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Photo: International Space Station (ISS)  
Photo Credit: ASI

## Partner Spotlight: National Aeronautics and Space Administration

The International Space Station (ISS) is an international project that is the largest single structure humans ever put into space: a 460-ton, permanently-crewed platform orbiting at an altitude of 248 miles and circling the globe every 90 minutes at a speed of 17,500 miles per hour. In one day, ISS travels the distance it would take to go from Earth to the moon and back! President Ronald Reagan instructed NASA to build the ISS within a decade in his 1984 State of the Union address, during which he also invited European heads of state to join the program. Italy was one of the first ISS signatories. ISS's main construction was completed between 1998 and 2011; it took over 30 missions to assemble.

The Italian Space Agency (ASI) recently announced that in 2019, Italian astronaut [Luca Parmitano](#), the first Italian to have ever walked in space, is to be the first Italian and second European to command the International Space Station. In February 2011, ASI assigned him to its first long-duration mission on the ISS, where he spent 166 days in space, conducted over 20 experiments, took part in two spacewalks, and aided in the docking of four spacecraft. Parmitano

also helped improve spacewalk safety procedures after his helmet filled with [water](#) on a spacewalk in 2013, which informed NASA improvements in spacesuit design.

Italy built three Multi-Purpose Logistics Modules for the Space Station program under a special bilateral NASA/ASI agreement, in exchange for [Italy's usage](#) of the ISS. Through an agreement with NASA and the European Space Agency (ESA), Italy constructed nodes two and three for the ISS, and helped ESA establish the onboard [Columbus Laboratory](#). ASI is also involved in deep-space exploration through the participation in ESA's missions to Mercury and Mars via the [Bepi-Colombo](#) and [ExoMars](#) missions, respectively. The two probes will be equipped with primary instruments developed by ASI. ASI-funded technology has contributed to key past missions, such as [Cassini-Huygens](#), which entailed an agreement between ASI and NASA to utilize it for interplanetary missions. ASI and ANA recently inaugurated the inclusion of Italy's [Sardinia Deep Space Antenna](#) (SDSA) in NASA's [Deep Space Network](#) (see article [page 14](#)).



### Meet your ESTH Rome team:

L to R: Zac, Caron, Lee, Federica, and Alex

**Caron De Mars,**  
ESTH Counselor

**Federica Signoretti,**  
ESTH Specialist

**Michael Lee,**  
Office Management Specialist

**Alexandra M. Anderson**  
Summer '18 Intern

**Zachary M. Adams**  
Summer '18 Intern

## Food Donations Up by 20% and Domestic Food Waste Down by 40%

For the fifth year, Italy celebrated the “stop-food-waste day,” on February 5, marking the idea of consuming all food one has purchased. According to Reduce, a national campaign against food waste sponsored by the Italian Environment Ministry, even though Italy reduced its domestic food waste by 40% compared to 2016, each person had thrown away approximately 37 kg of food (worth 250 euro) last year. Supermarkets also improved in 2017: food waste dropped from 3.58% to 2.3%. Overall, 2.2 million tons of food was wasted, valued at 8.5 billion euro, which equates to 0.6% of Italy’s GDP.

Former Environment Minister Galletti stated that Italy is doing well regarding limiting food waste, but that it is still not enough. Former Agriculture Minister Martina said that firms are now donating food rather than throwing it away, encouraged by the 2016 Food Waste Law (Law 166/2016). “Recovered excess food given to the most in need has increased by 20%, providing food for over one and a half million people.” Before the law came into effect on September 14, 2016, it was possible only to donate long-life products. Now cooked food, fruits, and vegetables can also be given to the needy.

Twitter post: <https://twitter.com/AmbasciataUSA/status/960545768980516865>

FB Post: <https://www.facebook.com/AmbasciataUSA/posts/10155442738256872>



Image Credit: Zero Waste Europe

## American Teenage Environmentalists Raise Awareness of Plastic Pollution

In partnership with ESTH, Embassy Rome’s Public Affairs (PA) Section organized a series of speaking engagements for Carter and Olivia Ries, two American teenagers who founded the non-governmental organization (NGO) *One More Generation (OMG)* and launched the “One Less Straw” campaign to raise awareness about plastic pollution and marine litter. PA and ESTH also showed the 22-minute film, “A Plastic Ocean,” about the dangers of plastics and other pollution to marine life. The Ries children have been traveling around the world promoting plastic pollution awareness, including presenting their pledge at the United Nations and meeting with U.S. ambassadors. Carter, 17, and Olivia, 16, presented at four Italian high schools in and around Rome, and spoke with faculty, restaurant and business owners, and other environmentalists, in addition to meeting with Ambassador Eisenberg. *La Nuova Ecologia*, a monthly magazine of Italy’s largest environmental NGO, interviewed the siblings. The teenagers traveled to Naples to continue the program at another high school, before visiting the Gaiola Underwater Park and Marine Protected Area. The program raised awareness about environmental protection and resulted in several business and restaurants, including the U.S. Embassy cafeteria, pledging to end the use of plastic straws. PA facilitated an interview with 24-hour all-news channel SKY TG24, during which Carter and Olivia Ries presented their NGO and the “One Less Straw” pledge campaign, and talked about their activities to safeguard the environment. Embassy’s social media channels also highlighted the interview.



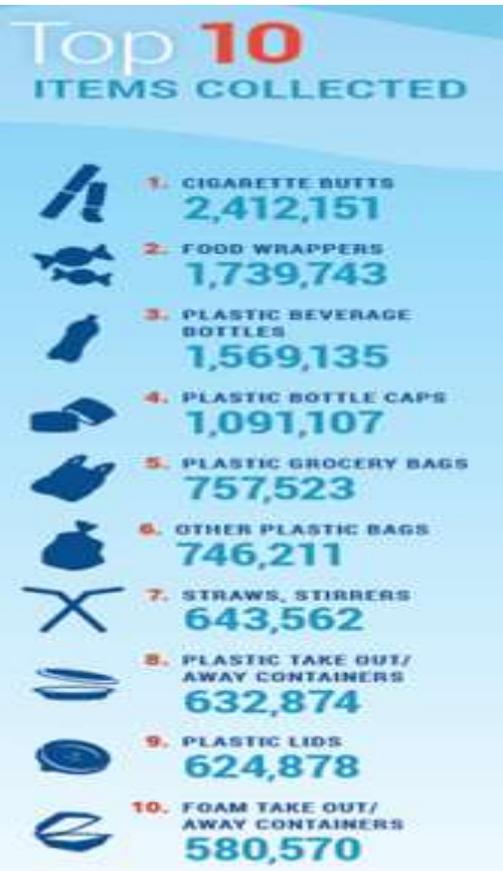
Ries children on Italian T.V.

