STRÖMSTAD AKADEMI
Nordiskt institut för avancerade studier

Newsletter, October 2021, international edition

Content

Editor's corner

Editor´s corner

Anders Gustavsson

Surgeon and Chairman of the Board Peter Fritzell reports on important events in Strömstad Academy.

Vice-Chancellor and Information System Scientist Per Flensburg informs about current events in Strömstad Academy. He emphasizes the importance of members using Strömstad Academy's discussion forum.

October´s chronicle in Strömstads Tidning was written by **Climate researcher Eugen Ungethüm**. He explains how global warming is happening.

Proposals for new chronicles in Strömstads Tidning should be sent to Mariana Back mariana.back@tekniskamuseet.se

Educator Åsa Morberg draws attention to World Teachers' Day on 5 October. She welcomes the fact that Statistics Sweden (SCB) has been commissioned by the government to study the distance education that took place in primary and secondary school during the covid-19 pandemic. She also comments on the Government's bill that subject grades should replace course grades in upper secondary school.

Educator Carl Olivestam and **Psychologist Gudrun Olsson** are presenting a photo collage from the Science Festival in Strömstad from 30 August to 2 September.

Physicist Ari Lampinen puts the 2021 Nobel Prize in Physics in a climate historical perspective. Very illustrative and thought-provoking ahead of the upcoming climate conference in Glasgow.

Redaktör: Anders Gustavsson
Layout: Per Flensburg

Based on the 2021 science festival, **Pediatrician Gudmund Bergqvist** reflects on the relationship between music and science. He also calls for new publications from Strömstad Academy's members.

Psychologist Gudrun Olsson reports from a research stay at Kavalla, the Swedish House in Greece. The place represents "hard work and unexpected conversations". Here, cultural workers and researchers from all disciplines meet. "The positive force of cross-border rests on the house". https://kavallavannerna.se/2021/rum-nummer-7/

On 25 October, **Ethicist Sten Philipson** participated in a debate in the Swedish radio's Studio One on fundamental values.

On 29 September, ST-tidningen had a report entitled "New book on historical pandemics". The article was based on an interview with **Ethnologist Anders Gustavsson** https://743b071a.flowpaper.com/STT202109291001FlowPaperJoined/#page=10

In the publication series Acta Academiae Stromstadiensis, AAS, no. 58 has the anthology ”Pandemier - dåtid och nutid” been published. http://stromstadakademi.se/AAS/AAS-58.pdf

In the publication series Acta Academiae Stromstadiensis, AAS, no. 59 **Linguist Jens Allwood** has published ”Living with Uncertainty — A Plea for Enlightened Skepticism”. http://stromstadakademi.se/AAS/AAS-59.pdf

In the publication series Acta Academiae Stromstadiensis, AAS, no. 60 **Linguist Jens Allwood** has published A skeptical defense of skepticism”. http://stromstadakademi.se/AAS/AAS-60.pdf

In the video series SAV no. 36 **Orthopedist Margareta Berg** has published ”The need for scientifically validated surgical training methods – i.e. How do you transform a medical school student to a skilled surgeon?” http://stromstadakademi.se/SAV/SAV-36.pdf

In the video series SAV no. 37 **Neurologist Peter Borenstein** has published ”Yrsel efter nack- och skalltrauma”. http://stromstadakademi.se/SAV/SAV-37.pdf

In the video series SAV no. 38 **Mathematician Per Enflo** has published ”Mathematics and Music – What is the Connection?” http://stromstadakademi.se/SAV/SAV-38.pdf

In the video series SAV no. 39 **Mathematician Per Enflo** has published ”Beethovens pianosonat op 111, d-moll”. http://stromstadakademi.se/SAV/SAV-39.pdf

The anthology "Pandemics - past and present for the future" has been published and presented through a press release. http://stromstadakademi.se/Pandemierforhand.pdf. The book can be ordered via Strömstads Bokhandel: std.bok@telia.com or Bokus.com. The price is SEK 249. https://www.bokus.com/bok/9789189331006/pandemier/

I want to urge a previous call for all members to verify and complete their personal information on the Academy website. Also try to recruit new members to the Academy, not least young scholars. Please, send suggestions to **Vice-Chancellor Per Flensburg** per.flensburg@stromstadakademi.se

I wish new contributions to the November issue 2021 of the Newsletter sent to my e-mail address with deadline on 26 November 2021: anders.gustavsson@ikos.uio.no . Send short articles, opinion articles and/or reviews of new scientific literature. Swedish contributions should have an English translation.

