

## Action.M6.A9

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with input from Tony McNally

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To write a small text to emphasize the requirement for NRT access to ALTIUS products for assimilation purposes, and their potential contribution to validation campaigns

This is a follow-on of the presentation of ALTIUS by Didier Fussen (BIRA-IASB) during the previous MAG meeting in Brussels 7-8 November 2018

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## Response to the action

- 1) **Available information:** As in the stated requirements for ALTIUS, there will be an operational O<sub>3</sub> product from bright limb measurements with a latency of 3 hr
- 2) **Current status:** There are current discussions between ESA and BIRA-IASB to decide/fund the corresponding ground segment production
- 3) **Possible actions:**
  - Wait for new information from Didier Fussen
  - EUMETSAT to contact ESA for a status of the ongoing discussions
  - MAG + EUMETSAT to write a formal message to ALTIUS and ESA

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## Some details

- There is at least one NWP centre (ECMWF, as confirmed by Tony McNally) that is ready to test the assimilation of O<sub>3</sub> profiles (as done in a test/monitoring mode for the MLS O<sub>3</sub> profiles).
- There should be a definite commitment that this data would be delivered in NRT **for the duration of the ALTIUS mission**
- This is because the appropriate resources have to be in place in NWP centers when ALTIUS is up and when the corresponding GS will deliver the ozone data
- Testing ALTIUS data would follow the normal ECMWF procedures...an initial **passive evaluation** ...and then if the data quality is acceptable a **preliminary assimilation test**

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A proposed message to ALTIUS and ESA (plus NWP's in cc:)

- The MAG from MTG-IRS is considering the possible synergy between ALTIUS and MTG-IRS as very important for monitoring ozone in near real time (NRT)
- The complementarity is between nadir (MTG-IRS) and limb (ALTIUS) measurements
- NWP centres (ECMWF has confirmed) would be in a position to test the joint assimilation of O<sub>3</sub> products if they are available in NRT through the usual channels (GTS and/or EUMETCAST)
- There should be a definite commitment that these data would be delivered in NRT **for the duration of the ALTIUS mission**

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A more general vision (could be mentioned in the message)

- There is a possibility to coordinate joint validation campaigns with ozone sondes or other *in situ* or remote sensing O<sub>3</sub> measurements for which shared support could be provided by ESA (cal/val of ALTIUS, S5P, S5, S4), EUMETSAT (link with MTG IRS, IASI, IASI-NG, GOME-2), KIT (through GLORIA) and possibly CNES (stratospheric balloons campaign)
- The complementarity would be between these various types of ozone measurements and the NRT availability of operational satellite sounders
- NWP centres would contribute through forecasts of O<sub>3</sub> fields useful for optimizing the correlative measurements (stratospheric ozone intrusions, ozone hole conditions)

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## A further proposal (Tony and CCP)

- This could be the starting point for an **intensive year of ozone observations** (similar to activities like the International Polar Year) in a time frame when the impact of the Montreal Protocol should be re-assessed (for ozone) in the conditions of a **significantly changing climate** (affecting both the troposphere and the stratosphere)
- An **International Ozone Year** could be proposed to the partners involved (the “stakeholders”) and it is time to start thinking and organizing this activity in years 2022-2023 when MTG and MSG would begin to be operational
- Copernicus, WMO or WCRP could be the expected umbrellas. But having a well identified driving unit for this **International Ozone Year** would be most efficient

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## Additional thoughts (not directly related to NRT)

- Scientists involved in L2 retrievals combining **nadir O<sub>3</sub>** measurements (MTG-IRS, IASI, IASI-NG, GOME-2, S5P...) and ALTIUS **limb O<sub>3</sub>** measurements would better constrain the partitioning between tropospheric and stratospheric ozone (ACE-FTS O<sub>3</sub> solar occultation profiles and OMPS are also available)
- A full assessment of the **quality of ozone profiles from satellite measurements** needs a more complete comparison between **direct assimilation** of L1 spectra/radiances and **generation of L2 profiles from inversion** of L1 spectra
- All these **satellite related activities** needs to be strongly coupled to **correlative measurements** (ground-based *in situ* or remote, airborne/balloon borne *in situ* or remote)