8th March, Woman's Day 2025

> "If you are curious and you persevere, you will make it. It takes time and effort, but it is not unreachable. Just focus on one step at the time."

Maria Luisa Alonso Tagle

1. What was your path/journey to reach your current position?

I completed my Bachelor's degree in Astronomy in Chile, followed by a Master in Astrophysics. Shortly after, I moved to Belgium to pursue a PhD in Astronomy, but due to health reasons, I had to withdraw. Years later, in 2021, I started my PhD in Space Physics in collaboration with BIRA-IASB.

2. What has been your greatest source of inspiration or motivation in your scientific career?

My inspiration has always been curiosity – the drive to understand natural phenomena. A professor used to say that space is the most extreme and fascinating part of physics, yet it is still just a part of physics. I agree, it is very challenging and you have to use all your resources, but I am having lots of fun.

An additional source of motivation has been my fantastic mentors – both women and men- who believed in me and supported me, even when I was doubting myself. They stepped up when I was facing difficulties and offered a helping hand. Throughout my career, I also encountered brilliant and inspiring women who showed me that it was possible, despite of what society was telling me.

Nowadays, a key motivation for me is paving the way for future generations, ensuring they receive even more support than I did, so they can go even further - just as the women before us have done for us.

3. Which current research project excites you the most and why?

I am currently enjoying my work on the characteristics that allow a planet like Earth to retain its atmosphere – and consequently its water reservoirs - over long periods of time, in contrast to Mars. Spoiler alert: it's not just the magnetic field. In fact, Earth loses atmospheric ions through its poles at rates comparable to Venus and Mars. Understanding how planets lose atmospheric particles to space, is key to determine whether a planet can develop life as we know it. The dynamics of the near-space environment are fascinating, and their impact affects directly our atmosphere, satellites, navigation systems, and even electrical grids.

4. What were the main challenges you faced as a woman in science?

I believe the challenges women face in science are not so different from those we encounter outside of it. However, they are often amplified by the disparity of representation in positions of power and a lack of empathy towards gender-related issues. Key ones are:

- To be invisible: you are perceived as less capable than your male peers. You are told that you are not suited for science or that pursuing it means sacrificing your private life.

- Gender roles: on top of your career, you have to deal with extra duties that are not expected from your male peers. Your personal life is also subject to greater scrutiny.

- Sexual harassment: this is a major issue, particularly as a young woman in a male-dominated field, you are in a very vulnerable position. Some men holding power positions may act inappropriately, while others may feel more entitled than you to knowledge and they use this to intimidate and bully you out. In combination with the previous ones, you may feel that it is not worth it.

- Maternity: whether or not you want to have children, navigating a scientific career requires extra effort. Taking a career break is not as easy, and moving countries –often necessary for career advancement - is harder for women that want to have children. On the other hand, if you don't want children, you are often unfairly judged as heartless, career obsessed, and un-supportive of other women, on top of all the judgment that society already gives to childless women.

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It is a lot to deal with, and it can feel even harder you are starting your career. Some of these challenges fade over time, while others persist. My personal advice is to find your people, a support system that empowers you. Speak up to them when it is safe, they will help you, give you courage and support. Some people that had helped me during these years are:

- Male classmates (even professors): they can be incredible allies, stepping in to support or intervene in difficult situations. If you explain how you feel and ask for help, many will stand by you.

- Women, also from previous generations: they can provide valuable advice on how they solve(d) their issues. Ask them to be your mentors. Your classmates are also a great support, as they are dealing with the same struggles. They will make you feel seen. Together, you are stronger.

- Support network: family, friends, partner(s), colleagues, whoever makes you feel heard and seen. Find people you can openly discuss these topics with, break stereotypes, and most importantly recharge yourself. Keep distance from people that are not on your side, they will drain you.

You don't need to be a superwoman, be perfect or change the whole world, you are allowed to make mistakes. Focus on what truly matters for you, and don't waste energy in things that don't. Take it one step at a time, keep pushing forward, and remember you are not alone and you are not the first.

5. Over time, what changes in the role of women in science have you observed?

I have seen more women in science, opening the discussion and enriching the environment. This makes me hopeful, not only because their presence helps to create a safer environment for everyone, but also because institutions with a greater gender diversity tend to see the whole person and not focus on one aspect of them, fostering a healthier and more inclusive work environment. I believe that science benefits directly from diversity of backgrounds, points of view, and abilities.

6. What measures do you think scientific or political institutions should take to improve diversity and inclusion?

We cannot pretend that inequality is not real. Focusing only on a certain stage of life onward does not prevent discrimination, as a lot of it has happened even before we choose our careers. Their repercussions shape our choices and limit our options. Interviewing women who were forced to leave science, and addressing the circumstances openly is fundamental to identify the main issues. I think that having honest communication of the challenges that we face and creating a supportive environment to overcome them is key. But, it is not possible to create supportive environments to research when governments are reducing the scientific budget significantly. Thus, women, minorities, and family heads are forced to join a more stable workforce, impacting diversity and mental health in science, as the competition becomes even more extreme.

7. What message would you like to convey to young women who are hesitant to pursue a career in science?

If you are curious and you persevere, you will make it. It takes time and effort, but it is not unreachable. Just focus on one step at the time. Building a future is a cumulative set of efforts, as long as you keep putting your energy and enthusiasm in it, you will keep moving forward. Spend some time knowing yourself: understand your limits, discover how you learn better, what motivates or demotivates you, how you deal with frustration. Learn to sit down with uncomfortable emotions, as they hint us where we need to grow as a person. Those are key characteristics. You will use them throughout your career (and life) to make the most out of it. And overall, enjoy the ride!