Please, also send contributions to the Academy´s publication series Acta Academiae Stromstadiensis, AAS, and the video series SAV to the e-mail address: gudmundbergqvist@hotmail.com

Chairman's report

Colleagues in Strömstad Academy,

The Swedish society has opened up now since a month ago, and we have not seen any dramatic change (in the corona situation) for the worse. Let us continue to be careful.

The work in the various groups continues, and there are intense activities in several local chapters. Gothenburg with Jens Allwood as initiator this week conducted a Webinar on Preschools which was very interesting, and which can be watched via our Website. How are our youngest citizens programmed? Who decides, and what about legal aspects? I can really recommend it for reflection. In Falun, the collaboration with Folkuniversitetet is ongoing, which will result in a Science Saturday, with focus on 5 of the UN's 17 items on Agenda 2030, on 11/12. The hope is that we will also be able to broadcast virtually, and to be able to record. We'll see how it goes, in the end it's a question of money.

Two possible debate subjects, which could be raised in the Academy, have been presented in recent days. They could fit in the Discussion Forum and/or in the Newsletter. Urban Waldenström has raised the issue of Swedish society and how it has developed over the past ten years, and I have thought about the concept of "consequence neutrality" based on the book "Genuine News" by the journalist Erik Fichtelius. Several positive reflections have been received, but some are also thoughtful. We should be careful not to comment on issues where we lack "relevant competence", as this may be to the detriment of the Academy. It is worth thinking about where and how we should publish based on different target groups. Consequence analysis first! I would like to ask all members of the Academy to consider the issues mentioned above, and feel free to submit your own suggestions on different topics. Per Flensburg has produced a platform, "Discussion Forum" which is available to members on the Website. Here is an opportunity to think together, also about issues like target groups.

Next month, both meetings in the AU working group and the Board will follow, and we will come back with information in the November letter.

I wish all members a good continuation of the fall, or of the summer if that is more relevant!

Peter

Vice Chancellor's report

As you can see, there is a new layout of the Newsletter. Several members have complained about my two-column layout, so now I only do one column. The layout work will also be much easier that way. But the question is whether it will look better?

In the last Newsletter, I had an appeal about what the goal of our Academy is and why the individual member had joined the Academy. The response was overwhelming: One (1) person responded. The obvious conclusion is that either the question is not important or no one reads the Newsletter. Probably a combination of both. This means that if we are to have a goal or a vision, it must be based on a massive lack of interest from the Academy's members. However, I refuse to believe that this is the case!

There is certainly a group of members who are there just to support the Academy. They may think we have an important message, but do not have the time / ability to get involved themselves but do support with membership fees. This is perfectly OK. Then there is a group that is

happy to participate in the academic discussions, enjoys the discussions and thinks that we have a nice debate climate. This is shown by participating in our webinars, which have gradually become quite well attended. But this group just wants to talk, they are not interested in either writing anything or making any other contribution to the Academy. This is also perfectly OK, they contribute with their comments which often contain completely new aspects.

The next group are those who are active by writing articles, recording webinars or being elected representatives. These account for most of Strömstad Academy's activities. The undersigned belongs to this group. I am afraid that we often run over the members who would like to do something, but are slow starters. This is not OK, everyone should feel welcome to take the initiative.

The vision for Strömstad Academy is of course to become a legitimate university with both research and teaching. We have the subject competence, we have the breadth and we have a professional organization on paper. We also have some abilities that other universities do not have, e.g. minimal administration, open environment where there is a difference between thing and person and with no competition for funding or positions.

Ahead of the upcoming board meeting in mid-November, we will present a marketing strategy, a ditto policy and hopefully also a plan and budget. These are based on the thoughts I have expressed above. I also expect significantly more physical IRL meetings next year.

Last, but not least, I want to welcome a new member, Sveza Filipova, to the Academy.

