

Scanning Earth is the mission because time is running out

October 20 2019, by Nancy Cohen



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As a response to the climate crisis, a project effort seeks to do a LiDAR scan of the Earth's surface—as time runs out. What, that urgent? Two professors at Colorado State University appear to think so. They are archaeologist Chris Fisher and geographer, Steve Leisz.

Together, they have formed something called [The Earth Archive](#). The

archive effort wants to scan Earth's surface and in turn generate maps that can be used for scientific pursuits.

Forests burning. Fish populations dwindling. Oceans warming. Glaciers melting. Animal species fighting to survive Earth's structures lost. Events are happening too quickly, too severely to abandon the effort. Observers who agreed to their notion often referred to getting the map "before we mess everything up."

[The Guardian](#) said the intent involved an effort "to record cultural, geological and environmental treasures at risk from climate crisis."

This would be a complete 3-D map of planet Earth using LiDAR (Light Detection and Ranging). About LiDAR, Light Detection & Ranging: it involves shooting a dense grid of infrared beams from an airplane towards the ground. "It's a high-resolution scan of the earth's surface & everything on it. Not an actual image, but a dense three-dimensional cloud of points," said the project site.

Jan Cortes in [Medical Daily](#) said that light detection and ranging has been "a method that archaeological surveys has utilized over the past decade or so. This is usually done by using an aircraft to shower a landscape with laser beams. Information from these laser beams can then be used to create a three-dimensional map of any given area."

Space.com Brandon Specktor can [see](#) why it's time: "The quicker Earth changes, the less time there is to learn from its past and understand its mysteries."

The argument of why-now was raised a notch by archaeologist Chris Fisher himself, who talked about the [climate crisis](#) in a [TEDx Talk](#): "We're running out of time...I feel an urgency to my work that I didn't feel 20 years ago. How can we document everything before it's too late?"

According to Fisher's observations, we are to lose in both cultural and ecological areas—sites and plants and animals and landscapes.

[BGR](#)'s report by Mike Wehner reminded readers it is not just a case of documenting what is known. Rather, "there's still so much we don't know about our planet's history, and various climate-related factors put us at ever-greater risk of losing those discoveries forever."

Lidar can help researchers understand what went on in the past to result in the present state of things. *The Guardian* noted how it can provide "details such as the age and complexity of forests. The data can also be used to reconstruct landscapes and to track changes to the landscape over decades."

The founders hope to provide an ongoing resource for scientists. The two describe the focus as on endangered landscapes and also as an open-source collection of LiDAR scans, accessible to scientists around the world.

"Ecologists can study forest composition, tree size, age, and distribution. Geologists can study hydrology, faults, and disturbance," said the project site.

Outside observers did not shy away from counting the hurdles before their goal could be easily realized: The project sounded very expensive. Getting permission to map certain areas was going to be difficult.

The two seem determined to push ahead no matter what. If their project sails, then scientists, no matter where the destruction and loss, will know.

According to the project site, "As science & technology advance, they'll apply tools, algorithms, and AI to LiDAR scans done today and ask questions that we can't currently conceive of. We can't yet imagine how

these records will be used, but we know that they'll be critically important in the future."

Interestingly, a good example of how the use of LiDAR reveals what was lost was discussed in 2017, in *IDEAS.TED.COM*. That is where space archaeologist Sarah Parcak talked about Cambodia in the realm of amazing archeological finds.

She [said](#) that "Damian Evans studied the surrounding terrain using LIDAR technology—his team scanned an area of more than 700 miles, sending down laser pulses from a helicopter to 'see' through the vegetation. In June they revealed what they found: multiple medieval cities hidden on the forest floor. The cities are estimated to have been built between 900 and 1,400 years ago, and they're huge, comparable in size to Cambodia's modern capital, Phnom Penh. These cities suggest that the Angkor Empire was much larger than previously thought—possibly the largest empire in the world in the 12th century."

Fast-forward to 2019. According to the Earth project:

"We've already lost 50% of the world's rainforests. We're losing 18 million acres of forest each year. Rising sea levels will make whole cities, countries, and continents unrecognizable. Unless we have a record of these places, no one in the future will even know they existed."

The Earth Archive is hosted at a research lab at Colorado State University in Fort Collins.

More information: www.theeartharchive.com/

Citation: Scanning Earth is the mission because time is running out (2019, October 20) retrieved 25 April 2024 from <https://techxplore.com/news/2019-10-scanning-earth-mission.html>

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