

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Global Carbon Budget 2017: https://www.icos-cp.eu/GCP/2017

Description (complete for data and software)	
Title	Global Carbon Budget 2017
Description	All components of the global carbon budget including fossil fuels, land use change, atmosphere accumulation, land and ocean sinks. From 1959 to 2016.
Temporal & Spatial Extent	Annual 1959-2016 Global totals, and by country for emissions
Lineage	Independently derived.
Credit	Each contributing dataset has its own source and credit. See Le Quere et al. 2018. Global Carbon Budget 2017. ESSD.
Keywords	Carbon sources and sinks, fossil fuel emissions, land use change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

Attribution/IP(complete for data and software)	
Owning Organisation	Each individual flux is own by their contributors, more than 50.
Collaborating Organisations	CSIRO and 56 other organizations. See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Primary contact for this data	Pep Canadell
Lead Researcher	77 scientists involved. Leading group: Corinne Lequere, Glen Peters, Pep Canadell
Contributors	See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Access	publicly available
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Corinne Le Quéré, Robbie M. Andrew, Pierre Friedlingstein, Stephen Sitch, Julia Pongratz, Andrew C. Manning, Jan Ivar Korsbakken, Glen P. Peters, Josep G. Canadell, et al (2018) Global	https://www.earth-syst-sci-data.net/10/405/2018/essd-10-405-2018-discussion.html

Carbon Budget 2017. Earth System Science Data 10: 405–448	
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Technical Details	
For data: Total Size of this data collection	N/A
For data: Total Number of Files	N/A
Current location of files (data or software)	https://www.icos-cp.eu/GCP/2017
Format(s)	Excel file
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Global Carbon Budget 2018 Data: https://www.icos-cp.eu/GCP/2018 Documents: https://www.earth-syst-sci-data.net/10/2141/2018/

Description (complete for data and software)	
Title	Global Carbon Budget 2018
Description	All components of the global carbon budget including fossil fuels, land use change, atmosphere accumulation, land and ocean sinks. From 1959 to 2017.
Temporal & Spatial Extent	Annual 1959-2017 Global totals, and by country for emissions
Lineage	Independently derived
Credit	Each contributing dataset has its own source and credit. See Le Quere et al. 2018. Global Carbon Budget 2018. ESSD.
Keywords	Carbon sources and sinks, fossil fuel emissions, land use change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

Attribution/IP(complete for data and software)	
Owning Organisation	Each individual flux is own by their contributors, more than 50.
Collaborating Organisations	CSIRO and 56 other organizations. See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Primary contact for this data	Pep Canadell
Lead Researcher	77 scientists involved. Leading group: Corinne Lequere, Glen Peters, Pep Canadell
Contributors	See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Access	Publicly available
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Le Quéré, C., Andrew, R. M., Friedlingstein, P., Sitch, S., Hauck, J., Pongratz, J., Pickers, P. A., Korsbakken, J. I., Peters, G. P., Canadell, J. G., Arneeth, A., Arora, V. K., Barbero, L., Bastos, A., Bopp, L., Chevallier, F., Chini, L. P., Ciais, P., Doney, S. C., Gkritzalis, T., Goll, D. S., Harris, I., Haverd, V., Hoffman, F. M., Hoppema, M., Houghton, R. A., Hurtt, G., Ilyina, T., Jain, A. K., Johannessen, T., Jones, C. D., Kato, E., Keeling, R. F., Goldewijk, K. K., Landschützer, P., Lefèvre, N., Lienert, S., Liu, Z., Lombardozi, D., Metz, N., Munro, D. R., Nabel, J. E. M. S.,	https://essd.copernicus.org/articles/10/2141/2018/

Nakaoka, S., Neill, C., Olsen, A., Ono, T., Patra, P., Peregon, A., Peters, W., Peylin, P., Pfeil, B., Pierrot, D., Poulter, B., Rehder, G., Resplandy, L., Robertson, E., Rocher, M., Rödenbeck, C., Schuster, U., Schwinger, J., Séférian, R., Skjelvan, I., Steinhoff, T., Sutton, A., Tans, P. P., Tian, H., Tilbrook, B., Tubiello, F. N., van der Laan-Luijkx, I. T., van der Werf, G. R., Viovy, N., Walker, A. P., Wiltshire, A. J., Wright, R., Zaehle, S., and Zheng, B.: Global Carbon Budget 2018, <i>Earth Syst. Sci. Data</i> , 10, 2141–2194, https://doi.org/10.5194/essd-10-2141-2018 , 2018	
Figueres, C., C. Le Quéré, A. Mahindra, O. Baete, G. Whiteman, G. P. Peters, D. Guan (2018). Emissions are still rising: ramp up the cuts. <i>Nature</i> 564, 27-30. https://doi.org/d41586-018-07585-6	https://doi.org/10.1038/d41586-018-07585-6
Jackson, R.B., C. Le Quéré, R. M. Andrew, J.G. Canadell, J.I. Korsbakken, Z. Liu, G.P. Peters, and B. Zheng (2018). Global Energy Growth Is Outpacing Decarbonization, <i>Environmental Research Letters</i> . https://doi.org/10.1088/1748-9326/af303	https://doi.org/10.1088/1748-9326/af303

Technical Details	
For data: Total Size of this data collection	N/A
For data: Total Number of Files	N/A
Current location of files (data or software)	https://www.icos-cp.eu/GCP/2018
Format(s)	Excel file
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Global Carbon Budget 2018 Data: https://doi.org/10.18160/gcp-2019 Documents: https://doi.org/10.5194/essd-11-1783-2019

Description (complete for data and software)	
Title	Global Carbon Budget 2019
Description	All components of the global carbon budget including fossil fuels, land use change, atmosphere accumulation, land and ocean sinks. From 1959 to 2018.
Temporal & Spatial Extent	Annual 1959-2018 Global totals, and by country for emissions
Lineage	Independently derived
Credit	Each contributing dataset has its own source and credit. See Friedlingstein et al. 2019. Global Carbon Budget 2019. ESSD.
Keywords	Carbon sources and sinks, fossil fuel emissions, land use change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

Attribution/IP(complete for data and software)	
Owning Organisation	Each individual flux is own by their contributors, more than 50.
Collaborating Organisations	CSIRO and 56 other organizations. See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Primary contact for this data	Pep Canadell
Lead Researcher	77 scientists involved. Leading group: Corinne Lequere, Glen Peters, Pep Canadell
Contributors	See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Access	Publicly available
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Friedlingstein, P., Jones, M. W., O'Sullivan, M., Andrew, R. M., Hauck, J., Peters, G. P., Peters, W., Pongratz, J., Sitch, S., Le Quéré, C., Bakker, D. C. E., Canadell, J. G., Ciais, P., Jackson, R. B., Anthoni, P., Barbero, L., Bastos, A., Bastrikov, V., Becker, M., Bopp, L., Buitenhuis, E., Chandra, N., Chevallier, F., Chini, L. P., Currie, K. I., Feely, R. A., Gehlen, M., Gilfillan, D., Gkritzalis, T., Goll, D. S., Gruber, N., Gutekunst, S., Harris, I., Haverd, V., Houghton, R. A., Hurtt, G., Ilyina, T., Jain, A. K., Joetzier, E., Kaplan, J. O., Kato, E., Klein	https://essd.copernicus.org/articles/11/1783/2019/