PRESS STOP: I was at a scientific festival at University West on the 29th and there we decided to arrange joint webinars. Details will come later.

Åsa Morberg: Subject grades

Subject grades are now proposed by the government - the upper secondary school's internal activities will change, as will the role of grades

Åsa Morberg

The Government now proposes in a bill that subject grades should replace course grades in upper secondary school and also submits proposals for other changes in the grading system. The purpose of the changes is that the grades in the future will better reflect students' knowledge and promote their knowledge development. In the bill, which is based on a proposal from the Grading Inquiry 2018, the Government proposes that the course-designed upper secondary school be replaced with a subject-designed upper secondary school with a subject grade.

Subject grades instead of course grades can give students more time to progress/advance in a subject before the decisive grades are set. It provides better conditions for in-depth learning and learning over time, says the Government. The changes concerning the new principle of overall assessment are proposed to take effect from July 2022. With regard to subject grades, it is proposed that the first students who begin their studies in the new system will do so in the fall of 2025.

A reasonably unanimous body of teachers and researchers claim that the function of grades is to sort students into "prime" and "second" students. Through the sorting, the students who have from the beginning been given the conditions to do well in upper secondary school, ie. born by highly educated parents. They get motivation through the grades they get. These students

can also be sure to end up far ahead in line for the good academic educations that lead to high-status professions.

For the weak students, the grades are almost devastating. Through subject grades, they make it clear that these are among the worst students. They do not have the conditions to follow the teaching, but must still participate in the frequent tests. They lose the most important driving forces for school work, the desire to learn and the success of learning. They also lose self-confidence and faith in the future.

The Government has now submitted a bill to reintroduce subject grades in upper secondary school. In order to be able to submit subject grades, changes are required so that "courses become own subjects" or that "subjects become own courses". Grades and assessment are, after all, an integral part of the learning processes.

The grading system is linked to the acquisition of knowledge, skills and abilities, which are then reported, checked, assessed and graded. There should be a focus on the organization of teaching and not only on the type of grades to be given. School subjects are not static constructions. They are changing, evolving and being phased out. School subjects change as to designation, content and form. A school subject consists of a heading for school teaching in a specific and delimited area. A school subject is intended to contain things that give the students better coping skills in life and also things that make our whole society function better. Of course, these constructed school subjects should enable students to learn the content and teachers should naturally also be able to teach about this content.

These have been problems that we all know. The school is politically controlled and political influence can change the school subjects both regarding content and form. Scientific findings also affect school subjects. On an overall level, it is the Swedish Parliament and the responsible authority, the National Agency for Education, that is considered to be of great importance for a school subject's development and design, while teachers and students are important mostly for school subjects' concrete and practical implementation in the classroom. The interpretations of the governing documents differ, which means that the practical orientation of a school subject changes

Teacher education is also sometimes used to change the school. In addition, many teacher educators have been and are textbook authors. Teaching materials have had and are today having a great impact on the development of school subjects. Sometimes the teaching aid has even been equal to the course in the subject, and not the instructions given. Equipment, premises and a number of other factors also affect the development of school subjects. The grading system is considered to promote learning, reward hard work and reflect the knowledge the students actually have. Of course, every teacher knows that this is not the case.

But we pretend, anyway.

Åsa Morberg: World Teacher’s day

World Teachers' Day 2021-10-05

Åsa Morberg

Today is World Teacher's Day. On World Teachers' Day, we celebrate all teachers - both in Sweden and in the rest of the world. The theme in 2021 is "Time for democracy". Let us at Strömstad Academy celebrate all teachers, but also raise our voices to give teachers good working conditions so that they can practice their profession. Together - locally, nationally and

Åsa Morberg, President of ATEE, a European Research- and Education Organization, at the lectern for the opening ceremonies of the latest conference before the pandemic outbreak. The conference was held at the Bath Spa Universtiy, Bath.

globally - we need to put pressure on our governments to create a positive and safe working environment for all teachers, so that teachers can fulfill the most important task, namely to teach and develop children, young people and adults.

