

EARTH SCIENCE APPLIED SCIENCES



Applied Sciences Program Communications ANNUAL SUMMARY

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INTRODUCTION

The Applied Sciences Program has a unique charge at NASA: to help people worldwide use NASA Earth science data to solve problems. Working with people, communities, commercial interests, local governments, and international entities, Applied Sciences provides expertise, support, and funding to help make better decisions about Earth's environment, as well as our food, water, health, and safety.

The Applied Sciences communications team closely follows its Technical Content Strategy to promote the actions and overall mission of the Program. This communications strategy ladders up to overall Earth Science Division (ESD) communications direction, plans developed by the Science Mission Directorate, and NASA's agency-wide communications strategy.

In 2021, the Applied Sciences communications team co-led a major communications campaign undertaken by ESD. The Food + Drink campaign was conceived of by the Applied Sciences communications team and was the first-ever ESD communications campaign not solely run by the Earth News Team. The campaign resulted in a significant rise in awareness about NASA's actions and research about Food + Drink topics, both within the agency and elsewhere.

In addition to the Food + Drink campaign, the communications team continued to support the Program with established work in writing and editing profiles, stories, and news articles for varied NASA communications outlets. Ongoing work includes significant efforts in expanding, refining, and supporting the Applied Sciences website and developing stories to share information about the Program worldwide.

The communications team supports the Program's six program areas and numerous initiatives and actions with targeted, strategic communications strategies. In 2021, the team stood on the foundation of communications plans and policies put forward in earlier years, allowing the Program overall to achieve a high level of success and to lean into the Program's expansion and increased visibility within ESD. The addition of three program areas to Applied Sciences reflects the strength of the Program within ESD. We look forward to supporting all the program areas, as well as the many initiatives undertaken by the Program, in the coming year.



THE COMMUNICATIONS TEAM

The communications team in 2021 had three core staff members:



McRae Lent Project Manager

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Leads the team in development of comprehensive, coordinated communications products and ensures that all efforts align with the Program's strategic plan and objectives.

Aries Keck Communications Lead

Leads the management of communications products, ensures alignment with all communications plans and strategies across NASA, and advocates for Applied Sciences inclusion in all NASA efforts.

Lia Poteet Communications Specialist

Specializes in storytelling to engage new audiences, identifying strategic opportunities for increasing awareness of the Program's work, reviewing communications products, and working across teams to build long-term narratives.

Additionally, the communications team was supported by the impactful work of:

Marissa Kunerth, Marketing Strategist

Specializes in research, development, and implementation of communication campaigns and identifies trends and patterns in marketing performance.

Jessica Sheaves, Senior Content Strategist

Produces engaging stories and profiles that showcase Earth science applications and specializes in researching and developing strategies for website enhancement to better serve Applied Sciences' audiences.

WHERE WE'VE BEEN, WHERE WE ARE

2021 was a year in which NASA moved from an immediate response to the COVID-19 pandemic to ensuring that communications about the Program continued and expanded, despite the changes to in-person work and meetings. Building on the strength of our communications strategy and our work with each program manager in Applied Sciences, the communications team supported and facilitated amplification of all aspects of the Program.

Policies and practices put into place in previous years are now paying off. Program managers moved from previous years' discussions on possibilities for communications to concrete actions and campaigns. As just one metric of strategic output, 217 communications were published by the communications team in 2021. This number does not include the numerous supporting social media posts, meeting discussions, and other supporting efforts to spread the word about Applied Sciences work far and wide.



PHASE PROGRESS

The Communications Strategy outlines a phased approach to set communications milestones and challenging, achievable targets. We are concurrently making progress in the first two phases.

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2019-2024: Putting Data to Use

Goal: Expand awareness of the Program among all audiences to facilitate greater use of Earth data and resources.

Approach: Craft stories that showcase societal benefits and feature individuals, communities, organizations, and collaborators using Earth science to make a positive impact. Strengthen relationships across NASA and throughout the scientific community to build trust and audience engagement.

2019-2022: "NASA Does That?"

Goal: Shift expectations of NASA to drive new appreciation of and engagement with potential uses or benefits enabled by NASA and Earth data. Drive the use of Earth data and Program resources, emphasizing unique opportunities to work with data, especially among untapped potential user audiences.

