Comments from Public Consultation on ECV Requirements 13/01 – 13/03 2020 for:

# Anthropogenic Greenhouse Gas fluxes

## ECV Product: High-resolution footprint around point sources

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | High-resolution footprint around point sources | | | | |
| **Definition** | Spatially resolved GHG emission plume around local source | | | | |
| **Unit** | kg CO2 /m2/s | | | | |
| **Note** |  | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | km | distance | G | 1 |  |
| B |  |  |
| T | 2 |  |
| **Vertical Resolution** | N/A |  | G |  |  |
| B |  |  |
| T |  |  |
| **Temporal Resolution** | time | Repeat time of observations | G | 4 hours | IPCC 2019 Refinement |
| B |  |  |
| T | 6 days |  |
| **Timeliness** | time |  | G | Within one week |  |
| B |  |  |
| T | Within one month |  |
| **Required Measurement Uncertainty** |  | Twice the estimated standard deviation of the total | G | 1 ppm | IPCC 2006 GL |
| B |  |  |
| T | 5 ppm | IPCC 2006 GL |
| **Stability** |  |  | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | ESA Mission requirements document of CarbonSat, of CO2 Sentinel 7 | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | Yes | Yes | Allows monitoring of sites where action is being undertaken | | |
| **Extremes[3]** | NO |  |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

NO COMMENT

## ECV Product: Total Estimated fluxes by coupled data assimilation/ models with observed atmospheric – national

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | Estimated fluxes by coupled data assimilation/ models with observed atmospheric – national | | | | |
| **Definition** | National estimates derived from highly resolved GHG emission gridmaps (modelled output, using proxy for the spatial distribution at fine-scale resolution) | | | | |
| **Unit** | kg CO2eq /m2/s | | | | |
| **Note** | Total estimated fluxes by coupled data assimilation/ inverse models at a national scale. This includes both “anthropogenic” and “natural” emissions and removals. | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | km | Size of country | G | 10 |  |
| B |  |  |
| T | 100 |  |
| **Vertical Resolution** | Four Layers | 1)        surface,  2)        stack height (between 100m and 300m),  3)        cruise height (10km) and  4)        supersonic height  (15 km) | G |  |  |
| B |  |  |
| T |  |  |
| **Temporal Resolution** | time | time | G | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | time | time | G | WITHIN ONE 1.25 YEARS | To allow comparison with estimates made following the UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN ONE 1.25 YEARS | To allow comparison with estimates made following the UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** |  | Twice the estimated standard deviation of the total as a % of the total | G | 10% | IPCC 2006 GL |
| B |  |  |
| T | 30% | IPCC 2006 GL |
| **Stability** |  |  | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** |  | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | Yes | Yes | Allows confirmation that the atmospheric inputs of CO2 are as expected by national plans for mitigation and adaptation. When accurate grid maps can be routinely produced these would support project monitoring as well. | | |
| **Extremes[3]** |  |  |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

### Comment 1

|  |  |
| --- | --- |
| Author: Martin Steinbacher | Email: martin.stonycreek@gmail.com |
| * update reference IPCC 2006 GL by the 2019 refinement <https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html> * Make reference in particular to Volume I, Chapter 6.10.2 Comparisons with atmospheric measurements * Add reference to GAW Report No. 245, An Integrated Global Greenhouse Gas Information System (IG3IS) Science Implementation Plan * Reword explanation for adaption that it reads "Provides information (a) to support uncertainty reduction of GHG emissions in national plans for mitigation and adaptation, (b) to allocate and quantify (previously unknown or unreported) large emitters, (c) to support the global stocktake as part of the Paris Agreement." | |

## ECV Product: Total Estimated fluxes by coupled data assimilation/ models with observed atmospheric - continental

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | Estimated fluxes by coupled data assimilation/ models with observed atmospheric - continental | | | | |
| **Definition** | GHG emission gridmaps (modelled output, using proxy for the spatial distribution) | | | | |
| **Unit** | kg CO2eq /km2 /yr | | | | |
| **Note** | Total estimated fluxes by coupled data assimilation/ inverse models at a continental scale. This includes both “anthropogenic” and “natural” emissions and removals. | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | km | Size of continents | G | 1000 |  |
| B |  |  |
| T | 10000 |  |
| **Vertical Resolution** | N/A |  | G |  |  |
| B |  |  |
| T |  |  |
| **Temporal Resolution** | time | time | G | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | time | time | G | WITHIN ONE 1.25 YEARS | To allow comparison with estimates made following the UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN ONE 1.25 YEARS | To allow comparison with estimates made following the UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** | % | Twice the estimated standard deviation of the total as a % of the total | G | 10% | IPCC 2006 GL |
| B |  |  |
| T | 25% | IPCC 2006 GL |
| **Stability** |  |  | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | Maps for modeling NDC/ in particular adaptation effects | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | Yes | Yes | Allows confirmation that the atmospheric inputs of CO2 are as expected by national plans for mitigation and adaptation | | |
| **Extremes[3]** | No | No |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