The work is varied and as a teacher there is great freedom to set up the teaching within the framework of current curricula and syllabi. Today, there are four different teacher qualifications for teachers: preschool teachers, basic teachers, subject teachers and vocational teachers. Only those who have a diploma from the National Agency for Education may set grades and become eligible for permanent employment. The content of the teacher education depends on the type of school and which subjects the teacher is to teach. The length of educations varies between 1.5 years and 5.5 years depending on the specialization.

Teachers are also one of the largest professional groups in the municipal sector. In total, there are approximately 56,000 pre-school teachers and slightly more than 100,000 monthly paid primary and lower secondary school teachers. The recruitment situation for teachers has been challenging over the past five years, but has improved somewhat in recent surveys. However, there is still a threatening large shortage of teachers in Sweden.

Teacher education is by far the largest education within the Swedish college / university that leads to a vocational degree in terms of the number of beginners. In the academic year

2018/19, for example, approximately 13,370 individuals began teacher training. The number of new teacher students is now back at the same high levels that prevailed in the early 2000s. Despite this, not enough teachers are trained to meet national recruitment needs.

Both the National Agency for Education and SKR estimate that significantly more teachers would need to be examined to meet the needs, around 3,000 more per year. However, given that several of the teacher educations have a low application pressure and many dropouts, this is not a realistic future scenario at present.

World Teachers' Day was established in 1994 by the UN agency UNESCO and is celebrated every year by the member organizations of Education International. The teachers' union and teachers' organizations around the world pay attention to teachers and their important role in ensuring that all children and young people receive the education they are entitled to.

Education is crucial for creating long-term sustainable societies where democracy and equality prevail. All teachers really make a difference for children and young people all over the world every day! Teachers must be given the conditions to be teachers. The right to education is an important part of Agenda 2030.

The fourth goal is about the right to education and aims to ensure an inclusive and equal education of good quality and to promote opportunities for lifelong learning for all. The goal itself is divided into sub-goals which, for example, is about all children having access to preschool that is preparatory for school. Another of the sub-goals is that everyone should receive a free, equal education of good quality.

Other sub-goals are about access to vocational education and college and that all children and young individuals should have the opportunity to learn to read and count. There are also intermediate goals that aim for everyone who goes to school to learn about sustainable development, which includes subjects such as gender equality. The Host Teachers' Day also celebrates the adoption of the UN Universal Declaration of Human Rights in 1948, in which education is considered a fundamental right. This document is also the basis for the school's curricula.

Åsa Morberg: Statistics Sweden and distance education

Statistics Sweden has been commissioned to conduct a study on distance education during the pandemic

Åsa Morberg

In the fall of 2021, Statistics Sweden (SCB) will, on behalf of the Government, carry out a study on distance education in primary and secondary schools during the covid-19 pandemic. In fact, it sure is about time for the business to be studied. The activities with distance education have been ongoing throughout the covid-19 pandemic. It has been largely ignored by the Ministry of Education. All teachers became as of 2020-03-12 just seemingly magically distance teachers and distance education teachers. Basically from one day to another, the Swedish upper secondary school switched to distance learning as a result of the corona pandemic. The Swedish upper secondary school teaching staff was faced by closed school buildings and dismissed high school students. All to prevent Covid-19 from spreading. It was a necessary decision made by the Government to prevent the spread of infection in Sweden. At the same time, the Government puts all upper secondary school teachers in a difficult teaching position. Guidelines from the Ministry of Education came much later, like the yeast after the dough.

In order for it to be possible to draw lessons and evaluate the consequences of distance education during the pandemic, more knowledge is needed and Statistics Sweden will therefore conduct a survey aimed at principals, where questions are asked about the extent of distance education in upper secondary and upper secondary school in spring of 2020, fall of 2020 and spring of 2021. The information can then be linked to register statistics to measure later outcomes, and in this way any effects of distance education can be measured. During the pandemic, the importance of school has become clear to everyone, and for most students, physical presence in education is the best. In order to be able to follow up long-term consequences for the students, we need more knowledge about the extent to which distance education has been conducted in the school during the pandemic. Statistics Sweden will therefore conduct a survey on this during the fall, says Minister of Education Anna Ekström.