<p>Goldewijk, K., Korsbakken, J. I., Landschützer, P., Lauvset, S. K., Lefèvre, N., Lenton, A., Lienert, S., Lombardozi, D., Marland, G., McGuire, P. C., Melton, J. R., Metz, N., Munro, D. R., Nabel, J. E. M. S., Nakaoka, S.-I., Neill, C., Omar, A. M., Ono, T., Pregon, A., Pierrot, D., Poulter, B., Rehder, G., Resplandy, L., Robertson, E., Rödenbeck, C., Séférian, R., Schwinger, J., Smith, N., Tans, P. P., Tian, H., Tilbrook, B., Tubiello, F. N., van der Werf, G. R., Wiltshire, A. J., and Zaehle, S.: Global Carbon Budget 2019, Earth Syst. Sci. Data, 11, 1783–1838, https://doi.org/10.5194/essd-11-1783-2019, 2019.</p>	
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Technical Details	
For data: Total Size of this data collection	N/A
For data: Total Number of Files	N/A
Current location of files (data or software)	https://www.icos-cp.eu/science-and-impact/global-carbon-budget/2019
Format(s)	Excel file
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Global Carbon Budget 2020 Data: https://doi.org/10.18160/gcp-2019 Documents: https://doi.org/10.5194/essd-11-1783-2019

Description (complete for data and software)	
Title	Global Carbon Budget 2020
Description	All components of the global carbon budget including fossil fuels, land use change, atmosphere accumulation, land and ocean sinks. From 1959 to 2019.
Temporal & Spatial Extent	Annual 1959-2019 Global totals, and by country for emissions
Lineage	Independently derived
Credit	Each contributing dataset has its own source and credit. See Friedlingstein et al. 2020. Global Carbon Budget 2020. ESSD.
Keywords	Carbon sources and sinks, fossil fuel emissions, land use change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

Attribution/IP(complete for data and software)	
Owning Organisation	Each individual flux is own by their contributors, more than 50.
Collaborating Organisations	CSIRO and 56 other organizations. See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Primary contact for this data	Pep Canadell
Lead Researcher	77 scientists involved. Leading group: Corinne Lequere, Glen Peters, Pep Canadell
Contributors	See http://www.globalcarbonproject.org/carbonbudget/17/publications.htm
Access	Publicly available
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Friedlingstein, P., O'Sullivan, M., Jones, M. W., Andrew, R. M., Hauck, J., Olsen, A., Peters, G. P., Peters, W., Pongratz, J., Sitch, S., Le Quéré, C., Canadell, J. G., Ciais, P., Jackson, R. B., Alin, S., Aragão, L. E. O. C., Arneeth, A., Arora, V., Bates, N. R., Becker, M., Benoit-Cattin, A., Bittig, H. C., Bopp, L., Bultan, S., Chandra, N., Chevallier, F., Chini, L. P., Evans, W., Florentie, L., Forster, P. M., Gasser, T., Gehlen, M., Gilfillan, D., Gkritzalis, T., Gregor,	https://essd.copernicus.org/articles/12/3269/2020/

<p>L., Gruber, N., Harris, I., Hartung, K., Haverd, V., Houghton, R. A., Ilyina, T., Jain, A. K., Joetzjer, E., Kadono, K., Kato, E., Kitidis, V., Korsbakken, J. I., Landschützer, P., Lefèvre, N., Lenton, A., Lienert, S., Liu, Z., Lombardozzi, D., Marland, G., Metzl, N., Munro, D. R., Nabel, J. E. M. S., Nakaoka, S.-I., Niwa, Y., O'Brien, K., Ono, T., Palmer, P. I., Pierrot, D., Poulter, B., Resplandy, L., Robertson, E., Rödenbeck, C., Schwinger, J., Séférian, R., Skjelvan, I., Smith, A. J. P., Sutton, A. J., Tanhua, T., Tans, P. P., Tian, H., Tilbrook, B., van der Werf, G., Vuichard, N., Walker, A. P., Wanninkhof, R., Watson, A. J., Willis, D., Wiltshire, A. J., Yuan, W., Yue, X., and Zaehle, S.: Global Carbon Budget 2020, Earth Syst. Sci. Data, 12, 3269–3340, https://doi.org/10.5194/essd-12-3269-2020, 2020.</p>	
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Technical Details	
For data:	N/A
Total Size of this data collection	N/A
For data:	N/A
Total Number of Files	N/A
Current location of files (data or software)	https://www.icos-cp.eu/science-and-impact/global-carbon-budget/2020
Format(s)	Excel file
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Deliverable(s)	1. Australia CABLE-BIOS3 with land use change and demographics. 2. Global CABLE with land use change coupled to ACCESS.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/nr7QcKKxsoO3lTn Documents: https://cloudstor.aarnet.edu.au/plus/s/nr7QcKKxsoO3lTn

Description (complete for data and software)	
Title	CABLE simulations for TRENDY-v6 2017
Description	<p>These data are the submission of CABLE results to the 'Trends in net land-atmosphere carbon exchange' (TRENDY) global terrestrial biosphere simulation experiment. Following the TRENDY protocol, results are from four simulations (S0-S4) over the 1860-2016 period with one or more of changing CO₂, climate and land use as follows:</p> <p>S0: No forcing change (needed to diagnose any issues / drift)</p> <p>S1: CO₂ only (with time-invariant "pre-industrial" land use mask)</p> <p>S2: CO₂ and climate (with time-invariant "pre-industrial" land use mask)</p> <p>S3: CO₂, climate and land use (Using updated annual LULCC maps to 2016).</p> <p>The full TRENDY-v6 protocol is here: /documents/GlobalCarbonBudget_protocol_2017%20(006).SECURE.pdf</p> <p>A table of the full suite of TRENDY output variables is given here: /documents/TRENDY_variables_160817.pdf</p> <p>In this table, green cells are available CABLE outputs, red cells were not supplied.</p>
Temporal & Spatial Extent	Annual or monthly, 1860-2016 1°x1°, 180W to 180E, 90N to 60S
Lineage	<p>The CABLE model forcing for these experiments was:</p> <ul style="list-style-type: none"> • 6-hourly CRU-NCEP v8 meteorology supplied by Nicolas Viovy, aggregated to daily. • Hurtt et al. LUH2 v2h (3/8/2017) historical land use/land cover change dataset for 850-2015. • Global annual CO₂ concentration from NOAA.
Credit	Author: V. Haverd, B. Smith, L. Nieradzick, P.R. Briggs, C.M. Trudinger, J.G. Canadell
Keywords	Carbon cycle, earth system science, climate change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