## EPA Expert Keynotes at Closing of “An Ocean of Plastic” Exhibit in Genoa

**K**athleen Salyer, Deputy Director of the Office of Resource Conservation and Recovery at the U.S. Environmental Protection Agency (EPA), gave the keynote speech on December 4, 2017 at the capstone event of U.S. Mission Italy’s six-week long “An Ocean of Plastic” exhibit in at the Genoa Aquarium in Genoa, Italy. “Tackling Marine Litter through Sustainable Materials Management” was well-received by an audience of about 80 students, academics, NGO members, Genoa’s American Women’s Club, and Genoa Aquarium managers. Kathleen discussed how recent studies revealed that 80% of marine litter is from land-based sources, and the remaining 20% from derelict fishing gear and ship waste. Salyer noted that single-use consumer goods make up most of marine litter, and that approximately 8 million metric tons of plastic enters the ocean every year. Plastic has been found in 59% of sea birds, 100% of turtle species, and more than 25% of fish sampled from global seafood markets. She talked about [EPA’s Trash Free Waters Program](#), which aims to significantly reduce the amount of trash entering U.S. water bodies and the ocean through actions taken by government (at all levels), the business community, and individual citizens, approaching zero loadings of trash entering aquatic ecosystems within 10 years (by 2023). She also talked about how EPA cooperates internationally to achieve these goals and ended with a challenge of how we all can help by taking the following actions: dispose of your trash properly; bring your own bag; carry a reusable water bottle; say no to straws; bring your own container and utensils; use [Marine Debris Campus Toolkit](#) to help your university or institution to cut their plastic waste; communicate to your family and friends and help them get involved; and support your local government in carrying out robust solid waste management programs.



Caron & Kathleen Salyer in the “Ocean of Plastic Exhibit”. Photo Credit: Federica Signoretti



Top 10 Items collected on beaches. Photo Credit: Ocean Conservancy



Genoa Aquarium Logo. Photo Credit: [Genova Hotel Bristol Palace](#)

## Climate Change Beyond the Paris Agreement

ESTH attended the round table discussion “Climate Change beyond the Paris Agreement” organized by the American Studies Center on February 7. The keynote speaker was retired Navy Vice Admiral Conrad C. Lautenbacher, CEO of GeoOptics, and former administrator of the National Oceanic and Atmospheric Administration (2001-2008). Lautenbacher stated that climate

Panel of the Center for American Studies. Photo Credit: Federica Signoretti



change is “just one symptom” of a large problem caused by the increase of the world population, and thus “sustainability and science” are essential in determining environment policies. He added that many U.S. local and state authorities, private companies, and 69% of U.S. citizens support the Paris Agreement. Others at the round table offered different perspectives on the Paris agreement. Prof. Ezio Bussoletti (a physicist and Special Advisor for Satellites Programs at the Ministry of Infrastructure & Transport ) stated that, “It was a politically important step but not sufficient,” given it is voluntary, with no penalties, and does not include air and naval pollution. Antonio Cianciullo (a well-known environmental journalist) expressed optimism about the accord’s success, citing popular support, private-sector investment in renewables, and the participation of China, the greatest CO2 emitter. Raffaele Tiscar (then-Chief of Cabinet to Environment Minister Galletti) underlined the lack of information on the costs associated with the ambitious EU long-term goals and stressed the importance of new technologies and slow implementation in order to not shock the labor market.

On the margins of the workshop, Embassy Rome’s Press Office arranged an interview for Lautenbacher with centrist, niche news magazine *Formiche* linked here: [This is Why the U.S. Administration Does Not Deny Climate Change.](#)

## Mission Italy’s Ocean Emissaries Screen *A Plastic Ocean*

In partnership with Embassy Rome’s Public Affairs Section (PAS), ESTH obtained screening rights to show the compelling film *A Plastic Ocean* (in English with Italian subtitles) in schools throughout Italy. PAS encouraged film screenings by offering it to the Embassy Speakers’ Bureau, and ESTH obtained links so that NGO *Marevivo* could show the documentary in its network of coastal and island schools. ESTH Counselor Caron De Mars was particularly inspired by a 15-year old young woman in *L’Aquila*, a community 118 kilometers east of Rome. At the beginning of the discussion after the film, De Mars asked the students what they did to use less plastic. “Erika” recounted the actions that her “zero-waste” family does to help the environment. She uses a compostable [bamboo toothbrush](#); sews the family shopping and lunch bags from worn clothing; makes her own cosmetic remover pads from fabric and washes them to reuse; consistently carries a water bottle that she fills in the sink or one of the public fountains; uses [bar shampoo](#) and soap; brings lunch in a reusable container along with [reusable cutlery](#); and her family takes reusable bags to the farmers market. Erika follows [TrashisforTossers](#) on Instagram and other social media outlets.

Movie Poster: imbd.com



And speaking of social media, here are some links posted after showing *A Plastic Ocean* at a high school in Gaeta, Italy: <https://twitter.com/EntrepCaron/status/972115649832071169>  
<http://www.facebook.com/32706176871/posts/10155524816736872>  
<http://www.facebook.com/32706176871/posts/10155524816736872>



L’Aquila students made a sculpture of bottles for their school. Photo Credit: Caron De Mars

## Two Italians Named in Time Magazine's List of the 100 Most Influential People

**A**strophysicist Marica Branchesi, whose work helped lead to the detection of gravitational waves last year, and surgeon Giuliano Testa, who led a groundbreaking trial of uterus transplants, were both honored in the prestigious ranking on April 18, 2018.



Marica Branchesi is Assistant Professor at the Gran Sasso Science Institute in L’Aquila. She is a member of the Virgo team, where she serves as co-liasion to coordinate the LIGO (U.S.) and Virgo (Italian) collaborations’ electromagnetic follow-up program to send gravitational-wave alerts in low latency. She is the President of the Commission of Gravitational Wave Astrophysics of the International Astronomical Union and a member of the Gravitational Wave International Committee. Her scientific interest lies in the astrophysics governing emission, formation, and evolution of black holes and neutron stars. She is developing “multi-messenger”

Marica Branchesi, Photo Credit: [Focus](#)

observations to probe the most energetic transient phenomena in the sky. Her inclusion in Time’s list was the latest in a series of accolades for the astrophysicist, who Nature magazine named as one of “Ten People who Mattered this Year” in December 2017.

Dr. Giuliano Testa, MD, is surgical chief of abdominal transplants at Baylor University Medical Center in Dallas, Texas. In 2016, Testa gathered a team of experts for a groundbreaking uterus transplant clinical trial. In December 2017, for the first time in the United States, a woman who was born without a uterus gave birth to a baby. Dr. Testa graduated from University of Padova in 1988, where he also started his residency that he later completed at The University of Chicago Medical School.