Shouldn't studies also be aimed at high school teachers? There were only a few high school teachers in Sweden who had experience of distance learning. Exactly how many is difficult to say. The upper secondary school closed in principle from one day to the next and the preparation time for the transition to distance education therefore became virtually non-existent. The high school students were all largely accustomed to computers, more accustomed than many in the teaching staff were, and this facilitated the transition to digitally based distance learning. The teachers were still worried: Would the technology work? It all depends on the Internet and good connection? Will we have time to prepare? Do we know our Laptops well enough? How should we be able to put fair grades at a distance? How should we be able to maintain quality?

Many high school teachers joked among each other about what would happen if Sweden were forced to close down the high school as in other countries, which were harder hit than Sweden. The high school teachers joked among each other that what would be stated from a central angle: "As usual, we trust that the teachers will find a solution." That's exactly how it turned out. Distance learning eventually became the teachers' own responsibility. The heroes of the Corona Pandemic, alongside the heroes of health care, are teachers in high school who became distance learning teachers as if by magic overnight. Healthcare staff are rewarded and extolled, but high school teachers in Sweden also deserve to be in the spotlight, extolled and rewarded. They are also heroes in Corona Pandemic Sweden.

It is not really a mistake, according to our national control system for the school system, to hand over to the professional teachers to solve the didactic and practical teaching problems on the classroom floor, but guidelines and frameworks must always be given by the Government and Parliament, as always by high school principals. Because the Corona pandemic spread so rapidly, the Government apparently did not have time to provide frameworks and guidelines. Most principals apparently did not have the time either. There was no preparedness for a pandemic. The corona pandemic really took Sweden's high schools literally and figuratively off guard. A new commission should be given to Statistics Sweden to direct a study of primary school and upper secondary school teachers to study the effects of distance education. It is important that the performers have their say in this.

Gudmund Bergqvist: Music and Science

On music and science

Gudmund Bergqvist

During this year's Science Festival, we could listen to two fantastic lectures about science and music, as well as attending a concert in the form of a premiere performance of a string quartet by Elaine Bearer and listen to Per Enflo performing a Beethoven sonata.

Their performances will be posted on SAV (Strömstad Academy videoseries) so that we can enjoy them again. However, the connection between music and science is not new. During the Middle Ages, music was included in mathematical sciences.

There are a number of composers who have been outstanding in science or had other special skills in addition to the fact that many were outstanding as musicians on various instruments. I'm not talking about musicology where e.g. Bela Bartok, Zoltan Kodaly and György Ligeti were prominent music ethnographers, and Anton Weber a specialist in early music, but about other sciences.

Among our Swedish composers it can be mentioned that Franz Berwald worked as an orthopedist, and Karl Birger Blomdahl had a degreee in biomedicine. Aleksander Borodin was a medical chemist with a professorship in this subject in S:t Petersburg.

Many have done other studies besides music or has been particularly prominent in other activities; such as Pierre Boulez in mathematics and Gustav Mahler in literature and philosophy. Jean Sibelius and Igor Stravinsky studied law and Ralph Waughan Williams was a historian. Others have had particularly good knowledge in other subjects such as Arthur Honegger about trains, and Olivier Messiaen in ornithology. This was reflected in some of their works. Sergei Prokofiev was a very skilled chess player and also played against professional players and Alban Berg was very knowledgeable in literature. Many had other professions such as many Russian composers in the 19th century being officers, or civil servants. Gösta Nyström was also a painter and journalist, and Antonio Vivaldi was a priest. It is thus a very versatile picture of different composers' knowledge in various other areas. The connection between composition and other intellectual skills seems to be an area for further exploration and we were fortunate to take part in Elaine Bearers and Per Enflo's research. Strömstad Academy has taken the lead here in Sweden.

Ari Lampinen: Physics Nobel Prize 2021

Physics Nobel Prize 2021 awarded for climate change research

Ari Lampinen

The Nobel Prize in Physics 2021 was awarded to Syukuro Manabe and Klaus Hasselmann for climate change research and to Giorgio Parisi for theoretical statistical physics, including climate change and other earth science applications. All three laureates are tied by computer modeling. Inclusion of Syukuro Manabe, one of the early pioneers, brings this prize all the way to the origins of the field in the 1960s.

