

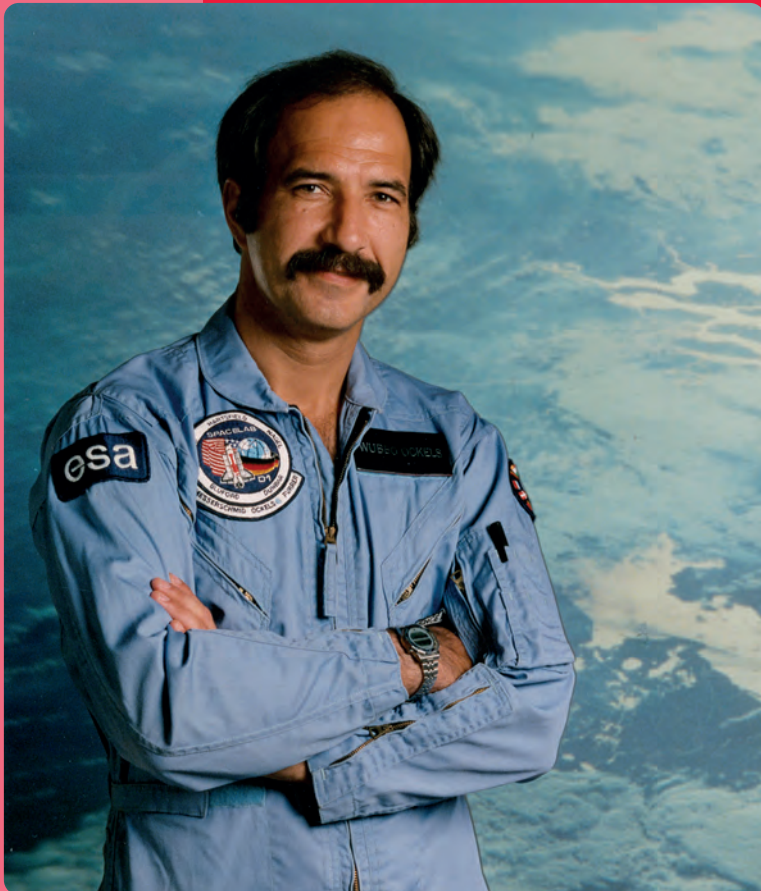


university of
 groningen

wubbo ockels school
 for energy & climate

Wubbo Ockels

a multitalented man



Ton Schoot Uiterkamp



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Colophon

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The Wubbo Ockels School for Energy and Climate



What characterises a university is its community. Neither one professor, nor one student makes a university. Working together to improve each other and society! That is the hallmark that has made our university great.

This is also the central idea behind the establishment of the four Schools: Jantina Tammes School of Digital Society, Technology and AI, Aletta Jacobs School of Public Health, Rudolph Agricola School for Sustainable Development, and Wubbo Ockels School

for Energy and Climate. The Wubbo Ockels School pursues this goal and places itself in service of a better world. In the words of Wubbo Ockels himself:

“Enough is enough, we have gone too far! The industrial revolution has put us in an undesirable situation. We have raced through nature; we are destroying our sources of life. We have to choose a different path; we have to change our lives and the way we do business.”

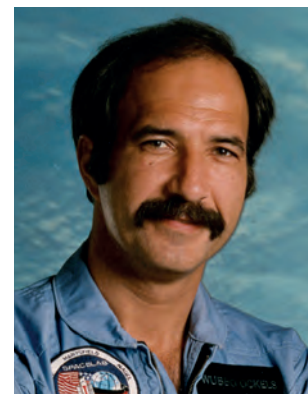
Ockel's call to 'choose a different path' has inspired many to put effort in protecting 'spaceship Earth' as much as possible. It also inspired the School. Our goal is: Working together to improve each other and society thanks to a greener and fairer energy transition and climate policy!

The above goal places researchers and students at the heart of the Wubbo Ockels School's action. The School will serve the researchers, students and society, being an instrument aimed at facilitating research and educational activities that help society choose the 'other path'.

The School is grateful to Wubbo Ockels for setting an example for us and will endeavour to take his mission further!

Lorenzo Squintani
Director of the Wubbo Ockels School for Energy and Climate

Wubbo Ockels, a short biography



Wubbo Johannes Ockels was born in Almelo on March 28, 1946. He studied physics and mathematics at the University of Groningen (UG). He did his PhD study in the Nuclear Physics Accelerator Institute (KVI) at UG. In 1978 he obtained a PhD degree in experimental nuclear physics from UG. Prof. Rolf Siemssen was his PhD advisor.

