

**GEF-Land Degradation and Monitoring Project
Steering Committee Conference Call
December 19, 2016**

Present:

Dr. Sandy Andelman, Vital Signs

Dr. Annette Cowie, STAP

Mr. Stephen Muwaya, Ministry of Agriculture, Animal Industry, and Fisheries, Uganda

Dr. Lennart Olsson, Lund University

Dr. Compton Tucker, NASA

Dr. Ulrich Apel, GEF Secretariat

Dr. Miguel Morales, CI-GEF Project Agency

Mr. John Lee David, NASA

Ms. Katherine Melocik, NASA

Dr. Jorge Pinzon, NASA

Mr. Tristan Schnader, Vital Signs

Introduction and Agenda Amendments

Dr. Andelman welcomed everyone and called the meeting to order at 3:02 p.m. EST. She asked if anyone had amendments to the agenda. No additional items were offered.

Output 1.1.1 Activity 7 Draft NASA Report Review

Dr. Andelman reviewed the deliverables required in Output 1.1.1 Activity report. The report must contain a comparison of datasets and methods for estimating status and trends in land degradation as well as guidance for using datasets and methods to estimate land degradation. Specifically, this must include 1) a summary of the use of spectral indices for indicating photosynthetic capacity as a means to identify land degradation in the project's four pilot countries; 2) a discernment of climate trends from inter-annual variation; 3) an evaluation of data sources that are relevant for identifying land degradation; and 4) an evaluation of whether primary productivity can be used to identify land degradation and the subsequent use of commercial satellite data to identify the drivers of land degradation.

Dr. Tucker presented to the Steering Committee on what his team has accomplished pertaining to the report. NASA's team has devised a way to assess Gross Primary Production (GPP) quantitatively, without using numerical models, at a scale of 250m. This assessment was done by comparing chlorophyll solar induced fluorescence from the GOME-2 satellite on Meta Ops 2 (40km x 80km) with the concurrent time integral of a range of vegetation indices from the MODIS Terra and Aqua platforms. The team found that the time integral of NDVI is highly correlated to GPP, with an r-squared value of 0.91. Assessment of GPP using the time integral

of NDVI has an advantage over a simulation approach, which can lack adequate field data, especially if measurements go below one km or sometimes below a quarter of a degree by a quarter of a degree in temperature and precipitation.

Dr. Cowie asked about the progress on the report beyond validating the relationship between NDVI and GPP. Specifically, she asked about the relationship between rainfall and plant growth, the incorporation of Net Primary Production (NPP) into the analysis, the evaluation of Sentinel-2's relevance for identifying land degradation, and the soil-moisture as well as residual trend analyses. Dr. Tucker mentioned that in order to get NPP from GPP, the project should consult with Dr. Belinda Medlyn and he agreed to reach out to her as soon as this week.

Dr. Tucker noted that there are other aspects of the Output 1.1.1 report that are still being worked on and that his team will be able to complete a draft report by January 3, 2017.

Dr. Andelman noted that this report needs to be completed, so it can be circulated to both the Steering Committee and to the Science Advisory Committee for review. Once reviewed and finalized, we will then need to be able to share the report more broadly and expressed some concern that the analyses provided by NASA are labeled confidential. Dr. Andelman mentioned that the UNCCD has recently funded the ESA and CSIRO to develop indicators of land degradation and that it will be important to have consensus from the scientific community on what are the robust indicators for land degradation. Dr. Andelman reported that she met with Ms. Monique Barbut, the Executive Secretary of the UNCCD, who expressed interest in receiving guidance from our report by February, in time to incorporate into the ESA and CSIRO report which will be released in March 2017.

Dr. Tucker indicated there is no restriction with sharing the report and this will not depend on publication of a paper. He reiterated that a draft of the report will be circulated in two weeks from this call, by January 3.

UNNCD Indicators

Dr. Andelman reported on the UNCCD and its adoption of three indicators for Sustainable Development Goal 15, which include 1) land cover change; 2) land degradation as measured by changes in productivity; and 3) soil carbon. At the COP22, the UNCCD presented these indicators, which were endorsed by the member countries. Our project can help address two of these indicators, land cover as well as land degradation as measured by changes in productivity. Dr. Andelman mentioned that, once the Output 1.1.1 report is completed, we should meet with the UNCCD and CSIRO to figure out how to connect our two projects.

Dr. Andelman asked Dr. Apel whether or not there is an on-going discussion between the GEF-Secretariat and the UNCCD on these indicators or the Land Degradation Neutrality (LDN) target-setting process. Dr. Apel responded that there is not an on-going discussion about the indicators, which are longstanding. Dr. Andelman expressed concern regarding a lack of

technical guidance on how to measure the targets of each indicator and emphasized the importance of creating consensus on guidance and methods within the scientific community.

