

WE ARE ETH: Episode 8

With Felix Seidel, ETH Alumni and Data Scientist at the NASA Jet Propulsion Lab (JPL), Caltech

[00:00:00] **Felix Seidel:** If you grow up in Switzerland, you most likely stay in Switzerland, right? Most people do, but ETH is the place then to go to, where you have access to whatever you want to do, right? Whatever you're interested in. It's so diverse from engineering to science, to even, you know, more political security and risk.

[00:00:19] **Susan Kish:** In this episode, I'm talking to Felix Seidel. He's a Research Scientist at NASA's JPL or Jet Propulsion Lab, and he shares with us how ETH Zurich influenced him in his career and continues to be important for him today. I'm Susan Kish host of the We Are ETH Podcast, telling the story of the alumni and friends of the ETH Zurich, the Swiss Federal Institute of Technology in Zurich. ETH regularly ranks amongst the top universities in the world.

[00:00:49] With cutting edge research, science, and people. The people who were there, the people who are there, and the people who will be there. These are their stories. So if you could first tell, how did you first learn about ETH you grew up here in Zurich, right?

[00:01:07] **Felix Seidel:** Yes, correct.

[00:01:08] **Susan Kish:** So did you always wanna go to the ETH?

[00:01:11] **Felix Seidel:** I don't think. I, I don't think I knew about ETH for quite a while.

[00:01:15] **Susan Kish:** How is that possible?

[00:01:19] **Felix Seidel:** I grew up in a different environment, not in the academic environment.

[00:01:22] **Susan Kish:** Yeah.

[00:01:23] **Felix Seidel:** Uh, my parents were more in, in, in art.

[00:01:26] **Susan Kish:** You said your dad was an actor on radio.

[00:01:28] **Felix Seidel:** He was an actor at, uh, Schauspielhaus Zurich and Right and uh, on the radio as well. Film as well. And my mom was a dancer, so

[00:01:37] **Susan Kish:** Very cool.

[00:01:38] **Felix Seidel:** So no ETH in the family really, but, but that came later. Yeah.

[00:01:42] **Susan Kish:** So what was the trigger? You wanted to learn to be a pilot, is that right?

[00:01:46] **Felix Seidel:** Right, Yeah, exactly. That, that started really early. Maybe before 10, or maybe even the age of, uh, eight or something.

[00:01:54] **Susan Kish:** You can't fly a plane when you're eight years old.

[00:01:56] **Felix Seidel:** Oh. Mentally worked. It's the very first flight simulator that worked as well on the computer. So now,

[00:02:03] **Susan Kish:** Oh, is that right?

[00:02:03] **Felix Seidel:** Yeah. So that, that's how it started and I started, um, with about 16 age of 16 with flying. I did the, uh, FVS, the "Fliegerische Vorschule" or the like basic pilot training for the Swiss Air Force. And that's where I learned about, uh, meteorology.

[00:02:20] About the weather I learned, uh, if you fly against the sun, it's harder to see than if you fly away from the sun.

[00:02:27] **Susan Kish:** That seems intuitive.

[00:02:28] **Felix Seidel:** I learned how, you know, hot air rises and creates clouds and those are two things I'm still working on these days. So, and I got so fascinated by this. This was the, the most fun part of all.

[00:02:42] And I realized that I wanna learn more about this. I wanna understand how this works, how it, it's connected to each other. Because I only knew the pieces, only the relevant pieces you need to know as a pilot. I dunno how exactly, but I found, okay, ETH is the place I have to go because there I can study climatology.

[00:02:59] **Susan Kish:** So you've finished up your matura, you went to the ETH and you said, I wanna study. Was there a climatology department or what did you actually end up as? Your field of research?

[00:03:11] **Felix Seidel:** Yeah, that's still the, uh, Institute of Atmosphere and Climate, I believe. Mm. And I had to go through the whole, um, you know, basic study the first couple of years and fail at first diploma, which I would say was one of my, um, richest, not best, but richest experiences.

[00:03:29] **Susan Kish:** Good. It taught you resilience at an early age.

[00:03:32] **Felix Seidel:** Resilience and perseverance.

[00:03:35] **Susan Kish:** Good. So you just mourned for a night, went out and had a beer, and then you came back and studied and took it again?

[00:03:41] **Felix Seidel:** Yeah, a little more than one year, but... It was more later that I realized, you know, how important it is to fail. That if you succeed or if you, the worst is you barely succeed, you just make it into the next level. But you may not have really understood or comprehended, you know, the whole depth. But if you can go back and have one more year, it really helps you to really understand what's going on and which makes it so interesting, which opens up, you know, so many new doors versus if you scratch at the surface, and I only had this opportunity, by going back one year, resetting the button basically, and, and go at it again.

