**Deep Ocean Research Program**

**National Geographic Labs**

**Project Overview**

Updated: 4/10/2019

**The Deep Ocean Research Program consists of two products, the Deep Sea Index and the Deep Ocean Drop-cam.**

**Platform: Deep Ocean “Drop-cam”. Known as Drop-cam henceforth.**

**17 in Drop-cam**

**13 in Drop-cam**

An animation of the Drop-cam being deployed can be found [here](https://vimeo.com/238944280/e0f4d67af1).

Cleared sample video from the Drop-cam can be found [here](https://vimeo.com/329863940/b3dda52cdf).

**Media**

* Sharkcano [video](https://video.nationalgeographic.com/video/expedition-raw/0000014e-6f82-d37e-a7de-ef83793b0000)
* Marianas Trench [article](https://news.nationalgeographic.com/news/2011/10/111026-deepest-mariana-trench-giant-amoebas-science-oceans/)
* Gulper shark in Chagos Archipelago [video](https://video.nationalgeographic.com/video/news/0000014c-c919-df45-a76e-df79d0680000)
* Greenland shark [article](https://news.nationalgeographic.com/news/2014/12/141216-greenland-shark-video-franz-josef-land-exploration-science/)
* Patterns in Bathyal Demersal Biodiversity and Community Composition Around Archipelagos in the Tropical Eastern Pacific [manuscript](https://www.frontiersin.org/articles/10.3389/fmars.2019.00388/full)
* DAN Member Profile: Jonatha Giddens - DSRP art outreach [article](http://www.alertdiver.com/Jonatha-Giddens)

**Expeditions:**

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| **Expedition ID** | **Expedition** | **Institutions Involved** | **Start (YYYYMM)** | **Expedition Vessel** | **Collaborator Cruise ID** |
| DOEX0001 | Puerto Rico | NGET | 200903 |  |  |
| DOEX0002 | Porcupine Abyssal Plane | BAS | 201005 |  |  |
| DOEX0003 | Sala y Gomez | NGPS | 201102 |  |  |
| DOEX0004 | Marianas | NGET | 201108 |  |  |
| DOEX0005 | Pitcairn | NGPS | 201203 |  |  |
| DOEX0006 | Tonga Trench | SIO | 201208 |  |  |
| DOEX0007 | Desventuradas | NGPS | 201302 |  |  |
| DOEX0008 | Franz Josef Land | NGPS | 201308 |  |  |
| DOEX0009 | Mozambique | NGPS | 201404 |  |  |
| DOEX0010 | Palmyra | UCSB | 201405 |  |  |
| DOEX0011 | Puerto Rico | NGET | 201407 |  |  |
| DOEX0012 | Palau | NGPS | 201409 |  |  |
| DOEX0013 | Rapa | NGPS | 201410 |  |  |
| DOEX0014 | Chagos | UWA | 201501 |  |  |
| DOEX0015 | Solomons | URI | 201501 |  |  |
| DOEX0016 | Seychelles | NGPS | 201503 |  |  |
| DOEX0017 | Selvagens | NGPS | 201509 |  |  |
| DOEX0018 | Galapagos | NGPS | 201512 |  |  |
| DOEX0019 | Clipperton | NGPS | 201603 |  |  |
| DOEX0020 | Revillagigedo | NGPS | 201603 |  |  |
| DOEX0021 | Niue | NGPS | 201609 |  |  |
| DOEX0022 | Tristan | NGPS | 201701 |  |  |
| DOEX0023 | Tierra del Fuego, Chile | NGPS | 201702 |  |  |
| DOEX0024 | Juan Fernandez | NGPS | 201703 |  |  |
| DOEX0025 | Ascension | NGPS | 201706 | RRS James Clark Ross |  |
| DOEX0026 | Yaganes | NGPS | 201803 |  |  |
| DOEX0027 | Malpelo | NGPS | 201804 |  |  |
| DOEX0028 | Azores | NGPS | 201805 |  |  |
| DOEX0029 | Islas Marias | NGPS | 201807 |  |  |
| DOEX0030 | Trinidad | UWI | 201808 | Multiple |  |
| DOEX0031 | Clarion-Clipperton Fracture Zone (CCFZ) | OET | 201810 | E/V Nautilus |  |
| DOEX0032 | Monterey Canyon | OET, NOAA | 210810 | E/V Nautilus |  |
| DOEX0033 | Birdwood Bank | NGPS | 201811 | RV Austral |  |
| DOEX0034 | Antarctica | NGPS | 201901 |  |  |
| DOEX0035 | Seychelles | Project Nekton | 201903 |  |  |
| DOEX0036 | Costa Rica | NGPS | 201903 |  |  |
| DOEX0037 | Bermuda | BIOS | 201903 |  |  |
| DOEX0038 | Pacific Seamounts (between San Fran and Honolulu) | OET |  | E/V Nautilus | NA109 |
| DOEX0039 | Palmyra Atoll, Kingman Reef, and Jarvis Island | OET |  | E/V Nautilus | NA110 |
| DOEX0040 | National Marine Sanctuary of American Samoa | OET |  | E/V Nautilus | NA112 |
| DOEX0041 |  | OET |  | E/V Nautilus | NA113 |
| DOEX0042 | Baker and Howland Islands and Johnston Atoll | OET |  | E/V Nautilus | NA114 |
| DOEX0043 | Clarion Clipperton Fracture Zone | OET |  | E/V Nautilus | NA115 |
| DOEX0044 | Greater Farallones and Cordell Bank National Marine Sanctuaries | OET |  | E/V Nautilus | NA116 |
| DOEX0045 | Monterey Bay National Marine Sanctuary | OET |  | E/V Nautilus | NA117 |
| DOEX0046 | Alaska | Lindblad |  | R/V Quest | QT101921 |
| DOEX0047 | Alaska | Lindblad |  | R/V Quest | QT101922 |
| DOEX0048 | Alaska | Lindblad |  | R/V Quest | QT101923 |
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**Scientific Publications:**