Dr. Giuliano Testa, Photo Credit: Baylor Scott & White Transplant Services

## Veneto Researchers Receive ASCO Merit Award

**O**n June 4 Francesca Battaglin from the Veneto Oncological Institute (IOV) and Luisa Carbognin, a researcher from the University Hospital of Verona, received the Merit Award, which honors the world’s best oncologists selected by the American Society of Clinical Oncology (ASCO) in Chicago. Battaglin is a specialist in gastrointestinal tumors while Carbognin has been selected for her work on inflammation, immunity, and cancer.



Francesca Battaglin Photo Credit: *Corriere Della Sera*



Luisa Carbognin, Photo Credit: *Corriere Della Sera*

## Fall 2017 Intern Elena Berg Blog Post

**A**ttention in the Embassy! Attention in the Embassy! Duck and cover. I repeat, duck and cover. This is not a drill.” Fortunately, Post One (Embassy Marine guards) soon deemed this announcement a false alarm; nonetheless, it illustrates a fundamental aspect of what it takes to be a diplomat—adaptability. The following is the story of how I drew upon this essential quality.

Interning at the U.S. Embassy in Rome was one of the most rewarding experiences in my life, and I am more than confident that the skills and knowledge that I gained will benefit me for the rest of my life. My day-to-day experience was an entry out of the diary of a diplomat.

From day one to day 90, the internship never ceased to challenge and reward me. As an intern, one’s assignments resemble tasks that diplomats themselves are responsible for, not typical of internships where interns pick up the mail, make copies, and go on coffee runs. As the Environmental, Science, Tech, and Health (ESTH) intern, I was expected to attend press briefings three times a week and participate in staff meetings once a week. I hit the ground running on Day 1, learning Diplomacy 101. The Deputy Chief of Mission hosted a reception for the National Science Foundation Director where I found myself navigating in circles of scholars and diplomats. Day 9 marked my initiation of drafting a decision memorandum, which asks the Ambassador or Deputy Chief of Mission to participate in an event or meeting. By Day 15, I had gained a great deal of practice in the art of diplomatic ‘small talk’, learning conversational skills applicable in any situation. On Day 24, I attended conferences at the United Nations Food and Agriculture Organization. All U.S. Department of State posts send ‘cables’ to Washington, which are essentially write-ups reporting on important matters taking place abroad. These documents are taken very seriously and writing a cable is seen as a right-of-passage in the intern world—



Elena Berg, Caron De Mars, & Federica Signoretti Credit: Tim Tawney

completed on Day 31. Days 39 and 45, I had the privilege of attending receptions and events at foreign embassies of the Czech Republic and Switzerland on behalf of the U.S. Embassy. On Day 52, I was given the opportunity to dine and network with NASA scientists, attending alongside the ESTH Counselor, my wonderful supervisor. Day 67, my supervisor tasked me with writing a speech she was asked to give at an important EU event. Blessed with the opportunity to work at one of the most beautiful embassies in the world, live in one of the most ancient cities in the world, and immerse myself in one of the richest cultures in the world, it was utopia for a working professional! The Embassy itself stood as the former palace of the last queen of Italy, Queen Margari-

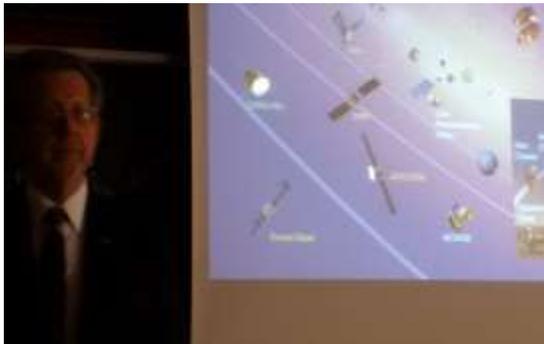
ta. Labeled a Tri-Mission, the U.S. Embassy to Rome includes the U.S. Missions to Italy, the Holy See, and the United Nations. In short, diplomatic paradise for an aspiring Foreign Service Officer, where one eats lunch with or shares an elevator conversation with some individuals boasting diverse backgrounds and experiences. Moreover, one of the paramount aspects of the Department of State internship is that

the Foreign Service Officer community truly treats you like one of their own. Beyond a doubt, this internship is extraordinary as one is at the cusp of global affairs and takes part in the representation of one’s nation and culture while learning and engaging with foreign emissaries as they do the same.

Looking back, the journey to commence my internship and the experience of the internship itself were remarkable. The diplomatic attitude of adaptability, cordiality, and tactfulness is most certainly engrained in me now. I cannot even begin to emphasize the acumen and insight I have gained during the course of one semester and how quickly I was forced to mature. Indisputably, this experience marks one of the most influential chapters in my life. This will be something that I will carry with me for the rest of my career.

## NASA and Cassini

On March 7, [Dr. Jim Green, NASA Planetary Science Division Director](#) who has since been named Chief Scientist of NASA, gave two student presentations at the University of Rome “La Sapienza” Aerospace Engineering Faculty in cooperation with Prof. Luciano Iess. The first session had about 95 students from the Space Missions and Systems course, while the second had more than 100, mainly from the Space Environment course. His presentations covered planetary missions, planetary defense, Mars exploration, and the outer planets. Being in Rome for the final Cassini Project Science Group meeting outside the United States, Dr. Green also talked about Cassini-Huygens mission, which, after two decades in space, reached the end of its remarkable journey of exploration in September 2017. The Cassini-Huygens mission — a joint endeavor of NASA, the European Space Agency, and the Italian Space Agency — was the first mission to orbit Saturn and explore its environs in detail. Launched in 1997, Cassini toured the Saturn system after arriving there in 2004, performing a detailed, up-close study of



Dr. Green Presenting on NASA & Cassini. Photo Credit: Caron De Mars

the planet, its rings, and moons. After its four-year prime mission, Cassini's tour was extended twice. In April 2017, operators placed Cassini on an impact course that unfolded

over five months of daring dives. This final phase of the mission brought unparalleled observations of the planet and its rings from closer than ever before.

At Saturn's largest moon, Titan, Cassini and Huygens showed us one of the most Earth-like worlds we have ever encountered, with weather, climate, and geology that provides new ways to understand our home planet. Cassini's key discoveries also included the global ocean with indications of hydrothermal activity (the first time beyond Earth) within Enceladus, making this tiny Saturnian moon one of the leading locations in the search for possible life beyond Earth.

