**Gaps Assessment and Impacts for atmospheric ECVs in the EU GAIA-CLIM project**

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The aim of the EU H2020 Gap Analysis for Integrated Atmospheric ECV CLImate Monitoring (GAIA-CLIM) project is to improve our ability to use ground-based and non-satellite observations to characterise satellite observations for a number of atmospheric Essential Climate Variables (ECVs), specifically temperature, water vapour (H2O), ozone (O3), carbon dioxide (CO2), methane (CH4) and aerosols. On of the key outcomes will be a “Virtual Observatory” facility of co-locations and their uncertainties. Another key outcome will a report (GAID = Gaps Assessment and Impacts Document) on gaps in capabilities or understanding, which shall be used to inform subsequent Horizon 2020 activities. Here we will a summary of Version 2 of the GAID including the gaps (‘user needs’) that have been identified during the first year of the project. The GAID will be kept as a living document to be updated based on latest insights throughout the 3-year GAIA-CLIM project lifetime (Mar 2015- Feb 2017). Feedback on the GAID is welcome through the dedicated interactive website: <http://www.gaia-clim.eu/page/gaid>