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Observatories on 5 continents to scan skies for extraterrestrial life

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The scientific search for extraterrestrial intelligence went global this weekend as observatories in 13 nations on five continents trained their telescopes on several promising star systems.

While they don't expect their one-day joint effort will find the kind of intentionally produced signal from afar that enthusiasts have been seeking for decades, participants say the undertaking illustrates just how far the search for extraterrestrial intelligence, or SETI, has come.

Frank Drake made the world's first such observations at the Green Bank radio telescope in West Virginia 50 years ago, listening on a single-channel receiver that took in radio waves one frequency at a time. Today's technology allows scientists to receive radio signals at millions of different frequencies per minute, in addition to searching for laser-like bursts of light communication using optical telescopes.

The international star-viewing extravaganza, the first of its kind, comes at a time of fast-paced discovery in the science of exoplanets, bodies that orbit suns beyond our solar system.

Last month alone brought the announcement of the first Earth-sized planet found that appeared to be potentially habitable, as well as a study from top scientists in the field which concluded that the number of Earth-sized planets in the Milky Way alone could be counted in the tens of billions.

Suddenly, the prospects for finding planets that might have complex life and environments to support it appear to have brightened. Scientists well in the future may still conclude Earth is the only planet that harbors life, but discoveries in the last few years seem to increase the odds that we are not alone after all.

"This is a real coming of age for exoplanets and for SETI," said Drake, who remains active in the field and whose founding of the science of SETI five decades ago was being commemorated as well over the weekend.

"It shows SETI has gone truly international, and it's happening when our knowledge about planets beyond Earth is just exploding," he said. "We made predictions based on weak evidence 50 years ago and now a lot of that is, very satisfyingly, getting hard scientific support."

Practical matter

Doug Vakoch, a SETI Institute scientist who helped organize the effort, said the coordinated

observing is probably most important for its practical side.

"What this weekend really does is begin the process of making it possible to track a possible SETI signal around the globe," he said. "If a signal is detected, it has to be confirmed and followed, and now we're setting up a network to do that."

The participating observatories are in Italy, India, Argentina, Australia, France, Germany, the United Kingdom, South Korea, Sweden, the Netherlands, and several in the United States and Japan. Officials at the largest radio telescope in the world, Arecibo, will also participate.

The idea for the unprecedented global observation was initiated by Shin-ya Narusawa, director of Nishi-Harima Astronomical Observatory in western Japan - one of the largest observatories in that country. Narusawa organized a many-centered SETI observation in Japan last fall, and was invited to present his results at the biannual NASA-sponsored astrobiology conference held this spring.

There, Narusawa met SETI Institute President Jill Tarter, he proposed a bilateral and then international observation, and before long 19 observatories and research centers in 13 nations had joined in.

The telescopes will be trained in a coordinated way on a number of star systems, including Tau Ceti and Epsilon Eridani - the nearest systems in the Northern Hemisphere and the two that Drake observed 50 years ago in what he called Project Ozma, a reference to the princess in "The Wizard of Oz." (Keeping with the theme, the weekend's effort is called Project Dorothy for the heroine of the book.)

"These two stars were the best SETI targets a half-century ago," Narusawa said. "They remain the symbol of the project Ozma and so are two of the target stars for Project Dorothy."

But with more than 500 exoplanets identified in the past 15 years and 700 more awaiting confirmation, he said, the observation can be far more directed and ambitious. Some will include stellar systems that have planets which appear to be located the right distance from their suns to support life, he said.

'Earth is tiny'

While Narusawa is a scientist, he said he had another, non-scientific reason for organizing the global event. "When we do this worldwide observation," he said in an e-mail from Japan, "citizens remember the Earth is tiny and we are the same earthlings."

The SETI enterprise has, from the start, had many skeptics - scientists who say it involves looking for a needle in a haystack, and at times legislators who have been outraged that for a short time the effort received federal funding. That came to a quick end in 1993 and SETI has relied on private funding since, although the institute was allowed to compete again for federal grants late in the Bush administration.

Its biggest coup has been to win almost $30 million from Microsoft co-founder Paul Allen to build a large array of radio telescopes in the mountains of northern California. The Hat Creek array and its 42 radio telescopes are jointly run by the SETI Institute and the University of California at Berkeley, and are used for SETI observing and more traditional radio astronomy. The facility was one of the 19 to participate in Project Dorothy.

With new scientific discoveries announced regularly that support key assumptions that Drake and SETI made decades ago, and now with a global network of astronomers who agree that SETI constitutes solid and important science, Drake said he has never been more optimistic about ultimately finding intelligent life beyond Earth. Although 50 years of SETI observing has yet to come up with a signal, he said, the percentage of stars actually studied is minuscule.

He also said it's time for people to consider an initially unsettling understanding that flows from the work being done by exoplanet hunters and by SETI - that distant planets are as much a part of nature as Earth is.

"Who knows what kind of life we'll ultimately find out there?" Drake said. "It won't be like our life because it will have evolved in response to different kinds of forces. But there's no doubt about it - the underlying chemistry will be the same and that means it will be basically an extension of what we have here."