Journal Name

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Supplementary Information

Definitions

The carbon content w_C is stated as mass fraction of carbon in the mixture, i.e. as the ratio of the mass of carbon m_C to the total mass m_{tot} of the mixture

$$w_C = \frac{m_C}{m_{tot}}$$

Original data

Table S4 Overview of values given for the carbon inventory.

Definition *	Gt C	Ref.
Biomass on land	650	89
Land phytomass	6×10^2	88
Plants	450	90
Subsurface bacteria	70	90
Subsurface archaea	7	90
Total for abundant taxonomic groups	550	90
Terrestrial biosphere	625	‡
Soil humus	1.5×10^3	88
Soil	3000	93
Soil organic carbon	2.3×10^3	‡
Oceanic biota	3×10^0	88
Biomass in oceans	3	89
Marine zoomass	2	90
Marine biota	6	‡
Atmosphere	597	89
Atmosphere	750	57
Atmosphere	7.850×10^2	88
Atmosphere	785	‡
Ocean, mostly HCO_3^-, CO_3^{2-}, CO_2	3.8509×10^4	88
Carbonates	6.53×10^7	88
Organic matter	1.25×10^7	88
Fossil fuel reserves	3.5×10^3	99
Continental crust	2.576×10^6	88
Oceanic crust	9.200×10^5	88
Earth's crust	$6 - 8 \times 10^7$	103
Upper mantle	$8.90 – 16.6 \times 10^7$	88

* As per reference; aggregated data and description used for the discussion are highlighted.

Table S4 Cumulative values for anthropogenic emissions since the onset of industrialisation.

Definition *	Gt C	Year	Ref.
Cumulative anthropogenic emissions	461±19	2000	88
Cumulatively taken up by land ecosystem	134±6	2000	88
Cumulatively transferred to ocean	122±2	2000	88
Cumulatively left in atmosphere	205±13	2000	88

* As per reference

Table S5 Overview of values given for the carbon fluxes in terrestrial processes.

Definition *	Gt/a C	Ref.
Anthropogenic emissions	7.6	57
Emitted through human activities	9	114
Anthropogenic CO_2 emitted into atmosphere	9	‡
Uptake of anthropogenic CO_2 by terrestrial biosphere	2.6	‡
Uptake terrestrial biosphere from atmosphere by photosynthesis	120	57
Uptake terrestrial biosphere	120 - 123	57,‡
Absorbed by vegetation	123	114
Plant respiration	60	114
Cellular respiration	60	‡
Decaying biomass and respiration of animals	60	114
Sequestration in soil	3	114

* As per reference; aggregated data and description used for the discussion are highlighted.

Table S6 Overview of values given for the carbon fluxes in oceanic processes.

Definition *	Gt/a C	Ref.
Exchange with oceans	90	57
Uptake of carbon by oceanic biosphere from surrounding water body	108	89
Uptake of anthropogenic CO_2 by oceans	2.2	‡
Absorption by photosynthetic organisms	92	114
Update oceanic biosphere	92 - 108	‡,89
Respiration and decay	90	114
Metabolized in upper layer of ocean	78	‡
Sinking particles (detritus)	11	‡
Carbon sequestration in the oceans	2	114
Bound by carbonate-producing plankton	1	‡
Organic carbon in the sediment	<0.1	‡

* As per reference; aggregated data and description used for the discussion are highlighted.

Table S7 Overview of values given for the carbon fluxes in geologic processes.

Definition *	Gt/a C	Ref.
Chemical weathering	0.233-0.288	[118]
Accumulation of $CaCO_3$ on sea floor	0.38	‡
Long term burial of organic carbon	0.144	‡
Retention of carbon along subduction interfaces	0.0005-0.0020	[119]
Carbon sequestered by serpentinized forearc mantle wedge	0.00162-0.00485	[119]
Subduction of dolomite	0.002-0.005	‡
Initially subducted sediments	0.040-0.115	[119]
Volcanic activity	0.13	[114]
Carbon returned by arc volcanoes	0.018-0.043	[119]

* As per reference; aggregated data and description used for the discussion are highlighted.

Notes and references

For references see the main article.