

2018年3月8日
国立研究開発法人海洋研究開発機構
国立大学法人東京大学生産技術研究所
国立大学法人九州工業大学
国立研究開発法人海上・港湾・航空技術研究所
三井造船株式会社
日本海洋事業株式会社
株式会社 KDDI 総合研究所
ヤマハ発動機株式会社



**日本発の海底探査チーム「Team KUROSHIO」
Shell Ocean Discovery XPRIZE「Round2 実海域競技」(決勝) 進出決定**

【概要】

国立研究開発法人海洋研究開発機構、国立大学法人東京大学生産技術研究所、国立大学法人九州工業大学、国立研究開発法人海上・港湾・航空技術研究所、三井造船株式会社、日本海洋事業株式会社、株式会社 KDDI 総合研究所及びヤマハ発動機株式会社からなる「Team KUROSHIO」は、海中ロボット等を用いて、超広域高速海底マッピングの実現を目標とする海底探査技術の国際コンペティション「Shell Ocean Discovery XPRIZE」に挑戦しています。

この Shell Ocean Discovery XPRIZE は、「技術提案書審査」、「Round1 技術評価試験」及び「Round2 実海域競技」という3つの関門で構成されており、「Team KUROSHIO」は2017年2月に「技術提案書審査」を通過、2018年1月に「Round1 技術評価試験」が実施されました。

2018年3月7日23時(JST)、XPRIZE財団より「Round1 技術評価試験」の結果発表が行われ、「Team KUROSHIO」は2018年10月に行われる Shell Ocean Discovery XPRIZE の決勝である「Round2 実海域競技」へと進出することになりましたので、お知らせいたします。なお、「Round2 実海域競技」へは「Team KUROSHIO」を含む9チームが進出いたします。

※参考：2017年3月7日付 XPRIZE 財団プレスリリース
<https://oceandiscovery.xprize.org/press-release/nine-teams-advance-final-round-of-7m-shell-ocean-discovery-xprize>

また、本件に関して、2018年3月15日09:45~18:00(GMT)に英国ロンドンで開催される国際会議「Oceanology International」の「Catch the Next Wave」セッションにて、XPRIZE財

団による授賞式が行われます。

Team KUROSHIO は、「Round2 実海域競技」に向けて着実に準備を進めてまいる所存です。今後とも Team KUROSHIO へのご声援の程、何卒よろしくお願い申し上げます。

【XPRIZE について】

1995 年に設立された米国の非営利組織である「XPRIZE 財団」によって運営され、世界の大きな課題を解決することを目的とした世界コンペティション。「学習」「探査」「エネルギーと環境」「世界規模の開発」「生命科学」の 5 分野をテーマとする。最近では、民間による最初の月面無人探査を競う「Google Lunar XPRIZE」が話題となった。

【Shell Ocean Discovery XPRIZE について】

○目標

- ・500km²の海底マッピング（解像度：水平 5 m、垂直 50cm 以上）の実現

○主なルール

- ・支援母船を用いない等、海域に人が立ち入らない（海域へのロボットの展開・回収含む）
- ・機材の持込みは 40feet コンテナ 1 つまで
- ・調査後 48 時間以内での海底地形図の作成及び提出

