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SPACE FOR
OUR PLANET

The point of view of Debra Elmegreen

**President
International Astronomical Union (IAU)**

The IAU was founded in 1919, it's the worldwide organization of professional astronomers with 12,000 members from 83 countries.

Our original purpose was to foster worldwide coordination and exchange of astronomical information; now our goals have been expanded to promote the inclusive advancement of astronomy, to promote the use of astronomy as a tool for development, to engage the public in astronomy, and to stimulate STEM education through astronomy.



Two areas regarding a sustainable world that impact and involve astronomy are dark skies and climate change. Light pollution is becoming a serious problem. We need to maintain dark skies so that we can all continue to enjoy our view of space, so that wildlife natural rhythms are not disrupted, and so that astronomers can continue to do observations from the ground to understand our Universe. And despite the undisputed merit of satellite communication constellations, their unprecedented large number is creating several challenges that hinder optical and radio astronomy. Our new Center for the Protection of Dark and Quiet Skies will work with the United Nations and other organizations on concrete actions to help mitigate the negative impact of satellite constellations.

We also need to tackle the problems associated with climate change, and astronomers can make an impact on this issue by helping to inform the public. We can educate about climate change from the perspective of studying evolution of atmospheres on the Earth and other planets. Our continued studies of astronomical objects and of Earth from space will help in our understanding of these issues. Through our outreach programs we can impress upon the public and schoolchildren that our pale blue dot needs protecting.

Astronomy inspires natural curiosity and so draws schoolchildren to STEM fields. Helping their education and their teachers' development through training, workshops, and symposia will lead to a generation better able to tackle this transition.

It is vital that we engage a diverse and inclusive global community in these problems, since that will broaden ideas and perspectives and lead to better solutions. We hope to accomplish this through our various outreach, educational, and professional astronomer meetings. Ultimately such broad involvement is vital for the well-being of our planet.

Always remember that "We are all together under one sky."



Dark skies need to be preserved to continue to inspire the present and future generations

Connie Walker
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Our place in the universe starts with being able to see the night sky. It is now estimated that 83% of the people living on Earth live under light polluted skies. Light pollution is not just a problem for our cultural heritage but it also threatens remote mountain tops where there are major world class astronomical facilities. With the newest generation of ground based observatories coming online conducting cutting edge research into things like dark matter, life on other planets, and other thought-provoking, astronomical, cosmological questions, the International Astronomical Union has established a recommended maximum tolerable threshold of light pollution for astronomical sites of about 10% above national background levels.



Light pollution is growing globally at an estimated rate of between 2 and 6% per year which is reducing darkness everywhere including at the observatories' sites. These rates risk hitting the 10% threshold in the next decade. In addition to its impact on astronomy, there is convincing evidence that light pollution negatively affects ecological and biological systems such as nocturnal animals, insects and various human biological systems that are important to our health and our well-being. There is a great impact on birds for instance, especially when they are migrating. They might migrate through cities, and cities reflect the sunset on buildings and start circling buildings and get exhausted, fall and die. They get so hungry in the process of doing all that they actually also die. You go to these big cities for instance in North America, like New York or Toronto, any of big cities - studies have been done in these areas. One million birds each year actually die this way. Another one is sea turtles. Mother sea turtles come on shore between May and October. They lay eggs in the sand and they leave these nesting areas which may be a foot deep with a hundred eggs. If there is too much light, when these eggs hatch, they think the reflection of starlight on the ocean is actually the hotels and companies on shore so they are heading in the wrong direction and never make it back into the ocean. Moths that are night-time creatures that pollinate our beautiful bushes are also affected, you name it, fish, salamanders, amphibians are affected by too much light at night. They may also affect crucial ecological systems that are connected to agricultural and food supplies. Thus monitoring and mitigating light pollution as much as possible is extremely vital not just for our understanding of the universe but for Humanity and the planet's well-being as a whole.



If you have never been brought up in a place that has a beautiful starry night sky, how can you be influenced? Because for millennia the night sky has been an inspiration to humanity in so many ways that have created not just our interest in the stars and the science behind them, but things like literature and art and even compositions like Holst's The Planets. Things that are incredibly beautiful, things that have been created because of the influence of the night sky. If you don't have that inspiration any longer for the next generation, what's going to happen? I don't even want to think about it. So we have to, as stewards of the Earth right now, we have to protect the night sky, keep it as dark as possible, and reverse the process.