HISTORY This Week EP 342: Exploring Earth’s Evil Twin
EPISODE TRANSCRIPT

NOTE: This transcript may contain errors.

Sally Helm: HISTORY This Week. October 22, 1975. I'm Sally Helm.

The spacecraft has already traveled 186 million miles. But it’s only just reached its destination. Finally, today, its unmanned lander plunges down into the hot, harsh atmosphere of the planet Venus.

Venera 9 is a probe sent out by the Soviet Union to explore Earth’s closest neighbor. In fact, the goal is to do something that’s never been done before: take a photograph of another planet’s surface and send it home.

This is no simple task. It’s quite possible that Venera 9 will have traveled those millions of miles in vain. That it’ll burn up in the atmosphere or crash to bits on the surface and go dark, unable to send anything back to the human beings who have so hopefully launched it into space. Here’s what it has to do:

Travel through the thick, swirling clouds of sulfuric acid that make up the Venusian atmosphere. Deploy one parachute, then a cluster of three more. Jettison its heat shield, travel twenty minutes through Venus’s sky, and, finally, crash down—fast, but controlled.

Venera 9 does all that … and then opens its eyes. What it sees there…we can see too. Thanks to the cameras the probe used to photograph its surroundings. And its surroundings look…kind of like Earth. The probe has landed in some rocky spot that, at least to an untrained eye, could be in the dry highlands of Ethiopia. Or somewhere in the mountainous American West. The rocks are pointy in some places, smooth in others. Like they’ve been eroded away.

When scientists get to see these photos, that erosion will get them really excited. Because what have the rocks been eroded by? Not running water. There isn’t any of that on Venus. Probably not fast winds—as far as they knew then, the winds on Venus seemed relatively slow. One theory: it might have to do with how hot Venus is. A whopping 900 degrees Fahrenheit. Possibly hot enough to melt some of these rocks.

Because Venus is both like Earth…and not like Earth. Many call it our twin planet. But…given the punishing temperatures and the swirling sulfuric clouds…it is, if anything, our evil twin.

Today: humanity travels to Venus. What’s behind the ancient fascination with the so-called “morning star,” the brightest planet in our sky? And what can the differences between the twins Earth and Venus teach us about our home planet…it’s present, and its possible future?

[AD BREAK]

Sally Helm: David Grinspoon is an astrobiologist and planetary scientist. He loves Venus. But like many people, his fascination with outer space started with the moon.

David Grinspoon: I mean, it'll sound cliche, but it's the absolute truth, which is that I'm a child of Apollo. Literally some of my earliest memories are watching moon landings—
David Grinspoon: and the Apollo 11 mission in particular—

David Grinspoon: when Neil and Buzz stepped onto the surface of the moon—

David Grinspoon: I was there watching on the little grainy black and white TV, along with billions around the world—

David Grinspoon: As an impressionable fourth grader that just blew my mind.

Sally Helm: Next to the moon and Mars, Venus can seem like a forgotten stepsibling. But, Grinspoon told us, this planet might actually have answers to some of the biggest questions facing our own. Because it’s in many ways so similar to Earth. Not a stepsibling at all. Something closer.

You call Venus our mysterious twin planet. And I, myself, am a fraternal twin. So, I feel like the word twin really carries a lot for me.

David Grinspoon: Yeah. Well, I have, I have, two twin brothers as well.

Sally Helm: Really?

David Grinspoon: Not I'm, I'm not a twin, but my two brothers are fraternal twins. And so, twins are—

Sally Helm: Ugh. I love a fraternal twin, identical twins. I think, you know, they get so much attention!

David Grinspoon: Yeah, exactly.

Sally Helm: Not to get too far away from Venus, but...this is a favorite hobby horse of mine. So, after it came up with David Grinspoon, I called someone who I knew would understand.

Eliza Helm: My main complaint about being a fraternal twin is that when you say you're a twin and then you tell people you're fraternal, they look a little disappointed.