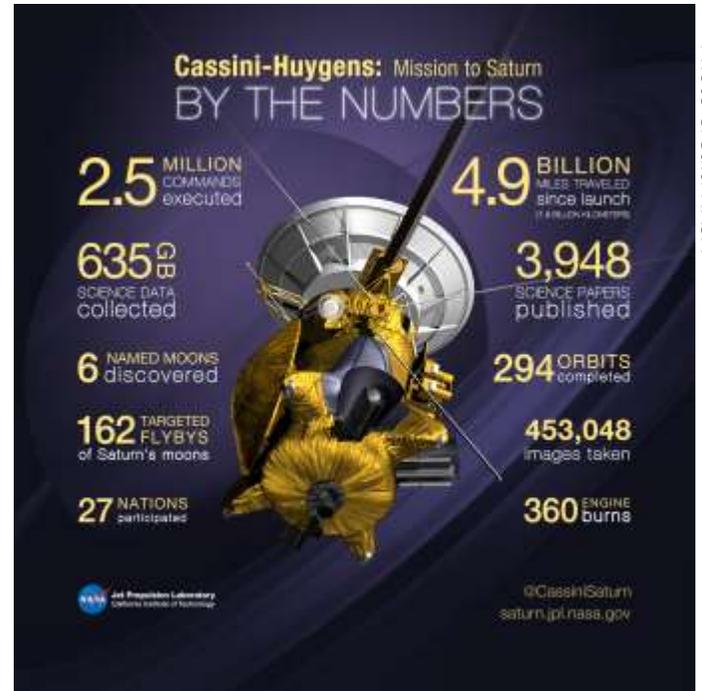


Photo Credit: NASA

## Italian Astronaut Paolo Nespoli Returned to Earth after 139 days

The Russian Soyuz spacecraft undocked from the International Space Station (ISS) and landed on the steppes of Kazakhstan with its three crewmembers on December 14, 2017. The Soyuz returned European Space Agency's (ESA) astronaut Paolo Nespoli, NASA's Randy Bresnik, and Roscosmos' Sergei Ryazansky. Italian veteran space traveler Nespoli completed his third tour of duty on the ISS, and completed more than 60 experiments during his Vitality, Innovation, Technology, and Ability (VITA) mission.



Paolo Nespoli, 2016.

Photo Credit: Wikipedia

## NASA and Space Nutrition

**E**STH attended the presentation “NASA, Nutrition, and the International Space Station: Implications for space exploration – and Earth” by Dr. Scott Smith on April 18. Dr. Smith, who leads the Nutritional Biochemistry Laboratory at the NASA Johnson Space Center, gave an overview on what his team does to support the crewmembers on missions to the International Space Station (ISS). His team carries out assessments of nutritional status on Earth, providing nutritional requirements for long-term space flight, studying



Photo Credit: Federica Signoretti

body changes during flight (e.g. bone loss and vision changes), and recommending the measures to counteract the changes. He has conducted research on the U.S. space shuttles and the Russian space station, Mir. Dr. Smith has published over 100 peer-reviewed publications, chapters, and reviews. He has coauthored three books: two textbooks, and another, titled “[Space Nutrition](#),” designed for upper elementary and middle school students. The Italian Space Agency [translated the latter into Italian](#).



Photo Credit: Federica Signoretti

## Science and Diplomacy Club Met with Planetek Italia

**E**STH attended the first 2018 meeting of the Science and Diplomacy Club of Rome, coordinated by the South African Embassy Chargè d’Affairs on Feb. 7. Guest speaker was Giovanni Sylos Labini, CEO of [Planetek Italia](#), who gave a presentation on “The Advent of Space Stream”. Established in 1994, Planetek Italia is a company focused on providing information and services using satellite data. The company operates in many application areas ranging from environment and land monitoring to open-government and smart cities, as well as scientific missions and planetary exploration. Sylos Labini stated due to the work of Copernicus Sentinels (the EU’s earth observation satellite system), a continuous stream of data, free and open, with a horizon of availability that exceeds 30 years, can be provided.



Photo Credit: Agenzia Spaziale Italiana (ASI)

The Group created the platform Rheticus, named after the only pupil of Copernicus. It is able to use the satellite data to provide solutions in the fields of urban planning, land or coastal monitoring and protection, defense, civil protection and emergency response, tourism, agriculture, fleet monitoring, energy (e.g. oil & gas platform and renewables), infrastructure engineering, and transportation (railways and roads). NASA Earth Science Program has funded Planetek to study the correlation between carbon-flux and land use. EAESC (the European EO industries association) selected Planetek as the best European Earth Observation Company of the year in 2017.

[https://www.planetek.it/eng/company/about\\_us/profile](https://www.planetek.it/eng/company/about_us/profile)

## U.S. and Italy Commit to Broad Spectrum of Earth Science Activities

The Italian Embassy in Washington hosted the U.S.-Italy Earth Science Working Group December 5-6, 2017. Scientists from multiple Italian entities (including National Institute for Geophysics and Volcanology-INGV, National Research Council-CNR, the Italian National Institute for Environmental Protection and Research-ISPRA, and National Agency for New Technologies, Energy and Sustainable Economic Development-ENEA) discussed collaborative opportunities with the U.S. researchers (from NASA, National Oceanic and Atmospheric Administration-NOAA, U.S. Geological Survey-USGS, Department of Energy-DOE, and the National Science Foundation-NSF) across a host of disciplines and technologies that could enhance bilateral and multilateral joint efforts. Fernando Echavarria and Cole Donovan represented the Department of State's [Bureau of Oceans and International Environmental and Scientific Affairs](#) (OES). The meeting culminated with several days of field trips to research centers and facilities in Louisiana and Virginia, organized and led by the USGS, which currently chairs the working group for the United States.



Photo credit: Ministero degli Affari Esteri e della Cooperazione Internazionale



Italian Embassy to the US. Photo credit: Ministero degli Affari Esteri e della Cooperazione Internazionale

The two-day Washington agenda included sessions outlining ongoing scientific work on: geological hazards including earthquakes and volcanoes; oceanography and climatology; advanced combustion and gasification technologies with carbon dioxide capture and storage; coastal hydrodynamics and flooding; fire science; and discussions on opportunities for joint work with third countries on how to share best practices in volcano observatories. Echavarria summarized discussions on "Space data for Earth observation including space weather," with detail emphasis on the role of Earth observations in support of disaster risk reduction. Participants in the Working Group identified several upcoming meetings in 2018 for continued joint work on geosciences in Yellowstone, Wyoming this summer and on "Cities on Volcanos" in Naples, Italy in September.



Photo Credit: USGS.gov

## European Parliament (EP) Ups Ambition for Energy Efficiency and Renewable Targets

On January 17, the EP adopted its negotiating positions on key components of the EU’s Energy Union plan ([17 USEU Brussels 528](#)), proposing that by 2030: (1) renewables should account for 35% of total energy use; (2) energy use should be reduced by 35% (relative to 2005); and (3) first generation/crop-based biofuels should be limited to 7% of fuel blended for transportation. Parliamentarians also approved their position on Energy Union governance rules and called for EU carbon neutrality by 2050. Despite calls to ban the use of wood in renewable electricity production, the EP’s proposal would not impact U.S. wood pellet exports (current trade valued at \$620 million).