Climate science and policy context

In the 1960s, introduction of computers and satellites as new tools for scientific research created profound boost to science in general. For climate research it was pivotal decade as satellites provided the last piece of evidence required for scientific proof of both natural and anthropogenically enhanced greenhouse effect. After that, physicists submitted the anthropogenic climate change problem to United Nations (UN) for solving.

In June 2022 the Stockholm+50 conference will review five decades of UN work in this area, since it was introduced in global political agenda at the first UN environmental summit in Stockholm in 1972. Syukuro Manabe and Klaus Hasselmann made large contributions into the main achievement of the UN process two decades later, the UN climate change treaty (UNFCCC) that was the most significant outcome of the second UN environmental summit in Rio de Janeiro in 1992. UN established scientific climate change expert organization IPCC in 1988 under leadership of Stockholm University professor Bert Bolin for serving as a bridge between scientific world and political world, and it was required for creation of the UNFCCC treaty in 1992. IPCC was awarded Nobel Peace Prize in 2007 for its achievements in linking climate science and climate politics for solving the most serious environmental problem humankind has ever created. Therefore, Syukuro Manabe and Klaus Hasselmann might now be considered double Nobelists, because their climate modeling work produced detailed scientific answers that were prerequisites for many countries to sign the 1992 UNFCCC treaty.

Historical background

Physicists had studied natural greenhouse effect since the 1820s and anthropogenically enhanced greenhouse effect since the 1890s, originally theoretically and by laboratory scale experiments, and expanded it to diverse planetary scale field research and observations in the 1950s. Although the Nobel Prize 2021 in physics is the first science Nobel Prize awarded directly for climate change research, more than 20 physics and chemistry Nobel laureates are among key contributors to present knowledge, starting from 1903 Nobel Chemistry Prize laureate Svante Arrhenius, Stockholm University physics professor, who published the first scientific article about anthropogenic climate change in 1896. Also, the Nobel Peace Prize was awarded in 2007 for bridging climate change science with policy, and the Nobel Chemistry Prize awarded in 1995 for ozone hole research was closely linked to climate change due to several scientific connections bet-ween the two largest global anthropogenic environmental problems.

Background document of the Swedish Academy of Sciences "Scientific Background on the Nobel Prize in Physics 2021" (https://www.nobelprize.org/uploads/2021/10/sciback_fy_en_21.pdf) includes historical review of climate change research. Few people will read it, because it has been written for physics researchers, so the Keeling Curve shown in FIG.4 on page 4 of the document is included here to be explained. The Keeling Curve was in the 1960s and is still today the most crucial scientific evidence of anthropogenic climate change.

The Keeling Curve shows evolution of atmospheric carbon dioxide concentration by direct experimental observations. Charles Keeling designed measurement technology and started these observations in 1958, and they have continued in the original location in Hawaii since then. Several years of observations in Hawaii and similar measurements elsewhere in the world were needed before this evidence became conclusive by the mid-1960s.

This experimental result was supported by theoretical physics studies, laboratory scale experiments and independent scientific field observations, but they were not enough for overall

scientific proof. For it, satellite measurements were also required. Despite long and diverse physics research since the 1820s on ground, high resolution spectrum of outgoing infrared (IR) radiation from Earth to space measured by satellite outside of the atmosphere was needed, and was finally delivered in 1969. Science was clear for UN to take this into their agenda in 1970. Similarly, for the ozone hole problem experimental satellite observations were the final evidence in the 1980s leading to action by the UN.

