

Paula Hennon: This is Paula Hennon, and I'm at the 33rd Conference on Tropical Meteorology and Hurricanes for the American Meteorological Society, and it's April 18th – 19th – it's April 19th, 2018, and I'm speaking with Nadia Bloemendaal, and she's going to give a brief introduction of herself, and she's going to tell us a story.

Nadia Bloemendaal: OK, so my name is Nadia, I'm from the Institution for Environmental Studies based at the Vrije Universiteit in Amsterdam, the Netherlands. And well, I'm here today because basically my professor sent me. No, I'm a Ph.D. student in tropical cyclone flood risk under climate change. I'm in my second year, so I have two and a half more years to go. I actually gave a presentation yesterday which went pretty well, at least I think. I got some good comments back, so I'm happy with that.

PH: Tell us the topic.

NB: So the topic of my presentation yesterday was how to model storm surges using the ECMWF integrated forecasting system and a global hydrodynamic model which is called GTSM – Global Tide and Surge Model. I combined the two and I presented that yesterday and showed some of the results. So that went pretty well.

Yeah, actually, it's quite funny that I'm because I think you all might know that we don't have hurricanes or tropical cyclones in the Netherlands. So I usually get weird looks when I say that I'm a hurricane researcher based in the Netherlands. But we have our fair share of floods in the Netherlands. Well, nowadays we don't anymore, fortunately, because we built our dikes and storm surge barriers and everything. But as you might or might not know, in 1953, the Netherlands was severely hit by a northeastern storm which – well, we call it the Watersnoodramp, but in English it's generally referred to as the 1953 floods. Well, I don't want to say fun fact, but fact is that my grandma survived those floods. She lived very close to the area where the dikes broke and she actually volunteered for the Red Cross to save people and bring them to shelter and supply them with food and blankets and anything that they needed.

I don't want to say that that's how I got into flood risk because I only found out about this story last year, so I was already in my Ph.D. I was embarrassed that I didn't know this story before, but it's now a great way to introduce my fair share in flood risk because I actually have a personal story attached to that. But actually, ever since I was little, so my earliest memories of me growing up is me watching thunderstorms. Those are the only recollections I have from being a toddler, being four or five years old, standing outside – or I don't think my parents allowed me to stand outside, but stand in front of the window watching thunderstorms roll in. According to my parents, I've already been talking about thunderstorms and severe weather ever since I could talk.

The way that I got into meteorology as I remember it is watching the movie Twister. I think it's pretty familiar out here to all. That's what grew my interest in severe weather. That was the moment I was like, OK, I'm going to be a meteorologist, I want to be a storm chaser, I want to hunt those tornadoes, I want to find out more about them, and I want to come up with a mechanism to, yeah, to basically save people from severe weather. This is when I was 10 years old, and all the other people in my class, they were like, I want to be an astronaut, I want to be –

like there's typical 10 year old dreams, and here I was, I want to be a meteorologist. So that was really interesting. My teacher didn't know what to do with it, and he was just like, OK, that kid's crazy. But hey, here I am, 15 years later, and I'm at the hurricane conference and I live my dream. So yeah, I'm pretty happy with that.

But the thing is that, of course, like I said, we don't have hurricanes in the Netherlands. I don't want to say that we have severe weather the way that you guys have.

PH: Do they tornado-chase in the Netherlands?

NB: No.

PH: I didn't think so.

NB: No, no. We have – sometimes we have land spouts or water spouts, but not really tornados. But actually, I think that one of my ancestors – at least, that's the story that my grandma's been telling me – another grandma – that one of my – I think her mother or something, that she survived a tornado in 1928. But I honestly believe it was a land spout because we don't really have the tornado sizes you guys have up here. I'm really jealous for that, know that.

So we don't really have severe weather, we don't have hurricanes or anything, so ever since I found out that you have to be in the States for that, I was like, I'm going to move to the States, and my parents were like, yeah, OK, tone it down a bit. Please just do something here like a universal study of university study or anything.

But we don't – there aren't a lot of opportunities to get into meteorology in the Netherlands. So there is one bachelor degree which you guys would call undergraduate but in another sense, bachelor master. We have one bachelor degree, but that's more a combination of atmosphere, soil, and water. So basically means you only done one third of the thing that you love, namely atmosphere, and the other two things are, well, side effects, let's call it like that. So I decided not to do that bachelor, but I got into applied mathematics because I also like mathematics, and I thought these models, I think they're pretty mathematical, so it's good to have a background in mathematics.