*These are listed in

<http://www.abs.gov.au/ausstats/abs@.nsf/0/4AE1B46AE2048A28CA25741800044242?opendocument>

Attribution/IP(complete for data and software)	
Owning Organisation	CSIRO

Collaborating Organisations	Lund University, Sweden
Primary contact for this data	Peter Briggs peter.briggs@csiro.au
Lead Researcher	Vanessa Haverd
Contributors	Cathy Trudinger (cathy.trudinger@csiro.au), Pep Canadell (pep.canadell@csiro.au), Will Woodgate (will.woodgate@csiro.au), Ben Smith (Lund University), Lars Nieradzik (Lund University)
Access	This software is a research product, and is not for public release. For enquiries refer to primary contact.
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Journal Paper (in review): Haverd V, Smith B, Nieradzik L, Briggs PR, Woodgate W, Trudinger CM, Canadell JG. 2018. A new version of the CABLE land surface model (Subversion revision r4546), incorporating land use and land cover change, woody vegetation demography and a novel optimisation-based approach to plant coordination of electron transport and carboxylation capacity-limited photosynthesis. Geoscientific Model Development. https://doi.org/10.5194/gmd-2017-265 .	https://www.geosci-model-dev-discuss.net/gmd-2017-265/
Meteorology forcing: CRU-NCEP-v8, 6-hourly, 0.5x0.5° CRU+NCEP historical forcing, 1901- 2016, prepared by Nicolas Viovy, aggregated to daily by Peter Briggs. References: Harris, I., Jones, P. D., Osborn, T. J. & Lister, D. H. Updated high-resolution grids of monthly climatic observations—the CRU TS3.10 dataset. <i>Int. J. Climatol.</i> 34, 623–642 (2014). Wei, Y. et al. The north american carbon program multi-scale synthesis and terrestrial model intercomparison project—Part 2: environmental driver data. <i>Geosci. Model Dev.</i> 7, 2875–2893 (2014).	http://forge.ipsl.jussieu.fr/orchidee/wiki/Documentation/Forcings#a1.1CRU-NCEP
Land-use/Land cover change: Hurtt et al. LUH2 v2h (3/8/2017) historical land use/land cover change dataset for 850-2015. References: Hurtt, G., Chini, L. P., Frolking, S., Betts, R., Feddema, J., Fischer, G., Fisk, J., Hibbard, K., Houghton, R., and Janetos, A.: Harmonization of land-use scenarios for the period 1500–2100: 600 years of global gridded annual land-use transitions, wood harvest, and resulting secondary lands, <i>Climatic Change</i> , 109, 117–161, 2011. Lawrence, David & C. Hurtt, George & Arneeth, Almut & Brovkin, Victor & V. Calvin, Kate & D. Jones, Andrew & Jones, Chris & Lawrence, Peter & de NOBLET, Nathalie & Pongratz, Julia & Seneviratne, Sonia & Shevliakova, Elena. (2016). The Land Use Model Intercomparison Project (LUMIP) contribution to CMIP6: Rationale and experimental design. <i>Geoscientific Model</i>	http://luh.umd.edu/

Development. 9. 2973-2998. 10.5194/gmd-9-2973-2016.	
<p>CO2 forcing: Global annual CO2 concentration (ppm). Prepared on behalf of C. Le Quere for the Global Carbon Project. Data from March 1958 are monthly average from MLO and SPO provided by NOAA's Earth System Research Laboratory http://www.esrl.noaa.gov/gmd/ccgg/trends/. When no SPO data are available, SPO is constructed from the 1976-2014 average, MLO-SPO trend and average monthly departure. Data for 2015-2016 are preliminary values. The data from 1980 through 2006 were reprocessed in 2011 to bring them into the WMO X2007 scale. This affected slightly the entire time series from 1958. Data prior to March 1958 are estimated with a cubic spline fit to ice core data from Joos and Spahni 2008 Rates of change in natural and anthropogenic radiative forcing over the past 20,000 years PNAS.</p>	http://www.esrl.noaa.gov/gmd/ccgg/trends/

Technical Details	
For data: Total Size of this data collection	98 GB
For data: Total Number of Files	223 data files (plus documentation)
Current location of files (data or software)	Documents: https://cloudstor.aarnet.edu.au/plus/s/nr7QcKKxsoO3ITn
Format(s)	NetCDF files, gzipped
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Deliverable(s)	3. Australia CABLE-BIOS3 with land use change and demographics. 4. Global CABLE with land use change coupled to ACCESS.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/rrRHfGNy45HvM2f Documents: https://cloudstor.aarnet.edu.au/plus/s/rrRHfGNy45HvM2f

Description (complete for data and software)	
Title	CABLE-POP simulations for TRENDY-v7 2018
Description	<p>These data are the submission of CABLE-POP results to the 'Trends in net land-atmosphere carbon exchange' (TRENDY) global terrestrial biosphere simulation experiment. Following the TRENDY protocol, results are from five simulations (S0-S4) over the 1700-2017 period with one or more of changing CO2, climate and land use as follows:</p> <p>S0: No forcing change (needed to diagnose any issues / drift)</p> <p>S1: CO2 only (with time-invariant "pre-industrial" land use mask)</p> <p>S2: CO2 and climate (with time-invariant "pre-industrial" land use mask)</p> <p>S3: CO2, climate and land use (Using updated annual land use/land cover change maps to 2017).</p> <p>S4: Land use only (time-invariant "pre-industrial" climate and CO2, using updated annual LULCC maps to 2017)</p> <p>Harvest components of S3 and S4 are stored in separate directories S3_harvest and S4_harvest. Zonally-averaged (i.e. by latitude band) NBP data for each scenario are in directory zonalNBP. The full TRENDY-v7 protocol is here: /documents/GlobalCarbonBudget_protocol_2018.pdf</p> <p>A table of the full suite of TRENDY output variables is given here: /documents/trendy_listofvariables_GCP2018.pdf</p> <p>In this table, green cells are available CABLE outputs, red cells were not supplied.</p>
Temporal & Spatial Extent	Annual or monthly, 1700-2017 1°x1°, 180W to 180E, 90N to 60S
Lineage	<p>The CABLE-POP model forcing for these experiments was:</p> <ul style="list-style-type: none"> 6-hourly CRU-JRA55 meteorology supplied by Ian Harris and Nicolas Viovy, aggregated to daily. Full details are provided in Annex 1 of the protocol. Hurt et al. LUH2 v2h (3/8/2017) historical land use/land cover change dataset for 850-2015, augmented to 2018 as version GCB 2018. The

	<p>differences from LUH2 v2h are described in: /documents/LUH2_GCB2018_Summary.pdf</p> <ul style="list-style-type: none"> Global annual CO2 concentration from NOAA.
Credit	Author: V. Haverd, B. Smith, L. Nieradzic, P.R. Briggs, C.M. Trudinger, J.G. Canadell
Keywords	Carbon cycle, earth system science, climate change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