### Comment 1

|  |  |
| --- | --- |
| Author: Click here to enter text. | Email: Click here to enter text. |
| * Update reference IPCC 2006 GL by the 2019 refinement https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html; make reference in particular to Volume I, Chapter 6.10.2 Comparisons with atmospheric measurements * Add reference to GAW Report No. 245, An Integrated Global Greenhouse Gas Information System (IG3IS) Science Implementation Plan * Reword explanation for adaption that it reads   "Provides information to support uncertainty reduction of GHG emission estimates in national plans for mitigation and adaptation. | |

## ECV Product: Anthropogenic F-gas emissions from industrial processes and product use

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | F-gas emissions from industrial processes and product use | | | | |
| **Definition** | F-Gas emissions are anthropogenic and mainly originating from chemical industrial processes and F-gas-related product use. The different F-gases have different, all very high global warming potentials. | | | | |
| **Unit** | ton CO2eq /yr for the region | | | | |
| **Note** | This corresponds to UNFCCC reporting of anthropogenic emissions of fluorinated gases (HFC, PFC and SF6) aggregated according to the GWP as agreed by the UNFCCC | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | Nation | Country by country | G | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Vertical Resolution** | N/A | Not relevant | G |  |  |
| B |  |  |
| T |  |  |
| **Temporal Resolution** | time | time | G | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | time | time | G | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** | % | Twice the estimated standard deviation of the total as a % of the total | G | 10% | IPCC 2006 GL |
| B |  |  |
| T | 50% | IPCC 2006 GL |
| **Stability** |  | Follow times series consistency in 2006 GLs and 2019 Refinement | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | IPCC 2006 GL (Optional: 2019 Refinement of the GL; National inventory reports to UNFCCC) | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | YES | YES | Measure of impact of adaptation on national emissions. | | |
| **Extremes[3]** | NO | - |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

NO COMMENT

## ECV Product: Anthropogenic N2O emissions from fossil fuel use, industry, agriculture, waste and products use, indirect from n-related emissions/ depositions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | N2O emissions from fossil fuel use, industry, agriculture, waste and products use, indirect from n-related emissions/ depositions | | | | |
| **Definition** | Anthropogenic N2O emissions are mainly originating from fuel combustion, industry, agriculture, waste, products use (including  indirect emissions from leaching and run-off, from NOx emissions | | | | |
| **Unit** | ton N2O /yr for the region | | | | |
| **Note** | This corresponds to UNFCCC reporting of anthropogenic emissions of nitrous oxide | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | Nation | Country by country | G | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Vertical Resolution** | N/A | Not relevant | G |  |  |
| B |  |  |
| T |  |  |
| **Temporal Resolution** | time | time | G | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | time | time | G | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** | % | Twice the estimated standard deviation of the total as a % of the total | G | 40% | IPCC 2006 GL |
| B |  |  |
| T | 80% | IPCC 2006 GL |
| **Stability** |  | Follow times series consistency in 2006 GLs and 2019 Refinement | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | IPCC 2006 GL (Optional: 2019 Refinement of the GL; National inventory reports to UNFCCC) | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | YES | YES | Measure of impact of adaptation on national emissions. | | |
| **Extremes[3]** | NO | - |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

NO COMMENT

## ECV Product: Anthropogenic CH4 emissions from fossil fuel, waste, agriculture, industrial processes and fuel use

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | CH4 emissions from fossil fuel, waste, agriculture, industrial processes and fuel use | | | | |
| **Definition** | Anthropogenic CH4 emissions are mainly originating from fermentation processes in waste (landfills), manure, enteric fermentation, but also from fossil fuel extraction, transmission and distribution and use, and industrial processes. | | | | |
| **Unit** | ton CH4 /yr for the region | | | | |
| **Note** | This corresponds to UNFCCC reporting of anthropogenic emissions of methane, except from wetlands | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | Nation | Country by country | G | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Vertical Resolution** | N/A | Not relevant | G |  |  |
| B |  |  |
| T |  |  |
| **Temporal Resolution** | time | time | G | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | time | time | G | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** | % | Twice the estimated standard deviation of the total as a % of the total | G | 20% | IPCC 2006 GL |
| B |  |  |
| T | 40% | IPCC 2006 GL |
| **Stability** |  | Follow times series consistency in 2006 GLs and 2019 Refinement | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | IPCC 2006 GL (Optional: 2019 Refinement of the GL; National inventory reports to UNFCCC) | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | YES | YES | Measure of impact of adaptation on national emissions. | | |
| **Extremes[3]** | NO | - |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

