

# CURRICULUM VITAE (25.03.2017)

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## **Personal data:**

Name: Ilya G. Usoskin  
Gender: Male  
Birth: 17 January 1965, Leningrad, USSR  
Citizenship: Finland + Russia (double citizenship)  
Marital Status: Married (1986), two children (1989, 2001)  
Languages: Russian – mother tongue, English – fluent, Finnish – basic

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## **Academic background:**

2012- : Full Professor of Space Physics, Faculty of Natural Sciences, University of Oulu, Finland;  
2016 : Visiting Professor, National Research Nuclear University MEPhI, Moscow, Russia;  
2013-2014: Visiting Professor, Institut de Physique du Globe de Paris, 05-06/2013, 10-11/2014;  
2006 : Qualified for a full professor in Solar Physics, Lund University and Swedish Institute for Space Physics (IRF), Sweden;  
2002 : Docent (= Habilitation / Assoc. Prof.) in Space Physics from the University of Oulu;  
2000 : Ph.D. in Space Physics from the University of Oulu, Finland (Nov 2000)  
1995 : Candidate of Sciences (equiv. to Ph.D.) in Astrophysics from A.F.Ioffe Physical-Technical Institute, St.Petersburg, Russia (Jan 1995);  
1988 : M.Sc. in Space Physics from Leningrad Polytechnics (presently St.Petersburg State Technical University.), Russia (Feb 1988 – honour diploma)

## **Education:**

1990 - 1994 : Doctoral scholarship at A.F.Ioffe Physical-Technical Institute, St. Petersburg, Russia;  
1982 - 1988 : Leningrad Polytechnics (presently St.Petersburg State Technical University, Russia),  
M.Sc. in Physics (specialization in Space Physics), 1988 - honour diploma;  
1980 - 1982 : Leningrad High School No.239 with intensified studying of mathematics;  
1972 - 1980 : Leningrad Primary and Secondary School No.92.

## **Current positions and employment history:**

Since 2014: Vice-Director of ReSoLVE Centre of Excellence of the Academy of Finland;  
Since 2012: Professor of Space Physics, University of Oulu  
Since 2000: Head of Cosmic Ray Station, the University of Oulu  
6 months in 1999: Research Fellow, the University of Oulu  
1997 - 1999: Postdoctoral Fellow, Italian National Institute of Nuclear Physics, Milan, Italy  
1988 - 2000 : Staff Researcher, Ioffe Physical-Technical Institute, St.Petersburg, Russia.

## **Personal Grants and Awards:**

2016 - the most valuable reviewer for *Astroparticle Physics* journal;  
2016 - author of a highly cited paper in Space Physics (ISI Web of Science);  
2015 – Personal Gratitude from the Russian Science for the assessment of research proposal;  
2013 - Knight, 1st class, of the Order of the Lion of Finland;  
2011 – Principal authors of the most cited paper in *Acta Geophys.*;

2010 – Personal Gratitude from the Ministry of Education and Science of Russian Federation for the assessment of research proposal in the Call (aka Megagrants) as an expert group leader;  
2010 – Principal author of a top-cited paper in *J. Atmos. Solar-Terr. Phys.* (2005-2010);  
2001 – INTAS Personal Prize Grant (YF 00-82) for Young Scientists;  
1997 - UNESCO/ICSU/TWAS Personal Award for Research in the Basic Sciences;  
1997 – Personal Prize Scholarship of the Nordic Council of Ministers in the field of Space Research;  
1994 - Personal Award of the American Astron. Soc. for young scientists of the former USSR;  
1993 - Personal Award of the International Science Foundation for scientists of the former USSR;  
1988 - Prize of the Physics Department for the best student scientific work of the year.

## **Publications:**

About 300 scientific publications (including 8 invited reviews, 4 book chapters, 6 popular articles) in total, among them ~200 papers in refereed journals, cited 6000+ times in major journals (ISI Web of Knowledge), Hirsch's citation *h*-index = 41. Invited review article (*Living. Rev. Solar Phys.*, 10, 1, 2013) has the status of "highly cited paper" (ISI Web of Science, 2016) in Space Physics.

## **Public interview and lectures:**

The results on long-term relations between cosmic rays, solar activity and climate have been highlighted in the scientific community (Press-releases of the *Astronomy & Astrophysics* (2006, 2013), *University of Oulu* (2011, 2014, 2015, 2016) and *Leibniz-Institut für Astrophysik Potsdam* (2011), *Max-Planck Society* (2003, 2004, 2006), *Physics News* (2003), *Science News* (2004), *EOS* (2102)), by European governmental organizations (*Community Research & Development Information Service* (CORDIS), *Presidency R&D news* (27-09-2006); *Energy and Enviro*, Finland (2006)), popular scientific magazines (*the New Scientist* (2003, 2009, 2013), *the American Scientist* (2004), *Natural History* (2004), *Pour la Science* (2006), *Science Now* (2004, 2006), etc.), news agencies and newspapers (*Kaleva*, *Turun sanomat*, *Tähtet ja Avaruus* and *Vasabladet* (Finland), *Le Monde* (France), *Berliner Zeitung* and *Spiegel online* (Germany), *BBC News*, *Daily Telegraph* and *The Telegraph* (UK), *Observer Budapest* (Hungary), *Washington Times*, *United Press International*, *Discovery Channel* and *CBC News* (USA), *Rzeczpospolita* (Poland), *Komsomolskaya Pravda* (Russia), *Sydney Morning Herald* (Australia), *Neue Zürcher Zeitung* (18/09/2013 Switzerland).