In 1978 he was selected by the European Space Agency (ESA) to train as a payload specialist for NASA/ESA space missions. In 1985 he became the

first Dutch citizen astronaut when he flew on the STS-61A Challenger Space Shuttle mission (October 30 – November 6, 1985).

From 1986-2003 he worked at the European Space Research and Technology Centre (ESTEC) in Noordwijk. From 1999 as head of the ESA Office for Educational Project Outreach Activities. In 1992 he became a part-time professor in Aerospace Engineering at the Technical University Delft (TUD). In 2003 he became a full-time professor in Aerospace Sustainable Engineering and Technology, at TUD. From 2004-2011 he also served as an extraordinary professor at UG in Atmospheric systems for sustainable energy and transport.

Wubbo Ockels died from cancer on May 18, 2014. He was survived by his wife Joos, whom he married in 1969. Joos Ockels-Swaving studied educational psychology at UG. Wubbo and Joos Ockels had two children Gean and Martin.

Wubbo Ockels was a multitalented man

Ockels played many roles in his life simultaneously and seemingly without any effort. To mention just a few, besides being a scientist/ engineer and astronaut, he was an educator, communicator, professor, inventor, initiator and innovator.

Wubbo Ockels the astronaut, educator, professor and communicator

His flight on the space shuttle Challenger was literally a life changing event and a turning point in his career. He admired the beauty and splendour of the planet but he also saw industrial pollution, ocean contamination and large-scale deforestation. He realized how small our planet is. When he wanted to take a picture of the Netherlands as seen from the north over Denmark while the shuttle was speeding at 27.000 km/hr towards the north he had to position himself already over Rio de Janeiro!



Like many other astronauts he returned from space with a very strong inner drive and a sense of mission aimed at planetary conservation and sustainability. After observing our fragile and beautiful planet earth from above he wanted to share his overwhelming emotions and experiences with as many audiences as possible. He could teach and stimulate especially children and students like no one else.

For example, during a visit to a primary school in the village of Stedum he asked the pupils what the most important task was of an astronaut in a space ship. After some hesitation they answered: "To take care of managing and recycling urine and excrements." He answered: "Yes, because otherwise it would rapidly become a mess on board."

He proceeded by saying to the children: "I am an astronaut, but do you know that you are astronauts too?" When they looked at him somewhat puzzled, he said: "Yes, and your spaceship is called planet earth, and what do you need to do to keep your spaceship clean and operational?" They answered: "Take good care of it otherwise it would become a mess!" It was the fastest demonstration of most effectively explaining the rather abstract concept of sustainability to a group of curious young people, clearly showing Ockels' teaching talents.

Ockels also showed his skills as a communicator by presenting the popular scientific television program Kijk - TV from 1987 till 1989.

Wubbo Ockels the scientist/ engineer, inventor, initiator and innovator

Ockels had a playful, creative and imaginative mind as illustrated by some of the projects he was involved in over the years. His first patent application (at the age of 22) was for a bicycle chain-cleaning device!

Most of his ideas and projects were either aimed at generating renewable energy or using renewable energy in cars, buses and boats.

Laddermill

In 1996 1997 he filed a patent application for a 'laddermill'. He realized that air moving at high altitudes contained a very large and nearly always present amount of wind energy. By launching a very large rotating chain containing kites going up and down the wind energy could be harvested.

Ockels and his students at TUD worked and published extensively on the laddermill concept that also could be applied in the propulsion of large container ships. Among others a research group at TUD is keeping Ockels' laddermill concept alive by actively modelling and exploring kite wind power systems.



Laddermill research in wind tunnel

Solar cars

Starting from 2001 Ockels was the driving force behind the participation of TUD student teams in the bi-annual World Solar Challenge race from Darwin to Adelaide through the Australian outback. With an unparalleled series of increasingly advanced so called Nuna solar cars Ockels' teams won the race in 2001, 2003, 2005, 2007 and 2013. After their graduation many members of the former Nuna teams continued to work in the field of electric vehicles.

Following TUD, the Technical Universities of Eindhoven and Twente entered the solar car competition as well. They were followed by a joint team from Groningen consisting of participants from secondary vocational education colleges (MBO) Alfa College and Noorderpoort, the Hanze University of Applied Science and the University of Groningen UG. Together they built the 'Green Lightning' solar car. In October 2019 the 'Green Lightning' finished fourth in the Bridgestone World Solar Challenge in Australia. The next edition of the event will take place from October 22-29, 2023.