Approach: Build upon storytelling success to amplify awareness of each program area.

PHASE GROWTH

In support of the phases listed above, the team focused on driving awareness of the Program, its six program areas, and its ever-growing areas of collaborations and initiatives. The unified website platform we created (appliedsciences.nasa.gov) helps to better bring potential data users into the fold, as well as educate the public — and our internal NASA audience — about the Program's work and help them engage with available resources.

The communications team supports the content and quality of the website, which makes it a good resource to track and collect performance metrics. A comparison of website performance from Jan-Dec 2020 to the Jan-Dec period in 2021 showed the following:



AWARENESS & ENGAGEMENT

The increase in pages per session and return visitors indicates engagement growth, as content is compelling enough to spend more time on the site and return. The increase in total website sessions and new visitors indicates awareness growth, as the site is now a unified platform for all Program content and is more visible than ever before.

MORE WEBSITE SESSIONS

Number of website visits total

MORE NEW VISITORS

Website visits from new visitors

MORE RETURNING VISITORS

Website visits from returning visitors

COMMUNICATIONS CAMPAIGN: FOOD + DRINK

Applied Sciences was the first-ever ESD element to co-lead a communications campaign. By all metrics the campaign was a success. It increased awareness of the Applied Sciences Program not only throughout ESD, but agency wide. It was also the first to completely incorporate all ESD communications resources under one campaign. This achievement was possible due to the innovation of using a consistent "look and feel" for all the content, posted on the Applied Sciences website, the NASA.gov site, Earth Observatory, and across all NASA social media outlets like Twitter, YouTube, and Facebook.

To support the campaign, we onboarded copywriting and design support to create effective messages and branded visuals. This set a foundation for the larger group to work from, providing inspiration for discussion and ideas. As NASA developed the themes and messages, our expertise provided crucial phrasing and consolidating of a vast number of inputs from ESD staff and leadership. The team was embedded in all aspects of this campaign, from helping produce content to identifying audiences and strategizing media outreach efforts.

The campaign consisted of an innovative video series that was highlighted for a Webby nomination, and a coordinated group of user-focused feature stories on NASA.gov and subsequent social media and additional content. In addition to the outreach content, the campaign also contributed to solidifying Applied Sciences as a key communications partner within the ESD communications structure.



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USING EARTH OBSERVATIONS TO SOLVE OUR PLANET'S MOST PRESSING ISSUES.

ABOUT THE PROGRAM

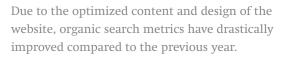
The Applied Sciences website is a primary platform in highlighting the Program's work. The website is:

• Written for the general public with human-centered language, making the Program's mission and activities clear to all audiences.

• Designed with a cohesive brand identity and web best practices, connecting NASA's global identity with the Program's web presence.

• Developed to feature resources, stories, and news from across the Program, providing many opportunities for users to engage.

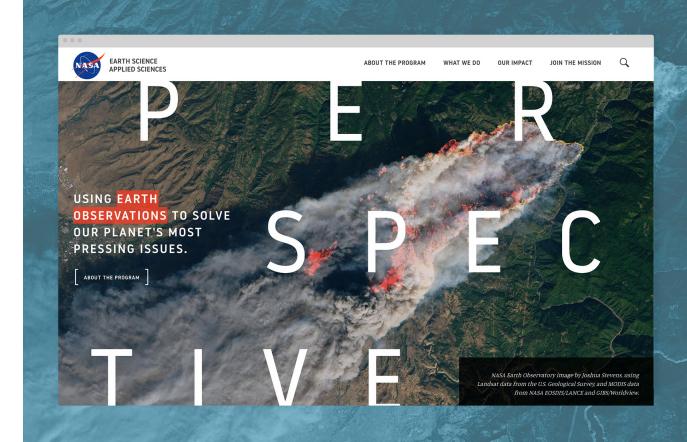
The refreshed content strategy has successfully made the website a hub where marketing efforts can drive traffic. Throughout 2021, the site brought in 1,185,605 pageviews, which was 3.2 times greater than 2020.



• Website visitors from organic search grew by 356% (127,485 compared to 27,932 in 2020).