Sally Helm: This is my twin sister Eliza.

Eliza Helm: They always just look a little crestfallen.
Sally Helm: Totally. And it's like, I'm sorry. I made no promises.

I've thought a lot about how everyone loves identical twins, with their identical little pigtails and their identical little outfits. But my sister and I don't look alike. I have brown hair. She has red hair. My hair is curly. Her hair is straight.

Eliza Helm: You are five four, and I'm five eight.

Sally Helm: I always say you’re five seven.

Eliza Helm: No bro. I'm five eight. Don't take that little quarter inch away from me. I am five eight.

Sally Helm: There is one group of people that appreciates twins like us. Scientists. By studying sets of twins, scientists can learn about what makes people the way we are. Is it nature, or nurture? Which is not just a question for humans, it’s also a question for planets.

My sister and I were actually subjects in a twin study.

What do you remember about the twin study that we were in together?

Eliza Helm: I remember playing bop it and having them study how well we played together.

Sally Helm: We went into the lab every few years to do things like complete mazes, answer long questionnaires, have our brain activity measured with a special cap.

Eliza Helm: We had to play a spacecraft game.

Sally Helm: We did?

Eliza Helm: Oh my God. Yeah, there was like a little, oh my gosh. Was, was this from a dream? There was a little spacecraft and you had to boo boo, boo, like shoot things.

Sally Helm: I mean, it's very topical because we're talking about Venus. I don't remember doing it at the twin study, but I also could just not remember—

Eliza Helm: Maybe they only gave it to me cause I'm advanced.

Sally Helm: When my sister and I were playing computer games and watching movies in the lab, scientists were trying to answer questions about why people are the way they are. And scientists who study space have the same curiosity about planets.

David Grinspoon: You know, we don't get controlled experiments in planetary science. We don't just say, well, this is my idea. I'm gonna test it by setting up this other planet and waiting four billion years and seeing what happens. But Venus is almost like that.

Sally Helm: Venus offers the chance for a planetary twin study.

David Grinspoon: Venus and Earth, as far as we know, were born at the same time and basically the same size and nearby in the solar system. So, they were probably made out of the same original
mix of stuff. And yet clearly, they've diverged and their life experiences, if you will have, brought out different personalities and different pathways.

Sally Helm: For example, Earth was struck by another planet when it was very young. The material that broke off from that impact would become our moon.

David Grinspoon: So, in addition to Venus being closer to the sun, Earth had this, you know, this trauma, this near-death experience when it was young, and as far as we know, Venus didn't have.

Sally Helm: This is the kind of thing that modern scientists like Grinspoon can study. For ancient astronomers, that kind of twin study was unimaginable. But that's not to say that ancient astronomers were clueless.

David Grinspoon: Probably the most adept and committed Venus observers of all time, the Mayan astronomer priests, knew more about Venus than a lot of modern astronomers do today.

Sally Helm: Astronomer priests—in Ancient Mesoamerica, stars could be sacred.

David Grinspoon: Just that phrase, astronomer priests carries, I think, the sense that this activity that we think of as observing the sky was an intimate part of the religious life of the community. Unfortunately, we astronomers carry a, you know, less status than the astronomers did then.

Sally Helm: When those astronomer priests looked up at the sky, their attention naturally settled on Venus.

David Grinspoon: Venus is very striking in the sky, it’s the brightest thing in the night sky, other than the full moon so it really stands out. And it also behaves in this unusual manner.

Sally Helm: Venus is fickle. It doesn't stay in one place in the sky. One name for it is "Eveningstar." It appears around sunset each night, and then moves up higher and higher for months until...it vanishes. About a week later, it reappears...but not at nightfall. This time, it comes out just before sunrise. That Venus we call "Morningstar." Again, it moves up and up towards the sun...and then disappears.

David Grinspoon: In fact, some of the ancients didn't know that they were the same object. They had a different name from Morningstar and Eveningstar.