Solar boats

Inspired by the solar cars race a number of TUD students founded the TUD Solar Boat Team. Naturally Wubbo Ockels was there to guide them to the first Frisian Nuon Solar Challenge to be held in 2006 along the full course of the famous 'Elfstedentocht' (Eleven cities skating tour). The TUD team won. Currently, there are many solar boat racing events.

Ecolution

Ockels liked water sports. He participated in a skiff the 100 km Haarlemmer Ringvaart Rowing Regatta. Wubbo and Joos Ockels planned to spend their 'retirement years' on a sustainable 'zero emission' sailing ship so they sold their house in Aerdenhout and ordered a customized very innovative ship.

Designed by ship designer Gerard Dijkstra, the ship was constructed between 2007 and 2010 at the Marvis Shipyard in Groningen. While sailing the ship generated its own electricity by means of propeller screws underneath the hull. The electricity was stored in a large number of batteries simultaneously acting as ballast. The ship was equipped with a diesel engine propelled by biodiesel. The ship was automated in such a way that it could be sailed by a crew of two. Just like happened in other projects of Ockels, students from the Hanze University of Applied Science guided by Ockels assisted in developing and building special innovative features for the ship.

The ship was christened 'Ecolution' by Joos Ockels in Groningen in August 2010. After Wubbo's death Joos sold the ship to the Foundation WadDuurzaam. The ship was partially reconstructed between 2019 and 2021. The diesel engine was removed and the ship is now able to sail on fuel cells running on hydrogen. The current home harbour is Lauwersoog.



Richard Branson (l) and Wubbo Ockels with the Superbus

Superbus

In 2007 the plan for a possible high speed rail link ('Zuiderzeelijn') between Amsterdam and Groningen was cancelled.

In that same year Ockels received governmental funding to realize his concept of a luxury 15 m long, 250 km/hr electric 'Superbus' for a maximum of 23 passengers. The first bus, designed in the format of a stretched formula one racing car was built. It received its license plate on May 15, 2012.

The bus was shown in many places around the world. In order to operate fully the vehicle would have needed a customized infrastructure. The Superbus did not enter service. Perhaps it was ahead of its time. Since 2020 the bus is on display in the Netherlands Transport Museum in Nieuw Venneep.

Green Canals

At the end of his life Ockels lived in the centre of Amsterdam. In 2011 the world-famous Amsterdam city canal system celebrated its 400 years existence. In that year Ockels started 'The Green Canals' Foundation (Stichting De Groene Grachten), together with Suze Gehem and Jelle Rademaker. The Foundation was aimed at making the old historic architecture in Amsterdam more sustainable for example in the field of energy supply and conservation in order to hand it down in an acceptable way to future generations.