Computer modeling as a tool for climate research

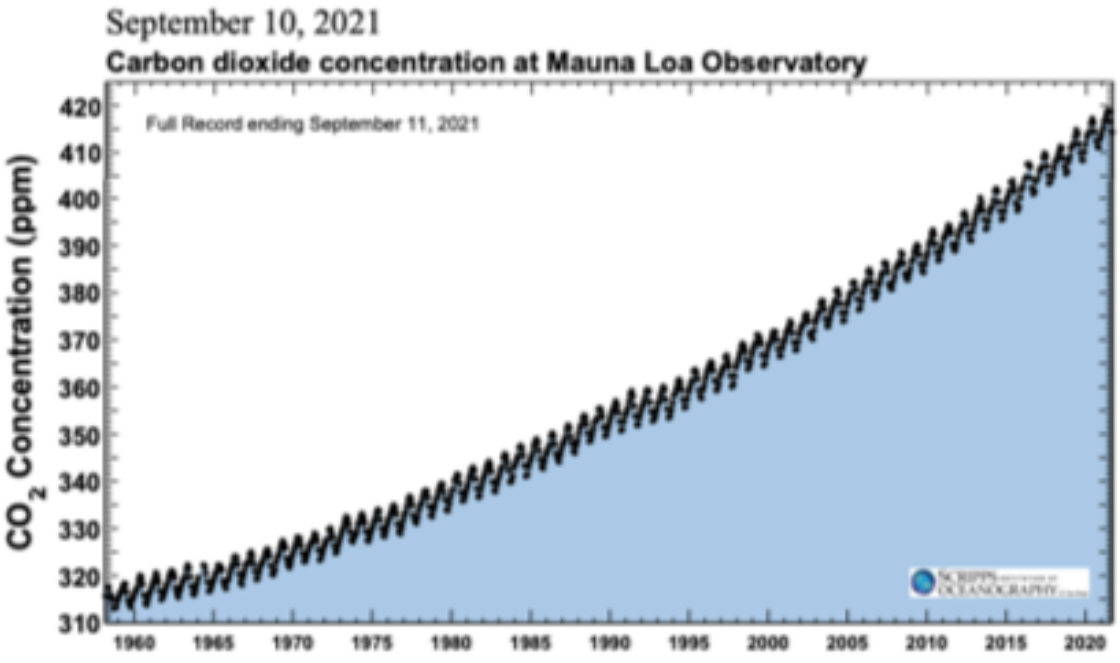

FIG. 4. The Keeling Curve, named after the late Charles Keeling who began the monitoring program. The curve shows monthly mean CO_2 concentration from Mauna Loa, 1958-2021. (Data from Scripps Institution of Oceanography; https://keelingcurve.ucsd.edu.)

Computer modeling was not needed for proving natural and enhanced greenhouse effect in the 1960s, but computers were needed. IR measurements outside of the atmosphere were enabled by advanced computer and satellite technology. Otherwise, technological requirements were low compared to present science, but scientific ingenuity requirements were high. For example, measurement of atmospheric carbon dioxide content by Charles Keeling was made possible by his technologically innovative device costing only a few thousand dollars. But for the Keeling Curve shown here, computer automated data acquisition technology was needed.

Nobel Prize of Physics 2021 honors pioneers of whole new era of climate research, made possible by computer modeling, and is further expanded to crucial value of computer modeling in physical sciences in general. Computer modeling is needed for detailed understanding

of both the past and the present and for understanding impacts of past and present choices in the future. Advances in computer modeling since the 1960s have been vast, but also satellite based and other field observation technologies have advanced so much that the enormous volume of experimental scientific data can no longer be utilized without computer modeling.

Syukuro Manabe was one of the pioneers of this field, when it was born in the 1960s. One of his earliest contributions in the 1960s has significant temporal linkages both to the past and the future. His work is directly linked to the first scientific article of anthropogenic climate change published in 1896 by Svante Arrhenius, 1903 Nobel laureate. Scientific background document of these Nobel prizes includes long historical review, where majority of space is devoted to this article from 1896. The main purpose of this article was to estimate increase of average global surface temperature, if CO_2 emissions from fossil fuel burning would double CO_2 content in the atmosphere. Syukuro Manabe repeated this estimate in 1967, with the help of computers and advanced experimental devices. That the end result was near the value given by Arrhenius confirms high quality of the work achieved by Arrhenius with 19th century technology. But much more important contribution of Manabe was initiation of permanent monitoring of anthropogenic climate change based on two of the most significant concepts of modern climate science and policy originating from the Arrhenius article: radiative forcing (disturbance in natural energy balance) and climate sensitivity (impact of the disturbance in ground temperature). These modern formulations of the key concepts developed by Arrhenius describe the main task ahead in the UNFCCC COP26 conference in Glasgow in November. Reducing global fossil greenhouse gas emission to achieve target of 1.5-2 degree surface temperature increase compared to pre- industrial level is based on the climate sensitivity concept of Arrhenius, developed by Manabe into practical form for computer modeling tools.