[00:04:18] **Susan Kish:** So after you finished ETH, what did you do?

[00:04:21] **Felix Seidel:** Even before I ended, ETH it was, um, towards the end, you know, in the second last year, when I finally went through, you know, all the difficult things that I was less interested in and finally got to do the, the climatology I always wanted to, I had the opportunity to go to, uh, Hawaii for an internship.

[00:04:38] **Susan Kish:** Oh, how cool.

[00:04:39] **Felix Seidel:** And that was,

[00:04:39] **Susan Kish:** And you said No,

[00:04:40] **Felix Seidel:** and I said, hell yeah.

[00:04:44] **Susan Kish:** That sounds right.

[00:04:45] **Felix Seidel:** Yeah. And it actually started just by, I wanted to go to, um, to Hawaii because my now wife, she was at the time in Hawaii working. And I, I went to my professor here at ETH uh, Atsumu Ohmura and, and ask him, is there anything I can do in Hawaii,

[00:05:01] And he said, Hmm, let me get back to you. And like next week he said, call this number. Yeah. And that's what I did. And a few months later I was in Hawaii.

[00:05:11] **Susan Kish:** Did you work at that climate observatory unit that they keep coding for?

[00:05:15] **Felix Seidel:** Mauna Loa?

[00:05:16] **Susan Kish:** Yeah. Mauna Loa.

[00:05:17] **Felix Seidel:** No, I never even was out there, but I was working at the International Pacific Research.

[00:05:22] **Susan Kish:** Oh, that sounds cool.

[00:05:23] **Felix Seidel:** Which studies, uh, climate aspects in the, in the Pacific area and which is, um, it's, it's a collaboration between Japan and the US, which was fundamental for me in, in learning, um, how, you

know, different countries can collaborate in research and, and that carries all the way through today for my motivations as well.

[00:05:41] **Susan Kish:** What was the professor that you mentioned that, uh, that made that call?

[00:05:45] **Felix Seidel:** Yeah, that was professor Atsumu Ohmura.

[00:05:47] **Susan Kish:** And was he Japanese?

[00:05:49] **Felix Seidel:** He was Japanese, yes. Swiss as well.

[00:05:50] **Susan Kish:** So there was connecting all those dots.

[00:05:52] **Felix Seidel:** Yes. Yeah, so the, the person I had to call was, I think his first student when he still was in Japan. That's my understanding. Which at the time already there was 2001, I believe, or 2000 became a director of the, um, university which oversaw the IPRC um International Pacific Research Center. So it's, it's those connections, right, which you can make through ETH will, which can set you on an entirely different path.

[00:06:21] **Susan Kish:** Now, somewhere along the way you applied to be an astronaut, which I thought was wicked cool, as we say in Boston. Um, how did that come about?

[00:06:30] **Felix Seidel:** Why would you not apply?

[00:06:33] **Susan Kish:** Well, it sounds really hard.

[00:06:35] **Felix Seidel:** It is really hard. But, uh, I like things that are really hard.

[00:06:39] **Susan Kish:** I get that impression.

[00:06:42] **Felix Seidel:** And it's a really, um, interesting experience that you have to a hundred percent be motivated, obviously, but also convinced that you're able to do it and at the same time, you know you're not gonna do it at all. Right? There's just no chance. There's five, six people out of the whole Europe. They select every, I dunno, 12 years or

something. Claude Nicollier was the, the first and so far, the only Swiss astronaut, that was selected.

[00:07:08] **Susan Kish:** Oh, that's right. Cuz it's the European Space Agency.

[00:07:11] **Felix Seidel:** Exactly. Okay. So it's super hard. It's impossible if you will.

[00:07:15] **Susan Kish:** But did you take time off to do.

[00:07:17] **Felix Seidel:** Um, a little bit, yeah. I prepared, you know, most time it took me to, uh, finish the application. That's the first big step in the selection.

[00:07:28] **Susan Kish:** And then you just sort of filed that, figured if it happened, it happened, I gotta move on with my life. Or how does that work? It's is, is your application still on file? I think that's what I'm asking.

[00:07:37] **Felix Seidel:** Oh, no, it's not. I don't think so. They, they just had the second, um, or, or the next round of, uh, of applications which are pending I think right now.

