Diversity
For more than 20 years Dr. Moore has provided leadership in engaging faculty with K-12, undergraduate, and graduate students. He has also worked with STEM industries and government agencies to develop successful STEM diversity initiatives. Along with GeoFORCE, Sam also oversees Jackson School outreach programs to increase participation in the geosciences.

Lindsay Stephens, College Program Coordinator
Oversees the GeoFORCE College Program, which includes statistics, college leadership opportunities, and scholarship management.

Edgar Garza, Outreach Program Coordinator
Assists with the GeoFORCE College program, the High School Program, along with GeoFORCE's social media presence.

Matt Hofer, High School Program Coordinator
Oversees logistics and operations for all high school program field courses and events.

John Hash, Coordinator
Coordinates the Houston Academy trips, assists with development activities for GeoFORCE and college transition initiatives for the College program.

We would like to wish the best of luck to Bridget Haby and Chris Graham as they embark on new adventures. Both Bridget and Chris have decided to return to school to pursue graduate studies. We would also like to thank Debra Sue Trinque for returning from retirement to provide administrative consultation during the fall of 2016.

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TEXAS Geosciences
The University of Texas at Austin
Jackson School of Geosciences

http://www.jsg.utexas.edu/geoforce