

MUSIC

Composer Lei Liang and Scripps oceanographers take deep dive in Arctic to create game-changing 'Six Seasons'



Composer Lei Liang (left) and oceanographer Joshua Jones have forged a unique creative partnership for Liang's new composition, "Six Seasons." (Eduardo Contreras / The San Diego Union-Tribune)

The acclaimed composer's new work dizzying, high-tech musical collaboration
Jacques Cousteau and Jules Verne

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BY GEORGE VARGA

OCT. 9, 2022 6:01 AM PT



Groundbreaking composer Lei Liang has never been to the Arctic or to its Chukchi Sea, which sits between Alaska and Siberia. But that imposing 240,000-square-mile body of water's beneath-the-surface sounds not only inspired his provocative new work, "Six Seasons," they are an intrinsic and very audible part of it.

“We recorded amazing marine animals: bearded seals, beluga whales and bowhead whales. I call them the ‘Three B’s,’ in relation to Bach, Beethoven and Brahms!” said University of California San Diego professor Liang, the 2020 recipient of the prestigious Grawemeyer Award for Music Composition.



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Dec. 2, 2019

“And we recorded the sound of ice in various formations, and at different temperatures and conditions, along with calm seas, raging storms and everything in between. Then, we carefully and meticulously studied the data recorded in the Arctic Ocean and restored the sound to its pristine condition, so that we truly hear and appreciate the complexity and beauty of our own environment.”

If this suggests Liang's collaborators from the Scripps Institution of Oceanography's Whale Acoustics Laboratory were perched precariously on a boat, holding microphones in sub-freezing weather to record what he calls his "living score," guess again.

“We have developed an underwater recording its own,” said Joshua Jones, a post-doctoral sc

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He and Scripps professor of oceanography John Hildebrand have collaborated closely with Liang in making “Six Seasons” a reality. So has UCSD professor Miller Puckett, who created special new computer software to make the Arctic soundscape more clearly defined for listeners and richer in dimension and depth.

Liang’s 50-minute-plus composition also features New York’s acclaimed Mivos Quartet, who commissioned “Six Seasons.” The four string musicians will perform carefully calibrated, real-time improvised responses — which Liang calls “echoes” — to the sounds of the Arctic featured in Liang’s piece.

“Six Seasons” will receive its world premiere Saturday in UCSD’s Conrad Prebys Experimental Theater with performances at 5 and 8 p.m. Six days later, the San Diego Symphony will perform Liang’s 2013 orchestral work, “Bamboo Lights,” as part of its Oct. 21 concert at UC San Diego’s new Epstein Family Amphitheater.



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It takes a village to bring composer Lei Liang's "Six Seasons to a concert stage. Pictured from left are oceanographer Joshua Jones, Liang, audio engineer Gabriel Zalles Ballivian, violinist Myra Hinrichs and stage director Jeremy Olson at the Conrad Prebys Music Center's Experimental Theater at UC San Diego. (Eduardo Contreras / The San Diego Union-Tribune)

Deep dive

“For centuries, we thought of the ocean as something we can engage with comfortably from a distance,” said Liang, 49, a graduate of the New England Conservatory of Music and Harvard University.

“This project with ‘Six Seasons’ allowed us to dive into the ocean and to understand that it is a very noisy, beautiful place. As artists, this is a very interesting time for us to respond to inquiries and to rethink who we are in our environment, our planet. Ultimately, it’s also a

While it won't be visible to the audience, the u. developed and utilized by Scripps is a foundational part of "Six Seasons." It is called

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HARP, short for High-frequency Acoustic Recording Package, and is also known as a hydrophone.

Roughly the size of a side-by-side washing machine and dryer, HARP is, in essence, an underwater recording studio. Make that, an unmanned underwater recording studio designed specifically to capture the sounds of nature from deep beneath the ocean surface for extended periods of time.

For "Six Seasons," Scripps used two of its 40 HARP machines, both of which were lowered onto the seafloor — about 50 kilometers apart — by the U.S. Coast Guard icebreaker Healy.

The two HARPs remained submerged on the ocean bottom for 13 months.

"They recorded continuously, using batteries located in the hard drives of the device," Jones, 47, explained. "HARP is in a pressurized housing, so we can put it 100 meters down on the seafloor.

"One reason the sound recording is done at the sea floor is that the whole region is covered by a thick layer of sea ice for most of the year. Any buoy at the surface would be destroyed by the ice. We deployed the two HARPs in July 2015 and retrieved them in August 2016. They were deployed in the standard way we deploy all our instruments, for the purpose of recording in broadband width underwater."