• The top five search result pages, Google, Bing, DuckDuckGo, Yahoo, and Escosia, generated 10.31% more organic searches to the site (36.42% compared to 26.11% in 2020).

• The number of sessions that came through unpaid search results on search engines improved by 1,019% (517,369 compared to 46,235 in 2020).



98,800 47,700 26,630 66.26%

Overall website numbers are also strong.

AVG MONTHLY PAGEVIEWS

(+224.30% compared to 30,466 in 2020)

AVG MONTHLY SESSIONS

(+ 211.15% compared to 14,404 in 2020)

AVG MONTHLY NEW USERS

(+222.97% compared to 8,245 in 2020)

BOUNCE RATE

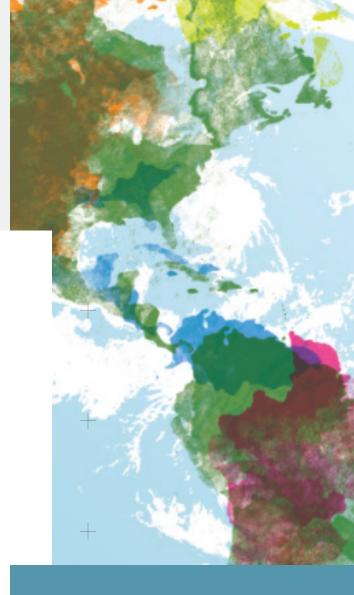
(+ 0.47% compared to 65.95% in 2020)

In 2022, we will conduct a search engine optimization audit (SEO) to continue building on the website's success. Annual SEO audits are considered a best practice to maintaining a site's health. This audit will help us understand where the site is performing best for organic search and provide direction as new content is written.

APPLIED SCIENCES WEEK

The communications team continued to support the yearly Applied Sciences Week event, led by the Capacity Building program area.

- Applied Sciences Week showed strong year-over-year improvements in attendance and particular success in outreach to self-selected audiences like email lists and social media.
- The event page on the website earned 5,346 views (+73.2% from 2020's 3,087 views) and attendance throughout the week totaled more than 1,000 people (nearly double the 550+ who attended in 2020).
- Efforts by the program areas in building mailing lists and newsletter content seem to have paid off, as well.
- While it only makes up a small portion of total traffic, 574 pageviews came to the website during Applications Week from email sources a more than 1,000% increase from 49 pageviews in 2020.



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SUCCESS & PROGRESS

In 2021, the communications team saw significant progress across the board. In this summary, we measure our success against the Communications Strategy, which outlines four principles that guide and shape all communications work.

MEASURING AGAINST OUR PRINCIPLES

We have organized the many opportunities, activities, events, trainings, and products the communications team led and supported over the past year by these principles:

Principle 1: Stories are our building blocks

Principle 2: Exploit unique assets

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Principle 3: Make Earth science for everyone

Principle 4: Mature communications platform



STORIES ARE OUR BUILDING BLOCKS

Stories are at the center of our work. Showcasing not just the scientific process, but the journey toward a goal and the real humans and animals who benefit from the results, allows readers to connect viscerally with a project they may never interact with. Stories like <u>Dust Storms, Valley Fever... and Cake Pans</u> draw readers in with the unexpected and keep their attention by highlighting the creativity of the researchers. Visitors stayed on the page for an average of 3 minutes and 19 seconds, more than a minute longer than the site's average.



Landsat Satellite Data Warns of Harmful Algal Blooms NASA at Your Table: Where Food Meets Methane

Emily Fischer (August)

Economics of Nature: Mapping Liberia's Ecosystems to Understand Their Value

Sofie Bates (March)

NASA at Your Table: Climate Change and Its Environmental Impacts on Crop Growth

Ellen Gray (September)

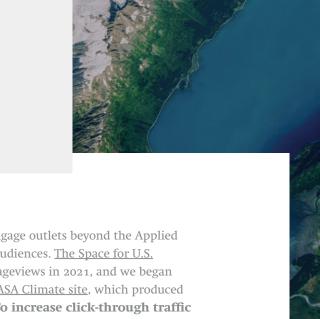
Kate Ramsayer (March)

The effort to identify, write, and amplify these stories has long-term benefits, as well. Maintaining the Applied Sciences site as a reliable and regularly updated source of relevant information increases a returning audience that knows they can turn to the site for information, as well as improves the site's SEO performance. This means potential visitors using Google will see the Applied Sciences site listed higher in results when they search for relevant terms than if Google's algorithm did not recognize the site as a reputable source.

