

Aurora Project: Simulation And Validation Of Synergistic Products From Sentinel-4 And Sentinel-5(p)

U.Cortesi⁽¹⁾, A. Keppens⁽²⁾, J-C. Lambert⁽²⁾, M. van Roozendael⁽²⁾, A. Arola⁽³⁾, W. Wandji⁽³⁾, S. Del Bianco⁽¹⁾, M. Gai⁽¹⁾, C. Tirelli⁽¹⁾, R. van der A⁽⁴⁾, R. Dragani⁽⁵⁾, M. Bonazountas⁽⁶⁾, A. Bos⁽⁷⁾, M. Morelli⁽⁸⁾, K.Verberne⁽⁹⁾

AURORA CONSORTIUM: ⁽¹⁾ Istituto di Fisica Applicata "Nello Carrara", IFAC-CNR, IT; ⁽²⁾ Belgian Institute for Space Aeronomy, BIRA-IASB, B; ⁽³⁾ Finnish Meteorological Institute, FMI, FIN; ⁽⁴⁾ Royal Netherlands Meteorological Institute, KNMI, NL; ⁽⁵⁾ European Centre for Medium Range Weather Forecast, ECMWF; ⁽⁶⁾ Epsilon International SA, GR; ⁽⁷⁾ Science and Technology BV, NL; ⁽⁸⁾ Flyby Srl, IT; ⁽⁹⁾ Datacraft, NL.

AURORA project in a nutshell

The **AURORA** project was proposed in response to a Call of the **Horizon 2020** framework programme of the EU.

H2020 Work Programme: 2014-2015

Research Area: Leadership in Enabling and Industrial Tech.

Sub-programme: Space

Project Coordinator: IFAC-CNR, Italy (U.Cortesi@ifac.cnr.it)

Call: H2020 - Earth Observation – 2015

Topic: EO-2-2015 Stimulating wider research use of Copernicus Sentinel Data.

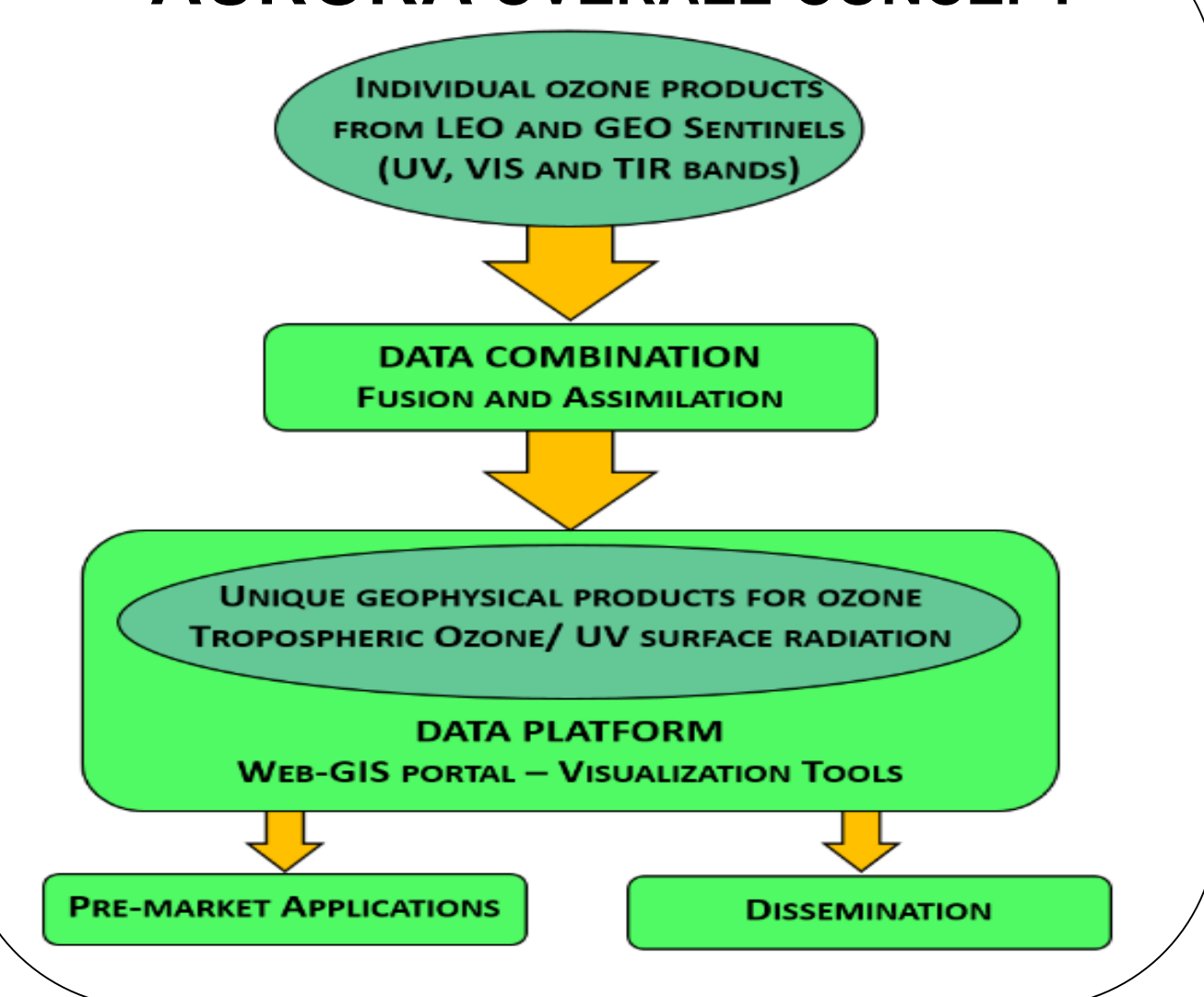
Project duration: 36 months (Feb 1, 2016 – Jan 31, 2019)

AURORA web site: <http://www.aurora-copernicus.eu/>

Scope and objectives

The idea at the core of AURORA is the exploitation of advanced products for **TROPOSPHERIC OZONE** and **UV SURFACE RADIATION** derived from GEO (S-4) and LEO (S-5, S-5p) platforms, based on **ASSIMILATION OF FUSED DATA** from different spectral regions (UV, Visible, Thermal IR).

