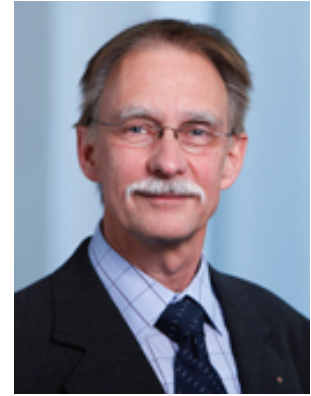


# Curriculum Vitae

## Werner K. Schmutz

Prof. Dr. sc. nat.

Function            Senior Scientist  
Nationality        Swiss citizen  
Date of birth      August 29, 1952, Zürich, Switzerland  
Address            PMOD/WRC, Dorfstrasse 33, Davos Dorf



## Education

1974 – 1979      Studies of physics at the ETH Zürich  
1979 – 1983      Ph.D. student at the Institute of Astronomy, ETH Zürich  
1984              Ph.D. in astrophysics  
1995              Habilitation and Venia Legendi, ETH Zürich  
2002              Professor Adjunct at ETH Zürich

## Award

2015              International Kristian Birkeland medal for Space Weather and Space Climate

## Research interests

Impact of solar irradiance variations on the terrestrial climate: Sun-Earth relation, Space weather and space climate, Space-based solar irradiance measurements, Sun as a star

## Publications

Author of more than 400 scientific articles; 172 publications in refereed journals

H-index: 50, 7685 citations to 263 articles included in the Science Citation Index of Web of Science, Institute for Scientific Information (September 2023, author identifier 0000-0003-1159-5639)

## Professional and academic experience

2019 – present    Senior Scientist PMOD/WRC, Switzerland  
1999 – 2019      Director PMOD/WRC, Switzerland  
1991 – 1999      Assistant at the Institute of Astronomy, ETH Zürich, Switzerland  
1988 – 1991      Research associate at JILA, University of Colorado and NBS, USA  
1985 – 1987      Wissenschaftlicher Mitarbeiter at the Institut für Theoretische Physik und Sternwarte der Universität Kiel, Germany

## Research projects as leading investigator

Principal Investigator

- DARA (Davos Absolute RAdiometer) Swiss space experiment on the planned ESA technology mission PROBA 3; PMOD/WRC is hardware institute, financed by Swiss PRODEX Funds; launch in 2024
- CLARA (Compact Lightweight Absolute Radiometer) Swiss space experiment on the Norwegian mission NORSAT-1; PMOD/WRC is hardware institute, financed by Swiss PRODEX Funds; launch June 2017
- PREMOS (Precision Monitoring of Solar Variability) space experiment on the French micro satellite PICARD; PMOD/WRC is hardware institute. Launched June 2010, financed by Swiss PRODEX Funds; the satellite PICARD was switched off March 2014
- Research project SOLID (First European Comprehensive SOLar Irradiance Data exploitation) FP7 project in collaboration with 10 European institutes, December 2012 to November 2015
- Research project FUPSOL (Future and Past Solar Influence on the Terrestrial Climate) in collaboration with the Institute for Atmospheric and Climate Science of the ETH Zürich, the University of Bern, Oeschger center of the University of Bern, and EAWAG Dübendorf. Sinergia project of Swiss National Science Foundation: FUPSOL-I 2011-2013, FUPSOL-II 2014-2017

### Co-Principal Investigator

- EUI (Extreme Ultraviolet Imager), Belgian lead European consortium experiment on the ESA Solar Orbiter mission, PMOD/WRC is hardware contributing institute, Swiss hardware contribution financed by Swiss PRODEX Funds; launched 2020

### Co-Investigator

- DARA-JTSIM (Davos Absolute Radiometer - Joint Total Solar Irradiance Monitor), Swiss space instrument as part of the JTSIM experiment on the planned Chinese Earth observing mission FY-3E; PMOD/WRC is hardware institute, financed by Swiss PRODEX Funds; launch in 2021
- SPICE (Spectral Imaging of the Coronal Environment), ESA lead European consortium experiment on the ESA Solar Orbiter mission, PMOD/WRC is hardware contributing institute, Swiss hardware contribution financed by Swiss PRODEX Funds; launched 2020
- LYRA (Lyman-Alpha Radiometer), Belgian/Swiss space experiment on the ESA technical mission PROBA 2, PMOD/WRC is hardware institute, financed by Swiss PRODEX Funds; launched November 2009, still operational

### International commission membership

- |                              |  |
|------------------------------|--|
| 2017 – present               | Honorary member of the <i>International Radiation Commission</i> of IAMAS  |
| 2013 – 2016                  | President of the <i>International Radiation Commission</i> of IAMAS  |
| 2011 – 2014                  | Member of the UN Expert Group on Space Weather   |
| 2011 – 2021                  | Member of the <i>Space Weather Working Team Steering Board</i> of ESA  |
| 2010 – 2017                  | Member of the Swiss delegation to the <i>Science Programme Committee</i> of ESA  |
| 2010 – 2017                  | Swiss delegate to the council of COSPAR  |
| 2009 – 2012                  | Vice-president of the <i>International Radiation Commission</i> of IAMAS   |
| 2002 – 2017                  | Member of the <i>International Living With a Star Working Group</i> (Solar Task Group)   |
| 2001 – 2019                  | Member of the <i>Consultative Committee for Photometry and Radiometry</i> (CCPR), of the International Bureau of Weights and Measures (BIPM) |
| 2001 – 2016                  | Member of the <i>International Radiation Commission</i> of IAMAS   |
| 1998 – 2001                  | Member of the <i>Users Committee</i> of the European Southern Observatory  |
| 1993 – 1997 &<br>2009 – 2010 | Member of the <i>Observing Program Committee</i> of the European Southern Observatory  |