Photo Credit: [European Parliament](#)



Biofuels in the U.S. Photo credit: [Oilprice.com](#)

## ESTH Assists Foreign Commercial Service (FCS) with the Blue Economy Trade Mission

FCS facilitated over 110 matchmaking meetings between ten U.S. maritime-related companies, the Maritime Alliance (TMA), and Italian entities interested in cutting-edge U.S. marine technologies on March 19. In the planning phase, ESTH met with Commerce colleagues to review each companies’ website, and to make suggestions of potentially interested Italian government entities, researchers, and businesses. Commerce local staff Maria Calabria worked with multiple partners, including the Italian National Research Council and various marine industry clusters to organize the meetings with Italian professionals from government, academia, Italian Coast Guard and Navy, researchers, and business leaders. ESTH Officer Viki Limaye came from Brussels to talk to the American companies about the EU’s Blue Economy strategy, EU funding mechanism, and how the EU bureaucracy operates. Each company representative gave an overview of his or her business to the larger crowd before the one-on-one meetings and they were truly inspirational. For example, [Resolute Marine](#) has mastered a technique to use ocean wave

energy for desalination. [Earth-wise Sorbents](#) have developed a way to clean up oil spills with algae. TMA has a grant from Commerce to promote these and many other fascinating



Crashing waves. Photo Credit: [Resolute Marine](#)

companies, with an expected resulting increase in \$3-5 million in exports. That export estimate is for the entire Blue Economy Trade Mission that included stops in Paris, Rome, Las Palmas, and Lisbon.

## U.S. Company Forms Alliance with ENEA

**U**.S. firm Perma-Fix has created a new microporous resin technology for the production of Technetium-99 (Tc 99m). Tc 99m is the most widely used medical isotope in the world and is used for medical diagnostic tests and cancer treatments. The new process developed by Perma-Fix is expected to solve a worldwide shortage of Tc 99m, which is currently produced using weapons-grade nuclear material and aging special-purpose nuclear reactors.

On January 9, Perma-Fix and Italy's National Agency for New Technologies, Energy, and Sustainable Economic Development (ENEA) signed a Memorandum of Understanding (MOU) to establish a mutually beneficial relationship, with the purpose of producing Tc 99m generators using Perma-Fix technology in ENEA's TRIGA RC-1 nuclear re-

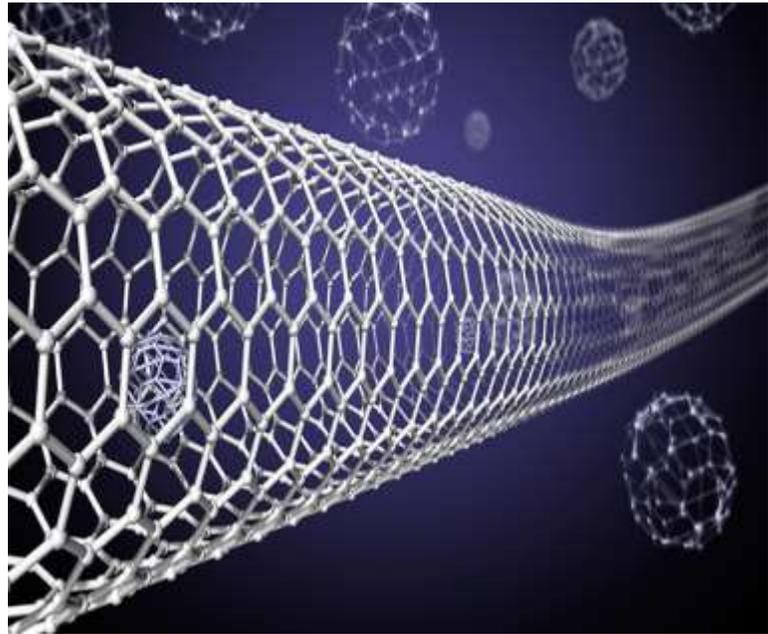


search reactor. This technology uses natural molybdenum as a target, rather than enriched uranium, providing non-proliferation benefits. In addition, it produces easily-handled waste which decays to below regulated levels in a very short period of time, unlike the traditional method, which produces high-level radioactive waste that requires expensive long-term storage. ENEA has clean rooms to immediately take advantage of this licensing agreement, and expects to produce Tc 99m by the end of 2018.



ENEA President Federico Testa with Louis Centofanti, Perma-Fix founder  
Photo Credit: Caron De Mars

## Nanotechnology



Artist representation of Nanotechnology. Photo Credit: <https://nudgee.libguides.com>

**O**n April 27, ESTH met with Dr. Ping Furlan, from the US Merchant Marine Academy, who was in Rome to attend the 17<sup>th</sup> edition of the "International Conference on Emerging Trends in Material Science and Nanotechnology." Dr. Furlan developed a nanocomposite which is highly antimicrobial (because of its silver content) and easily recoverable/reusable (for its magnetic core) for disinfecting vessel discharges called bilge water, in order to avoid release of oil, microbes, invasive species, and harmful chemicals at sea. {A nanocomposite is a multiphase solid material where one of the phases has dimensions of less than 100 nm. Nanocomposites represent an exciting class of advanced materials due to their synergistic and hybrid properties derived from their components.}

Dr. Furlan received an award from the conference organizers for the "quality, novelty and significance" of her research.

## Scientists Gather in Rome to Discuss Next Gen Materials

University of Washington’s Center for Process Analysis and Control (CPAC) convenes a meeting in Rome’s city center each year and invites the ESTH Counselor to address the meeting. The theme this year was “Utilization of New Concepts in Developing Next Generation Materials, as well as Exploring New Reaction Routes that Benefit from the Growing Use of Continuous Flow Technology.” The March 19-21 Rome Workshop was a successful gathering of participants from 12 countries, with representatives from 16 companies, 13 universities, and five government organizations and research institutes. The workshop themes dovetailed well with some top priorities of Rome’s ESTH section. For example, there was an emphasis on sustainable materials and discussions on using bio-based materials. ESTH Counselor Caron De Mars addressed the CPAC workshop immediately after she attended the Blue Economy Trade Mission that featured American businesses using innovative materials, so she highlighted Earthwise Sorbent’s new [surfboards made from algae](#). Another CPAC theme was the circular economy/resource efficiency, and University of Iceland Professor Harald Sverdrup described how capitalizing on the circular economy could be a cost-effective production strategy for new and existing businesses. University of Washington organizers Melvin Koch and Nan Holmes have announced the next CPAC Rome meeting will be March 25-27, 2019.