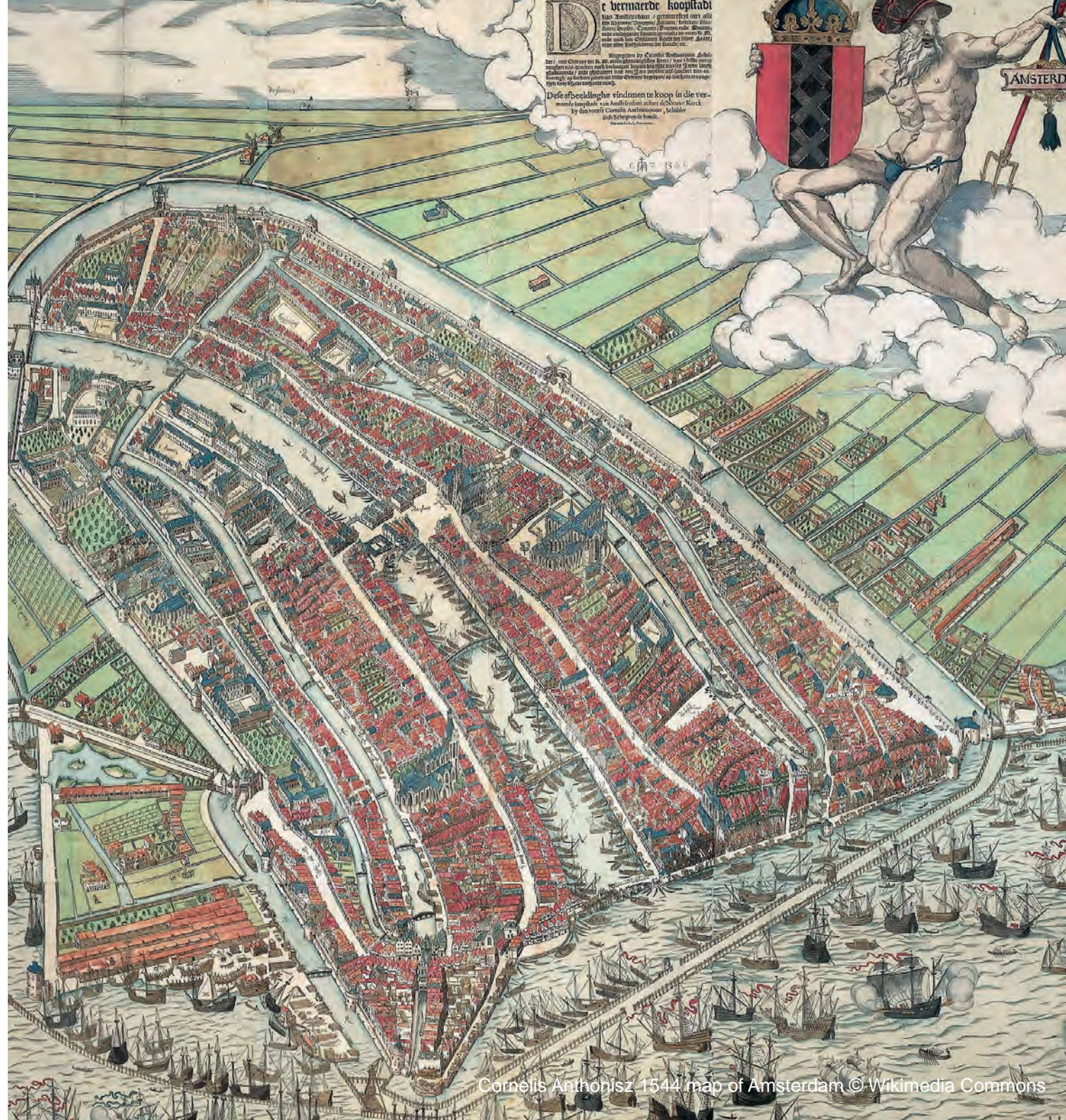
And with success! Suze and her team are experts both in the Netherlands and abroad on energy saving, sustainability and circularity in historical buildings.

Quote Wubbo: "Because if it can be done here on the canals, it can be done anywhere." Currently the Foundation is fully operational and branching out its activities to other cities as well.

Happy Energy Foundation

Also, in the year 2011 Wubbo and Joos Ockels, together with Erik Schoppen and Marleen Zoon launched the Happy Energy Foundation. The mission of the Foundation is 'to positively impact the planet by changing people's mindsets'.

We have to adjust our course and change the mindsets of people! Committed to transition for a much more sustainable society on planet Earth. "We have to protect what we love..." Currently, the foundation is located in Voorburg.