*These are listed in

<http://www.abs.gov.au/ausstats/abs@.nsf/0/4AE1B46AE2048A28CA25741800044242?opendocument>

Attribution/IP(complete for data and software)	
Owning Organisation	CSIRO
Collaborating Organisations	Lund University, Sweden
Primary contact for this data	Peter Briggs peter.briggs@csiro.au
Lead Researcher	Vanessa Haverd
Contributors	Cathy Trudinger (cathy.trudinger@csiro.au), Pep Canadell (pep.canadell@csiro.au), Will Woodgate (will.woodgate@csiro.au), Ben Smith (Lund University), Lars Nieradzic (Lund University)
Access	This software is a research product and is not for public release. For enquiries refer to primary contact.
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
<p>Journal Paper: Haverd V, Smith B, Nieradzic L, Briggs PR, Woodgate W, Trudinger CM, Canadell JG, Cuntz M. 2018. A new version of the CABLE land surface model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis. Geoscientific Model Development. https://doi.org/10.5194/gmd-11-2995-2018.</p>	https://doi.org/10.5194/gmd-11-2995-2018
<p>Meteorology forcing: CRU+JRA-55, 6-hourly, 0.5x0.5° historical forcing, 1901- 2017, prepared by Ian Harris and Nicolas Viovy, aggregated to daily by Peter Briggs. References: Harris, I., Jones, P. D., Osborn, T. J. & Lister, D. H. Updated high-resolution grids of monthly climatic observations—the CRU TS3.10 dataset. Int. J. Climatol. 34, 623–642 (2014). Wei, Y. et al. The north american carbon program multi-scale synthesis and terrestrial model intercomparison project—Part 2: environmental driver data. Geosci. Model Dev. 7, 2875–2893 (2014). Kobayashi, S., Ota, Y., Harada, Y., Ebata, A., Moriya, M., Onoda, H., Onogi, K., Kamahori, H., Kobayashi, C., Endo, H., Miyaoka, K., and Takahashi, K.: The JRA-55 Reanalysis: General Specifications and Basic Characteristics, J.</p>	https://vesq.ipsl.upmc.fr/thredds/catalog/work/p529/viov/crujra/catalog.html

<p>Meteorol. Soc. Jpn., 93, 5–48, https://doi.org/10.2151/jmsj.2015-001, 2015.</p>	
<p>Land-use/Land cover change: Hurtt et al. LUH2 v2h (3/8/2017) historical land use/land cover change dataset for 850-2015, augmented to 2018 as version GCB 2018. References: Hurtt, G., Chini, L. P., Froking, S., Betts, R., Feddema, J., Fischer, G., Fisk, J., Hibbard, K., Houghton, R., and Janetos, A.: Harmonization of land-use scenarios for the period 1500–2100: 600 years of global gridded annual land-use transitions, wood harvest, and resulting secondary lands, <i>Climatic Change</i>, 109, 117–161, 2011. Lawrence, David & C. Hurtt, George & Arneeth, Almut & Brovkin, Victor & V. Calvin, Kate & D. Jones, Andrew & Jones, Chris & Lawrence, Peter & de NOBLET, Nathalie & Pongratz, Julia & Seneviratne, Sonia & Shevliakova, Elena. (2016). The Land Use Model Intercomparison Project (LUMIP) contribution to CMIP6: Rationale and experimental design. <i>Geoscientific Model Development</i>. 9. 2973-2998. 10.5194/gmd-9-2973-2016.</p>	<p>http://luh.umd.edu/</p>
<p>CO2 forcing: Global annual CO2 concentration (ppm). Prepared on behalf of C. Le Quere for the Global Carbon Project. Data from March 1958 are monthly average from MLO and SPO provided by NOAA's Earth System Research Laboratory http://www.esrl.noaa.gov/gmd/ccgg/trends/. When no SPO data are available, SPO is constructed from the 1976-2017 average, MLO-SPO trend and average monthly departure. Data for 2016-2018 are preliminary values. The data from 1980 through 2006 were reprocessed in 2011 to bring them into the WMO X2007 scale. This affected slightly the entire time series from 1958. Data prior to March 1958 are estimated with a cubic spline fit to ice core data from Joos and Spahni 2008.</p>	<p>http://www.esrl.noaa.gov/gmd/ccgg/trends/</p>

Technical Details	
For data: Total Size of this data collection	65 GB
For data: Total Number of Files	284 files (plus documentation)
Current location of files (data or software)	Data: https://cloudstor.aarnet.edu.au/plus/s/rrRHfGNy45HvM2f
Format(s)	NetCDF files, gzipped
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Deliverable(s)	5. Australia CABLE-BIOS3 with land use change and demographics. 6. Global CABLE with land use change coupled to ACCESS.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/dbGGMZEXj7QnfCD Documents: https://cloudstor.aarnet.edu.au/plus/s/dbGGMZEXj7QnfCD

Description (complete for data and software)	
Title	CABLE-POP simulations for TRENDY-v8 2019
Description	<p>These data are the submission of CABLE-POP results to the 'Trends in net land-atmosphere carbon exchange' (TRENDY) global terrestrial biosphere simulation experiment. Following the TRENDY protocol, results are from four simulations (S0-S3) over the 1700-2018 period with one or more of changing CO₂, climate and land use as follows:</p> <p>S0: Control. No forcing change (time-invariant "pre-industrial" CO₂, climate and land use mask). S0 is needed to diagnose any "cold start" issues or model drift</p> <p>S1: CO₂ only (time-invariant "pre-industrial" climate and land use mask)</p> <p>S2: CO₂ and climate only (time-invariant "pre-industrial" land use mask)</p> <p>S3: CO₂, climate and land use (all forcing time-varying).</p> <p>Zonally-averaged (i.e. by latitude band) NBP data for each scenario are in directory zonalNBP. The full TRENDY-v8 protocol is here: /documents/GlobalCarbonBudget-Protocol-2019v6.pdf</p> <p>A table of the full suite of TRENDY output variables is given here: /documents/trendy_listofvariables_GCP2019v6.xlsx</p> <p>Not all variables were supplied by CABLE-POP.</p>
Temporal & Spatial Extent	Annual or monthly, 1700-2018 1°x1°, 180W to 180E, 90N to 60S
Lineage	<p>The CABLE-POP model forcing for these experiments was:</p> <ul style="list-style-type: none"> 6-hourly CRU-JRA55 meteorology supplied by Ian Harris and Nicolas Viovy, aggregated to daily. Full details are provided in Annex 1 of the protocol document. Hurtt et al. LUH2 v2h historical land use/land cover change dataset for 850-2015, augmented to the end of 2018 is described in Annex 2 of the protocol document. Global annual CO₂ concentration from NOAA.
Credit	Author: V. Haverd, B. Smith, P.R. Briggs, J.G. Canadell

