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Sounding rocket project PMWE for investigation of polar mesosphere winter echoes

Boris Strelnikov¹, Tristan Staszak¹, Philipp Seither¹, Martin Friedrich², Markus Rapp^{3,4}, Joan Stude^{3,4}, Ralph Latteck¹, Toralf Renkwitz¹, Stefan Löhle⁵, Igor Hörner⁵, Martin Eberhart⁵, Stefanos Fasoulas⁵, Jörg Gumbel⁶, Jonas Hedin⁶, Franz-Josef Lübken¹, Gerd Baumgarten¹, Jens Fiedler¹, Irina Strelnikova¹, Evgenia Belova⁷, Marcus Hörschgen-Eggers⁸, and the PMWE team*

¹Leibniz Institute of Atmospheric Physics, Optical Soundings and Sounding Rockets, Kühlungsborn, Germany (strelnikov@iap-kborn.de)

²Graz University of Technology (TUG), Graz, Austria

³DLR Institute of Atmospheric Physics (IPA), Oberpfaffenhofen, Germany

⁴Ludwig-Maximilians-Universität München (LMU), Munich, Germany

⁵Institute of Space Systems (IRS), Stuttgart, Germany

⁶Department of Meteorology at Stockholm University (MISU), Stockholm, Sweden

⁷Swedish Institute of Space Physics (IRF), Kiruna, Sweden

⁸Deutsches Zentrum für Luft- und Raumfahrt, DLR MORABA, Oberpfaffenhofen, Germany

*A full list of authors appears at the end of the abstract

Polar mesosphere winter echoes (PMWE) are relatively strong radar returns which are regularly observed by mesosphere/stratosphere/troposphere (MST) radars at high latitudes in winter. A sounding rocket project PMWE aimed at investigation of this phenomenon by means of high resolution in situ measurements of all the relevant parameters inside and around the volume probed by the MAARSY radar. Two sounding rocket campaigns were conducted at the Andøya Space (AS, 69 °N, 16 °E) in April 2018 and October 2021, respectively. Two instrumented sounding rockets were launched during each rocket campaign. Both EISCAT in Tromsø and SAURA radar located near the launch site were running throughout the campaign periods. RMR-lidar successfully measured temperature and wind fields on the day of rocket launches in October 2021. In this paper we give an overview and some details of the measurements conducted during the two rocket campaigns and discuss first results.

PMWE team: Boris Strelnikov <strelnikov@iap-kborn.de>, Tristan Staszak <staszak@iap-kborn.de>, Philipp Seither <seither@iap-kborn.de>, Martin Friedrich <martin.friedrich@tugraz.at>, Markus Rapp <Markus.Rapp@dlr.de>, Joan Stude <Joan.Stude@dlr.de>, Ralph Latteck <latteck@iap-kborn.de>, Toralf Renkwitz <renkwitz@iap-kborn.de>, Stefan Löhle <loehle@irs.uni-stuttgart.de>, Igor Hoerner <ihoerner@irs.uni-stuttgart.de>, Martin Eberhart <eberhart@irs.uni-stuttgart.de>, Stefanos Fasoulas <fasoulas@irs.uni-stuttgart.de>, Jörg Gumbel <gumbel@misu.su.se>, Jonas Hedin <jonash@misu.su.se>, Franz-Josef Lübken <luebken@iap-kborn.de>, Gerd Baumgarten <baumgarten@iap-kborn.de>, Jens Fiedler <fiedler@iap-kborn.de>, Irina Strelnikova

<strelnikova@iap-kborn.de>, Evgenia Belova <belova@irf.se>, Marcus Hoerschgen-Eggers
<Marcus.Hoerschgen-Eggers@dlr.de>, Markus Wittkamp <Markus.Wittkamp@dlr.de>, Johannes
Göser <Johannes.Goeser@dlr.de>