Conclusion

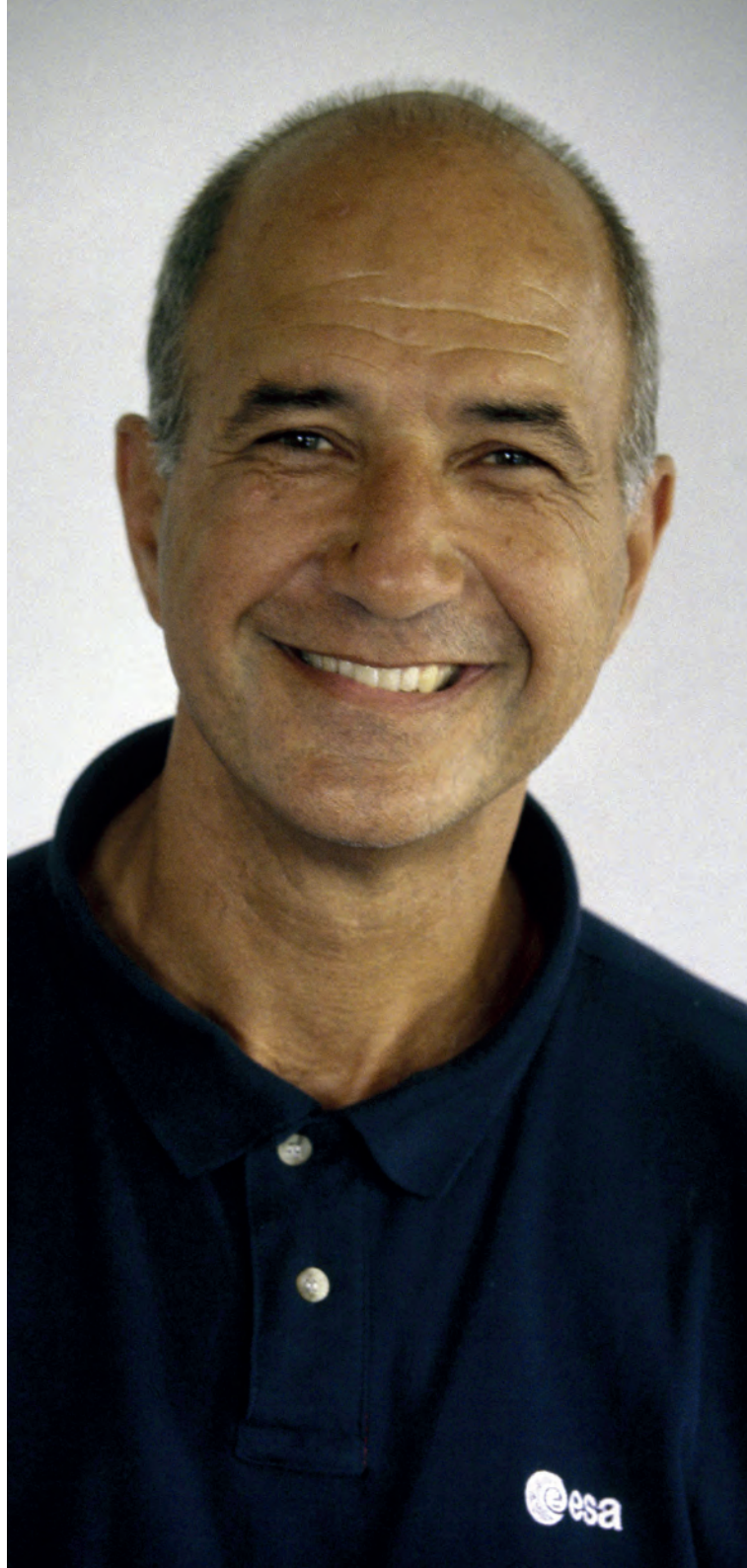
The memorable life and career of Wubbo Ockels is not only that of a passionate and gifted human being highlighted by his own experience as an astronaut but also reflects the historic events he witnessed during his life. Ockels' space flight in late 1986 occurred at a crucial point in time in which humans began to realize that many environmental issues no longer could be addressed locally or nationally but needed to be approached at a global scale.

In September 1986 the Montreal Protocol was signed aimed at phasing out the production of numerous substances that give rise to the global problem of ozone depletion better known as 'the hole in the ozone layer'.

In October 1987 the report Our Common Future was published. It launched the concept of sustainable development 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

In 1988 The Intergovernmental Panel on Climate Change (IPCC) was established. The IPCC is an intergovernmental body of the United Nations charged with advancing scientific knowledge about climate change caused by human activities.

In 1992 the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro. Two important legally binding agreements were opened for signature: The Convention on Biological Diversity and the UN Framework Convention on Climate Change (UNFCCC).



Both IPCC and UNFCCC are somehow related to the Chernobyl nuclear disaster which occurred on April 26, 1986. Combined with the ever-increasing worldwide evidence of the climatic effects of the massive use of fossil sources of energy, "Chernobyl" gave an extra impetus to the development of renewable sources of energy like wind turbines and solar panels.

Wubbo Ockels' lifelong mission was to promote sustainability by trying to convince as many people as possible to participate in activities aimed at stopping large scale human planetary destruction and to adapt to the inevitable environmental changes that would come anyway. In 1986, he was the first recipient of the Wubbo Ockels Prize awarded for outstanding scientific and technological contributions made by a Groningen-associated individual.

He himself initiated the Wubbo Ockels junior prize for best efforts made in the field of energy and/or sustainability by primary and secondary schools in the Province of Groningen. Ockels was not only a full professor at TUD but from 2004-2011 he was also an honorary professor in 'Atmospheric systems for sustainable energy and transport' with IVEM (currently IREES) at the UG Faculty of Mathematics and Natural Sciences, the predecessor of the Faculty of Science and Engineering.

Ockels' many lectures and contributions to courses and programmes at UG and Hanze UAS are legendary. He also gave inspiring and memorable lectures on energy and sustainability to hundreds of primary school children in the UG Academy Building under the auspices of the UG Children's Academy. Very rightly UG connected the name of her eminent alumnus Wubbo Ockels to her School for Energy and Climate.

