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► **To cite this version:**

Simon Walker, Michael Balikhin, Peter Wintoft, Tony Arber, Volodya Krasnoselskikh, et al.. PROGRESS: Fusion of forecasts from the Sun to the Earth. 19th EGU General Assembly, Apr 2017, Vienne, Austria. pp.17250. insu-03568128

HAL Id: insu-03568128

<https://hal-insu.archives-ouvertes.fr/insu-03568128>

Submitted on 13 Feb 2022

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PROGRESS: Fusion of forecasts from the Sun to the Earth

Simon Walker (1), Michael Balikhin (1), Peter Wintoft (2), Tony Arber (3), Volodya Krasnoselskikh (4), Natalia Ganushkina (5), Michael Liemohn (6), Yuri Shprits (7), and Richard Boynton (1)

(1) University of Sheffield, ACSE, Sheffield, United Kingdom (simon.walker@sheffield.ac.uk), (2) IRF-Lund, Sweden, (3) University of Warwick, Coventry, UK, (4) LPC2E, Orleans, France, (5) FMI, Helsinki, Finland, (6) University of Michigan, Michigan, USA, (7) GFZ, Potsdam, Germany

The particle environment of the inner magnetosphere is strongly coupled to variations in the solar wind. The introduction of large fluxes of electrons into the radiation belts and their subsequent acceleration to high energies can result in the internal and surface charging of space assets, possibly leading to disruption and even cessation of essential services. Reliable forecast of the fluences of these electrons can assist in the mitigation of undesirable effects on spacecraft.

PROGRESS, an EU Horizon 2020 funded project, aims to provide forecasts of the evolution of the geospace environment beginning from the surface of the sun to the radiation belts. We review the current status of the projects and the challenges that still lie ahead.