Updates from Dr. Andelman, Dr. Tucker and Dr. Olsson on additional progress for FY17Q2

Dr. Olsson mentioned that Lund hosted a meeting with the Project Technical Team in October and has been communicating closely with the NASA team on the project. He reported that his team has downloaded all of the 250m MODIS data, which will help his team link areas of perceived degradation, as shown through satellite data, to what is actually happening on the ground. A major goal is to find ways of detecting different forms of land degradation, including vegetation degradation through overuse, soil erosion, or use of chemicals in, for instance, in agricultural areas. The 250m MODIS data is of importance because it is the highest resolution data that exists as a time series. Dr. Olsson mentioned that his team is looking at “hotspots,” areas of degradation, “cold spots,” areas of improvement.

Dr. Olsson reported that his team is delayed because they do not have access to the high-resolution data from NASA, which, along with the ground data, will help his team determine the types, varying degrees, and boundaries of land degradation. Dr. Olsson asked Dr. Tucker when his team and the CI team would receive the high-resolution data and from what years. Dr. Tucker deferred to Ms. Melocik from his team, who reported that she is prioritizing certain areas and is creating multi-spectral mosaics over the four pilot countries, but is prioritizing her focus over all of Senegal and the Vital Signs landscapes in Tanzania and Uganda. Dr. Tucker asked Dr. Olsson to send Ms. Melocik priority areas for her to focus on, so she can produce multi-spectral mosaics in those priority areas as soon as possible. Dr. Olsson agreed to select areas once Ms. Melocik shares with the team a tile scheme for each of the four countries.

Dr. Olsson asked Dr. Tucker about the availability of Sentinel-2 data for comparison. Dr. Tucker answered that if there are any areas where Sentinel-2-Landsat needs to be merged at 30m spatial resolution, he can reach out to Dr. Jeff Masek, who is the Project Scientist for Landsat-8 at NASA.

Dr. Andelman reported that, with the help of Lund, Vital Signs acquired the climate series data, which has been processed. The team has also put together the Landsat mosaics for each pilot country. Additionally, Vital Signs has made all of the Vital Signs 1-hectare plot data available to the team.

Dr. Andelman mentioned to Dr. Apel that they should have a discussion with Dr. Mohamed Bakarr of the GEF-Secretariat, who has expressed an interest in the synergies between this project and the food security project. During workshops pertaining to the food security project, ICRAF had indicated that all of their Land Degradation Surveillance (LDSF) plots were open access. However, when Vital Signs asked ICRAF if we could access the LDSF plots for Kenya, they told us that their LDSF data is proprietary and that we could pay for their analyses, but not for their primary data. However, Vital Signs does have plot data from the Government of Kenya and recently completed a preliminary assessment, which we will be able to share in the next

two weeks. Dr. Apel asked Dr. Andelman to follow up with Dr. Bakarr to further discuss the lack of access to ICRAF's LDSF data, as it has implications for the ability to derive baselines and trends for the GEF Food Security IAP.

Dr. Andelman reported on the development of the toolbox. Vital Signs is exploring two platform possibilities. The first option would be an online platform through Google Earth Engine, so that countries could process analyses without software. However, connectivity is required. Vital Signs is discussing the potential of also providing a software-based platform that would allow stakeholders to download data and then process the data offline. As soon as Vital Signs has every product from Component 1, the team will create a preliminary version with the goal of having a beta version of the toolbox completed by April, 2017.

Relating to the toolbox in the context of training, Dr. Olsson noted that his team will send Vital Signs a first draft of the training material background before the end of the month. He also mentioned continued difficulty with reaching African stakeholders. Dr. Andelman noted that Vital Signs will continue to assist Lund in reaching out to stakeholders.

Adjourn

There being no further business, the call adjourned at 4:16 p.m. EST.

Addendum

Dr. Michael Cherlet (JRC), who was unable to join the call, provided comments regarding NASA's report for Output 1.1.1. He noted that even though the correlation of NDVI with GPP is commonly used, he would like to see the correlation between GPP and time integrated NDVI properly assessed.

More generally, Dr. Cherlet noted that loss in GPP does not equal land degradation even after controlling for climate change. Measuring land degradation entails analyzing a number of processes and cannot be derived from GPP alone. GPP changes might be due to land use changes, which are not necessarily tied to land degradation. That said, positive changes in biomass or derived GPP might be related to land degradation. Therefore, GPP or biomass related indicators are important, but should be considered as only part of the analysis. Specifically addressing criterion number 4 for the report, Dr. Cherlet warned against presenting GPP as land degradation maps.

Related to his point above, Dr. Cherlet mentioned that SDG 15.3 Indicator 2 is land productivity and not 'land degradation measured by changes in productivity,' since land degradation cannot be measured by productivity alone.

Additionally, Dr. Apel provided follow up regarding the needed conversation with Dr. Bakarr on ICRAF making data from LDSF plots available. According to Dr. Bakarr, ICRAF has not utilized any

funds from the FSIAP for its LDSF work. While the GEF hopes for cooperation between ICRAF and Vital Signs, they will rely on the GEF-LDMP team to discuss a solution with ICRAF.