AURORA OVERALL CONCEPT



- to reduce the complexity of managing the high volume of Copernicus S-4 and S-5 data and increase its quality
- to develop a prototype data processing system and demonstrate its capability to work with simulated data as closely as possible to the operational environment.

Technological objectives

- to develop **two operational downstream services** (innovative mobile App for UV dosimetry and tropospheric ozone monitoring application for prediction of air quality)

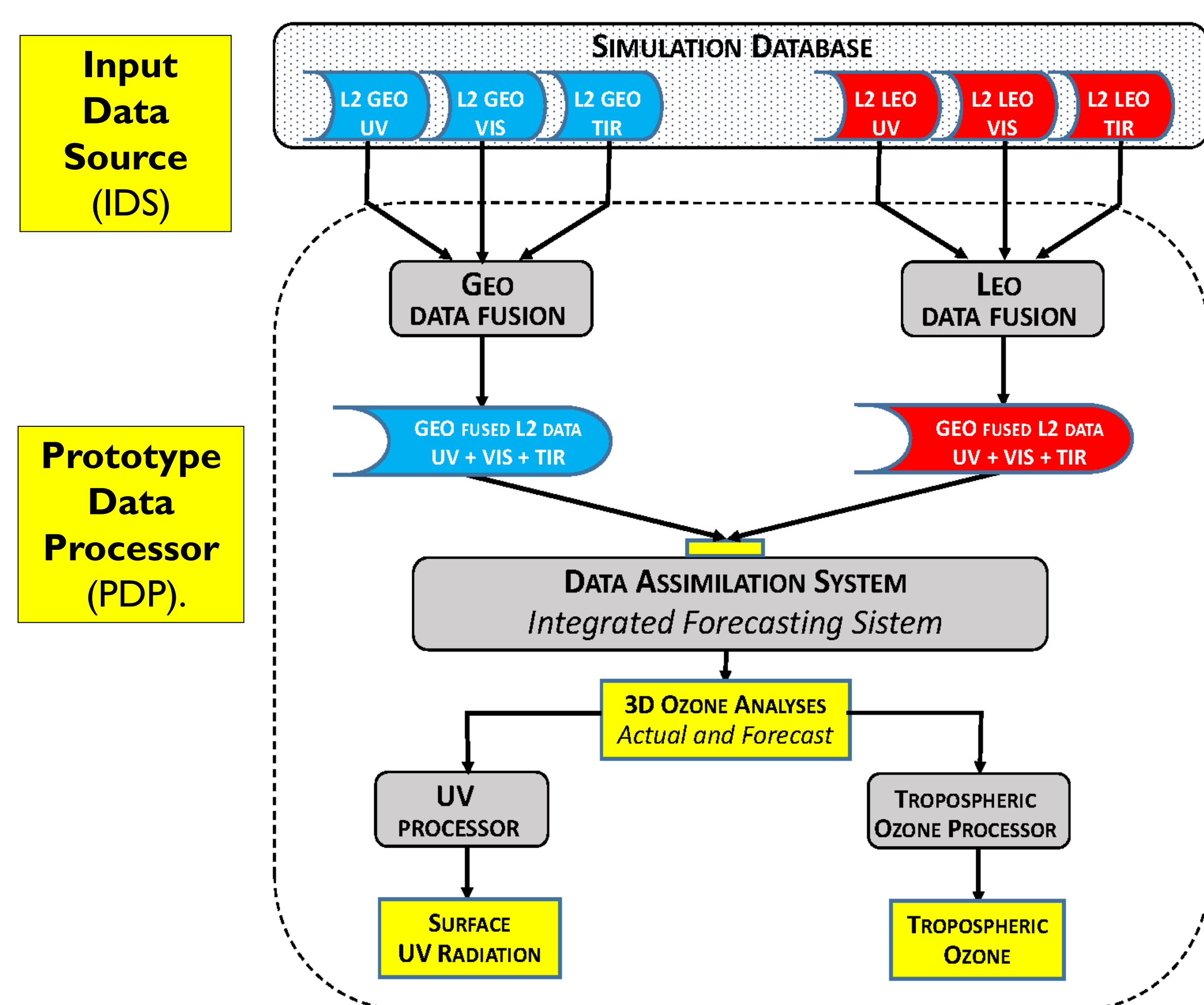
Scientific objectives

- to investigate the potential of data fusion and data assimilation to convey complementary information content of measurements by the atmospheric Sentinel LEO and GEO missions into unique geophysical products.
- to focus the exploitation of the synergy between simultaneous and independent measurements of the same target on **tropospheric O₃** and **UV SURFACE RADIATION**.

Application objectives

Simulation chain

The IDS block will be fully replaced by S-4 and S-5 data once available.



AURORA Technological Infrastructure: the project uses a cloud-based architecture for data processing

Validation chain

- Translation of user requirements and of data/service specifications into validation requirements; conception of the Product Validation Plan (PVP).
- Performance assessment of retrieval/fusion/assimilation procedures and their resulting ozone and UV data products and associated uncertainties.
- Performance assessment of the full data processing chain and QA/validation of the final ozone and UV products using ground-based reference observations.

