



## **Trends in global terrestrial biomass over 1993-2012**

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Vegetation change plays a critical role in the Earth's carbon budget and its associated radiative forcing in response to anthropogenic and natural climate change. Existing global estimates of aboveground biomass carbon (ABC) based on field survey data provide brief snapshots that are limited to forest ecosystems only. Here we use an entirely new remote sensing approach to derive global monthly ABC estimates for both forest and non-forest biomes during the last two decades from passive microwave observations onboard a series of satellites.

We estimate that 65% of global ABC is in forests and 17% in savannas. Over the period 1993-2012, an insignificant decline trend was found globally, mostly resulting from the loss of tropical forests and net gains in mixed forests over boreal and temperate regions and tropical savannas and shrublands. Inter-annual ABC patterns are greatly influenced by the strong response of water-limited ecosystems to rainfall variability, particularly savannas. From 2003 onwards, forest expansion in Russia and China, tropical deforestation decline, and increasing ABC associated with wetter conditions in the savannas of northern Australia and southern Africa together reversed global ABC loss and led to an increase, consistent with trends in the global carbon sink.