Despite the exponential growth in overall visitors in 2021, the site saw an even greater proportional increase in the number of "returning visitors" – users who have previously visited the site in the past two years. The Applied Sciences site saw 21,028 returning visitors in 2020, accounting for 17.61% of the total visitors for that year. In 2021, that figure jumped to 71,561 – and 18.27% of the year's total. The fact that 71,561 users came back to the Applied Sciences site more than once is a strong testament to both the communications about the Program's work and the public's interest in the Program's work itself.

Providing timely information about a recent event in the news can drive interested audiences to the Applied Sciences site. **The top performing news story from 2021, <u>Satellites Map Tornado</u> <u>Damage in Kentucky</u>, was written by the Disasters team and received 5,570 pageviews – 94.51% of which came directly from Google search.** Stories that focused on the people within the Applied Sciences Program also performed well, with profiles like <u>On the Path Towards Inclusivity with Lisette Melendez</u> receiving more than 1,000 pageviews with an average of 4 minutes and 22 seconds on the page. In 2021, we continued to engage outlets beyond the Applied Sciences site to reach new audiences. <u>The Space for U.S.</u> site generated 5,561 total pageviews in 2021, and we began publishing stories on the <u>NASA Climate site</u>, which produced 27,588 pageviews in 2021. **To increase click-through traffic from climate site stories to the Applied Sciences site, we are working with the Climate site team to improve the navigation of Applied Sciences stories on the site for 2022**.

Part of this strategy of leveraging multiple outlets includes pairing NASA.gov features with appliedsciences.nasa.gov stories to provide additional details about specific data sources, end users, and collaborating organizations. Examples include the NASA.gov story <u>A Steady Drip with NASA Satellites</u> and the paired Applied Sciences site story <u>Keeping a Dry Eye on Drought in East Africa</u>.



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HIGHEST PERFORMING APPLIED SCIENCES STORIES ON <u>Masa.gov</u> in 2021			
Story Title	Pageviews	Avg. Time on Page	Bounce rate
Landsat Satellite Data Warns of Harmful Algal Blooms: added VALUABLES study & other content, edited and coordinated the Water program review	15,891	0:01:51	83.30%
NASA at Your Table: Where Food Meets Methane	15,763	0:02:36	83.38%
Economics of Nature: Mapping Liberia's Ecosystems to Understand Their Value	10,256	0:01:46	85.98%
NASA at Your Table: Climate Change and its Environmental Impacts on Crop Growth	9,744	0:03:11	79.91%
NASA Data Powers New USDA Soil Moisture Portal	8,841	0:02:12	78.58%

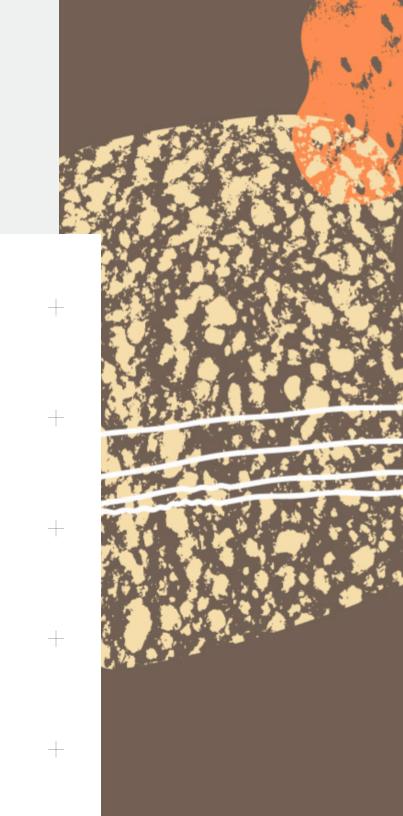
We continue to be a trusted and reliable resource for other NASA communications efforts across the agency, incorporating data users and details into other groups' written materials, providing content to larger NASA initiatives, and sharing content for NASA Centers about Applied Sciences work. Communications collaborators include, but are not limited to, the ESD Research & Analysis Program (R&A), Earth Observatory, Earth Science News Team, and NASA Marshall, Goddard, and Langley Center communication teams.

