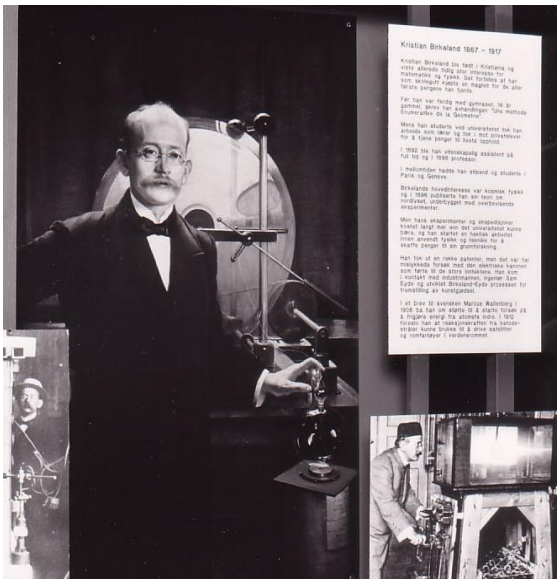
Birkeland 150 year Anniversary

“Birkeland Space Weather Symposium”

Oslo 15-16 June, 2017

Prof Kristian Birkeland, the world’s first space scientist, was born in Kristiania, Norway in1867. Birkeland is indeed famous for his pioneering research on Aurora Borealis and for his innovations leading to the industrial production of fertilizers. Birkeland plausibly addressed the Northern Lights to electrically charged particles of solar origin. The Birkeland currents, currents floating along the Earth magnetic field lines, facilitate an electrical coupling of the Earth atmosphere to the solar wind. Today, the term space weather is used for various impacts of the solar interactions with the near Earth space environment, which under severe conditions poses a considerable risk critical infrastructure that needs to be considered.

As part of the Birkeland Week in Oslo, we devote two days to space weather impacts on modern society, with particular emphasis on the European Arctic Sector. On June 15 we have an exciting program filled with key note speakers providing scientific, technology and user perspectives on various space weather phenomena and challenges. On June 16 we have a workshop welcoming contributed talks, good discussion, that hopefully will lead to new collaborations. We welcome talks on user needs, space weather products as well as on research activities.



DRAFT PROGRAM
15 June 2017

Venue: Down town Oslo

UiO Domus Academica
Karl Johans gate 47
Oslo

MAP: https://www.uio.no/om/finn-fram/omrader/sentrum/se02/

Domus Academica, built in 1852, was the building that hosted Kristian Brikeland's experimental activities.

All talks by invitation

09:00 Door opens

09:30-10:00 Opening Speeches

UiO Rector : Prof. Ole Petter Ottersen

Ministry of Education and Research : Mr. Torbjørn Røe Isaksen

Norwegian Space Center : Director General Bo Andersen

Chair: Morten Dæhlen

10:00 – 10:30 : Reducing vulnerability to space weather storms: Developing and implementing a preparedness strategy: **Mr. William Murtagh** Program Coordinator for NOAA, Space Weather Prediction Center (SWPC) in Boulder, Colorado.

10:30-11:00 The industrial applications of monitoring the polar cap/auroral ionosphere: Prof. **P. T. Jayachandran,** University of New Brunswick, Canada

11.00-11:30 "We need a law against this! How legislators, insurers and contract parties should handle solar storms affecting the Arctic.". Prof. **Erik Røsæg ,** University of Oslo.

11:30-11:40 Questions

11:40-12:30 Lunch

Chair: Anja Strømme

12:30-13:00 ESA Space Situation Awareness program:
Dr. Juha-Pekka Luntama, Space Weather Manager ESA SSA Programme Office

13:00-13:20 The Norwegian space weather priorities: Deputy Director General **Terje Wahl** Norwegian Space Center

13:20-13:40 Space Weather Hazards and Challenges to Future Civil Aerospace: Pilot **Bryn Jones**, Virgin Airlines

13:**4**0-**14:0**0 "How the Sun made Air Traffic Controllers go blind": **Andreas D. Skjervold**, Head of CNS Tower Operations, Avinor Air Navigation Services

14:00-14:30 Break

Chair : Pål Brekke

14:30-14:50 What are the major space weather challenges for ground and Aviation users of GNSS in Northern Scandinavia?: Dr. **Knut Stanley Jacobsen**, Norwegian Mapping Authorities

14:50-15:10 Geomagnetically induced currents: science, engineering and applications readiness, The Birkeland Medal winner 2016 Dr. **Antti Pulkkinen**, NASA

14:10-15:30 Impact of Space Weather in the Scandinavian Power Grid: **Trond Ohnstad**, Statnett

15.30-15:50 Space Weather Forecasts : A Research Grand Challenge : **Prof. Jøran Moen**, UiO

15:50-16:00 Questions and concluding remarks

16 June Space Weather Workshop

Venue : Yara Norge AS
Drammensveien 131, 0277 Oslo

08:30-09:00 Registration + Presenters copy their ppt-files to the computer

Chair: **Prof. Per Hoeg,** Technical University Denmark

09:00-10:30 Session 1 : Space weather satellites and ground instrumentation

09:00-09:20 Ground instrumentation challenges in observing ionosphere processes and phenomena : **Dr. Anthea Coster**, Massachusetts Institute of Technology Haystack Observatory

09:20-09:35 Norwegian Mapping Authority's network and services for space weather monitoring : **Dr. Yngvild Andalsvik**, Norwegian Mapping Authorities

09:35-09:50 Use of the Polar Cap (PC) index to forecast power grid disturbances : **Peter Stauning,** DMI

09:50-10:05 SWARM observational statistics of polar cap patches : **PhD Fellow Andres Spicher**, UiO

10:05-10:20 The Svalbard SuperDARN radar : **Prof. Dag Lorentzen,** Birkeland Centre for Space Science, UNIS

10:30-11:00 Coffee break

Chair: Prof. Kjellmar Oksavik, UNIS/Birkeland Centre for Space Science

11:00-12:30 Session 2 : Innovative space weather research/technology

11:00-11:20 Innovative ways of observing polar cap phenomena : **Dr. Craig Heinselmann**, EISCAT Director

11:20-11:40 Space weather and signatures of polar cap patches : Prof. Per Hoeg, Technical University Denmark

11:40-11:50 Space weather and signatures of polar cap patches : **Dr. Yaqi Jin**, UiO

11:50-12:05 The asymmetric geospace - the most common state : **Prof. Nikolai Østgaard**, Birkeland Centre for Space Science, UiB

12:05-12:20 The Role of Birkeland Currents on a Carrington Event : **Dr. Antonio Guerrero,** University of Alcalá, Physics and Mathematics Dpt., SPAIN

12:20-12:30 Discussion - conclude session

12:30-13:30 Lunch

Chair: Prof. Jøran Moen, UiO

13:30-15:00 Session 3 : User needs and innovative space pace weather product ideas

13:30-13:50 High-latitude GNSS space weather products **: Prof. Susan Skone**, University of Calgary

13:50-14:05 Auroral Forecast 3D : **Prof. Fred Sigernes**, Birkeland Centre for Space Science, UNIS

14:05-14:20 CCMC/SWRC space weather forecasting services for NASA robotic mission operators : **Dr. Antti Pulkkinen**, NASA

14:20-14:35 Highly Integrated Radiation Monitors for Space Weather CubeSat Constellations : **PhD Fellow Timo A. Stein**; IDEAS/UiO

14:35-14:50 Space weather forecast of polar cap patches **: PhD Fellow Anna Fæhn Follestad**, UiO

14:50-15:00 Discussion - conclude session - Adjourn