Klaus Hasselmann entered the field of computer modeling of climate in the 1970s, but finished his advanced studies and started his research career in oceanography in the 1960s at Scripps Institution of Oceanography, where one of his teachers, Charles Keeling, created interest in the field of climate change leading to entering this area in the 1970s. His most significant contributions were also based on the Arrhenius paper in 1896, specifically the concept of radiative forcing. But he greatly enhanced the concept. Arrhenius had included only CO_2 in his estimates. With the help of large advances of computer, satellite and spectroscopy technologies Hasselmann could include and quantitatively separate other components of anthropogenically enhanced greenhouse effect, and also natural components impacting it, but more widely also anthropogenic and natural radiative forcings based on other mechanisms. For several countries this quantitative separation was essential prerequisite for signing the UNFCCC treaty in 1992. Main outcome of this is that only anthropogenically enhanced greenhouse effect has relevance in the climate change problem, because combined influence of all other effects is marginal.

It is now possible to show overall failure of the UN efforts at the COP26 conference in Glasgow in November and at the Stockholm+50 conference next June. The current planetary impact of anthropogenically enhanced greenhouse effect is about 1.6 PW, of which about 66 % is caused by carbon dioxide. It is about 100 times larger than average power of total energy consumption of humankind. This planetary heating power results from anthropogenic greenhouse gas emissions since James Watt brought his steam engine into market about 250 years ago. About 60 % (1 PW) of this heating power and 75 % of anthropogenic carbon dioxide emissions have been produced during the past 50 years, since the UN environmental summit in Stockholm in 1972.

Gudmund Bergqvists: Call for publications

Call for new publications

Gudmund Bergqvist

In connection with this summer's Science Festival, many interesting lectures were given. Some of them were video recorded and will be posted on SAV (the video series) and are already available on You Tube. In addition, there is a compilation article of the festival in SAV.

But what about articles for the other publication series? We look forward to such articles, both regular scientific for AAS, debate articles for the Free Series and would very much like to receive articles for the Preprint Series, which provides an opportunity to quickly get results published. However, be sure to check what applies regarding guidelines. Please send the articles to gudmundbergqvist@hotmail.com

Per Flensburg: What does it mean to be a virtual Academy?

What does it mean to be a virtual academy?

Per Flensburg

Strömstad Academy has somewhere between 100 and 150 members. They come from 14 countries, at least. Some meet physically at the local chapters' meetings, a few more meet at the annual Science Festival, which is normally held at midsummer time in Strömstad. But we mainly socialize online and mainly through e-mail. It is great for shorter messages, questions, and answers but for longer discussions it is unsuitable. It is even more unsuitable when the discussion is about something completely different than the original topic. If the thread with the reply to the e-mail becomes too long, the beginning will not be displayed, where perhaps the post that started it all was. And like onions on salmon, it is completely uninteresting to many members and only takes up space and attention in the rich mail flow. Hence, we need to find other ways to have discussions.

I have therefore installed a discussion forum, which is not used at all. A couple of members have posted, but nothing more. It often happens that you find an interesting article and want to tell others about it. I used to put a small flasher under "News" in the right-hand column on the website, but only I do that and then visitors to the website can easily believe that it is the Academy's perception of what is important and interesting. In fact, it's mine and my name is not Ludvig. A discussion forum makes it possible for anyone to make such posts. This way, over time, we create an interesting database of various articles that affect us. But since no one uses the forum, it does not work.

Those I asked why they do not use the forum say it is too difficult. It's just as difficult as using the email, just that you must press a few other buttons and not having to type the sender. There are three more fields to fill in when registering for the first time, and this is significantly less than for the corresponding e-mail. I have found another forum program, which seems to be a little easier than the one we have and I will eventually make it available. But I mean that if we are to become a real academy, where everyone can participate in the discussions, we must stop using e-mail for that. Apart from the fact that it is not made for long discussions, only those on the mailing list can participate. In a discussion forum, anyone who has an account can read everything and participate in the discussions. This way, we get a more active and broader academy, where hopefully many more people participate in the discussions.