Bowls made from Leaves Photo Credit: [Indiatimes](#)



CPAC Rome. Photo Credit: [CPAC Rome](#)

## From Coal to Stars - Sardinia Coal Mine Will Help Dark Matter Research

ESTH organized the visit and joined Deputy Chief of Mission Kelly Degnan to the Carbosulcis coal mine of Monte Sinni in southwest Sardinia on March 5th. Coal extraction will end in December 2018 in compliance with the EU policies, but because of its unique, very large access-way from the surface to below 500 meters underground, Carbosulcis is perfect for the construction of a 350-meter (the biggest ever) underground purification column for the Advanced Rare Isotopes Applications (ARIA) project. ARIA will support the DarkSide Project, the international nuclear physics experiment for detecting “dark matter,” which uses liquid argon located at the National Institute for Nuclear Physics Gran Sasso Laboratories in Abruzzo. To supply the purest argon possible to DarkSide, underground argon will be extracted by the U.S. company Kinder Morgan in Colorado, brought to Sardinia, and then purified by the gigantic column. The ARIA column will consist of 28 modules 12 meters in height, plus a top module (condenser) and a bottom module (reboiler). Each module is being built in Italy, and tested at CERN (the European Laboratory for Nuclear Research in Geneva) before their installation at Carbosulcis. The construction of ARIA began in 2015 and will be completed by 2019. The Italian Education, Universities, and Research Ministry and the U.S. National Science Foundation committed €2.4 million each, while the Sardinia Region and the National Institute for Nuclear Physics are each investing €10 million in the project. The Sardinia Region hopes that the column could be also used to produce non-radioactive isotopes for medical (cancer) screening, as well as very pure chemicals to be sold to pharmaceutical and cosmetics companies, providing an economic future for local employees after the EU-mandated cessation of subsidized coal mining by 2018. <https://www.facebook.com/regioneautonomasardegna/videos/763746527154233/>



Detection Instruments, Photo Credit: INFN

Detection Instruments, Photo Credit: INFN

## How Space Drives Innovation and Economic Development

On May 30, the ESTH team joined the Public Affairs session and Women in Aerospace-Europe (WIA-E) to organize a conference on “How Space Drives Innovation and Economic Development” at the University of Rome “La Sapienza” Aerospace Engineering School. WIA-E Rome Co-



leader Annamaria Nasisi described Women in Aerospace (WIA) as a network established in the United States in 1985 to promote

worldwide networking. The overall mission of WIA is to represent and inspire women who work in the space sector, and to promote professional development and highlight women’s achievements, especially in the aerospace sector. WIA-E Rome, the local group founded in 2013, consists of over 100 members, 10 affiliates, and gender-diverse work teams that demonstrate superior team dynamics, and highlight women’s participation in all levels of the space sector.

Prof. Danielle Wood, Assistant Professor in the Program of Media Arts and Sciences within the Media Lab at the Massachusetts Institute of Technology, presented the keynote lecture titled “Space Technology Enables Sustainable Development.” Within the Media Lab, Prof. Wood leads the Space Enabled Research Group, which seeks to advance sustainable human interaction with Earth’s complex natural systems using designs enabled by space technology. She discussed her team’s latest work in sustainable development in river communities in Benin by promoting the local

communities’ circular economy based on the harvests of the water hyacinth plant, and its transformation in oil-absorbent products, supported by Green Keeper Africa, a non-profit group based in Benin. Her team provides



the community with advanced satellite data and research on terrestrial modelling, and trains them how to use the information effectively. Prof. Wood discussed how space-enabled technology and advancement could lead to sustainable development, using the sustainable development goals of the United Nations as a concrete baseline. Prof. Wood’s team members have utilized six major space technologies in their research, including satellite observation, satellite communication, satellite positioning and navigation, space technology and transfer, human space flight, and inspiration from further research and education. The team has also engaged in six primary research methodologies, including design, art, complex system modeling, satellite engineering, social science, and data science.



Dr. Wood presenting her work. Photo credit: Caron De Mars

## Italian Space Panel

**D**r. Maria Cristina Favella, Head of Strategies and Industrial Policy Unit at the Italian Space Agency (ASI), presented “The New Paradigm of Space Economy in Italy” after Danielle Wood’s presentation at La Sapienza on May 30 (see article [page 13](#)). She noted that the team of ASI researchers is relatively small overall, with a focus on working with local companies to advance Italy’s space program. In the Italian space industry from the years 2014 to 2016, there has been a 3% increase in employees, approximately one third of whom are women; 52% of the employees are between 26 and 35 years of age.



Also speaking at the event, Professor Bernardo De Bernardinis, National Delegate to the Copernicus User Forum (for more on Copernicus, see Planetek article on [page 8](#)) and Coordinator of Italy’s National Copernicus User Forum, highlighted Copernicus information services, which are served by a set of dedicated satellites (the Sentinel families), “contributing missions” (e.g., data obtained from existing commercial and public satellites), and a multitude of sensors. The Copernicus sensors are located on the ground, at sea, and in the air, and fall into the six main subject categories for which Copernicus collects data: land management, marine environment, atmosphere, emergency response, security, and climate change.

Professor Ezio Bussoletti, just-appointed Space Advisor to new Minister of Infrastructure and Transport Danilo Toninelli, highlighted [Galileo](#), the European global navigation satellite system, developed in collaboration between the European Union and the European Space Agency (ESA). The complete Galileo constellation will consist of 24 satellites plus six spares, and an extensive ground infrastructure (including one Control Center located in Fucino, 130 km east of Rome). Twenty-two satellites have been successfully launched so far; the final satellite is expected to be launched in 2022.

## Sardinia Deep Space Antenna Inauguration

**O**n May 9, Italy joined representatives from NASA’s Deep Space Network for the inauguration of the Sardinia Deep Space Antenna (SDSA). William Gerstenmaier, NASA’s Associate Administrator for Human Exploration and Operations, was on hand to sign the implementing agreement with Italian Space Agency (ASI) President Roberto Battiston. The antenna is a 64-meter-diameter parabolic radio-telescope that was recently upgraded with NASA equipment to also be able support deep space tracking and communications. The SDSA is managed by the Italian National Institute for Astrophysics (INAF) for radio astronomy purposes, and partially funded by ASI. The new agreement covers existing and planned SDSA modifications and mission support activities. The inauguration featured ASI, INAF, and NASA senior management, along with regional government leaders. After the signing ceremony, students, media, officials, and scientists toured the antenna facility, which is about 22 miles outside of Cagliari, on the island of Sardinia, Italy. Other facilities in NASA’s [Deep Space Network](#) include the Goldstone Complex in California, the Madrid Complex in Spain, and the Canberra Complex in Australia. Here is a [video](#) from a media outlet recording the May 9 event.



NASA and ASI delegates at Deep Space Antenna.

