



Planetary Perspectives – Ann Carine Vandaele

Ann Carine Vandaele is Head of the Planetary Atmospheres Group at the Royal Belgian Institute for Space Aeronomy (IASB-BIRA). She was announced as the President-Elect of the Europlanet Society during EPSC2022 in Granada and will take over as the second President of the Europlanet Society in September 2023.



You started as an Earth atmosphere and climate scientist.

How did you get into planetary science?

I studied engineering, taking a physics option. I wanted my Master's thesis to be related to Earth's atmosphere, so I developed an instrument to detect pollution-related trace gases in cities. I continued to work on the instrument during my PhD thesis, soon realising that if you want an instrument to perform well, you also need accurate laboratory reference data. So, I spent the next 10 years in the lab characterising atmospheric species by measuring spectral line parameters and cross-sections (the ability of molecules to absorb photons). In parallel, I was involved in the analysis of data obtained from Earth observation satellites and ground-based stations.

I work at the Royal Belgian Institute for Space Aeronomy (IASB-BIRA), which was involved in the Mars Express and Venus Express missions by the European Space Agency (ESA). IASB-BIRA designed and built the SOIR infrared spectrometer which was one of the channels of the SPICAV instrument

onboard Venus Express. SOIR was a brand-new design never used in space before. Because it had to be developed very rapidly, it could not be tested before launch. When the spacecraft arrived at Venus in 2006, our engineers were therefore quite surprised when it woke up and proved to be working perfectly!

Up to that point, no scientists had been involved in the development of SOIR, as it was merely a technology concept demonstration. One of our department heads started looking for scientists who would be interested in the instrument and Venus exploration and, apparently, I was the first to respond! I had all the tools and knowledge I'd learned from the lab and my involvement in Earth observation instruments, so the transition to Venus was easy.

Venus is a captivating planet with a complex atmosphere that challenges me both as an engineer and a scientist. Our instrument proved to be quite exceptional and we proposed an improved version - NOMAD - for the ESA ExoMars Trace Gas Orbiter (TGO) mission. This is still orbiting the Red Planet and gathering incredible information on its atmosphere and surface. We are now designing a new high-resolution

Above left: Celebrating the delivery of the NOMAD instrument to ESA. A model has been adapted for public outreach activities.

Above right: Ann Carine Vandaele speaking at the Europlanet Science Congress (EPSC) 2022 in Granada.

infrared spectrometer, VenSpec-H, for the ESA mission EnVision, which will go back to Venus.

What would you most like to achieve as President of the Europlanet Society?

The coming years will be challenging for the Society and we need to ensure its sustainability. We must convince our members of the usefulness of being part of a Society that can represent them and lobby for their interests. We need to increase the number of members and open up the Society to corporate or institutional memberships. Alongside this, we need to ensure we are building a diverse Society, which represents the whole planetary community in its multitude of nations and their cultural difference of languages, of origins, etc, and an inclusive society that is open to everyone interested in planetary science. It is essential for the Society to be supportive of all under-represented communities,

including those excluded because of their socio-economic situation.

A sustainable Society is also a Society that can count on its members and their determination to work for their community. This can be done at a local level by supporting the Regional Hubs, by proposing activities that address the Society's objectives and promote planetary sciences, and by engaging with the public or with policymakers. The range of possibilities is tremendous, but without members willing to engage, the Society will not be able to achieve great things.

Can you tell us a little about the new Europlanet Association that will be hosted by your institute?

If the Europlanet Society wants to be a game-changer, it needs to be visible to policymakers and people making decisions. It, therefore, needs to be involved in projects – in particular in projects funded through the European Commission. This is only possible if the Society becomes a legal entity that can participate in projects as a named partner. One of the ways to get there is for the Society to become an AISBL (Association Internationale Sans But Lucratif), which is an international non-profit association. It will be associated under Belgian law and will be hosted at IASB-BIRA, which is giving its full support to the Europlanet Society: we are one of the few institutional members and we already host several key members of the Benelux Regional Hub, as well as the current Treasurer and Vice-President/President-Elect of the Society. The structure of the AISBL follows exactly that of the Europlanet Society: the Executive Board members, including the President, Vice-Presidents, Secretary, and Treasurer are the same. Their mandates are of four years and members will change following the results of the election carried out within the Europlanet Society.

What steps could the planetary community take to support diversity and widen participation from under-represented groups?

I have already expressed my wish for the Europlanet Society to be as diverse as possible and open to all under-represented groups. How to do this is not straightforward or easy. First of all, we should all work on our own preconceptions and unconscious biases. We need to make sure that nobody gets excluded or marginalised because of their origin, belief or gender, make sure that all groups get represented in conferences, as conveners, session chairs, or invited speakers, and make sure that during open discussions, we give the floor to all. We should organise meetings so that everyone, including scientists with disabilities, can access all the content and all the physical spaces. The Europlanet Society's Diversity Committee proposes activities to promote equality and integrity, checking the way Europlanet activities are organised to ensure diversity. This is very important for me.

It is also crucial to engage with students and early careers, sharing experiences and ways forward. Europlanet has already implemented a mentoring program, which is a great initiative to foster discussions between early career and established scientists. Europlanet is also supporting students in planetary science, through bursaries to attend conferences, and scientists from under-represented European countries, through reduced memberships. These are only some examples of what Europlanet is doing, and these kinds of activities should be encouraged further.

EPSC2022 was the first Europlanet in-person meeting since the pandemic, what was your favourite moment?

It was definitely the first few hours during which I met colleagues I

had not seen for years and found out what had happened since the last time we met. I enjoyed discussions over a drink and some tapas, meeting students in person for the first time, and talking about collaborations, new ideas, or future projects during the coffee breaks.

If you could talk to a younger self at the beginning of your studies or career, what would you say to yourself?

This is not really original, but I would say: 'Believe in yourself, make your own choices and decisions. Always respect your own personality, you have the right to be different.' When I was about to graduate, I met a person who told me exactly that. I was attending a careers fair, trying to find a job in industry, as I was an engineer and that's what was expected of me! This person helped me understand that it was not what I really wanted to do. What I truly wanted was to be in a lab, making experiments and devising theories to better understand the world in which I lived. I knew this, but sometimes you need someone to spell it out for you. 🧐



Ann Carine with the NOMAD instrument on the ExoMars TGO spacecraft (at the top left) in the Thales clean room.