[00:07:47] **Susan Kish:** And after you went to try that you worked for the Swiss government doing some research, or what were the programs you did for the satellite images in areas like that?

[00:07:56] **Felix Seidel:** Well, that was the other opportunity I had along the way. That was right after, actually, it was still tied to ETH because when I did my, uh, master thesis, and that was influenced by my experience in, in Hawaii, right where I, for the first time, I, I learned to use, uh, satellite data and apply them to big questions that we have in climatology, and I didn't see this happening here at ETH. Brought that back to ETH and said, can we do this here as well? Can we use satellite data? Who's, who's using satellite data? No one was using satellite data at ETH, but someone told me, Go to Uni Zürich.

[00:08:31] There's, uh, remote sensing...

[00:08:32] **Susan Kish:** Which is like next door. Right?

[00:08:34] **Felix Seidel:** Exactly. That was in the geography department in the remote sensing, uh, laboratories, I found there a person who was willing to, uh, mentor me for my master thesis and I was able to pick my topic and I, I went to Meteo Schweiz as well to ask them about, um, you know, potential topics.

[00:08:52] And then I picked the people who could help me. There was this one person there and one person from, uh, ETH as well and they together helped me do the master thesis. And that was using satellite data in order to answer, again was like humidity in In Africa. And I wanted to look at trends in the humidity.

[00:09:08] And by the way, it's a research topic that's still ongoing. So I, I could have stayed on that for the last 15 years. Probably should have, I would've more publications by now. But this,

[00:09:18] **Susan Kish:** You have a long list of publications.

[00:09:21] **Felix Seidel:** Not quite, but this person at the time left then to work for the Swiss government for the Swiss space office.

[00:09:28] **Susan Kish:** Okay.

[00:09:28] **Felix Seidel:** Which is the interface between the Swiss government or Switzerland and ESA, European Space Agency. And he left behind a position at the so-called NPOC, the national point of contact for satellite data. Which was located partly at Uni Zürich and also at the um, Swiss Topo in, in Bern.

[00:09:49] And he was leading that NPOC and he basically told me, I need someone. Right. Can you do this job?

[00:09:55] **Susan Kish:** Oh, very cool.

[00:09:56] **Felix Seidel:** And again, you know, a challenge, I said yes. Sure. I like no idea what to do.

[00:10:00] **Susan Kish:** But it doesn't sound like you were inhibited by a lot of fear in terms of trying things.

[00:10:05] **Felix Seidel:** Maybe I should have had more fear. No, I don't think so. No.

[00:10:08] **Susan Kish:** No. Fear isn't fun Uhuh. So, And that's why you did that point of contact for satellite images. And did you start to get the ETH to look at using satellite?

[00:10:17] **Felix Seidel:** Not quite. There's Höggerberg, there's used to be, uh, I think one person at the time who started using radar, uh, remote sensing and, and some part of ETH they used, uh, airborne images for quite long time as well.

[00:10:35] There there's a strong heritage there, but to do the jump to use satellite data for research, I haven't seen that happening yet too much.

[00:10:43] **Susan Kish:** Got it.

[00:10:44] **Felix Seidel:** And actually nowhere really in Switzerland for the topics I'm interested in, in climatology and atmosphere.

[00:10:50] **Susan Kish:** How did you get from doing the point of contact to... cuz it shortly thereafter or it sounds like the timing overlaps, you went to the US to do postdoc and to do work at the Caltech.

[00:11:04] **Felix Seidel:** Yeah, the Postoc was after, So I, I did the, uh, NPOC work right after, uh, my master thesis here. And it was, again, this tremendous opportunity. I could influence the Swiss based policy.

[00:11:15] **Susan Kish:** That's cool.

[00:11:15] **Felix Seidel:** I could interview people all the way through the, the, uh, Swiss government to some really high levels within the government and, and, we came up with the idea of having a geo hub, like a point of a point of contact or a center of excellence for geospatial data.

[00:11:31] Which still exists at the Department of Foreign Affairs. I was located at in academia basically, and everybody around me was doing a, a PhD. So my professor Klaus Iten at the time, who himself was in the US by the way. Um, working for NASA as well, an ESA applicant together with Claude Nicollier. So he, he basically asked me one day, like, Why don't you do a PhD?

[00:11:55] And I felt, That's a good idea. Let's do this.

[00:11:58] **Susan Kish:** So you just decided to move up.

[00:12:00] **Felix Seidel:** And so I did the PhD in parallel to working and I reduced my workload a little bit. And then the PhD, which was a bad idea.