NO COMMENT

## ECV Product: Anthropogenic CO2 emissions/ removals by land categories

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | CO2 emissions/ removals by land categories | | | | |
| **Definition** | Short and long cycle C emissions from land use, land-use and forestry (including carbon stock gains and losses of biomass burning, disease, harvest, net deforestation) | | | | |
| **Unit** | ton CO2 /yr for the region | | | | |
| **Note** | This corresponds to UNFCCC reporting of anthropogenic emissions and removals from LULUCF | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | NONE – BY COUNTRY | As defined by UNFCCC | G | By country/region | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | By country/region | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Vertical Resolution** | N/A |  | G |  | Not relevant |
| B |  |  |
| T |  | Not relevant |
| **Temporal Resolution** | time | time | G | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | time | time | G | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN ONE 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** | % or kT | Twice the estimated standard deviation of the total as a % of the total **or** mass of CO2 | G | 15% or 300kT – whichever is largest | IPCC 2006 GL |
| B |  |  |
| T | 20% or 400kT – whichever is largest. | IPCC 2006 GL |
| **Stability** |  |  | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | IPCC 2003 GPG, IPCC 2006 GL;  UNFCCC National Inventory Reports | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | Yes | No | Sufficient at national level – projects need higher resolution e.g. 30x30m | | |
| **Extremes[3]** | No |  |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

NO COMMENT

## ECV Product: Anthropogenic CO2 emissions from fossil fuel use, industry, agriculture, waste and products use

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | CO2emissions from fossil fuel use, industry, agriculture, waste and products use | | | | |
| **Definition** | Anthropogenic long-cycle C emissions ~~are mainly~~ originating from combustion of fossil fuels, and ~~for about 10%~~ also from non-combustion sources, such as cement production, ferrous and non-ferrous metal production processes, urea production, agricultural liming and solvent use. | | | | |
| **Unit** | ton CO2 /yr for the region | | | | |
| **Note** | This corresponds to UNFCCC reporting of anthropogenic emissions from non-LULUCF sources by country | | | | |
| **Requirements** | | | | | |
| **Item needed** | **Unit** | **Metric** | **[1]** | **Value** | **Derivation and References and Standards** |
| **Horizontal Resolution** | NONE – BY COUNTRY | As defined by UNFCCC | G | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | By country and sector | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Vertical Resolution** | N/A |  | G | N/A | NOT RELAVENT |
| B |  |  |
| T | N/A | NOT RELAVENT |
| **Temporal Resolution** | Time - years |  | G | ANNUAL | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| B |  |  |
| T | Annual | IPCC 2006 GL, UNFCCC Inventory Guidelines |
| **Timeliness** | Time - years |  | G | WITHIN 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| B |  |  |
| T | WITHIN 1.25 YEARS | UNFCCC Inventory Reporting Guidelines |
| **Required Measurement Uncertainty** | % | Twice the estimated standard deviation of the total as a % of the total | G | Globally: 5%  Nationally: 10% | IPCC 2006 GL |
| B |  |  |
| T | Globally: 10%  Nationally: 30% | IPCC 2006 GL |
| **Stability** |  | Follow times series consistency in 2006 GLs and 2019 Refinement | G |  | IPCC 2006 GL |
| B |  |  |
| T |  | IPCC 2006 GL |
| **Standards and References** | IPCC 2006 GL (Optional: 2019 Refinement of the GL; National inventory reports to UNFCCC) | | | | |
| **Adaptation and Extremes** | | | | | |
|  | Relevant? (Yes/No) | Sugg. Req. sufficient? (Yes/No) | Explanation | | |
| **Adaptation[2]** | YES | YES | Measure of impact of adaptation on national emissions. | | |
| **Extremes[3]** | NO | - |  | | |

[1]Goal (G); Breakthrough (B)(not mandatory, more as one possible); Threshold (T), for definitions see [Guidelines](http://tiny.cc/ecv-review)

[2] Is the ECV Product directly relevant to support Climate Adaptation?

[3] Can the ECV Product be used to monitor climate extremes or aspects of extremes?

### Comment 1

|  |  |
| --- | --- |
| Author: Wiltshire Andy Wiltshire | Email: andy.wiltshire953@gmail.com |
| Apologies as I may have misundestood the structure of this document but an important anthropogenic emission is from LULUCF and should feature somewhere. | |