Sally Helm: Ancient astronomers knew—these are very strange stars. They don’t stay fixed in place. They move around. So, they earned the name: planets.

David Grinspoon: The word planet means wanderer.

Sally Helm: Those Mayan astronomers had stories about Venus, in particular. Why it went up and down like that in the sky. Why it sometimes disappeared.

David Grinspoon: Venus was a conquering dude with a spear who went down into the underworld repeatedly to do battle against the enemies of humankind and make the world safe for humanity.
Sally Helm: We earthlings have long projected stories onto the parts of the cosmos we can see. *That's not a random string of stars, that's the belt of a mighty hunter; that's not just the moon, it's a being protecting humans.* We made the cosmos about us. Imagining ourselves at the center of things.

David Grinspoon: We think of that now as a sort of naive, how could you think such a thing? Because we all were told when we were young, that it's not that way. But it's actually a pretty sensible thing to think. You're born on this planet, and you see these other things way up there in the sky moving around. And observed from earth, the sun is this thing that moves across the sky, so it, it's a very pervasive and effective illusion that there's this dome out there that everything else is moving on. And that this is the center.

Sally Helm: And it has like a religious aspect too. Right?

David Grinspoon: Yeah, absolutely. So, in sort of every belief system there was, the earth was, for understandable reasons, a sort of special place in the universe. And that carried right up through, the monotheistic religions and so forth, you know, God created the earth… and this other stuff [laughs] you know, but it's in, it is in a different category.

Sally Helm: This perfectly sensible belief – that the Earth, our home, is at the center of whatever is out there in the universe– it lasts up through the early 1500s. It’s something nearly everyone knows, from the sailor to the tailor. From the dons at Oxford to the wise men in the court of Kublai Khan.

But then along comes an astronomer named Nicolaus Copernicus. From what’s now called Poland. Copernicus combines his observations of the planets with some inspired math to propose that…actually…it's the SUN that's the center of things, NOT the Earth. You could say the idea is ahead of its time.

David Grinspoon: It's like, you know, you're walking down the street and there's some crazy seeming person handing out pamphlets saying, the earth is hollow and there's lizard people underneath. Just one of those nutty ideas.

Sally Helm: How do people react? What's the, it's a shocking idea.

David Grinspoon: Well, it was shocking, but it was also sort of sacrilegious and that's why it wasn't just like, oh, here's this guy with this weird idea. Let's ignore him or make fun of him. It was offensive because, we've been taught God created the universe for us in a certain way and you're saying that's all completely wrong, you know, that's disturbing.

Sally Helm: The idea is not entirely dismissed. But it doesn’t become common knowledge, either. The theory kind of goes into hibernation. Until it’s revived a century later by an Italian astronomer named Galileo Galilei. Galileo ushers in a new era…when he straps an eyeglass lens to the end of an organ pipe.

David Grinspoon: Galileo was the first person to use a telescope to study the sky as far as we know, he did not invent the telescope, but he was an early adopter and he made observations that were incompatible with this picture of earth being the center of everything.
Sally Helm: When Galileo points his homemade telescope skyward, he notices a few important things. Two in particular relate to the big name in this episode—if you will, its planetary star—Venus.

David Grinspoon: One is simply that Venus gets larger and smaller in apparent size. You can tell it's moving closer to us and farther from us at times. But then the other one was that Venus has phases, just like the moon has phases. It can be a crescent or nearly full.

Sally Helm: If Venus has phases, he realizes, it’s being illuminated by something. Something that isn’t Earth. And the angle of the light keeps changing.

Galileo also notices that when Venus is a crescent, it’s bigger. Closer to us. And when it’s a whole circle, it’s tiny. Far far away. And he has a realization.

David Grinspoon: The only time you can see it as nearly full is when it's on the other side of the sun.

