

Preface

The Amazon basin is considered a treasure trove of biodiversity, which has yet to be fully explored. The basin is also an important provider of a number of ecosystem services, both provisioning and supporting. These two facets often clash as provisioning services that require land cover change can radically change the capacity of natural ecosystems to maintain their supporting services. A well-known example is the much-debated impact of forest conversion to grazing and cropland that may impact the regional transport of moisture from the Amazon basin to south-western Brazil and the Plata basin in Argentina, currently contributing an estimated 20–25 % of precipitation in these areas. Along with water, carbon sequestration by the native forest is thought to be offsetting anthropogenic CO₂ emissions at both regional and global scales. However, it is important that none of these or any other monetisable ‘services’ are taken for granted as their ‘delivery’ is function of short-term climate variation, itself likely to be influenced by anthropogenic greenhouse gas emissions. For example, the more or less neutral carbon balance at the basin scale can be tipped to make the forest a carbon source in extreme drought years, which are often combined with increased fire occurrence. The frequency of such extreme years is projected to increase. The Amazon forest is unique in the strong coupling between forest functioning and climate. Many of the biological processes in the forest influence precipitation and radiation balance, making this coupling very unique in the ecosystems of our planet.

Amazonia, notwithstanding national sovereignties, is a world heritage asset, be it for its biodiversity or for its many services to humankind. This includes cultural services such as the scientific research presented in this book, which contributes to an ever-increasing body of scientific knowledge on the Amazon (still disproportionately small when compared with the vastness of the region). Today, it is imperative to use this knowledge to inform decisions on land use and development in Amazonia (and the policy incentives behind them). Such decisions, irrespective of the scale in question, require careful consideration and the participation of interdisciplinary teams of experts to help comply with national and international commitments to maintain the integrity of the remaining natural

ecosystems so that future generations may also experience the joy that Amazonia offers and the responsibilities that its conservation demands.

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