[00:12:07] **Susan Kish:** Well, it's a lot of work. What was your PhD on? I read the title and realized I completely didn't understand the topic.

[00:12:14] **Felix Seidel:** So this connects dots to what I said at the beginning from where my hole motivation started from. From flying. Right. So we're flying against the sun and the visibility that changed. Right? Or if you drive as well, you have the same. Through that, I wanted to better understand how light propagates through the air.

[00:12:30] Okay, how it comes from the sun, it goes through the atmosphere to the ground, reflects, goes to clouds and reflects there. And this being scattered in the atmosphere and absorbed. And all these processes together make what if you go out and, and see how visibility change, this is how it's made up. And I was then, uh, in my PhD, um, programming a little, you know, like a software code that can simulate what happens with a radiation in the atmosphere.

[00:12:56] **Susan Kish:** And that became the topic for your, your, uh, PhD.

[00:12:59] So you decided you liked California, you brought your family over. What, what, what ended up causing you to live there?

[00:13:07] **Felix Seidel:** Again serendipity. That was my other professor who's now, um, uh, director of university of Zurich, um, came to me one day as well, when I think already, um, defending my PhD and said, look, there's a, there's a job open at, uh, Jet Propulsion Laboratory and they may need the skills you have. He knew the person who was putting out the, the job at JPL, so that helped again. And I applied and was interviewed and, and was selected and two days prior learned that, uh, we had a son.

[00:13:42] **Susan Kish:** Oh, congratulations. That must have been an exciting time?

[00:13:45] **Felix Seidel:** And right after being asked, uh, Would you like to go to California? And then that was interesting.

[00:13:52] **Susan Kish:** Got it. Now, did you wait until your son was born or did you move in the midst of pregnancy.

[00:13:57] **Felix Seidel:** We moved in the midst.

[00:13:58] **Susan Kish:** Oh boy. You can tell you're a guy. And how, how was that move? I mean, what, what were the big challenges of that move outside of a baby on the way...

[00:14:11] **Felix Seidel:** You know, those are the good things about stressful times, uh, which I think when innovation happens, a lot of good things happen in stressful times. It's my opinion because you don't have enough time, not enough resources, so you don't think too much.

[00:14:25] So you just go from A to B and just do what you have to do and it works. It was a stressful time. And we arrived and it was, um, a bit of a culture shock.

[00:14:35] **Susan Kish:** Yeah, I bet it was.

[00:14:36] **Felix Seidel:** And I learned when I went later, we lived two and a half years in the east coast in Washington DC um, that felt like going halfway back to Switzerland, culture wise, weather wise and so on.

[00:14:48] So we moved 2011 to Pasadena, became an employee at JPL, and then was asked to go to, uh, NASA headquarters in Washington DC. That was a fun.

[00:14:58] **Susan Kish:** Do you still miss Switzerland and living here?

[00:15:01] **Felix Seidel:** Yes, I do.

[00:15:04] **Susan Kish:** But it sounds like your family at least gets to spend summers here.

[00:15:07] **Felix Seidel:** So I would think everybody who grew up, you know, who's leaving will miss Switzerland. It's just, just a beautiful place.

[00:15:14] **Susan Kish:** One of the three things you miss the most.

[00:15:16] **Felix Seidel:** Family and then right after there's, there's many things. There's, um, it's nature, it's the mountains. There's some things that I don't miss as well. It's just so you, you start learning the, you know, living two different lives and, and, and use, you know, benefit from, from the pros and the cons in a pretty good way if you live in two different places or if you live in the States and you can come back to Switzerland for your vacation. I think this is almost an optimum.

[00:15:43] **Susan Kish:** That sounds right. So, Felix, tell me what is it that, as a research scientist at JPL now, what is it you actually do? What's your day like?

[00:15:53] **Felix Seidel:** I'm working on about seven different projects at the time. So the, the one project is, is called Atmosphere Observing System, which is a really big NASA mission. That's currently in pre reformulation. We'll launch a few satellites by the end of the decade. And we look at, uh, how climate will change and about the processes that underly climate change regarding aerosols. Those are particles in the atmosphere, the clouds, the dynamics. And that again, ties back by the way, to the other point, from flying lessons.

[00:16:24] Which was flying a glider. You have to use the, the thermals. And this is caused by differences in, in heating. And this, you know, is causing turbulences in the air and is, um, either building clouds or inhibiting the building of clouds. And this is exactly what we're gonna study with this mission as well.