A number of interviews for public have been given to broadcasting companies: Japan Broadcasting Corporation (*NKH*), 2013; *YLE TV1* Broadcasting company, Finland (2004, 2006, 2010); *Swedish broadcasting corporation* (2003); *Norwegian broadcasting*, radio channel 2 (2003), *Polskie Radio* (2003), *DailyTech* (2008), magazines *New Scientist* (2013), and newspapers *Kaleva* (2005).

A number of reviews have been published in science popular magazines *African Skies* (2006), *ATS Ydintekniikka* (2009), *Solar Observer* (2010), and newspapers *Troitsky Variant* (2009, 2010 – in Russian), *CAWSES News* (2006).

A number of public lectures have been given: "Cosmic Rays and Earth" (Oulu, Finland, 2005); "Links between cosmic rays and climate on different time scales" (Univ. of Bern, 2005); "Solar activity variability and its relation to climate" (Geophysical Society of Finland, 2010), "Long-term variations of solar activity" (Moscow State University, 2014), "Long-term solar activity reconstructions: Knowns and unknowns" (HAO, Boulder, 2015); "Sun and solar activity" (in Russian, National Research Nuclear University, Moscow, 2016).

## **Expert duties and memberships:**

\* Council member for:

- *Government of Russian Federation* (Council for Research Grants, 2013-2015, 2016-2018);
- *Research Council of Russian Academy of Sciences* (Cosmic Rays section, since 2011);
- *Russian Ministry of Higher Education and Science* (head of the expert group on Earth and Space Sciences, 2010-2011);
- *Romanian National Research Council* (Rapporteur and Panellist for Research Proposals in Earth Sciences, 2012);

- \* Vice-Director of Centre of Excellence in Research on Solar Long-term Variability and Effects (ReSoLVE), the Academy of Finland, 2014-2019;
- \* Member of the C4 commission (cosmic rays) of the IUPAP (Inetrantional Union of Pure and Applied Physics) since 2015;
- \* Member of the Editorial Board of *Solar Physics* journal (2009-2012, 2013-2016), *J. Astron. Space Sci.*, *Scientific World J.* (Geophysics), *The Open Astron. J.*;
- \* Member of the National Board for ESO (European Southern Observatory) 2013-2016;
- \* Referee for numerous journals: *Adv. Geosci*, *Adv. Space Res.*, *Annales Geophys.*, *Astron. Astrophys.*, *Astron.Lett.*, *Astrophys. J.*, *Dendrochronology*, *Earth Planet. Sci.*, *Earth Planet. Sci. Lett.*, *Earth Sci. Rev.*, *Environ. Res. Lett.*, *Geophys. Res. Lett.*, *J. Atm. Solar-Terrestrial Phys.*, *J. Geophys. Res.*, *Mon. Not. Roy. Astron. Soc.*, *Nature*, *New Astronomy*, *Phys. Rev. Lett.*, *Proc. Royal Soc. A*, *Science*, *Solar Physics*, *Space Sci. Rev.*, *Sun & Geosphere*, *Survey Geophys*, etc.
- \* Expert-evaluator of research proposals for: *European Research Council*; *European Science Foundation*; *Czech Science Foundation*; *Russian Science Foundation*; *Kazakhstan Ministry of Education and Science*; *ESA*; *INTAS*; *PIRE (USA)*; *NSF (USA)*; *Italian Scientific Committee*; *Australian Antarctic Science Program*, *NERC (U.K.)*; *Antarctic Research Program (Chile)*; *National Res. Foundation (South Africa)*, *Rustaveli Foundation (Georgia)*, *French Polar Institute* etc.;
- \* Invited expert for ESA (2002), the French Academy of Sciences (2007), the Technical University of Tokyo (2008), Russian Ministry of Education and Sciences (2010-2011), Court of Vancouver (2016);
- \* Scientific consultant for IASON GmbH, Austria (2010-2014);
- \* Guest editor of topical issues: "Space Climate: Direct and Indirect Observations of Long-term Solar Activity" – *Solar Physics* (v.224, 2004); and "Space Climate: Long-Term Changes in the Sun" – *Adv. Space Res.* (2007); "Space Climate" – *J. Atmos. Solar-Terr. Phys.* (2010); "Solar Variability, Cosmic Rays and Climate" – *Adv. Space Res.* (2011).
- \* Meeting organiser:
  - o (Co)Chair of SOC/LOC (a founder) of a series of International Space Climate Symposia;
  - o Scientific Advisory Committee member of European Cosmic Ray Symposia, 2014, 2016;
  - o Main Scientific Organizer of Session D2.5/E3.5 "Space Climate" at COSPAR Scientific Assembly, 2012, 2014, 2016;
  - o Chair of SOC of the 22nd European Cosmic Ray Symposium, Turku, Finland, 2010;
  - o Member of SOC COSPAR Scientific Assembly (Symposium D1.2 "Heliospheric Cosmic Ray Transport, Modulation and Turbulence") Paris, July 2004;
- \* Supervisor of 10 Ph.D. and 15 M.Sc. theses;
- \* Examiner/Opponent of 2 Habilitations (Docent), 1 Lic. Phys. and 9 Ph.D. dissertations;
- \* National representative for COST Programs (ES0803, ES1005, CA15211);
- \* Member of steering committee of Finnish national SEISLAB project 2012-2013;
- \* member of societies: *European Astro. Soc.* (since 1995), *European Physics Society* (since 2000), *COSPAR* (since 2000), *European Geophys. Soc* (since 2005); *American Assoc. Adv. Sci.* (since 2002), *Asian-Oceanic Geophys. Soc.* (since 2004), *Internat. Astron. Union* (since 2009).

