ALTIUS Symposium



Tuesday, 2 May 2017 - Wednesday, 3 May 2017

Scientific Programme

Eight sessions
are foreseen during the symposium, each followed by a short discussion. Submission of related
poster presentations is encouraged. The following topics will be addressed:

ALTIUS: Mission objectives and status

This session will be dedicated to the presentation of the mission objectives,atmospheric product requirements, and the current development status. Speakers from the main participating bodies will present their views and expectations for the mission: the Belgian Institute for Space Aeronomy (BIRA-IASB), the Belgian Science Policy Office (BELSPO) and the European Space Agency (ESA).

System concept and measurement methods

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style="font-size:12px">Intended to fulfill the mission objectives and Level 2 product requirements, the ALTIUS instrument concept will be presented. Industrial partners will outline their work on both the platform and the payload preliminary designs. The measurement methods will be discussed for the three different observation geometries: limb scattering, solar occultation, stellar and planetary occultations. A preliminary architecture of the Payload Data Ground Segment will be presented.

Radiative transfer in limb observation geometry

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style="font-size:12px">The ALTIUS ground segment will process atmospheric radiance measurements using state-of-the-art limb radiative transfer modelling. The operational forward model will have to optimize both accuracy and computing speed. A dedicated code has been developed: the ALTIUS Radiative Transfer Simulator (ARTS). Beside the presentation of ARTS, other existing radiative transfer models will be reviewed, and their respective advantages and drawbacks will be discussed.

Retrieval algorithms

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style="font-size:12px">ALTIUS being an instrument operated in multiple observation geometries, various retrieval algorithms will be implemented for limb scattering, Sun, Moon, planets and star occultations. Retrieval strategies from past, present and future missions will be discussed.

ALTIUS geophysical product validation

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style="font-size:12px">With an important part of the ALTIUS mission being dedicated to the operational production of stratospheric ozone profiles with a global coverage, the quality of this product will have to be carefully validated against independent observations. Also all other ALTIUS trace gas products will require appropriate validation. This session aims at sharing and discussing

past experience in validating limb observations, tackling both technical aspects and methodologies.

Data usage and application

ALTIUS answers the need for several trace species concentration profiles. The ozone monitoring capacity may support numerical weather forecasts, atmospheric re-analyses, long-term trend detection and a broader range of possible applications. This session is an opportunity to discuss the added-value of high-vertical resolution stratospheric measurements for the atmospheric community (including the climate modellers).

ALTIUS in space: synergies with other instruments

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style="font-size:12px">The ALTIUS mission is one the very few limb missions planned for the next decade. Besides the obvious complementarity with the other limb missions (JPSS-2/OMPS-LP, ISS/SAGE-III), there are a number of potential synergies with various nadir missions that should also be exploited. The session will be devoted to data merging of different limb sounders and to synergistic use of limb/nadir measurements.

General discussion

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style="font-size:12px">Starting from the issues addressed at the end of each session, a general discussion will give the floor to all participants, addressing still open questions, inviting to propose collaborations and to formulate recommendations. This could trigger the development of a future ALTIUS User Community.