[00:16:41] **Susan Kish:** By the way, do you still have your license, your pilot license?

[00:16:44] **Felix Seidel:** No.

[00:16:44] **Susan Kish:** Oh.

[00:16:44] **Felix Seidel:** I have two kids now.

[00:16:45] **Susan Kish:** So, that probably takes up that time that used to be spent to play.

[00:16:50] **Felix Seidel:** Exactly. The other part of my work has a different title. It's um, a program manager for atmospheric composition.

[00:16:57] **Susan Kish:** When you talk about atmospheric composition, I know that satellite imagery, for example, is used to detect methane that there was a big announcement just in the press yesterday, I think about some, a facility in Russia that just gave off this huge plume. Is that the kind of atmosphere composition, are you also looking carbon dioxide and methane and those elements?

[00:17:18] **Felix Seidel:** Absolutely. Yes, absolutely. That's an overlapping part with, uh, carbon cycle as well, which is another thematic area we have at NASA.

[00:17:25] **Susan Kish:** What is it that really made the difference from ETH. How would your life be different if you hadn't gone to the ETH?

[00:17:32] **Felix Seidel:** It would be entirely different. I would not have known where I could go to study, uh, climatology, where I could learn the processes in the atmosphere. I mean, having access... um, if, if you grow up in Switzerland, you most likely stay in Switzerland, right? Most people do. Some don't, but ETH is the place then to go to where, where you have access to whatever you want to do, right? Whatever you're interested in. Uh, so whatever, from engineering to science, to even, you know, more political security and risk.

[00:18:03] **Susan Kish:** You are a member of the ETH Circle. And as such, it sounds like you're quite involved in the mentoring program. What is that program and what do you do with it?

[00:18:14] **Felix Seidel:** Yeah, so that goes back to I think the, the origins of ETH Circle, at least from my perspective. Right. Um, and that started that at the, um, embassy, the Swiss embassy in Washington DC where we had sort of a kickoff meeting.

[00:18:30] And I was asked, what would you be most interested in, what should the ETH Circle? And for me, the most important piece of ETH is the people. As you said, the people who were there, are there and will be there. The secret sauce is the people that are there. So that's why mentoring for me is, is front and center.

[00:18:48] I, I explained before, right, how, um, people helped me to get on a path, find opportunities that I was not even aware and have shaped my career, and, and I'd like to do the same for others.

[00:19:00] **Susan Kish:** Just to close a couple, very important question. When you come back to Zurich, uh, what's your favorite place to go for a coffee or a drink or a walk?

[00:19:10] **Felix Seidel:** I would say, Bequem: the BQM here at ETH. This is where I'm going to meet a, a fellow JPL'er, who's now in Switzerland as well. And, uh, it's just a great place to, to meet.

[00:19:24] **Susan Kish:** Where is the BQM?

[00:19:25] **Felix Seidel:** It's right next to the cafeteria here in the Hauptgebäude.

[00:19:29] **Susan Kish:** No kidding. Okay.

[00:19:30] **Felix Seidel:** And I spent quite some interesting hours there, which were, which were really helpful for, for networking and, and, um, you know, having a good time at ETH really.

[00:19:40] **Susan Kish:** When you were small, what did you wanna be when you grew up?

[00:19:44] **Felix Seidel:** Okay. I, I explained the pilot before. But there's one more other thing that was cook, but that was much earlier.

[00:19:50] **Susan Kish:** A chef. Oh, very cool.

[00:19:52] **Felix Seidel:** And I have no idea why. And if you had to ask my wife, she would laugh. I am no cook at all.

[00:20:00] **Susan Kish:** And is there a, um, a story or an anecdote from the years you were at studying here that you'd like to share. Sort of a specific thing that happened or that you remember... that was a big smile.

[00:20:14] **Felix Seidel:** A funny one is that I was sitting in the, um, in, in the lectures and listening and thinking like, I have no clue what the professor's talking about, but I'll figure out.

[00:20:25] **Susan Kish:** I'll take really good notes and look it up afterwards. Thank you so much. That was a great conversation. Really appreciate your time. Thank you for joining us, Felix.

[00:20:34] **Felix Seidel:** Thank you, Susan. It was a pleasure.

[00:20:39] **Susan Kish:** I'm Susan Kish, host of the We Are ETH podcast series. Please subscribe to this podcast and join us wherever you listen, and give us a good rating on Spotify or Apple Podcasts if you enjoyed today's conversation. I'd like to thank our producers at ETH Circle and Ellie Media GmbH and thank you, our listeners for joining us.