1. Friedlander AM, Caselle JE, Ballesteros E, Brown EK, Turchik A, Sala E (2014) The Real Bounty: Marine Biodiversity in the Pitcairn Islands. PLoS ONE 9(6): e100142. <https://doi.org/10.1371/journal.pone.0100142>
2. Chernova NV, Friedlander AM, Turchik A, Sala E. 2014. Franz Josef Land: extreme northern outpost for Arctic fishes. PeerJ 2:e692 <https://doi.org/10.7717/peerj.692>
3. A. J. Turchik, E. J. Berkenpas, B. S. Henning and C. M. Shepard, "The Deep Ocean Dropcam: A highly deployable benthic survey tool," OCEANS 2015 - MTS/IEEE Washington, Washington, DC, 2015, pp. 1-8. <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7401978&isnumber=7401802>
4. Caselle JE, Hamilton SL, Davis K, Thompson CDH, Turchik A, Jenkinson R, et al. (2018) First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: from kelp forests to the deep sea. PLoS ONE 13(3): e0195167. <https://doi.org/10.1371/journal.pone.0195167>
5. Caselle J.E., Hamilton S.L., Davis K., Bester M., Wege M., Thompson C., Turchik A., Jenkinson R., Simpson D., Mayorga J., Rose P., Fay M., Myers D., Glass J., Glass T., Green R., Repetto J., Swain G., Herian K., Lavarello I., Hall J., Schofield A., Dews S., McAloney D., and Sala E. 2017. Ecosystem Assessment of the Tristan Da Cunha Islands. National Geographic Pristine Seas, Royal Society for Protection of Birds and Tristan da Cunha Government. Expedition Report. July 2017. <https://media.nationalgeographic.org/assets/file/PristineSeasTristandaCunhaScientificReport.pdf>
6. Friedlander AM, Golbuu Y, Caselle JE, Ballesteros E, Letessier TB, Meeuwig JJ, Gouezo M, Olsudong D, Turchik A, Sala E. 2014. Marine biodiversity and protected areas in Palau: Scientific report to the government of the Republic of Palau. <https://media.nationalgeographic.org/assets/file/PristineSeasPalauScientificReport.pdf>
7. Single Cells within the Puerto Rico Trench Suggest Hadal Adaptation of Microbial Lineages Rosa León-Zayas, Mark Novotny, Sheila Podell, Charles M. Shepard, Eric Berkenpas, SergeyNikolenko, Pavel Pevzner, Roger S. Lasken, Douglas H. Bartlett Appl. Environ. Microbiol. Nov 2015, 81 (24) 8265-8276; <https://aem.asm.org/content/81/24/8265.short>
8. E. E. Easton, J. Sellanes, C. F. Gaymer, N. Morales, M. Gorny, and E. Berkenpas, “Diversity of deep-sea fishes of the Easter Island Ecoregion,” Deep Sea Research Part II: Topical Studies in Oceanography, vol. 137, pp. 78–88, 2017. <https://www.sciencedirect.com/science/article/pii/S0967064516303903>
9. B. Phillips, M. Dunbabin, B. Henning, C. Howell, A. Deciccio, A. Flinders, K. Kelley, J. Scott, S. Albert, S. Carey, R. Tsadok, and A. Grinham, “Exploring the ‘Sharkcano’: Biogeochemical Observations of the Kavachi Submarine Volcano (Solomon Islands),” Oceanography, vol. 29, no. 4, pp. 160–169, 2016. <https://www.jstor.org/stable/24862291>
10. Friedlander AM, Ballesteros E, Bell TW, Giddens J, Henning B, Hüne M, et al. (2018) Marine biodiversity at the end of the world: Cape Horn and Diego Ramírez islands. PLoS ONE 13(1): e0189930. <https://doi.org/10.1371/journal.pone.0189930>

**Team Members:**

**Alan Turchik**

Alan Turchik is the Product Development Manager for the Exploration Technology Lab at the National Geographic Society. He is in charge of scaling systems that the team has created, such as the Dropcam, a deep ocean benthic exploration tool. He spent his first six years with the team as a mechanical engineer, designing and testing sensor systems, and deploying these systems all over the world

**Jonatha Giddens**

**Denley Delaney**

**Michelle Rodriguez**

Drop-cam Technical Specifications:

Drop-cams are tetherless, portable devices that can be deployed off the side of a boat. They sink to the seafloor to take sensor readings and record video of deep ocean biodiversity. After releasing their anchor, they float back to the surface automatically.

* 4K video capture
* Can be easily be operated by a team of two.
* Data management: Depth, time, and pressure