Keywords	Carbon cycle, earth system science, climate change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

*These are listed in

<http://www.abs.gov.au/ausstats/abs@.nsf/0/4AE1B46AE2048A28CA25741800044242?opendocument>

Attribution/IP(complete for data and software)	
Owning Organisation	CSIRO
Collaborating Organisations	University of Western Sydney
Primary contact for this data	Peter Briggs peter.briggs@csiro.au
Lead Researcher	Vanessa Haverd
Contributors	Cathy Trudinger (cathy.trudinger@csiro.au), Pep Canadell (pep.canadell@csiro.au), Ben Smith (University of Western Sydney)
Access	This software is a research product and is not for public release. For enquiries refer to primary contact.
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Journal Paper: Haverd V, Smith B, Nieradzik L, Briggs PR, Woodgate W, Trudinger CM, Canadell JG, Cuntz M. 2018. A new version of the CABLE land surface model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis. Geoscientific Model Development. https://doi.org/10.5194/gmd-11-2995-2018 .	https://doi.org/10.5194/gmd-11-2995-2018
Meteorology forcing: CRU+JRA-55, 6-hourly, 0.5x0.5° historical forcing, 1901- 2018, prepared by Ian Harris and Nicolas Viovy, aggregated to daily by Peter Briggs. References: Harris, I., Jones, P. D., Osborn, T. J. & Lister, D. H. Updated high-resolution grids of monthly climatic observations—the CRU TS3.10 dataset. Int. J. Climatol. 34, 623–642 (2014). Wei, Y. et al. The north american carbon program multi-scale synthesis and terrestrial model intercomparison project—Part 2: environmental driver data. Geosci. Model Dev. 7, 2875–2893 (2014). Kobayashi, S., Ota, Y., Harada, Y., Ebita, A., Moriya, M., Onoda, H., Onogi, K., Kamahori, H., Kobayashi, C., Endo, H., Miyaoka, K., and Takahashi, K.: The JRA-55 Reanalysis: General Specifications and Basic Characteristics, J. Meteorol. Soc. Jpn., 93, 5–48, https://doi.org/10.2151/jmsj.2015-001 , 2015.	sftp trendy-v8@trendy.ex.ac.uk Directory: /input/CRUJRA2019 Password on application.
Land-use/Land cover change: Hurtt et al. LUH2 v2h (3/8/2017) historical land use/land cover change dataset for 850-2015, augmented to 2018 as version GCB 2018. References:	http://luh.umd.edu/

<p>Hurtt, G., Chini, L. P., Frolking, S., Betts, R., Feddema, J., Fischer, G., Fisk, J., Hibbard, K., Houghton, R., and Janetos, A.: Harmonization of land-use scenarios for the period 1500–2100: 600 years of global gridded annual land-use transitions, wood harvest, and resulting secondary lands, <i>Climatic Change</i>, 109, 117–161, 2011.</p> <p>Lawrence, David & C. Hurtt, George & Arneeth, Almut & Brovkin, Victor & V. Calvin, Kate & D. Jones, Andrew & Jones, Chris & Lawrence, Peter & de NOBLET, Nathalie & Pongratz, Julia & Seneviratne, Sonia & Shevliakova, Elena. (2016). The Land Use Model Intercomparison Project (LUMIP) contribution to CMIP6: Rationale and experimental design. <i>Geoscientific Model Development</i>. 9. 2973-2998. 10.5194/gmd-9-2973-2016.</p>	
<p>CO2 forcing: 1700-2018 annual time-series, derived from from ice core CO2 data merged with NOAA annual resolution from 1958 onwards. Prepared by C Le Quéré for the Global Carbon Project. Most small differences with the 2017 data are from the revisions of the trend between MLO and SPO which is used to fill missing SPO data. This dataset is intended to be used as atmospheric forcing for modelling the evolution of carbon sinks. Data from March 1958 are monthly average from MLO and SPO provided by NOAA's Earth System Research Laboratory http://www.esrl.noaa.gov/gmd/ccgg/trends/. When no SPO data are available (including prior to 1975), SPO is constructed from the 1976-2017 average MLO-SPO trend and average monthly departure. Data for 2016-2018 are preliminary values. The data from 1980 through 2006 were reprocessed in 2011 to bring them into the WMO X2007 scale. Data prior to March 1958 are estimated with a cubic spline fit to ice core data from Joos and Spahni 2008 Rates of change in natural and anthropogenic radiative forcing over the past 20,000 years PNAS.</p>	<p>sftp trendy-v8@trendy.ex.ac.uk Directory: ./input/CO2field/global_co2_ann_1700_2018.txt Password on application</p>

Technical Details	
For data: Total Size of this data collection	95 GB
For data: Total Number of Files	229 files (plus documentation)
Current location of files (data or software)	Data: https://cloudstor.aarnet.edu.au/plus/s/R5xZoEKOBx46EJG Documents: https://cloudstor.aarnet.edu.au/plus/s/R5xZoEKOBx46EJG
Format(s)	NetCDF files, gzipped
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 2.9 – Risk assessment of future carbon sources and sinks
Project Leader(s)	Pep Canadell
Deliverable(s)	7. Australia CABLE-BIOS3 with land use change and demographics. 8. Global CABLE with land use change coupled to ACCESS.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/R5xZoEKOBx46EJG Documents: https://cloudstor.aarnet.edu.au/plus/s/R5xZoEKOBx46EJG

Description (complete for data and software)	
Title	CABLE-POP simulations for TRENDY-v9 2020
Description	<p>These data are the submission of CABLE-POP results to the 'Trends in net land-atmosphere carbon exchange' (TRENDY) global terrestrial biosphere simulation experiment. Following the TRENDY protocol, results are from four simulations (S0-S3) over the 1700-2019 period with one or more of changing CO2, climate and land use as follows:</p> <p>S0: Control. No forcing change (time-invariant "pre-industrial" CO2, climate and land use mask). S0 is needed to diagnose any "cold start" issues or model drift</p> <p>S1: CO2 only (time-invariant "pre-industrial" climate and land use mask)</p> <p>S2: CO2 and climate only (time-invariant "pre-industrial" land use mask)</p> <p>S3: CO2, climate and land use (all forcing time-varying).</p> <p>Zonally-averaged (i.e. by latitude band) NBP data for each scenario are in directory zonalNBP.</p> <p>The full TRENDY-v9 protocol is here: /documents/GlobalCarbonBudget-Protocol-2020v1.pdf</p> <p>A table of the full suite of TRENDY output variables is given here: /documents/trendy_listofvariables_GCP20120v1.xlsx</p> <p>Not all variables were supplied by CABLE-POP.</p>
Temporal & Spatial Extent	Annual or monthly, 1700-2019 1°x1°, 180W to 180E, 90N to 60S
Lineage	<p>The CABLE-POP model forcing for these experiments was:</p> <ul style="list-style-type: none"> 6-hourly CRU-JRA55 meteorology supplied by Ian Harris and Nicolas Viovy, aggregated to daily. Full details are provided in Annex 1 of the protocol document. Hurtt et al. LUH2 v2h historical land use/land cover change dataset for 850-2015, augmented to the end of 2019 is described in Annex 2 of the protocol document. Global annual CO2 concentration from NOAA.
Credit	Author: V. Haverd, B. Smith, P.R. Briggs, J.G. Canadell

