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RESEARCH AND DEVELOPMENT NEEDS ON THE USE OF SATELLITE OBSERVATIONS OF FORESTS IN ORDER TO REDUCE GREENHOUSE GAS EMISSIONS AND PROTECT FOREST CARBON STOCKS

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ABSTRACT:

The United Nations Framework Convention on Climate Change has recognised the important role that deforestation and forest degradation have in contribution to global anthropogenic emissions of carbon dioxide. In order to address this issue, the UNFCCC has adopted a mechanism for *reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries* (REDD+), which would ultimately provide financial incentives for emission reductions. One important requirement needed in order to implement REDD+ is that countries need to establish national forest monitoring systems (NFMS) that provide annual, national, estimates of emissions of greenhouse gases and changes in forest carbon stocks that are reported biannually.

The Global Forest Observations Initiative (GFOI) was established to assist countries establish such systems, based on time-series of wall-to-wall earth observations, by ensuring availability and access to optical and radar satellite data at 10-30m resolution and providing technical advice on operational mapping methods. GFOI has identified a set of thematic forest map products derived from satellite and in situ data that are considered useful for country emissions estimates and assessed their operational readiness.

The capacity to stratify the forest and quantify degradation is for instance considered an important gap in the existing data provision. Ongoing R&D is demonstrating better ways to use multiple, complementary satellite observations for constructing long time-series or gap-filling, estimating uncertainty and mapping specific land cover types and transitions thereof. A component of the GFOI R&D agenda is to build capacity in the implementation of improved forest mapping methods. Within this agenda three identified gaps have been addressed with dedicated expert workshops: sensor interoperability, forest degradation and biomass estimation. This paper summarises their findings and identifies issues that need urgent attention in order to allow operational monitoring systems to be implemented.