- Established a consistent cadence for publishing stories.
 - Published 140+ stories on the appliedsciences.nasa.gov site
 - Published 25+ stories on the NASA.gov site
- Incorporated visual assets to enhance storytelling.
 - As a completely new way to connect and collaborate across ESD communications, developed the overall "look and feel" for the Food + Drink communications campaign.
 - Through a series of reviews with ESD leadership, ultimately developed a branded color scheme and icons for the campaign.
 - Supported and created website banner images, presentation templates, and more all in service of supporting and tying together the disparate aspects of the Food + Drink campaign.
- Stories are the foundation upon which we've built our strategy, and we've seen success. In 2022, we plan to continue identifying, developing, and amplifying stories to promote awareness of the Program and the many uses of Earth data. We aim to emphasize more human interest- focused stories, as well as continue to foster connections between Applied Sciences and other areas of ESD.

EXPLOIT UNIQUE ASSETS

The Applied Sciences Program community is broad — and also a unique asset to the Program. With passionate scientists, local stakeholders, and global partners using Earth data to solve problems around the world, the Program's story is a compelling one to tell.

Over the past year, the communications team has worked to identify, establish, and maintain relationships with members of this community. These relationships have helped us surface story leads and embedded us deeper in the Program.



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In 2021, we've:

- Continued monthly communications meetings with each program area, which in addition to discussion of the communication team's efforts, also facilitates discussion and collaboration within the program area.
- Staffed various virtual NASA events and helped maintain connections during the pandemic, including:
 - ° American Geophysical Union's storytelling event Ignite@AGU
- ° Earth Science Applications Week
- ° Program area annual meetings
- Used a variety of communication tools to vary the format and focus of storytelling efforts.
- ° Focused on telling stories from the point of view of a data user.
- Promoted Space for U.S., connecting with NASA OIIR and Legislative Affairs to see where we can fill gaps and tailor content.
- ^o Employed communication team's established relationships across NASA to promote Program work on various social media platforms, resulting in more than 30 Facebook posts, more than 80 tweets, and a number of Instagram, Tumblr and Linked In posts. A selected list of NASA and non-NASA social media accounts that shared our content includes:

NASA: NASA Earth, NASA Earthdata, NASA Landsat, NASA Atmosphere, NASA Internships, Women@NASA, NASA Climate Change, NASA Watch, NASA es, NASA Goddard, Dr. Thomas Zurbuchen, BZGeo (Emil Cherrington), SERVIR Global, NASA Marshall, NASA Globe, NASA Harvest, Bradley Doorn, and Sandra Cauffman

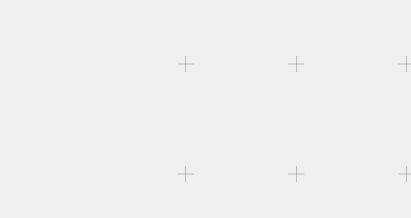
External: MIT Media Lab, Conservación Amazónica - ACCA, George Mason University, Minnesota Agriculture Department, University of South Florida, CU Boulder Engineering

These relationships are a facet of another unique asset at our disposal the Applied Sciences Program identity. The "brand" uses plain language, spellbinding visuals, and stories about real people. By consistently applying the Program brand across everything we do, the communications team creates a seamless, welcoming experience for audiences. People are one of the Program's strongest assets. Throughout this summary, we've reiterated the importance of human-centered stories, which is recognized in the Communications Strategy. These stories, the people they feature, and the way we write articles are all unique assets we use daily. The communications team harnesses Program members' notoriety by connecting their stories to the Program brand, tapping into new audiences that may not have engaged with the Program before. This can be seen by the fact that users are searching for specific people by name and clicking through to the Applied Sciences website, growing the awareness of the connection between NASA and people.

Examples of specific names found within the website's organic search data include:

- Alberto Ruban Saravia Guzman: <u>From Translation to Evapotranspiration</u> <u>with Alberto Guzman</u>
- Barri' Ragland-English: Intern Spotlight: Barri' Ragland-English
- Helena Chapman: Identifying Opportunities with Helena Chapman
- John Haynes: <u>Celebrating Sue: Health and Air Quality Colleagues Retires</u> from Applied Sciences

In 2022, we see an opportunity to further develop key relationships, increase awareness of the Program, and grow our repository of human-centered profiles.