Keywords	Carbon cycle, earth system science, climate change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

*These are listed in

<http://www.abs.gov.au/ausstats/abs@.nsf/0/4AE1B46AE2048A28CA25741800044242?opendocument>

Attribution/IP(complete for data and software)	
Owning Organisation	CSIRO
Collaborating Organisations	University of Western Sydney
Primary contact for this data	Peter Briggs peter.briggs@csiro.au
Lead Researcher	Vanessa Haverd
Contributors	Cathy Trudinger (cathy.trudinger@csiro.au), Pep Canadell (pep.canadell@csiro.au), Ben Smith (University of Western Sydney)
Access	This software is a research product and is not for public release. For enquiries refer to primary contact.
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Journal Paper: Haverd V, Smith B, Nieradzik L, Briggs PR, Woodgate W, Trudinger CM, Canadell JG, Cuntz M. 2018. A new version of the CABLE land surface model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis. Geoscientific Model Development. https://doi.org/10.5194/gmd-11-2995-2018 .	https://doi.org/10.5194/gmd-11-2995-2018
Meteorology forcing: CRU+JRA-55, 6-hourly, 0.5x0.5° historical forcing, 1901- 2018, prepared by Ian Harris and Nicolas Viovy, aggregated to daily by Peter Briggs. References: Harris, I., Jones, P. D., Osborn, T. J. & Lister, D. H. Updated high-resolution grids of monthly climatic observations—the CRU TS3.10 dataset. Int. J. Climatol. 34, 623–642 (2014). Wei, Y. et al. The north american carbon program multi-scale synthesis and terrestrial model intercomparison project—Part 2: environmental driver data. Geosci. Model Dev. 7, 2875–2893 (2014). Kobayashi, S., Ota, Y., Harada, Y., Ebita, A., Moriya, M., Onoda, H., Onogi, K., Kamahori, H., Kobayashi, C., Endo, H., Miyaoka, K., and Takahashi, K.: The JRA-55 Reanalysis: General Specifications and Basic Characteristics, J. Meteorol. Soc. Jpn., 93, 5–48, https://doi.org/10.2151/jmsj.2015-001 , 2015.	sftp trendy-v9@trendy.ex.ac.uk Directory: /input/CRUJRA2020 Password on application.
Land-use/Land cover change: Hurtt et al. LUH2 v2h (3/8/2017) historical land use/land cover change dataset for 850-2015, augmented to 2018 as version GCB 2018. References:	http://luh.umd.edu/

<p>Hurtt, G., Chini, L. P., Frohking, S., Betts, R., Feddema, J., Fischer, G., Fisk, J., Hibbard, K., Houghton, R., and Janetos, A.: Harmonization of land-use scenarios for the period 1500–2100: 600 years of global gridded annual land-use transitions, wood harvest, and resulting secondary lands, <i>Climatic Change</i>, 109, 117–161, 2011.</p> <p>Lawrence, David & C. Hurtt, George & Arneeth, Almut & Brovkin, Victor & V. Calvin, Kate & D. Jones, Andrew & Jones, Chris & Lawrence, Peter & de NOBLET, Nathalie & Pongratz, Julia & Seneviratne, Sonia & Shevliakova, Elena. (2016). The Land Use Model Intercomparison Project (LUMIP) contribution to CMIP6: Rationale and experimental design. <i>Geoscientific Model Development</i>. 9. 2973-2998. 10.5194/gmd-9-2973-2016.</p>	
<p>CO2 forcing: 1700-2019 annual time-series, derived from from ice core CO2 data merged with NOAA annual resolution from 1958 onwards. Prepared by C Le Quéré for the Global Carbon Project. Most small differences with the 2017 data are from the revisions of the trend between MLO and SPO which is used to fill missing SPO data. This dataset is intended to be used as atmospheric forcing for modelling the evolution of carbon sinks. Data from March 1958 are monthly average from MLO and SPO provided by NOAA's Earth System Research Laboratory http://www.esrl.noaa.gov/gmd/ccgg/trends/. When no SPO data are available (including prior to 1975), SPO is constructed from the 1976-2017 average MLO-SPO trend and average monthly departure. Data for 2016-2018 are preliminary values. The data from 1980 through 2006 were reprocessed in 2011 to bring them into the WMO X2007 scale. Data prior to March 1958 are estimated with a cubic spline fit to ice core data from Joos and Spahni 2008 Rates of change in natural and anthropogenic radiative forcing over the past 20,000 years PNAS.</p>	<p>sftp trendy-v9@trendy.ex.ac.uk Directory: ./input/CO2field/global_co2_ann_1700_2019.txt Password on application</p>

Technical Details	
For data: Total Size of this data collection	97 GB
For data: Total Number of Files	233 files (plus documentation)
Current location of files (data or software)	Data: https://cloudstor.aarnet.edu.au/plus/s/dbGGMZEXj7QnfCD Documents: https://cloudstor.aarnet.edu.au/plus/s/dbGGMZEXj7QnfCD
Format(s)	NetCDF files, gzipped
Associated tool(s)/ Dependencies	N/A
Proposed publication host	N/A

Project Details	
ESCC Project No. & Title(s)	Project 5.6 – The carbon budget of continental Australia and possible future trajectories
Project Leader(s)	Pep Canadell
Deliverable(s)	9. Australia CABLE-BIOS3 with land use change and demographics. 10. Global CABLE with land use change coupled to ACCESS.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/R5xZoEKOBx46EJG Documents: https://cloudstor.aarnet.edu.au/plus/s/R5xZoEKOBx46EJG

Description (complete for data and software)	
Title	Data associated with the publication "Multi-decadal increase of forest burned area in Australia is linked to climate change"
Description	Data from various sources related to fires in Australian forests, associated with the publication "Multi-decadal increase of forest burned area in Australia is linked to climate change"
Temporal & Spatial Extent	<ol style="list-style-type: none"> Various annual estimates of burned area aggregated for Australian dense forests by July-to-June fire years: 1930-2019 from State agencies, 1988-2019 from Landgate AVHRR, 2001-2019 MODIS. Long-term climate change in factors that are directly or indirectly associated with wildfire weather and activity, 1980-1999 vs 2000-2019 <ul style="list-style-type: none"> Min, Max Longitude (cell centres): 112, 156.25 Min, Max Latitude (cell centres): -44.5, -10 Resolution: 0.05° x 0.05° Min, Max Longitude (cell centres): 100, 160 Min, Max Latitude (cell centres): -50, -5 Resolution: 0.25° x 0.25° Mapped dense forest ecosystem distribution <ul style="list-style-type: none"> Min, Max Longitude (outer boundaries): 112.91, 153.64 Min, Max Latitude (outer boundaries): -43.75, -9 Resolution: 0.0025° x 0.0025°
Lineage	<ol style="list-style-type: none"> Burned area estimates aggregated for Australian dense forests: State agencies: Burned areas from land management and fire suppression agencies from all States and Territories in Australia. Agency data is provided as polygons in vector files derived from a variety of data that are converted to rasters at 0.0025deg resolution. Data includes paper records, ground mapping, and aerial photography for the earlier part of the record, and GPS boundary tracing from ground surveys, line scans, aerial photography and, in some cases, satellite mapping for the

later part of the record.