○賞金総額

- ・700 万ドル（約 8 億円）

○コンペティション内容

Shell Ocean Discovery XPRIZE では下記の 2 ラウンドで海底マッピング技術を競います。

①Round1 技術評価試験（2018 年 1 月実施）

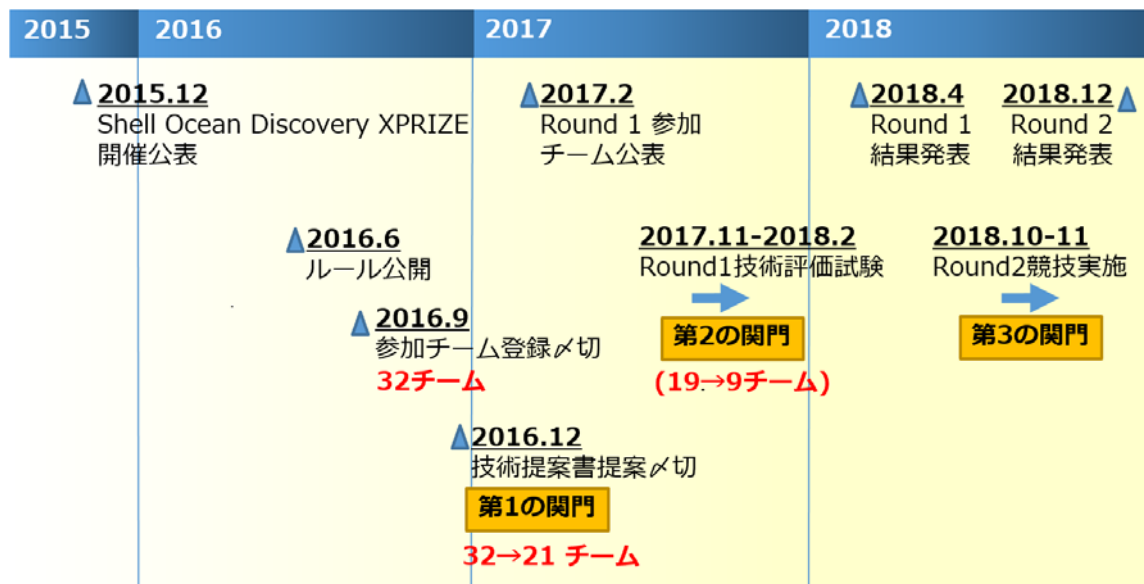
- ・高速かつ広域での海底探査に必要な 11 項目の技術に関する評価試験

②Round2 実海域競技（2018 年 10-11 月開催）

- ・水深 4,000m で 24 時間以内に最低 250km²以上の海底マップ構築
- ・海底ターゲットの写真撮影（10 枚）

○Shell Ocean Discovery XPRIZE のスケジュール

Shell Ocean Discovery XPRIZE はおよそ 3 年間にわたるコンペティションです（図参照）。現在は Round2 実海域競技に向けて、機器の改造及び信頼性向上のための技術開発等を行っています。



お問い合わせ先

Team KUROSHIO 広報担当 杉山・大久保

電話: 046-867-9250

E-mail: kuroshiopr(at)jamstec.go.jp

NINE TEAMS ADVANCE TO FINAL ROUND OF THE \$7M SHELL OCEAN DISCOVERY XPRIZE

Teams from Seven Countries Move Forward in Competition to Accelerate Rapid and Unmanned Ocean Exploration and Discovery

LOS ANGELES (March 7, 2018) — **XPRIZE**, the world’s leader in designing and managing incentive competitions to solve humanity’s grand challenges, today announced nine finalist teams advancing in the **\$7M Shell Ocean Discovery XPRIZE**, a three-year global competition challenging teams to advance ocean technologies for rapid, unmanned and high-resolution ocean exploration.

XPRIZE will award each finalist an equal share of a \$1 million milestone prize purse for the cutting-edge ocean mapping and imaging technologies they have developed. Their innovative approaches include artificial intelligence, aerial drones, underwater robotic swarms, lasers, and autonomous surface and underwater vehicles.

The nine finalist teams will be formally recognized and awarded at Oceanology International’s **Catch the Next Wave** conference in London on March 15, during a closing keynote by Dr. Jyotika Virmani, Ph.D., prize lead and senior director of Planet and Environment at XPRIZE.

“Round 1 testing for the Shell Ocean Discovery XPRIZE allowed the judges to see, for the first time, tangible prototypes of the innovative and diverse approaches that will revolutionize our access to the deep ocean and finally unveil the mysteries that lie deep below the sea-surface,” said Dr. Virmani. “As we dive into Round 2, we are looking forward to testing the finalists’ technologies in a rigorous real-world world situation that will demonstrate their ability to rapidly map the ocean floor at 4000m depths—that’s deeper than the Grand Canyon!”

Shell Ocean Discovery XPRIZE finalists were chosen from a field of 19 semifinalists by an independent **judging panel** of seven experts. **Teams** advancing to the final round include:

- **ARGGONAUTS** (Karlsruhe, Germany) – Led by Gunnar Brink, the team is creating two swarms: one swarm in the deep-sea and one on the ocean surface. Five or more intelligent deep-sea robot drones will be accompanied and supported by the same number of autonomous catamarans for geo-referencing, retrieval and transport.
- **Blue Devil Ocean Engineering – Duke University** (Durham, NC, United States) – Led by Martin Brooke, the Duke University team is working with heavy lift aerial drones that drop retrievable diving SONAR pods.
- **CFIS** (Arnex-sur-Nyon, Switzerland) – Led by Toby Jackson, the team is building a fleet of AUVs to map and image the ocean floor using lasers.
- **GEBCO-NF Alumni** (USA, Global) – Led by GEBCO-Nippon Foundation alumni, the 12-nation team is integrating existing technologies and ocean-mapping experience with an innovative unmanned surface vessel to contribute towards comprehensive mapping of the ocean floor by 2030.
- **KUROSHIO** (Yokosuka, Japan) – Led by Takeshi Nakatani, the team is integrating technologies owned by Japanese universities, institutes and companies for a unique collaborative approach centered around AUVs.
- **PISCES** (Portugal) – Led by Nuno Cruz, the team is aggregating Portuguese technologies developed at INESC TEC (Porto) and CINTAL (Algarve) to create the PISCES system that leverages cooperative robotics.
- **Team Tao** (Newcastle, United Kingdom) – Led by Dale Wakeham, the team is developing an autonomous swarm system for rapid surface to deep ocean exploration.
- **Texas A&M Ocean Engineering** (College Station, TX, United States) – Led by students, and working in partnership with industry and successful alumni of Texas A&M, the university team is using drone ships and AUVs to explore remote ocean habitats.
- **Virginia DEEP-X** (Virginia, United States) – Led by Dan Stilwell, the team is developing small and low-cost underwater vehicles that operate in coordinated teams.