MAKE EARTH SCIENCE FOR EVERYONE

From monitoring air quality after volcanic eruptions to understanding how Earth data helps make a more sustainable cup of coffee, we write stories that appeal to a large general audience — an audience that may not realize they're reading a NASA story until they end up on the appliedsciences.nasa.gov site.

When searching the web, many users include "NASA" in their search queries. Queries like "nasa applied sciences," "nasa arset training," and "nasa applied remote sensing training" are just a few examples of the many that bring the Applied Sciences website to the top of search results pages. It is crucial for the site to show up in NASA-related searches — something that the site is successfully doing.

More importantly, many users get to the site when searching unbranded keywords, which indicate unfamiliarity with NASA Earth's work until seeing NASA appear in search results. Examples of unbranded keywords driving these new audiences include:

- "introduction to remote sensing," "kentucky tornado path map," "st vincent volcano 2021," and even Spanish keywords like "clasificacion supervisada."
- Top search terms/phrases of 2021 that included the word "NASA" were "nasa arset," "arset nasa," and "nasa applied sciences."

Clearly, the site is attracting both a scientific audience that is aware of NASA and one that is newly acquainted with the Program.

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Additionally, while we continue to leverage NASA's network of social media accounts to amplify stories and garner page views, the growth in content and topics are now securing these new and recurring visitors organically through keyword searches. For example:

- <u>Satellites Map Tornado Damage in Kentucky</u> received 94.51% of its 5,012 pageviews from Google/organic search.
- <u>Remembering Mt. Pinatubo</u> received 38.38% of its 1,791 pageviews from Google/organic search.

This trend demonstrates that the site has reached the point where it can stand on its own and let the content sing. Additional marketing and communications outreach efforts will certainly continue to boost awareness, but it is clear that the communications team has been successful in building bridges between the Applied Sciences Program and the many audiences we hope to reach.

MATURE COMMUNICATIONS PLATFORM

In 2021, we used the Communications Strategy to guide our approach for every activity and opportunity to amplify awareness and understanding about the Program.

SIGNATURE STORIES CAMPAIGN

This effort focuses on having each program area program manager select one story as a premier example of their program, ensuring that we have a well-developed and vetted story that anyone can confidently use to describe the actions of the Program. Each Signature Story will be used as the jumping off point for a variety of products, including a video, written story, and presentation, and as the topic for each program manager's storytelling effort.

In 2021, we developed Signature Stories for the Capacity Building and Water Resources program areas. This increased focus on a story decided by each program area's program manager will continue as a long-term strategy in our storytelling effort.

ORAL STORYTELLING

Building upon the 2020 Story Slam effort, in 2021 we focused on increasing each program manager's ability to tell a story that followed a distinct three-act structure, focused on the experiences of a data user, and served as a premier example of the work the program area supports. In 2020, the program managers wrote and performed a story. In 2021, as part of expanding their skills, we focused on having them perform a story written by someone else. Another change in 2021 was that instead of holding a formal Story Slam event during which each program manager performed their story to an audience, we focused on working with the program managers to embed the oral storytelling effort into their ongoing presentations.

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We achieved this oral storytelling effort goal of two stories for three program managers, representing the four program areas of Water Resources, Agriculture, Capacity Building, and Health & Air Quality. We held off on the oral storytelling effort within the Ecological Forecasting and Disasters program areas due to staff changes in those programs.

PROGRAM-WIDE EMAIL NEWSLETTER STRATEGY

At every internal and external Program communication touch point, we want to ensure brand consistency. Program newsletters are one such opportunity. In 2021, we continued working with our program areas to ensure that their newsletters were optimized for their audience.