Landgate AVHRR:

Data product is developed by the Western Australia Land Authority (Landgate) that produces a burned area based on NOAA's Advanced Very High-Resolution Radiometer (AVHRR) at 1.1 km x 1.1 km and monthly resolution with continental coverage (<https://srss.landgate.wa.gov.au/fire.php>).

MODIS:

NASA-MODIS burned area, at monthly and 500m resolution, combines MODIS Thermal Anomalies and the Fire product MCD64A1.006. The data were downloaded for the Australian region in cylindrical equidistant form (0.004167° resolution)

at <https://lpdaacsvc.cr.usgs.gov/appeears/task/area>. They were resampled to 0.0025° (approximately 250m) by nearest-neighbor.

2. Long-term climate change in factors that are directly or indirectly associated with wildfire weather and activity:

Calculated from gridded analysis of observations throughout Australia including for temperature, rainfall and humidity from the Australian Water Availability Project (FFDI), wind speed from reanalysis data calibrated to the operational fire weather warning forecasts produced operationally by the Australian Bureau of Meteorology; temperature data from the ACORN-SAT high-quality data set for Australia; ERA5 reanalysis data (C-Haines).

3. Mapped dense forest ecosystem distribution: Based on the agro-ecological zones of the Biogeographic Regionalization for Australia (IBRA)

(<https://www.environment.gov.au/land/nrs/science/ibra>), with the corresponding forest types from the National Forest Inventory (<https://www.agriculture.gov.au/abares/forestsaustralia/australias-national-forest-inventory>).

Forest ecosystems are dominated by open forests of up to 80% canopy cover and 30 meters height and woodland forests up to 50% canopy cover. The forest vegetation classes were developed from ground, aerial and remotely sensed vegetation mapping, the National Vegetation Information System (NVIS), and large field validation programs. The following vegetation types are included:

Eucalypt low closed, Eucalypt low open, Eucalypt low woodland, Eucalypt medium closed, Eucalypt medium open, Eucalypt medium woodland, Eucalypt tall closed, Eucalypt tall open, Eucalypt tall woodlands, Rainforest, Letptospermum, Banksia, Other native forest, Softwood plantation, Hardwood plantation, Mixed species plantation and Other forests (unallocated types). ArcGIS majority resampling was used to determine forest/non-forest membership of cells at 0.01° resolution (1.1 km x 1.1 km) for comparison with Landgate NOAA-AVHRR, and at 0.0025°

	(approximately 250 m × 250 m) for all other analyses. The total area covered by this study is 324,873 km ² .
Credit	Author: Josep G. Canadell, C.P. (Mick) Meyer, Garry Cook, Andrew Dowdy (BoM), Peter R. Briggs, Jürgen Knauer, Acacia Pepler (BoM), Vanessa Haverd
Keywords	Carbon cycle, earth system science, climate change, bushfire
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences 040104 Climate Change Processes

*These are listed in

<http://www.abs.gov.au/ausstats/abs@.nsf/0/4AE1B46AE2048A28CA25741800044242?opendocument>

Attribution/IP(complete for data and software)	
Owning Organisation	CSIRO
Collaborating Organisations	Bureau of Meteorology
Primary contact for this data	Peter Briggs peter.briggs@csiro.au
Lead Researcher	Pep Canadell
Contributors	Josep G. Canadell, C.P. (Mick) Meyer, Garry Cook, Andrew Dowdy (BoM), Peter R. Briggs, Jürgen Knauer, Acacia Pepler (BoM), Vanessa Haverd
Access	Related software is a research product and is not for public release. For enquiries refer to primary contact.
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Full citations for publications, data and software.
Details	URL
Journal Paper: Josep G. Canadell, C.P. (Mick) Meyer, Garry Cook, Andrew Dowdy (BoM), Peter R. Briggs, Jürgen Knauer, Acacia Pepler (BoM), Vanessa Haverd (2021) Multi-decadal increase of forest burned area in Australia is linked to climate change. Nature Communications. (submitted)	TBD
State agency burned area estimates (See journal paper for further information)	https://data.nsw.gov.au/data/dataset/1f694774-49d5-47b8-8dd0-77ca8376eb04 https://data.aurin.org.au/dataset/vic-govt-delwp-datavic-fire-history-na https://discover.data.vic.gov.au/dataset/fire-history-records-of-fires-primarily-on-public-land https://discover.data.vic.gov.au/dataset/fire-history-overlay-of-most-recent-fires https://data.sa.gov.au/data/dataset/prescribed-burns https://data.sa.gov.au/data/dataset/fire-history https://catalogue.data.wa.gov.au/dataset/dbca-fire-history http://listdata.thelist.tas.gov.au/opendata/ https://www.data.brisbane.qld.gov.au/data/dataset/wild-fire-history/resource/2e8c7996-b864-4166-a1a0-953370ab63e5?inner_span=True https://qldspatial.information.qld.gov.au/catalogue/custom/search.page
Landgate AVHRR burned area	https://srss.landgate.wa.gov.au/fire.php

<p>Soto-Berelov, M. et al. Assessing two large area burnt area products across Australian southern forests. <i>Int. J. Remote Sens.</i> 39, 879–905 (2018).</p> <p>Perry, J. J. et al. Regional seasonality of fire size and fire weather conditions across Australia's northern savanna. <i>Int. J. Wildl. Fire</i> 29, 1–10 (2019).</p> <p>Russell-Smith, J. et al. Bushfires 'down under': Patterns and implications of contemporary Australian landscape burning. <i>Int. J. Wildl. Fire</i> 16, 361–377 (2007).</p>	
<p>MODIS burned area estimates</p> <p>Giglio, L., Boschetti, L., Roy, D. P., Humber, M. L. & Justice, C. O. The Collection 6 MODIS burned area mapping algorithm and product. <i>Remote Sens. Environ.</i> 217, 72–85 (2018).</p>	<p>https://lpdaacsvc.cr.usgs.gov/appears/task/area</p>
<p>Australia's dense forest ecosystem distribution</p>	<p>https://www.environment.gov.au/land/nrs/science/ibra</p> <p>https://www.agriculture.gov.au/abares/forestsaustralia/australias-national-forest-inventory</p> <p>https://www.environment.gov.au/land/native-vegetation/national-vegetation-information-system</p>