Sally Helm: What that means is, Venus appears bright and small when it is farther away from us than the sun is. And the sun is shining directly on the part of Venus that we can see. When Venus is closer to us than the sun is, Venus seems larger. And it's lit along one edge, in the shape of a crescent. That’s because the sun is at an indirect angle to the part of Venus that we can see.

Picture it this way: you and a friend stand facing each other on opposite sides of a room. There’s a lightbulb in the middle. You can see each other’s faces – they’re fully illuminated. But as your friend walks toward you, past the lightbulb, their face enlarges in your vision. And at the same time, a shadow starts to cover their face until only a sliver on the side of it is lit.

Galileo observes that Venus is like that friend, moving both toward and away from us. Sometimes Venus is nearer to us than the lightbulb slash sun is – and sometimes it’s further away. In a flash of insight, this confirms for him the truth: Earth isn’t the center of the solar system. The Sun is. Venus—and the Earth—are planets in its orbit.

David Grinspoon: Galileo put all that together and he said, ‘you know Copernicus is right.’

Sally Helm: Case closed. Scientific truth prevails. Except…

David Grinspoon: He got into a lot of trouble because he said that.

Sally Helm: The Catholic Church forces Galileo to appear before an ecclesiastical court. There, coerced, he confesses that he’s sinned. He recants his beliefs. And in return, his life is spared. But there is still a price to pay. He’s placed under “villa arrest” for the remainder of his life.

The authorities still feel that the idea of the SUN being the center of the universe—not the Earth—it’s too disruptive. They can’t allow it to get out. But…in the years that follow, more people start pointing their telescopes up at the sky. The evidence that we’re orbiting the sun mounts and mounts. And eventually, people can’t pretend anymore. Galileo is ultimately vindicated … although the Church doesn’t officially admit he’s right until 1992.
Long before that though, it’s clear that Earth is just one planet among countless others. But we still saw ourselves as kind of the template.

**David Grinspoon:** The tendency actually for a long-time post Galileo was to think of the other planets as much more Earth-like than they actually are.

**Sally Helm:** Venus was a great example.

**David Grinspoon:** There was even this idea that it was maybe a sort of more tropical version of earth because, well, yeah, it's like earth, it's got clouds, it's got water, but it's a little closer to the sun. So, it's probably hot and steamy and swampy. And there are papers where people said, well, Venus is probably dripping wet and full of like jungle life. It's probably like a big jungle planet.

**Sally Helm:** Venus is covered in a layer of clouds, so you can't actually see its features. Even using a good telescope. But some astronomers still convince themselves that they can tell what’s going on beneath the clouds.

**David Grinspoon:** There're these sort of dusky markings, which we now know are features in the clouds, but people did map them and were pretty certain, they saw features on the surface. In fact, Percival Lowell, who's famous for mapping the canals of Mars, of course, which had the world convinced for a long time and then they turned out not to be there. He also mapped canals on Venus. There was this sort of wishful thinking that we were figuring things out that we really didn't have the information to actually figure out.

**Sally Helm:** Then comes the end of World War II. And the decision by the world’s two superpowers – the United States and the Soviet Union – that it is time for humans to rocket up away from Earth and take a real look around. Journalists call it, "the space race."

**Getty Archival:** The first step toward the conquest of space.

**David Grinspoon:** Whether we like it or not, it's warfare that causes a lot of the big technological leaps and World War II led famously to the development of rocketry, ultimately to launch to the moon and to other places in the solar system.

**Sally Helm:** The US and the Soviet Union, once allies, are now in a race. Each trying to prove their own power.

**Getty Archival:** Soviet Russia scores a dramatic victory in the exploration of space

**Sally Helm:** Each country wants its scientists to understand the universe better… and first.

**Getty Archival:** As an American, I am of course, proud of the effort that a great many scientists and engineers and technicians have made, of all of the astronauts.

**Sally Helm:** I’ll let you guess which planet becomes a key part of that race.
David Grinspoon: Venus.

Sally Helm: Venus.

David Grinspoon: Venus was the first place we ever sent a spacecraft beyond the earth moon system successfully.