Photo Credit: Leslie Deutsch, JPL

## Health Expert Provides Surge Capacity to ESTH Team

**W**e were delighted to welcome Embassy Science Fellow Dr. Sut Soneja to join the Environment, Science, Technology, and Health section October-December 2017. Dr. Soneja came to us on temporary duty from his assignment as an American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellow at USAID, where he is working on health systems strengthening in West Africa as a part of USAID’s post-Ebola response. He has a Ph.D. in Public Health from the Johns Hopkins Bloomberg School of Public Health, and has an extensive background in environmental health, air pollution, climate change, and epidemiological research. His time at the U.S. Embassy to Italy coincided with the G7 Health Ministerial held in Milan November 5-6, which he attended as part of the U.S. delegation.

He also wrote a joint Op-Ed with then-Director General for Health Prevention at the Italian Ministry of Health, Dr. Ranieri Guerra, and represented the Embassy at a series of events highlighting scientific cooperation between Italy and the United States.



Dr. Soneja and Fall 2017 Intern Elena Berg with delegates at Gran Sasso. Photo Credit: INFN

In addition, he worked actively to further bilateral cooperation efforts focused on the impact of climate on health, and antimicrobial resistance. On January 2, 2018, he returned to Washington, D.C. to finish the remainder of his AAAS Fellowship, but we greatly appreciate the contributions he made to the work of the ESTH Section, and wish him all the best in his future endeavors.



Fall '17 Intern Elena Berg with Dr. Soneja at Laboratori Nazionali del Gran Sasso. Photo Credit: INFN



Dr. Soneja at G7 Health Summit. Photo Credit: Aye Aye Thwin

## We Could End AIDS!

In observation of World AIDS Day, ESTH cooperated with Embassy Public Affairs Section to organize the Dr. Melanie Thompson's talk, "Can we really end AIDS? Challenges in HIV Prevention and the Care Continuum" at the Istituto Superiore di Sanità (ISS - the Italian NIH) on December 5. Dr. Thompson is the founder and



Students listen to health education lecture.

Photo Credit: Tiziana Candiloro

principal investigator of the AIDS Research Consortium of Atlanta (ARCA). The US National Institute of Health funds ARCA to bring together primary care physicians and people with HIV/AIDS in the clinical research process. Dr. Thompson has been the principal investigator on over 125 clinical trials involving over 1,200 patients, and is actively involved in efforts to establish antiretroviral therapy guidelines.



Dr. Thomson discusses HIV prevention on a panel.

Photo Credit: Tiziana Candiloro

Dr. Stefano Vella, Director of ISS' Italian Center for Global Health, and co-author with Thompson of many scientific papers on HIV treatments since the 90's, introduced Dr. Thompson to the audience. Dr. Thompson highlighted that HIV and AIDS remain a persistent problem around the world, notwithstanding the great progress that has been made in preventing and treating the infection. The treatment with antiretroviral drugs – "if taken the right ways and everyday" – can control the virus so that people with HIV can enjoy healthy lives and reduce the risk of transmitting the virus to others. However, each year there are new HIV infections, which shows that people either aren't understanding the dangers of HIV, or know the risks but are unwilling to take precautions.

Many people are ignorant about the virus - a survey found recently that a third of teens thought there was a 'cure' for AIDS. Even if education were completely successful, there would still need to be an ongoing process. The older generations may need the message reinforced and updated, so that they are able to protect themselves and inform younger people. Thompson concluded stating, "We could end AIDS since it is preventable, but governments need also to invest in increasing education programs, expanding both screening for early diagnosis, and use of pre-exposure prophylaxis, and linking people to effective treatment within three days of getting an HIV diagnosis."



Dr. Thompson presenting at ISS.

Photo Credit: Federica Signoretti

## First Italian in the Board of the American Association for Cancer Research

**A**driana Albini, a Professor of General Pathology at the Department of Medicine and Surgery of the University of Milan-Bicocca, and the Director of the Laboratory of Vascular Biology and Angiogenesis at the IRCSS Multi-Medica of Milan, has been elected to the Board of Directors of the American Association for Cancer Research (AACR), one of the oldest and most prestigious oncological associations in the world. Dr. Albini began her three-year director term at the annual AACR meeting in Chicago on April 14. It was the first time for an Italian researcher to be elected to the AACR's Board of Directors.

The logo for the American Association for Cancer Research (AACR). The letters 'AACR' are in a bold, black, sans-serif font. The letter 'R' is highlighted in a vibrant green color.

American Association  
for Cancer Research

Founded in 1907, the American Association for Cancer Research ([www.aacr.org](http://www.aacr.org)) is the largest professional organization in the world dedicated to promoting cancer

research. AACR has over 40,000 members, including basic and clinical researchers, epidemiologists, other health professionals, and patient associations from 120 countries.

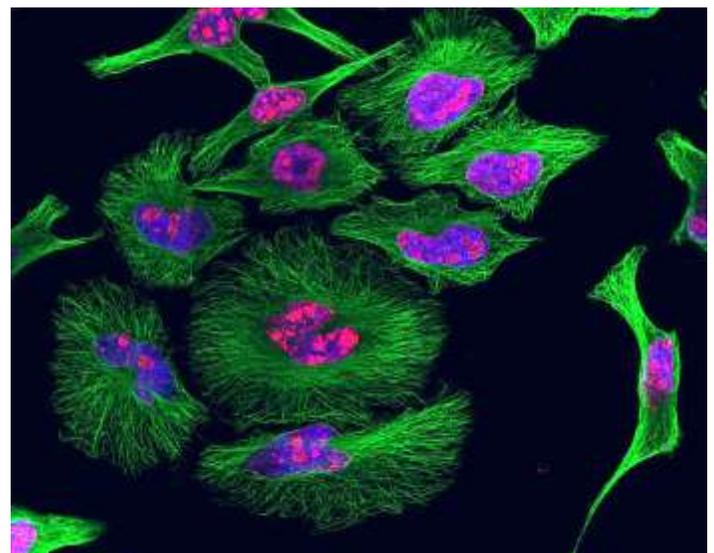
AACR provides the full spectrum of skills of the cancer community to accelerate progress in cancer prevention, biology, diagnosis, and treatment. AACR organizes more than 30 themed conferences and educational workshops annually, the largest of which is the annual convention, with more than 21,900 participants. In addition, AACR publishes eight specialized peer-reviewed journals and a journal for patients and their caregivers.

<http://www.facebook.com/207765002932/posts/10155676238422933>



Dr. Albini in her Lab

Source: [Genetics Article](#)



HeLa Strain Cancer cells

Source: [Cancer Article](#)

## Rome's Compost Center

**T**ri-Mission Green Team members toured Rome's composting center on February 1, located in Maccarese, about 35 kilometers west of Rome. It was heartening to



Tri-Mission Green Team at Compost Center.  
Photo Credit: Compost Center Employee

learn that all food waste from Rome's grocery stores, markets, and domestic food waste dumpsters make it to this facility. Therefore, it is important and makes sense for Rome's residents

to separate food waste and throw it into the correct receptacle! Upon arrival, the organic waste is piled up, filtered, and wood is added. Half of the weight is water, so the waste must be dried out. The temperature increases to 70 degrees Celsius/140 degrees Fahrenheit due to digestion by the bacteria. This temperature must be maintained for 15 days to kill any seeds, and eliminate pathogens.