After my bachelor degree, I rolled into a master meteorology. We actually do have that, so I was really happy with that, and that's how I ended up being a meteorologist – well, graduated meteorologist. I don't want to put myself on the too high level right here. So that's how I got a master's degree in meteorology.

Right after I graduated – well, it was in – I was writing my master thesis at that time, and I was doing my master thesis at the Dutch weather institute, meteorological institute, it's called KNMI, and they were having some job openings for operational weather forecasting. I thought, oh, that's cool, I get to learn how to do weather forecasting and I was always really interested in that. So I applied for a job, and I don't want to brag or anything, I think I would've had a really good chance at actually landing the job, but the moment I sent in my application, I was like,

something's not right. I don't know, there was just this feeling coming over me, like I'm not completely happy with the decision that I'm making right now. I was always like, I'm not going to do a Ph.D., I'm not going to do a Ph.D. because my boyfriend, when we met, he was doing a Ph.D. and I could just see him stressing over it, and I was like, I can't handle this, I don't want to do that. So that's why I was like, OK, I'm going to do something like operational meteorology. So I submitted my application, and I was like there's something that's not right. So I talked about it with some of my family members, and they were like, yeah, but you're more the type of helping people out, doing research, and not so much an operational weather forecasting setting or anything.

So I thought about it. I withdrew my application in the end. The day after I withdrew my application, a Ph.D. position came up on tropical cyclone flood risk modeling in the Netherlands, in Amsterdam, and I was actually living in Amsterdam at that time. I was like, OK, thank you, God, if you're up there. Thank you. Because there would have been no other option in the Netherlands to study severe weather at a Ph.D. level. I honestly believe – and correct me if I'm wrong, if anybody from the Netherlands is listening – I honestly believe that I'm the only one in the Netherlands studying hurricanes on a full time basis. Other people just have it as a project or a side project or part of a side project, but I'm the only one studying it full time. That's like it's such a huge opportunity, I heard from my professor later that they had over 60 applications for the Ph.D. position and they picked me out, and that was because of my background in both applied mathematics and meteorology, and my enthusiasm.

So that's how I landed studying hurricanes in the Netherlands. Yeah, and I'm having a lot of fun now with everything.

PH: What do you think you want to do when you're done with the Ph.D.? Do you have a plan, or are you just going to see what other serendipitous things happen?

NB: My very first plan is to go storm chasing right after I finish my Ph.D. That's going to be my Ph.D. graduation present. I always wanted to do that. My boyfriend and I last year – so my boyfriend's in asphalt construction. It's like the whole other end of doing research. But we were like, OK, right after I finish my Ph.D., we're first going to go storm chasing. So that's the first thing. I finish my Ph.D. in 2020. In 2021 I'm going to be out here on the plains chasing those storms – hopefully I survive. If I survive, yeah, I don't really know what I want to do next. I really hope that I can stay at the institute and continue working with tropical cyclones. If not, yeah, then I honestly, honestly don't know. I really want to stay in the world of severe weather.

The only thing is, I got diagnosed with a chronic disease a couple of months ago, and that basically means I could go out to the States, but I will not get healthcare here. I don't really know how the system works here, but for me it's better to stay in the Netherlands, let's just say it like that. Oh, there are some people nodding up here, so I got the answer to my question. So yeah, that's a really, really big drawback right now.

If I hadn't had the chronic disease, I would have moved out here. I would have got – I want to do a postdoc or some other research-related job, with the ultimate goal to save people's lives. That's a huge thing that I want to do. That's what I'm doing in my job right now because

the research that I'm doing, we can ultimately save lives with the research that I'm doing, like pointing out the high flood risk areas, and then hopefully someone will be smart enough to build a dike or do something else. So that's always been a huge element of my job, and I hope that in the future I can find a job that again combines both severe weather and saving people's lives.

PH: That's a pretty amazing story. You should be able to find a postdoc that's here that would allow you to be here for a few months and then go home and do your work and then come back. You could probably create an opportunity like that, especially getting to know people at the conference here.

NB: Yeah.

PH: I was just wondering if – I've worked in climate adaptation world, and severe storms and increased storminess in the mid latitudes and things like that, I just think that so many other areas of the world could learn from the Netherlands' example. Are there a lot of people doing that sort of work – climate adaptation, like making consultancy or something?