 Getty Archival: As man learned more about the Earth and near space, he sought to know about his neighbors in the solar system.

David Grinspoon: And this was a spacecraft called Mariner two that launched in 1961. Venus made sense as the first target, because it's actually the easiest place to get to in the solar system in terms of just how much oomph you have to give a rocket, Venus is the closest place in the solar system to get to. And that first mission to Venus, Mariner two, was really revelatory.

Sally Helm: Remember, before Mariner two, there was this vision of Venus as a big jungle planet. Maybe it has canals. Maybe it’s sort of an extra marshy version of Earth with – who knows? – swamp creatures swimming around everywhere. But there’s an aspect of Venus's atmosphere that doesn’t seem to fit this picture. Scientists have been struggling to understand it.

David Grinspoon: There had been hints that Venus had some microwave radiation, which is just short-wave radio radiation, coming off it. Too much. It didn't make sense. And there was one idea, it must mean that it's really, really hot on Venus. Like ridiculously hot, much, much, much hotter than earth. That would be making this microwave radiation. But people didn't wanna accept that—

Sally Helm: Because they want that, like tropical situation with the cool, weird animals.

David Grinspoon: Exactly. They wanted the tropical friendly Venus.

Sally Helm: Mariner Two is determined to find out what’s going on.

David Grinspoon: Mariner Two had one scientific instrument called a microwave radiometer that was designed to figure out where that anomalous radiation was coming from. And boom, it's coming from the surface.

 Getty Archival: Nearing Venus, our spacecraft reported the atmosphere to be very dense. The surface, hot enough to melt lead.

David Grinspoon: It sort of dissipated that whole idea of Venus as an Earthlike place, because it proved that Venus is really, really hot on the surface.

Sally Helm: Venus is hot.

David Grinspoon: That was the big take home from our first ever experiment at another planet. It was Venus is hot.
Sally Helm: When Grinspoon says hot… he means almost 900 degrees Fahrenheit. He writes in his book, that's hot enough to fry an egg on the sidewalk…if you did it extremely quickly, before the sidewalk melted away.

David Grinspoon: It's so hot that it cannot have liquid water on the surface. It cannot have life on the surface. And the New York Times had an editorial about it a few days after those results were returned. And the headline was Venus says no.

Getty Archival: These investigations told scientists that on Venus, there is little likelihood of life as we know it.

David Grinspoon: So, it was seen as this big bummer, [laughs] we finally get to another planet and we finally get results that it's like, ‘oh no, it's awful there.’

Sally Helm: Yeah, it's awful there. I mean, paint that picture for me, we've imagined the tropical planet, now that we have this new information from Mariner Two, like are we imagining lava? Does it look like hell?

David Grinspoon: The word hell came up [laughs] because, uh, it was so hot. It wasn't hot enough to literally have the surface be just full of lava like, to just melt rock, but it was way too hot for liquid water. Imagine earth, if you got rid of all the water and all the vegetation and all the life, what would be left and that's, how you at least start to imagine Venus.

Sally Helm: But despite the disappointing news it brought back…Mariner 2 expands the space race into the solar system.

In the coming years, both the US and the Soviet Union send a series of missions to Venus. Breaking all sorts of space travel records.

There's the Soviet Union’s Venera 4:

David Grinspoon: The first entry probes down into the atmosphere.

Sally Helm: Venera 9 and 10:

David Grinspoon: They photographed the surface. They’re these sort of eroded looking platey rocks that look kind of like ancient volcanic flows.

Sally Helm: And the more we learn about Venus, the more it defies our expectations for what our twin planet should be:

David Grinspoon: The clouds are made out of concentrated sulfuric acid, basically battery acid. It would burn your hand to reach out into the Venus clouds. The winds are very, very strong at the cloud level, the whole atmosphere whips around the planet, in just four days.
Sally Helm: It's a whirling battery acid situation. It doesn't sound good.