“Improving humanity’s ability to gather, visualize and interpret deep ocean data using new digital techniques while collaborating with some of the brightest minds is exciting. These nine finalist teams are a testament to the strength of open innovation through teamwork,” said Marc Gerrits, executive vice president of Exploration, Shell. “We believe that innovation and collaboration are fundamental if we are to solve some of the biggest challenges facing society today.”

To advance to the final round, the semifinalist teams had to pass a Round 1 Technology Readiness Test, which comprised of site visits to each team by XPRIZE staff and judges. The teams were tested against 11 measurement criteria to show their technological solutions were capable of meeting the operational requirements necessary for rapid, unmanned, and high-resolution ocean mapping and discovery. Esri, the global leader in geographic information system (GIS) software and geodatabase management, donated its award-winning ArcGIS Online platform for the teams to use, enabling the Ocean Discovery XPRIZE competitors to submit their maps to the judges via Esri ArcGIS Online.

The final Round 2 testing will take place during October and November of 2018. Finalists will have an opportunity to demonstrate their technologies in the real-world in a deep-sea environment, where they will have to map the sea floor at 4000m depth and bring back 10 images from the ocean. Fugro, an industry leader in ocean mapping and another partner to the Ocean Discovery XPRIZE, will assist XPRIZE in providing the competition’s high-resolution baseline bathymetry data that are needed in judging team mapping results.

A preliminary test of the \$1 million NOAA Bonus Prize will take place during Spring 2018. This will give all semifinalist teams who have opted to participate a platform to test their technologies. The winners of the NOAA Bonus Prize, which incentivizes the development of technologies that can detect a chemical or biological signal underwater and autonomously track it to its source, will be determined during Round 2 testing in October and November 2018.

The Shell Ocean Discovery XPRIZE is part of the XPRIZE Ocean Initiative—a commitment made to launch five multimillion dollar prizes to address critical ocean challenges and make the oceans healthy, valued, and understood. XPRIZE awarded the Wendy Schmidt Oil Cleanup XCHALLENGE in 2011 and the Wendy Schmidt Ocean Health XPRIZE in July 2015.

For the latest information about the competition structure, important dates and the **finalist teams**, please visit oceansdiscovery.xprize.org.

About XPRIZE

XPRIZE, a 501(c)(3) nonprofit, is the global leader in designing and implementing innovative competition models to solve the world's grandest challenges. XPRIZE utilizes a unique combination of gamification, crowd-sourcing, incentive prize theory, and exponential technologies as a formula to make 10x (vs. 10%) impact in the grand challenge domains facing our world. XPRIZE's philosophy is that—under the right circumstances—igniting rapid experimentation from a variety of diverse lenses is the most efficient and effective method to driving exponential impact and solutions to grand challenges. Active competitions include the \$30M Google Lunar XPRIZE, \$20M NRG COSIA Carbon XPRIZE, the \$15M Global Learning XPRIZE, the \$7M Shell Ocean Discovery XPRIZE, the \$7M Barbara Bush Foundation Adult Literacy XPRIZE, the \$5M IBM Watson AI XPRIZE, the \$1.75M Water Abundance XPRIZE and the \$1M Anu and Naveen Jain Women's Safety XPRIZE. For more information, visit www.xprize.org.

About Royal Dutch Shell

Shell has been a technology pioneer for more than 100 years, and has come up with many industry-transforming "firsts" to deliver energy to its customers and partners need. Since 2007, Shell has spent more than \$1 billion annually on research and development. In 2014, our research and development expenditures were \$1.2 billion. Shell's technical and engineering staff number more than 43,000 people.

Shell companies have operations in more than 70 countries and territories with businesses including oil and gas exploration and production; production and marketing of liquefied natural gas and gas to liquids; manufacturing, marketing, and shipping of oil products and chemicals and renewable energy projects. Royal Dutch Shell plc is incorporated in England and Wales, has its headquarters in The Hague, and is listed on the London, Amsterdam, and New York stock exchanges. For further information, visit www.shell.com.

About National Oceanic and Atmospheric Administration (NOAA)

The National Oceanic and Atmospheric Administration (NOAA) is a science-based federal agency within the Department of Commerce with regulatory, operational, and information service responsibilities with a presence in every state and U.S. territories. NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage coastal and marine resources. For more information, visit www.noaa.gov.

Media Contact:

Jackie Wei

310.741.4918

jackie.wei@xprize.org