Dataset Information:

Title	**ForestLand**
Abstract	Annual net CO_2 emission/removal from ForestLand (excluding CO_2 emissions from forest conversion to other uses) consist of net carbon stock gain/loss in the living biomass pool (aboveground and belowground biomass) associated with management of forest land occurred in the reported year. Computed at Tier 1, with the stock difference method, following the 2006 IPCC Guidelines for National GHG Inventories (IPCC, 2006) and using area and carbon stocks data compiled by countries in the FAO Global Forest Resource Assessment of 2010 (FRA, 2010); available by country, with global coverage and relative to the period 1990 onwards, with annual updates.
Supplemental	This domain contains data on net CO_2 emissions/removals, associated implied emission factors and underlying activity data. The FAOSTAT Emissions data are estimated by FAO and do not coincide with GHG data reported by Parties to UNFCCC. The database is intended primarily as a service to help member countries to assess and report their emissions and removals, as well as a useful international benchmark. The FAOSTAT Emissions data are disseminated publicly to facilitate continuous feedback from member countries.
Creation Date	2013
Last Update	2013
Data Type	Climate Change - Greenhouse Gases
Category	Environment
Time Period	1990 onwards
Periodicity	Annual
Geographical Coverage	World
Spatial Unit	Country
Language	Multilingual (EN, FR, ES)

Methodology and Quality Information:

Methods and processing

Net CO_2 emissions/removals from forest land consist of net carbon stock change in the living biomass pool (aboveground and belowground) associated with management of forest land occurred in the reported year. The FAOSTAT data are computed at Tier 1, with the stock difference method, following IPCC 2006 Vol. 4, Ch. 2 and 4.

The net CO_2 emission/removal, E/R, are estimated at country level, using the formula:

*E/R = A * CSCF * -44/12 / 1,000*

where:

E/R= Net CO_2 emission/removal, in Gg CO_2 yr^{-1} (3);

A = Activity data, representing the forest area ha (1);
CSCF = per hectare carbon stock change in the living biomass pool (aboveground + belowground) of forest land, expressed in units of t C/ha (2);

(1) Area of forest, A, were calculated from annual areas of forest land taken directly from the Global Forest Resource Assessment (GFRA) of FAO (http://www.fao.org/forestry/fra/fra2010/en/). Data for the year 1990, 2000, 2005 and 2010, as provided by GFRA-FAO, for categories *Primary forest*, *Other naturally regenerated forest* and *Planted forest* were linearly interpolated to compile, for each country, complete timeseries of areas for each category, for the period 1990-2010. GFRA categories *Primary forest* and *Other naturally regenerated forest* were aggregated, while *Planted forest* were considered separately, to compute the following forest area components at year t:

a. areas of forest land that were still forest in the previous year (area type SFA),

computed as *Min [A(t), A(t-1)]*;

b. new net area converted to forest in the same year (area type NAD), computed as: *Max[A(t)-A(t-1),0]* to only include cases of positive net forest area change.

(2) CSCF was computed from the per hectare carbon stock in the living biomass (aboveground + belowground) pool in the country in year t, *b(t)*. The latter was calculated from data on per hectare carbon stocks taken directly from the GFRA database. Data for the year 1990, 2000, 2005 and 2010, as provided by GFRA-FAO, were linearly interpolated to compile, for each country, a complete timeseries of per hectare average carbon stock in the living biomass pool, for the period 1990-2010. For countries for which GFRA carbon stock data were not available, the relevant GFRA regional carbon stock (table T2.21 of GFRA 2010) was applied.

For each year t, and each forest area type above, the CSCF was calculated as:

i. CSCF(t, SFA) = $\Delta b\ (t) = b(t) - b(t\text{-}1)$, for forest are of type SFA;

ii. CSCF*(t,NAD) = $b\ (t)$, for forest areas of type NAD.

The overall net carbon stock change factor at year t, CSCF(t), was computed as:
CSCF(t) = [CSCF(t,SFA)*SFA + CSCF(t,NAD)*NAD]/A

Dimensionless conversion factors used were:
-44/12, to convert from carbon mass to CO_2 emissions; and
10^{-3}, to convert tons in Gg

The ForestLand domain contains the following data available for download: country-level Net CO_2 emission/removal in Gg CO_2,\ and Carbon stock change in kt C; implied emission factors (i.e. the CSCFs); and activity data. Data are available for all individual countries and territories, as well as for standard FAOSTAT regional aggregations, plus Annex I and non-Annex I groups. The data period is 1990 onwards, with annual updates.

Information on growing stock and basic wood densities are used to compute living biomass carbon stocks. FAO GFRA 2005 estimates uncertainties in growing stock at ±8% for industrialized countries and ±30% for non-industrialized countries, and uncertainties for the basic wood density around 10 to 40%. FAOSTAT estimates area uncertainties at ±10%.

References

FAO, 2010. Global Forest Resources Assessment 2010, FAO Forestry Paper 163, Rome. Available at http://www.fao.org/forestry/fra/fra2010/en/.

IPCC, 2006. 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (Eds), IGES, Hayama, Japan. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

FAO, 2005. Global Forest Resources Assessment 2005, FAO Forestry Paper 147, Rome. Available at http://www.fao.org/forestry/fra/fra2005/en/

Data Collection Method	Computed
Completeness	100%
Links	www.fao.org/climatechange/micca/ghg/ www.ipcc-nggip.iges.or.jp/public/

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