Technical Details	
For data: Total Size of this data collection	12 MB
For data: Total Number of Files	9 files
Current location of files (data or software)	<p>https://zenodo.org/record/3877867#.YLzmnvkzYuU (embargoed until publication)</p> <p>Documents: Journal paper currently in review, other documents at https://zenodo.org/record/3877867#.YLzmnvkzYuU</p>
Format(s)	Excel, NetCDF, ArcGIS ascii grid and ancilliary files
Associated tool(s)/ Dependencies	N/A
Proposed publication host	zenodo.org

Project Details	
ESCC Project No. & Title(s)	Project 5.6 – The carbon budget of continental australia and possible future trajectories
Project Leader(s)	Pep Canadell
Deliverable(s)	Australia CABLE-BIOS3 with demographics.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/Uvcnjs5U08x3GmP

Description (complete for data and software)	
Title	Australia CABLE-BIOS major carbon cycle components
Description	GPP, NPP, NBP fluxes and PlantLeafCarbon pool for run 200229 of CABLE-BIOS
Temporal & Spatial Extent	Temporal: 3-hourly Jan 1, 2015 00:00 to Dec 31, 2019 21:00. Spatial: Min, Max Longitude (outer boundaries): 112, 154 Min, Max Latitude (cell centres): -44, -10 Resolution: 0.25° x 0.25°
Lineage	Data are 3-hourly model outputs from CABLE-BIOS3, an Australian implementation of of the CABLE land surface model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis.
Credit	Vanessa Haverd, Josep G. Canadell, Jürgen Knauer, Peter R. Briggs, Ben Smith (UWS)
Keywords	Carbon cycle, earth system science, climate change
ABS Fields of Research Category / Subcategory*	04 Earth Sciences 0401 Atmospheric sciences

*These are listed in

<http://www.abs.gov.au/ausstats/abs@.nsf/0/4AE1B46AE2048A28CA25741800044242?opendocument>

Attribution/IP(complete for data and software)	
Owning Organisation	CSIRO
Collaborating Organisations	University of Western Sydney
Primary contact for this data	Peter Briggs peter.briggs@csiro.au
Lead Researcher	Vanessa Haverd
Contributors	Vanessa Haverd, Josep G. Canadell, Jürgen Knauer, Peter R. Briggs, Ben Smith (UWS)
Access	Related software is a research product and is not for public release. For enquiries refer to primary contact.
Licencing	CC BY 4.0

Related Materials. Publications, tools, websites, related input data.	Please provide full citations for publications, data and software.
Details	URL
Journal Paper: Haverd V, Smith B, Nieradzik L, Briggs PR, Woodgate W, Trudinger CM, Canadell JG, Cuntz	https://www.geosci-model-dev-discuss.net/gmd-2017-265/

<p>M. 2018. A new version of the CABLE land surface model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis. Geoscientific Model Development. https://doi.org/10.5194/gmd-11-2995-2018. (2021)</p> <p>Multi-decadal increase of forest burned area in Australia is linked to climate change. Nature Communications. (submitted)</p>	
<p>AWAP forcing meteorology: Jones DA, Wang W, Fawcett R (2009), High-quality spatial climate data-sets for Australia. Australian Meteorological and Oceanographic Journal 58:233-248.</p>	<p>http://www.bom.gov.au/jshess/docs/2009/jones.pdf</p>

Technical Details	
For data: Total Size of this data collection	5.4117 GB uncompressed 1.9843 GB compressed
For data: Total Number of Files	2 files
Current location of files (data or software)	Data: https://cloudstor.aarnet.edu.au/plus/s/Uvcnjs5U08x3GmP
Format(s)	Gzipped NetCDF files
Associated tool(s)/ Dependencies	CABLE land surface model (Subversion revision r4601) as CABLE-BIOS3
Proposed publication host	

Project Details	
ESCC Project No. & Title(s)	Project 5.6 – The carbon budget of continental Australia and possible future trajectories
Project Leader(s)	Pep Canadell
Deliverable(s)	Australia CABLE-BIOS3 with demographics.
Data/software Manager	Peter Briggs (Data Manager)

Research Output data collection or software URLs if applicable
Data: https://cloudstor.aarnet.edu.au/plus/s/Uvcnjs5U08x3GmP

Description (complete for data and software)	
Title	Australia CABLE-BIOS major carbon cycle components
Description	GPP, NPP, NBP fluxes and PlantLeafCarbon pool for run 200229 of CABLE-BIOS
Temporal & Spatial Extent	Temporal: 3-hourly Jan 1, 2015 00:00 to Dec 31, 2019 21:00. Spatial: Min, Max Longitude (outer boundaries): 112, 154 Min, Max Latitude (cell centres): -44, -10 Resolution: 0.25° x 0.25°
Lineage	Data are 3-hourly model outputs from CABLE-BIOS3, an Australian implementation of the CABLE land surface model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis.
Credit	Vanessa Haverd, Josep G. Canadell, Jürgen Knauer, Peter R. Briggs, Ben Smith (UWS)
Keywords	Carbon cycle, earth system science, climate change
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Details	URL
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<p>model (Subversion revision r4601) incorporating land use and land cover change, woody vegetation demography, and a novel optimisation-based approach to plant coordination of photosynthesis. Geoscientific Model Development. https://doi.org/10.5194/gmd-11-2995-2018. (2021)</p> <p>Multi-decadal increase of forest burned area in Australia is linked to climate change. Nature Communications. (submitted)</p>	
<p>Related Journal Papers:</p> <p>Villalobos, Y., Rayner, P. J., Silver, J. D., Thomas, S., Haverd, V., Knauer, J., Loh, Z. M., Deutscher, N. M., Griffith, D. W. T., and Pollard, D. F.: Was Australia a sink or source of CO₂ in 2015? Data assimilation using OCO-2 satellite measurements, Atmos. Chem. Phys. Discuss. [preprint], https://doi.org/10.5194/acp-2021-16, in review, 2021.</p> <p>Norton AJ, Rayner PJ, Wang Y-P, Parazoo NC, Baskaran L, Cawse-Nicholson K, Briggs PR, Haverd V. 2021. Nonlocal carbon-water interactions in Australia. Remote Sensing of Environment, submitted.</p>	
<p>AWAP forcing meteorology: Jones DA, Wang W, Fawcett R (2009), High-quality spatial climate data-sets for Australia. Australian Meteorological and Oceanographic Journal 58:233-248.</p>	<p>http://www.bom.gov.au/jshess/docs/2009/jones.pdf</p>

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Format(s)	Gzipped NetCDF files
Associated tool(s)/ Dependencies	CABLE land surface model (Subversion revision r4601) as CABLE-BIOS3
Proposed publication host	