## **Positions of trust**

- \* Grand Holder for the European COST ES1005 Project (2011-2015, budget ~400 k€);

## **Main research achievements**

- \* Founder (together with Prof. Mursula) of a new research discipline - Space Climate, focused on long-term global changes of the terrestrial and near-Earth environment;
- \* Founder of a novel method to model cosmic ray induced ionization in the atmosphere, using a full Monte-Carlo simulation of the atmospheric nucleonic-electromagnetic-muon cascade

initiated by cosmic rays in the atmosphere - invented in 2004, this method became a standard approach now;

- \* Founder of a novel method of paleo-solar reconstructions using cosmogenic isotope method, a full quantitative physics-based approach;

## **Grant and Project history:**

### Ongoing projects:

- \* Vice-Director, ReSolVE Centre of Excellence, the Academy of Finland, 2014-2019 (~6 M€);
- \* PI, Research Project of the Academy of Finland "Solar Research with Alpha Magnetic Spectrometer on International Space Station", 2012-2016 (433 k€);
- \* PI, Research Project of the Academy of Finland "Cosmic Rays in Polar Atmosphere", 2013-2016, 2017-2019 (~300 k€);
- \* PI, Research project of the Thule Institute, Finland, "Outer Space Influence on the Low and Middle Polar Atmosphere", 2013-2016 (140 k€);
- \* National PI and Grant Holder, EU FP7 e-infrastructure Project COST ES1005 (~400 k€);
- \* Co-PI, "Data services and analysis tools for solar energetic particle event and related electromagnetic Emissions" FP-7 European Research Project, 2010-2013 (total budget >1 M€);
- \* Co-PI, Global Changes Joint Program (Project #16) between Russian Academy and Academy of Finland, 1993-1995, 1996-1998, 1999-2001, 2002-2004, 2005-2007, 2008-2010, 2011-2013;

## **Participation in Important Scientific Conferences:**

160+ contributions, including 53 keynote, rapporteur, highlight, invited, and solicited talks (see the list below) presented at 70+ major international conferences.

## **Student supervision**

### Supervision and examining Ph.D. theses:

- o Supervisor (all Ph.D. in Space Physics, University of Oulu) of Mr. A. Artamonov (expected in 2017), Ms. E. Asvestari (expected in 2016), Mr. S. Poluyanov (2016), Ms. R. Leussu (2016), Ms. A. Abe Pacini (2015), Mr. I. Virtanen (2013), Ms. L. Zhang (2012), Ms. O. Yakovchuk (2012), Ms. K. Alanko-Huotari (2007)
- o Opponent of PhD theses for Mr. F. Inceoglu (Univ. Aarhus, Denmark, 2015), Mr. A. Karelin (National Research Nuclear University MEPhI, Moscow, Russia, 2016).
- o Examiner 10 PhD theses;
- o Supervision of 15 M.Sc. theses:

### Lecturing:

- o Lecture course "*Cosmic rays and heliosphere*" at the University of Oulu (766655S, 44 lecture hours + 20 hours of exercises), given regularly since 2000.
- o NCAR/ASP Colloquium, Boulder CO (2015)
- o European Research Course on Atmospheres (Grenoble, annually since 2014);
- o COST ES1005 TOSCA schools (Thessaloniki, 2013, Trieste, 2014);
- o CLOUD ITN summer school (Frankfurt, 2012);
- o Space Climate school (Saariselkä, 2009; Levi, 2016);
- o Underground Physics School (Pyhäsalmi, 2007);