**Workshop on Earth Observation Data
and Applications for Official Statistics**

organized by UNSD and UNESCAP
Bangkok, Thailand, 18-22 June 2018

This workshop provides an opportunity for statistical organisations to participate in discussion and training in the use of earth observation (EO) data, in particular satellite imagery, for official statistics and sustainable development goals (SDGs). The first day of the workshop provides an overview of EO and the ways in which it can be used to report on a variety of SDGs. This will include presentations from different country representatives and discussions among participants. The workshop will continue with a course on the use of satellite data for agricultural statistics. This will include presentations, practical demonstrations and hands-on tutorials focusing on data preparation, analysis and presentation. The practical focus of the course will be on crop-type classification, but the techniques and tools are more widely applicable. The workshop will conclude with a half-day wrapup including discussion about moving forward, priorities for participants and ongoing training opportunities.

Main presenters: Kerrie Mengersen Queensland University of Technology (QUT), Jacinta Holloway, (QUT), Gordon Reichert (Statistics Canada), Michael Schmidt, Department of Environment and Science (DES), Michael Smedes (United Nations Statistics Division).

Agenda

9.00 **Welcome**
Facilitator: Gemma van Halderen
Formal welcome. Importance of big data for measuring SDGs

9.20 **Overview**
Facilitator: Kerrie Mengersen
Overview of workshop; introduction of presenters

9.35 Session 1.1 **Introductions**
Facilitator: Michael Smedes
Introduction of participants; current personal and institutional
knowledge and skills, ambitions for the workshop.

10:00 Session 1.2 **Overview of EO Data – Data types, sources and issues**
Presenter: Michael Schmidt
Introduction to key aspects of EO data, data sources, products and data-related issues;
International EO agencies and general applications of EO data

11.00 Break

11.15 Session 1.3 **EO Data, NSOs and SDGs**
Presenter: Jacinta Holloway
Overview of the use of EO data for NSOs and SDGs
Examples of current and emerging applications

11.45 Session 1.4 **Global Platform**
Facilitator: Michael Smedes
Overview of the UN Global Platform

12.15 Survey Participants fill in brief survey on their use of EO Data
E.g. In your organization how do you currently use EO data, if at all?
What are your short term and long term ambitions for using EO data?
What are the main barriers to using EO data? What are your needs to progress these
plans?

12.30 Lunch

13.30 Session 1.5 **Case study: Measuring water cover (and other projects)**
Facilitator: Nima Pahlevan
UN Environment Program and NASA present project on measuring water cover.

15.00 Break

15.15   Session 1.6   **Case study: Crop yield estimation**
Facilitator: Sangita Dubey, Christophe Duhamel
Presentation by FAO on their crop estimation work.

16.30   Session 1.7   **Roundtable Discussion: current status and future ambitions**
Facilitator: Kerrie Mengersen
Participants discuss current status and ambitions to use satellite imagery to produce
official statistics at their organisation.

17.00   Close

Day 2	Earth Observation Data and Official Statistics

9.00   **Welcome to Short Course**
Presenter: Kerrie Mengersen
Introductions, course overview

9.15   Session 2.1   **Working with Analysis Ready EO Data**
Presenter: Jacinta Holloway
Overview of the Australian Data Cube project

9.45 Session 2.2   **Google Earth Engine demonstration and practical session processing Landsat**
Practical 1.   **Data for crop analysis using QGIS**
Presenter: Michael Schmidt
Presentation and practical session

10.45   Break

11.00 Session 2.3   **Practical 1 session continued**

12.00 Session 2.4   **Overview of methods for analysing EO data**
Presenter: Kerrie Mengersen
Reference: UN Task Team on Satellite Imagery and Geospatial data report

12.30   Lunch

13.00 Session 2.5   **Practical session: Introduction to R**
Practical 2   Facilitator: Jacinta Holloway
Introduction to R, reading EO data into R, working with image files, calculate vegetation
indices, mask clouds.

14.00 Session 2.6   **Statistical methods for analysing EO data for crop area estimation**
Presenter: Kerrie Mengersen
Reference: UN Task Team on Satellite Imagery and Geospatial data report

15.00   Break

15.15 Session 2.7   **Practical session: Crop identification using R**
Practical 3   Facilitator: Jacinta Holloway

Approaches for classifying crops, obtaining and interpreting results.

17.00   Close

Day 3   Earth Observation Data and Official Statistics

8.00   **Field trip**
                Facilitator: Michael Schmidt
                Collecting field data to verify statistical analyses based on satellite imagery data

12.00   Lunch at Don Wai floating market

Day 4 Earth Observation Data and Official Statistics

9.00   **Welcome and Recap**
                Presenter: Kerrie Mengersen

9.15   Session 4.1   **Google Earth Engine demonstration and practical session**
         Practical 3   **processing Landsat data for crop analysis using QGIS – Part 2**
                Presenter: Michael Schmidt
                Practical session using data collected on field trip

10.45   Break

11.00   Session 4.2   **Statistical methods for analysing EO data for crop yield estimation**
                Presenter: Kerrie Mengersen
                Reference: UN Task Team on Satellite Imagery and Geospatial data report

12.15   Lunch

13.15   Session 4.3   **Case study: Statistics Canada crop yield**
                Facilitator: Kerrie Mengersen (On behalf of Gordon Reichert)
                Recorded presentation from Statistics Canada on crop yield

14.15   Break

14.30   Session 4.4   **Practical session: Crop yield estimation using R**
         Practical 4   Facilitator: Jacinta Holloway
                Working with time series crop data and predicting crop yield.

15:45   Session 4.5   **Roundtable discussion**
                Facilitator: Michael Smedes, with all presenters
                Discussion and advice on how participants can use EO data in their own situation

16.30   **Close of Short Course**

Day 5 Earth Observation Data and Official Statistics

9.00   Session 5.1   **Other opportunities for using EO data for official statistics and SDGs**
Presenter/Facilitator: TBC (potentially UNESCAP or Statistics Canada rep)
Presentation and facilitated discussion with workshop participants, link to Day 1

10.00   Session 5.2   **Case study: environment (topic TBA)**
Facilitator: Lucas Joppa
Microsoft presentation on earth observation work

11.15   Tea break

11.30   Session 5.3   **Roundtable Discussion:**
Where to from here? Opportunities and challenges of using
Earth Observation data in practice

Facilitator: Eric Rancourt
Facilitated discussion with workshop participants

12.30   Session 5.4   **Final comments and Feedback on Workshop**
Facilitator: Michael Smedes

13.00   **Close of Workshop**