NB: Yeah, yeah. So I have a lot of colleagues who re more into climate adaptation. I'm not quite sure, so colleagues correct me if I'm wrong, but right now I'm one of the only ones working on the hardcore physical side, but I have a bunch of colleagues who are working with drought, who are working with, indeed, flooding, like fresh water flooding, heavy precipitation, those kinds of things, and how to adapt to those circumstances. For instance the extreme precipitation from Hurricane Harvey, that's been a case study at my department to see how can we make Houston more flood resilient to prevent those extreme flooding events from happening in the future. Of course, you can't prevent the precipitation from falling, but you can find ways to let that water get out of the city more easily. That's just only at my department, but there are many, many research institutes and other universities who are also working on that.

But that's especially because we're – I don't want to brag, but we're the experts in flooding. We know how to build our dikes, we know how to sustain our dikes. If we hadn't had our dikes or if any of the dikes would fail, half of the country would be flooded. Especially in the western part of the Netherlands, that's where our economy is based, so if that were to flood, the Netherlands would go bankrupt. We would all of a sudden turn into a third-world country or something. It would be uninhabitable to live. So a lot of research is being done there. And we also – we, as in the Dutch researchers – consult other countries in how to improve their flood-resilient strategies. I know there are a bunch of Dutch companies that went out to New Orleans after Hurricane Katrina hit, and I know that there's now a growing group of researchers here from the States that are like, OK, you should – the policymakers here, you should take an example from the Netherlands and what they do with dikes and everything.

But yeah. I also think it's kind of what you're used to. I'm used to growing up behind the dikes, I'm used to having to cross a nine, 10, 11 meter high dike to get to the sea. You don't have ocean view houses in the Netherlands, you just don't. We also have dikes around all of our rivers, and there's special designated areas for rivers to flood. I grew up in Arnhem, which is right next to the Rhine river, and I'm just used to seeing the river flood every – at the end of winter, beginning of spring. That's just part of it, but that's also why in those areas, you just

cannot live, you cannot build, because they flood every year. I have to say it's a really marvelous sight to see all that water. It looks really beautiful, but at the same time, I'm happy that we have these extra areas because otherwise the city would flood. So yeah, there's nothing

PH: Sometime you should talk to Jenni Evans. She has an interesting idea about what the United States should do after hurricane flooding.

NB: Yeah, we also have our ideas about that, but I don't want to –

PH: No, (overlapping conversation; inaudible).

NB: I don't want to get tomatoes thrown at me as soon as I leave this room.

PH: I was going to say, though, that a good strategy for you will be to maybe to partner with a colleague who's into the adaptation side, and you be the severe weather expert, and then the two of you find colleagues here, like two other colleagues, and do a lot of joint work. That would be good because that would get you to be able to come over.

NB: Yeah, yeah. Yeah, yeah, no that's very true what you're saying. I have other colleagues and my professor, they have close contacts with people in LA, because LA is going to be prone to flooding due to sea level rise, so we're already teaming up with partners in the US. But I'm the newbie in hurricane research and I hope to meet up with other hurricane researchers, but there's 600 of them up here right now, so –

PH: Over 800, actually.

NB: Over 800.

PH: That's amazing, though. So you can go and take back the relationships. The important part is to keep in touch, actually, reach out –

NB: Yeah, indeed.

PH: – not just say oh, I met this person at a conference once. Go ahead and e-mail them, so –

NB: No, that's –

PH: (overlapping conversation; inaudible) my advice, but –

NB: – that's really important. And I would also kindly like to invite all the researchers to come to the Netherlands. I'll be more than happy to show you our flood resilience strategies. We had an associate professor from the UK coming over once, and he just looked at our dikes in amazement, and the storm surge barriers that we have, he's just like, I want that, too. I want that also in the UK.

PH: I'm just curious, at your university, are there any American students? Do they ever –

NB: Yeah, I actually have an American colleague, but she's not in the flood risk, she's in environmental policy, economics. Sorry, Hannah. (sp?) And we have some visiting researchers coming over every now and then. But I – think, think, think. No, I don't have any American colleagues right now in the water and climate risk department which I'm in. I wish I had.

PH: Right. Well, thank you so much for sharing your story –

NB: Yeah, you're welcome.

PH: – your plans, and best of luck to you.

NB: Thank you, thank you.

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