Happily, there is nothing standard about Liang or how he is utilizing the sounds recorded by HARP for his latest sonically expansive musical opus.

And there is nothing standard about his desire and ability to bring together the world of music with other disciplines rarely thought of

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Accordingly, Liang has been the driving force

School of Engineering, Scripps Institution of Oceanography and the Qualcomm

Institute. In 2018, the institute appointed him as its first Research Artist in Residence. He is uniquely qualified for such a post.

A native of Tianjin, China, Liang in July 2020 became the first music professor to receive UCSD's Chancellor's Distinguished Professorship. Only three other professors in any department at the La Jolla campus have previously received that honor — chemistry professor Susan Taylor, astrophysics professor Brian Keating and biochemistry professor Edward Dennis.



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Composer Lei Liang honored with Chancellor's Distinguished Professorship endowed chair at UCSD

July 7, 2020

In the spring of 2020, after UCSD had pivoted to online classes because of the COVID-19 pandemic, Liang began teaching a three-year seminar called “Heating Earth, Hearing Earth, Healing Earth.”

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Much of the source music in Lei Liang's new composition, "Six Seasons," was recorded on the sea floor of the Arctic Ocean, using two of Scripps Institution of Oceanography's HARPs (short for High-frequency Acoustic Recording Package). One of the HARPs used for Liang's piece is shown here being raised on to the U.S. U.S. Coast Guard icebreaker Healy. (Joshua Jones / Scripps Institution of Oceanography)

New vistas

The first musical manifestation of his “Healing” seminar is “Six Seasons,” which will be followed by a full orchestral work about and inspired by the earth’s oceans.

“We are presenting all of the pre-recorded sounds found in the Arctic Ocean with very little (digital) processing,” Liang noted. “I thought it was important to keep as much of the way so nature could talk to us.

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“This is part of an arts strategy I have taken on with ‘Six Seasons.’ We carefully and meticulously studied data recorded in the Arctic Ocean. The mission for us is to restore the sound to its most pristine condition, so that we can truly hear and appreciate the complexity and beauty of our own environment.

“These recordings were made in some of the most inaccessible places on earth. And it’s only in the last 15 years that advances in hydrophone technology have allowed us to put our ears in the Arctic Ocean and hear what an incredible world we can hear there, including the sound of three-day-old ice. All the recordings we made are time-folded, so we have very exact data about the temperature, the air pressure, velocity, all of those things. You can describe it as the ocean of data!”

Liang's enthusiasm, knowledge and attention to detail have impressed Jones, who has been at Scripps since 2002. He has the unique distinction of having previously worked with Roger Payne, the marine research scientist whose 1970 album, "Songs of the Humpback Whale," was a gateway for listeners who had paid little attention to the music being made in the ocean by earth's largest inhabitants.

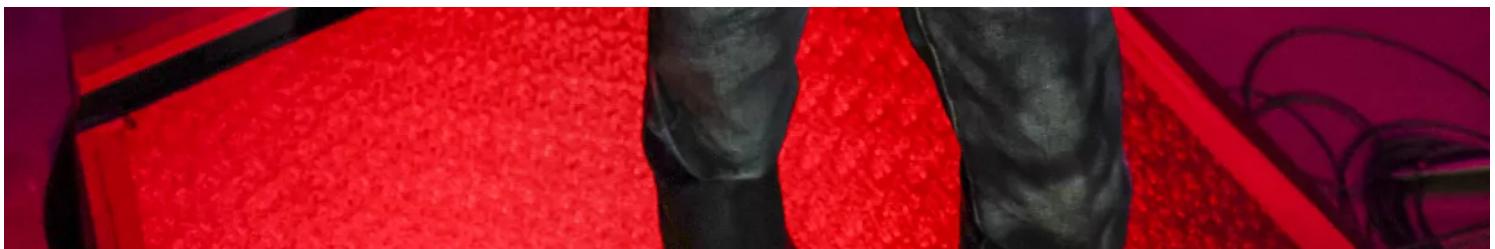
"I don't know if there's any other composer in the world like Lei. He's taken it to a new level and he's doing something amazing," Jones said.

“The way he treats the (ocean) sounds and thinks about them, the length of time he spends exploring them, is different and refreshing. And his creative process is so collaborative. Lei really likes to sit down and talk about the data, and to listen to the (Arctic) recordings together. And he’s brought in UCSD students to get their input. He really listens carefully and he connects things in a way other people don’t.”