David Grinspoon: It’s a whirling battery acid situation. [laughs]Yes.

Sally Helm: It is also covered in volcanoes.

David Grinspoon: Venus is like volcano world.

Sally Helm: And those volcanoes might be actively releasing gasses into the Venusian atmosphere.

David Grinspoon: Almost like on Earth you know, you have like the carbon cycle and the nitrogen cycle, this sort of active cycling of chemicals. We think something like that's going on Venus where you probably have a sulfur cycle.

Sally Helm: Wow. It so is bizarro earth, like instead of a nice, oxygen cycle that you can breathe, it's a sulfur cycle. The one that smells bad!

David Grinspoon: Right, again and again, Venus like showed us how much it did not conform to our early fantasies of an Earth-like, clement place.

Sally Helm: Okay. So, if you’re a billionaire thinking about building a weekend home on Venus:

David Grinspoon: Venus says no.

Sally Helm: But Venus still matters to Earth – a lot. Remember, she is supposed to be our twin. Which raises a couple of questions: how did we turn out the way that we did, and how did Venus turn out so different? Followed by a couple more questions. If we keep going the way we’re going, might we one day end up like Venus? Might our own planet become a place where you can boil an egg on a burning, sulfuric sidewalk?

[AD BREAK]

Sally Helm: When I called my twin sister Eliza, I told her about Venus. About the 900-degree temperatures. About the whirling battery acid atmosphere. About the sulfur.

Eliza Helm: So, this is the evil twin.

Sally Helm: Well, yeah, but, but we can't think of it that way, because the next question that I wanted to ask is, which of us is Earth and which is Venus?

Eliza Helm: Well, huh? Hmm. Obviously, I'm Earth.

Sally Helm: [laughs] Obviously I’m Earth!
Eliza Helm: No, I think you, I think you’re earth, I think you’re earth. I think I am more blustery and I’m more likely to get excited and also angry and experience all of the emotions.

Sally Helm: Yeah, you know, I hate to say it but I actually, I also think you're Venus.

Eliza Helm: Why do you think I'm Venus?

Sally Helm: I think it's what you're saying. Like, I feel like you are like more hot tempered. Your emotions run hotter in general. I'm more like, you know, whatever oceans, you know?

Eliza Helm: I also feel like, like, if you cross me: battery acid, you know, like—

Sally Helm: Also like you have red hair, you know, and Venus is very hot.

Eliza Helm: That's right. Yeah. I mean, and there's a whole thing about redheads and like being fiery and whatever, which, nature or nurture who knows.

Sally Helm: Well, that's actually my next question: nature or nurture? What do you think?

Eliza Helm: Yeah, I took a psychology class in college that was essentially helping me on my quest to answer this question and the answer that I came away from the class with was it's both.

Sally Helm: Yeah, yeah, I know. I know.

If I sound disappointed… it’s because I am. A little. When it comes to humans, everything really is a complicated mix of nature and nurture. The way we’re made, and the environments and influences we grow up with. Even with the help of twin studies, it’s really hard to tease all that apart. But maybe it’s easier with planets?

David Grinspoon: Nature versus nurture, it doesn't literally map onto planets in the sense that planets don't have DNA and haven't gone through natural selection.

Sally Helm: David Grinspoon again. Bringing us down to earth. Or I guess, away from it.

David Grinspoon: But you can ask, what is it about planets that is set in stone at their birth and what are the external forces that can change the way a planet evolves?

Sally Helm: So how did Venus get so hot? Was it always that way? Part of the answer lies in Venus's atmosphere.

David Grinspoon: They realized it must have to do with an extreme greenhouse effect.

Sally Helm: The Greenhouse effect. You might’ve heard of it. It’s an atmospheric process that happens not just on Venus, but also on Earth.

Mariner 2 and other missions have found that Venus's atmosphere is made up mostly of carbon dioxide. Which is a greenhouse gas. Meaning it absorbs and traps heat. Carbon dioxide in Earth’s atmosphere is creating this effect right now. The Earth is warming.
And what does Venus tell us about a warming process that spirals out of control?

