

# Chapter 12

## Conclusion

This report examines the scientific basis for the use of remotely sensed data, particularly NDVI, in land degradation assessments at different scales and for a range of applications. It draws on evidence from a wide range of investigations, primarily from the scientific peer-reviewed literature but also non-journal sources.

Research in land degradation currently makes use of a wide variety of datasets of different geographical scales and spatial, spectral, and temporal resolutions. The availability of free data of continuous observations from medium to coarse spatial resolution satellite sensors continues to support a range of ecosystem models and environmental applications. At the global level, a few of these datasets stand out. In the context of NDVI-based potential for land degradation assessment, the AVHRR-derived GIMMS dataset is the most widely used product. In the short to medium term, the quality control required to make this dataset a transparent source for a range of environmental applications is guaranteed. In the same light, continuous updates to the archive to extend it well beyond 33 years will enhance the potential for this data to be used to identify longer-term trends and trend components.

The GLADA approach, which was based on an earlier version of GIMMS, has been widely adopted. Several studies have used the same and later versions of the GIMMS dataset, with or without the GLADA approach, to investigate an array of environmental issues. Many caveats raised initially, flagged by GLADA itself, have been dealt with. As new methods of data analysis are developed, and computers become more efficient in processing information, more questions that draw on the relationship between NDVI, RUE, EUE, and NPP may be explored. These questions could address growing and emerging concerns about the resilience of ecosystems, and the coupling of socio-ecological systems, as well as new horizons in environmental assessment and management. The GLADA approach and NDVI data archives offer the potential for assessment of the performance of different policy options and can inform the implementation of the UNCCD and the allocation of resources from its financial mechanism, the GEF.

As a tool, NDVI and related indices, as well as the GLADA approach, still have limitations. Beyond some of the technical weaknesses associated with implementation and interpretation, there are barriers to their effective use for national assessments. We note that, over recent years, hardware components as well as some software to support the use of NDVI in national assessments have become more accessible. Notwithstanding the fall in costs of hardware and software, there is need for national services to be staffed by personnel with the appropriate technical expertise. This is necessary for many reasons, including the ability to ask the right questions and use the appropriate tools and depth of analysis in answering them and the ability to produce end products that meet international standards for cross-country comparisons.

NDVI continues to be valid for measuring and reporting some of the key strategic objectives of the UNCCD and has the appropriate qualities for use as an indicator for a number of indices.