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Lei Liang has long been inspired by nature as the inspiration for some of his groundbreaking musical compositions.
(Eduardo Contreras / The San Diego Union-Tribune)

Ravel and Debussy

Of course, Liang is not the first composer to be inspired by the sounds contained above and beneath the seas.

Witness Wagner's "The Flying Dutchman," Elgar's "Sea Pictures," Debussy's "La Mer" and Ravel's "Une Barque Sur l'Ocean." And witness more recent works, such as Gavin Bryars' "The Sinking of the Titanic," Douglas Quin's "Fathom" and Chris Watson's "Oceanus Pacificus."

Yet, while Liang is not the first to use recordings made at (or near) the bottom of the ocean, no other composer has had access to the extensive recordings from the Arctic Ocean provided him by Scripps. And no other has spent as much time meticulously bringing those sounds to the surface — let alone had an oceanographer provide invaluable input while honing his composition.

"We had preliminary rehearsals in May at UCSD with the sounds and the Mivos Quartet. And Joshua (Jones) was part of them," Liang said.

"It was so fascinating for me as a composer and for the musicians. What Joshua offered was not the usual advice about tempo and dynamics. What he offered was perspective and the stories behind the sounds we heard fr

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"That really made me and the musicians become more aware of what the sounds are and what it means for us to listen to them. And it made us better appreciate what we

need to do to tell stories with these sounds.”

To accomplish that goal, Liang created parameters for the Mivos Quartet, whose previous collaborators range from former UCSD professor George Lewis and singer Cécile McLorin Salvant to trumpeter Ambrose Akinmusire and Pulitzer Prize-winning composer Henry Threadgill.

“I have never done anything like this before,” Liang said. “I describe this piece as being written for musicians improvising with pre-recorded sounds. I participate as a coach in the preparation for the concert, offering guidelines about what to listen for, how to pace their responses, what techniques they can use, what techniques they *shouldn’t* use.

“A lot of it has to do with listening. The musicians shouldn’t rush to respond (to the sounds of the Arctic). They should feel that listening is as important as playing. This has been an eye-opening and ear-opening experience for all of us.”

That description will also apply to the audience at Saturday’s live debut of “Six Seasons,” which takes its title from the Inuit calendar.

While there will be some seating, the elevated rows of chairs in the theater have been removed, as have the elevated rows themselves. So has the stage. Rather than play side by side, each member of the Mivos Quartet — cellist Tyler J. Borden, violist Victor Lowrie Tafoya and violinists Olivia De Prato and Maya Bennardo — will perform atop individual platforms in each corner of the theater.

This will enable them to make eye contact with each other and with the audience, which will be encouraged to move (or “migrate”) from platform to platform during the performance.

In addition, there will be two rings of audio speakers projecting the sounds of the ice and wind.

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“The audience will be mobile,” Liang said. “Marine mammals move constantly and make sounds while they are in motion.”

The composer, however, will be mostly stationary during the concert, although fully active.

“I’ll be on the control board and mixing station and playing as if I was a musician in the group. For each of the six movements in ‘Six Seasons,’ my team and I create sonic folders that I can ‘play’ along with the musicians. I’ll be using a computer to project sounds.”

This week’s rehearsals with the Mivos Quartet will help shape out the form of “Six Seasons,” while still leaving ample space for them to improvise.

“It’s very much like playing checkers,” Liang said.

“Each one of us knows what we want to contribute, from solos to duos, trios and a climactic conclusion. The overall flow is very much like preparing a symphony or a piano sonata. We will make all the those decisions in the week of rehearsals before the concert.”

Liang plans to record “Six Seasons” with the Mivos Quartet following Saturday’s two concerts. His hope is that the music will not only move audiences emotionally but expand their awareness of nature and our increasingly fragile relationship with it.

“The sounds of these (Arctic) recordings and the sense of being deep in the water fill me with amazement,” he said. “They give me a sense of gratitude about what a privilege it is for us to hear these sounds. These scientists at need to tell stories with these sounds.”

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When: 5 p.m. and 8 p.m. Saturday

Where: The Conrad Prebys Music Center's Experimental Theater, University of California San Diego, 9500 Gilman Drive, La Jolla

Tickets: \$9 (students), \$30 (general public)

Phone: (858) 534-1430

Online: artpower.ucsd.edu

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When: 7:30 p.m. Oct. 21

Where: Epstein Family Amphitheatre at UC San Diego, 9500 Gilman Drive, La Jolla

Phone: (858) 534-1430

Tickets: \$20-\$65, plus service fees

Online: amphitheater.ucsd.edu/event/sandiego

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