The facility has a machine that removes all plastic and then the biomaterial is transferred to a treatment pond for 30 days. Italy developed a rotator to churn the compost, which is cured 60 days in the open air before being sold. The odor transition from the rotting food to the smell of the rich compost was striking. The Tri-Mission Green Team host provided by AMA, Dr. Antonio Mazzoni, a biologist, showed pictures of when the waste first arrives. Restaurants use pink trash bags, food markets use yellow bags or wooden boxes, and then the domestic waste arrives in all forms, from biodegradable bags to loose organic matter.

Only 10% of the food waste is kept in Rome for processing, and the rest is trucked to larger plants in Veneto and Friuli. The Veneto facility is 20 times larger than the processing plant near Rome. Trucking the food waste around Italy costs a great deal in workers' time and fuel. The take-away from the field trip is to buy only what you will eat and do your best to consume all that you buy.

Green Team with Retake Roma. Photo Credit: Retake Roma

## The Tri-Mission Green Team and Retake Team Up to Rehabilitate a Park

**O**n March 17, Rome's Tri-Mission Green Team and [Retake Roma](#) came together once again to clean up a park. The event took place in the Infernetto neighborhood, located in Rome's eighth Municipal area, the southern part of the city near Ostia Lido's coast area. Retake Roma is a nine-year-old non-profit, grass-roots movement that has over 90 neighborhood groups and has now spread to more than 30 Italian cities. Retake volunteers remove graffiti and illegal advertising stickers from walls; re-paint park benches and other urban structures; pick up trash; and refurbish public spaces. Retake has a long-standing relationship with the three U.S. Missions in Rome, dating back to its first joint cleanup of Villa Borghese in 2010. Park-clean-up-day volunteers gathered trash such as cigarette butts, plastic and glass bottles, and other litter. The group also cut grass, raked leaves, trimmed trees, and repainted benches. Shoveling was an important task for this particular park. Volunteers discovered a sidewalk that was beneath years of accumulated mud and grass, thus clearing a new path for pedestrians. Retake is so well known that government officials often pay a visit to say thank you and even help clean during a "Retake." For this project, Seila Covezzi came from the Rome Mayor's Ceremonial Office to lend a hand. The event brought out about 60 volunteers altogether, which also included about a dozen immigrants. This and other "Retakes" thus not only restore public spaces, but also bring communities together and give immigrant populations a sense of belonging and volunteerism.



# 2018 Look Ahead...

August 12	World Elephant Day 2018
September 2-7	Cities on Volcanoes meeting (Naples)
September 10	U.S.-Italy Earth Science Working Group (Rome)
September 15	International Coastal Cleanup Day
September 16	International Day for the Preservation of the Ozone Layer
September 28	World Maritime Day
October 13	World Migratory Bird Day
October 16	World Food Day
October 24-26	Arctic Council Senior Arctic Officials meetings (Rovaniemi, Finland)
November 2018	UNFCCC COP-24 (Katowice, Poland)
November 2018	Conference of the Parties to the Minamata Convention on Mercury (Location TBD)
November 6	International Day for Preventing the Exploitation of the Environment in War and Armed Conflict
November 10	World Science Day for Peace and Development
November 12-18	Global Entrepreneurship Week
November 15	America Recycles Day
November 16-22	World Antibiotic Awareness Week
November 21	World Fisheries Day
December 1	World AIDS Day
December 6	2018 U.S.-Italy Earth Science Working Group (Washington)
December 7	U.S.-Italy Joint Committee Meeting on Science and Technology Cooperation (Washington)



*If you know someone who would like to be added to this newsletter mailing list, or if you would like to be removed, please contact [LeeMD2@state.gov](mailto:LeeMD2@state.gov)*

Image Credit: Alex Anderson

# 2018 July Calendar

Sun	Mon	Tues	Wed	Thu	Fri	Sat
<b>1</b> Declutter 5 items from your home and recycle them	<b>2</b> Watch a <a href="#">video</a> on the recycling process	<b>3</b> Refuse that plastic straw as a <a href="#">first step</a> to reducing plastic use	<b>4</b> Use non-plastic storage containers at home, like glass	<b>5</b> <a href="#">Eat</a> vegetarian <a href="#">for a day</a>	<b>6</b> Walk or bike to work	<b>7</b> Spend 30 minutes in <a href="#">your local park</a>
<b>8</b> Take a look at the <a href="#">17 UN Sustainable development goals</a>	<b>9</b> Create three goals to <a href="#">reduce your carbon footprint</a>	<b>10</b> Look at your clothing label to see where your clothes came from, and <a href="#">if they were made with sustainable methods</a>	<b>11</b> Eat <a href="#">local/seasonal produce</a>	<b>12</b> World Population Day: <a href="#">Read about</a> the challenges we face as our population grows past 7 billion people	<b>13</b> Stop using products that use <a href="#">micro-plastics</a>	<b>14</b> Spend time learning about <a href="#">countries impacted by rising sea levels</a>
<b>15</b> <a href="#">Pick up a piece of litter</a> on the sidewalk or the beach, and dispose of it properly	<b>16</b> Don't print <a href="#">unnecessary</a> emails or documents	<b>17</b> <a href="#">No plastic</a> day	<b>18</b> <a href="#">Read about deforestation</a> and how it impacts our atmosphere	<b>19</b> <a href="#">Learn how to compost</a> at home and reduce food waste	<b>20</b> Read <a href="#">prior ESTH newsletters!</a>	<b>21</b> Upcycle: <a href="#">make something new</a> from something you would have gotten rid of
<b>22</b> <a href="#">Host a swap</a> between friends and family to exchange gently used clothing, toys, and household goods	<b>23</b> <a href="#">Stop junk mail!</a>	<b>24</b> Look into buying more <a href="#">environmentally friendly versions of household cleaning products</a> or <a href="#">make your own</a>	<b>25</b> Make a list of <a href="#">single-use plastics</a> that you can re-use or stop using (utensils, bottles, etc.)	<b>26</b> Join a <a href="#">Retake</a> cleanup and come to the next Green Team meeting Sept. 14	<b>27</b> Reduce <a href="#">water consumption</a> (reduce shower time, turn off water while brushing teeth or washing hands (rinse only))	<b>28</b> Write down environmental principles you want to live by
<b>29</b> Read an <a href="#">article</a> written by a scientist about hurricanes slowing down	<b>30</b> International Friendship Day: Talk to a friend about ways that you are environmentally friendly	<b>31</b> List 5 things you love about <a href="#">nature</a>				