**David Grinspoon**: If we look at what we think happened to Venus, the water starts to evaporate because of, of all that sunlight.

**Sally Helm**: Because it’s closer to the sun.

**David Grinspoon**: But that means there's more water vapor in the atmosphere. Well, water vapor itself is a greenhouse gas. So that makes the surface hotter, which causes more evaporation, which means there's more water vapor in the air, which causes more evaporation, because it's hotter. And that's what we call the runaway greenhouse. And ultimately it means the oceans boil off.

**Sally Helm**: Wow. So, it's kind of like Earth's dark future.

**David Grinspoon**: Yeah. Yeah, no, I mean, there, there's something to that.

**Sally Helm**: Grinspoon says, it would likely take billions of years for the sun to get hot enough for this to happen on Earth. But we’re releasing more carbon dioxide into the atmosphere every day. Creating our own greenhouse effect. So:

**David Grinspoon**: Venus is still very relevant to the question of human-caused climate change on Earth because it turns out it's a natural laboratory for us to study climate change.

**Sally Helm**: We're collecting data, so that maybe we can learn from another planet's mistakes. Well, I mean actually, planets aren’t people and don’t make mistakes. But we can use Venus to study our mistakes. It’s clear that human activity is contributing to Earth’s warming – led by the greenhouse effect from pumping carbon dioxide into the atmosphere. And that’s making Earth a little bit more like Venus every day.

**David Grinspoon**: It's no longer just curiosity to wanna understand how Earthlike planets work and how their climates change. That's a survival skill for humanity now.

**Sally Helm**: And there’s so much to learn about our “twin.”

**David Grinspoon**: The United States has not had a dedicated Venus mission since Magellan was launched in 1989 and that's literally my whole career.

**Sally Helm**: But that is about to change. NASA has greenlit two missions to Venus in the next decade—one called Veritas and the other, which Grinspoon is working on, called Da Vinci. The European Space Agency has planned a third. Russia has even proposed another Venera mission! Scientists are hailing it as "the decade of Venus." These missions might answer questions like, was there once liquid water on Venus? Was there once life, killed off by an increasingly inhospitable climate? Could there still be life up there, in Venus’s more temperate clouds? David Grinspoon says, nothing’s off the table.
David Grinspoon: If Venus was Earth-like through much of its history, these planets could have even have been exchanging material. So, we could even have Venusian relatives. We could even be Venusian. The origin of earth like could have come from Venus.

Sally Helm: So, you, me, Eliza, every other earthling…the possibility that we’re part Venusian is…greater than zero. All the more reason that, in this new decade of Venus, we are like those ancient astronomer priests. We’ve set our sights on the planets to make sense of our world … and even ourselves.

David Grinspoon: The question of who we are and what we're doing here in the universe is about the closest I, as a scientist, come to and defining spirituality.

[CREDITS]:

Sally Helm: Thanks for listening to History This Week. For more moments throughout history that are also worth watching, check your local TV listings to find out what's on the History Channel today.

If you want to get in touch, please shoot us an email at our email address, HistoryThisWeek@History.com, or you can leave us a voicemail: 212-351-0410.

Thanks to our guest, David Grinspoon, author of Venus Revealed: A New Look Below the Clouds of Our Mysterious Twin Planet. Grinspoon’s latest book is called Earth in Human Hands: Shaping Our Planet’s Future. Thanks also to my twin sister, Eliza Helm!

This episode was produced by Julia Press. It was story edited by Jim O’Grady and sound designed by Brian Flood. HISTORY This Week is also produced by Morgan Givens, Rebecca Nolan, and me, Sally Helm. Our associate producer is Emma Fredericks. Our senior producer is Ben Dickstein. Our supervising producer is McCamey Lynn, and our executive producer is Jessie Katz.

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