TIMING

As we identified more stories and enhanced our storytelling training efforts, we increasingly found that factors outside our control affected our deadlines. For example, scientists in the field would understandably need weeks of time to review materials. Looking ahead, having a robust pipeline of stories will allow us to hit pause when needed and turn our attention to other articles on different subjects. We are also clear about deadlines and expectations of our subjects and reviewers so they can take their work schedules into account

MEDIA OUTREACH

In 2021, the ability to conduct media pitching and outreach was officially allowed at the ESD level. The communications team is now included on various media requests that come in at the SMD level and can fulfill those requests with Applied Sciences Program staff, concurrent with the awareness of ESD communications leadership. In addition to the ability to answer media requests, the communications team is also now encouraged to develop media contacts and promote Applied Sciences efforts. A small, initial effort into media outreach as part of the Food + Drink communications campaign resulted in a few media inquiries and bolstered our ongoing efforts to continue to embed media outreach as an integral part of a communications plan for a particular story.

While the monthly communications meetings with each program area have become a clear success, developing program-specific communications plans has been a challenge. This is predominantly due to the demanding schedules of the program managers and their associates. We have continued with our efforts and have seen success in moving forward.

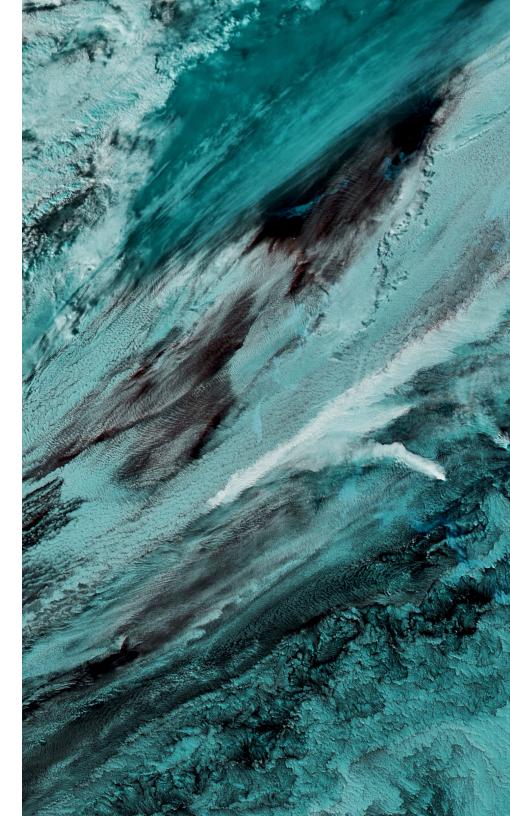
In 2022, we hope to apply lessons learned and take our storytelling and communications efforts to the next level with the following activities:



WEBSITE AND ENHANCEMENTS

In 2021, we accomplished significant breakthroughs for the Applied Sciences website. Building on the six program areas, we added multiple layers to the site, from the creation of the ARSET page under the Capacity Building program area to creating stand-alone pages such as Sustainable Development Goals, Risk & Resilience, and Group on Earth Observations. In addition to scaling the site with more content, the development team made major improvements to gain traction and followers to the site by adding features such as a share button on all pages. We capped off the year by upgrading the Applied Sciences site's content management system from Drupal 8 to Drupal 9. This upgrade gives us new features and significantly upgrades the security of the website, which protects the site from vulnerabilities.

To build on the momentum we've seen with appliedsciences.nasa.gov in 2021, we hope to continue focusing our efforts on this owned space by migrating additional Applied Sciences content to the domain, first with the DEVELOP site. We also hope to develop a baseline from our 2021 findings to continue assessing future communications products, as well as creating program area dashboards in the Google Analytics platform to guide teams in content creation.





2022 will be a year of change for NASA's Earth science communications, and thus there will be significant changes for Applied Sciences communications. The head of ESD has established a working group to review all ESD communications efforts, and that group has recommended a completely new structure for communications at the ESD level. This effort will be led by three new positions at the ESD leadership level, and they are charged with an overhaul of communications efforts for the Division. In addition, NASA's Office of Communications will release agency-wide communications goals in 2022 that any ESD and thus Applied Sciences communications efforts will need to support.

Given that Applied Sciences was one of the first communications teams to develop and follow a program-wide strategic communication plan, it is a positive sign that the ESD and Agency communications teams are now doing the same. In 2022, the Applied Sciences communications team looks forward to strengthening its successful, ongoing communications efforts, and to building on that success to continue to best represent the crucial work of the program.

LET'S GET TO WORK