AfriTRON: Challenges and Opportunities of Monitoring Africa's Closed-Canopy Tropical Forests

T5.36 Towards a global observatory of forest dynamics

Simon Lewis^{1, 2}, Bonaventure Sonke³, Corneille Ewango⁴, Ifo Suspense Averti⁵, Alfred Ngomanda⁶, Vincent Medjibe⁷, Wannes Hubau⁸, Aida Cuni-Sanchez⁹, Declan Cooper², AfriTRON Consortium¹⁰

¹ University of Leeds, UK

- ² University College London, UK
- ³ University of Yaounde, Cameroon
- ⁴ University of Kinsangani, DRC
- ⁵ Marien Ngouabi University
- ⁶ CENAREST, Gabon
- ⁷ ANPA, National Parks Agency of Gabon
- ⁸ University of Gent, Belgium
- ⁹ University of Life Science, Norway
- ¹⁰ 36 Institutions worldwide, but mostly in African countries

Abstract

Africa is home to the second largest block of closed-canopy tropical forest on Earth. Africa's forests play a major role in the global carbon cycle, being a major carbon sink in intact forests and a major source from deforestation and degradation. They distribute water to the Sahel and Nile headwaters contributing to maintaining agriculture that sustains 300 million rural people. In terms of biodiversity they are home to our closest living relatives, and are centres of mammal diversity. Yet we know very little about these forests and how they function in our rapidly changing Earth system. To help address this the African Tropical Rainforest Observatory Network, AfriTRON, has been established since 2009 (Lewis et al. 2009, Nature; www.afritron.net) to collect and collate standarised permanent plot inventory data across closed-canopy tropical forests in Africa, monitoring all trees >=10 cm diameter in plots, and periodically re-visiting them to assess tree growth, mortality and changes in carbon stocks. There are now ~500 locations with data across 14 countries spanning central, west and east Africa. Here we present the latest results from the AfriTRON network on the changing dynamics, carbon balance, and impacts of drought, temperature and elevated carbon dioxide concentrations on these forests. We then highlight the opportunities for understanding and better managing these forests, if the AfriTRON network obtains funds to continue recensuses and fill-in data gaps spatially, and the challenges faced by African scientists in doing science on the continent, including of making data not only open, but open and fair. We highlight that any 'global observatory' will be limited by the limitations of the most difficult to sample major forested regions of Earth. The world's second largest block of tropical forest is one of those, so a focus on Africa to build any global observatory is a must.