### National commission membership

- |                |  |
|----------------|--|
| 2010 – 2017    | President of the <i>Swiss Committee on Space Research</i> of SCNAT     |
| 2008 – 2017    | Member of the <i>Swiss PRODEX Program Committee</i>                    |
| 2008 – 2015    | Member of the <i>Federal Space Affairs Commission</i>                  |
| 2006 – 2012    | Treasurer of the Swiss Society for Astrophysics and Astronomy of SCNAT |
| 2001 – present | Member of the <i>Commission for Astronomy</i> of SCNAT                 |
| 2001 – 2019    | Member of the <i>Swiss Committee on Space Research</i> of SCNAT        |

### Outreach

- |      |  |
|------|--|
| 2017 | Press release of the Swiss National Science Foundation published on 27 March 2017, on the occasion of the final meeting of the SNF Sinergia project FUPSOL (see above) in Davos. There was quite a substantial reaction by the Swiss and to some extent also European and even world press. Coverage in Switzerland included a contribution on the evening news of Swiss television and a discussion on the renowned “Echo der Zeit” radio program |
|------|--|

## Most important publications

### Astrophysics

- Schmutz W., Hamann W.-R., Wessolowski U., 1989, *Astron. & Astrophys.* 210, 236 (310 citations)  
Spectral Analysis of 30 Wolf-Rayet Stars
- Schmutz W., Leitherer C., Gruenwald R., 1992, *PASP* 104, 1164 (161 citations)  
Theoretical Continuum Energy Distributions for Wolf-Rayet Stars
- Schmutz W., 1997, *Astron. & Astrophys.* 321, 268–287 (109 citations)  
Photon loss from the helium Ly $\alpha$  line – the key to the acceleration of Wolf-Rayet winds

### Atomic Physics

- Nussbaumer H., Schmutz W., 1984, *Astron. & Astrophys.* 138, 495 (59 citations)  
The Hydrogenic 2s–1s Two-Photon Emission

### Climate Modelling

- Egorova T., Rozanov E., Manzini E., Haberreiter M., Schmutz W., Zubov V., Peter T., 2004, *Geoph. Res. Letters*, 31, L06119 (85 citations)  
Chemical and dynamical response to the 11-year variability of the solar irradiance simulated with a Chemistry-Climate Model
- Ball W.T., Haigh J.D., Rozanov E.V., Kuchar A., Sukhodolov T., Tummon F., Shapiro A.V., Schmutz W., 2016, *Nature Geoscience* 9, 206 (36 citations)  
High solar cycle spectral variations inconsistent with stratospheric ozone observations
- Arsenovic P., Rozanov E., Anet J., Stenke A., Schmutz W., Peter T., 2018, *Atmos. Chem. Phys.* 18, 3469  
Implications of potential future grand solar minimum for ozone layer and climate (66 citations)

### Metrology

- Schmutz W., Fehlmann A., Hülsen G., et al., 2009, *Metrologia* 46, S202 (32 citations)  
The PREMOS/PICARD instrument calibration
- Fehlmann A., Kopp G., Schmutz W., Winkler R., Finsterle W., Fox N., 2012, *Metrologia* 49, S34 (43 citations)  
Fourth World Radiometric Reference to SI radiometric scale comparison and implications for on-orbit measurements of the total solar irradiance
- Prša A., Harmanec P., Torres G., et al. 2016, *Astron. J.* 152, 41 (217 citations)  
Nominal values for selected solar and planetary quantities: IAU 2015 Resolution B3

### Space Experiments

- Hochedez J.-F., Schmutz W., Stockman Y., et al. 2006, *Adv. Space Res.* 37, 303 (68 citations)  
LYRA, a solar UV radiometer on Proba 2
- Thuillier G., Dewitte S., Schmutz W., The Picard Team, 2006, *Adv. Space Res.* 38, 1792 (51 citations)  
Simultaneous measurement of the total solar irradiance and solar diameter by the PICARD mission
- Fox N., Kaiser-Weiss A., Schmutz W., Thome K., Young D., Wielicki B., Winkler R., Woolliams E., 2011, *Phil. Trans. R. Soc. A* 369, 4028 (77 citations)  
Accurate radiometry from space: an essential tool for climate studies
- Schmutz W., Fehlmann A., Finsterle W., Kopp G., Thuillier G., 2013. *AIP Conf. Proc.* 1531, 624 (36 citations)  
Total solar irradiance measurements with PREMOS/PICARD

### Solar Physics

- Haberreiter M., Kosovichev A.G., Schmutz W., 2008, *Astrophys. J.* 675, L53–L56 (51 citations)  
Solving the discrepancy between the seismic and photospheric solar radius
- Shapiro A.I., Schmutz W., Rozanov E., Schoell M., Haberreiter M., Shapiro A.V., Nyeki S., 2011, *Astron. & Astrophys.* 529, A67 (182 citations)  
A new approach to long-term reconstruction of the solar irradiance leads to large historical solar forcing
- Shapiro A.I., Solanki S.K., Krivova N.A., Cameron R.H., Yeo K.L., Schmutz W.K., 2017, *Nature Astronomy* 1, 612 (36 citations)  
The nature of solar brightness variations