

Workshop on Earth Observation Data and Applications for Official Statistics

Date : 29 April-1 May 2019

Venue : Kigali, Rwanda

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 activities on data preparation, analysis and interpretation of results. The demonstration focus of the course will be on crop-type classification and crop yield but the techniques and tools are more widely applicable. The workshop will conclude with a wrap up including discussion about moving forward, priorities for participants and ongoing training opportunities.

Main presenters: Kerrie Mengersen and Jacinta Holloway, Queensland University of Technology (QUT), Australia.

Via pre-recorded video or video call: Gordon Reichert (Statistics Canada), Michael Schmidt, (DLR), Sean Lovell (UN Statistics Division), TBA, FAO.

Agenda

Day 1 Earth Observation Data and Official Statistics

- 11.15 **Welcome**
Facilitator: TBA
Formal welcome. Importance of big data for measuring SDGs
- 11.30 **Overview**
Facilitator: Kerrie Mengersen
Overview of workshop; introduction of presenters
- 11.45 Session 1.1 **Recording: The UN Global Platform**
Presenter: Sean Lovell
Demonstration of the Global Platform
- 12.45 Lunch
- 13.30 Session 1.2 **Recording: 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
- 14.15 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
- 14.45 Session 1.4 **Recording: The Copernicus Programme and the Copernicus Data Information and Access Service (DIAS) and examples of other cloud based satellite image processing platforms.**

Presenter: Michael Schmidt
- 15.15 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?
- 15.30 Session 1.5 **Recording: Data sources: African Datacube 30 mins**
Overview of the new African Datacube product
Material produced by Geoscience Australia
- 16.00 Break
- 16:15 Session 1.6 **Basic introduction to QGIS**
Presenter: Kerrie Mengersen

- 16:35 Session 1.7 Ground truth collection app introduction <https://www.kobotoolbox.org/>
Show participants how to use mobile phone app to collect your own ground truth.
Overview of ground truth collection activity for Day 2.
- 16:45 Session 1.8 Summary of participant survey responses and discussion. Participants discuss current status and ambitions to use satellite imagery to produce official statistics at their organisation.
- 17.15 Close

Day 2 Earth Observation Data and Official Statistics

- 9.00 **Welcome to Short Course**
Presenter: Kerrie Mengersen
Review of previous day and overview of day 2.
- 9.15 Session 2.1 **Overview of methods for analysing EO data**
Presenter: Kerrie Mengersen
Reference: UN Task Team on Satellite Imagery and Geospatial data report
- 9.45 Session 2.2 **Demonstration: Introduction to satellite images in R**
Facilitator: Jacinta Holloway
Demonstration of reading EO data into R, working with image files, calculate vegetation indices, mask clouds.
- 10.45 Break
- 11.00 Session 2.3 **Recording: Case study: Statistics Canada crop area estimation**
Facilitator: Gordon Reichert
Presentation from Statistics Canada on their crop area estimation method.
- 12.00 Lunch
- 12.45 Session 2.4 **Statistical methods for analysing EO data for crop area estimation**
Presenter: Kerrie Mengersen
Reference: UN Task Team on Satellite Imagery and Geospatial data report
- 13.15 Session 2.5 **Crop identification using R**
Facilitator: Jacinta Holloway
Approaches for classifying crops, obtaining and interpreting results.
Demonstration of R and activity for participants.
- 13.45 Session 2.6 **Field data collection**
Participants collect groundtruth using Kobo collect app.

14.45 Break

- 15.00 Session 2.7 **Roundtable Discussion**

Discuss the ground truth collection exercise, how these data can be used and what types of ground truth would be useful for participants to produce statistics in their own organisations.

- 15:20 Session 2.8 **Recording: Case study: Statistics Canada crop yield**
Facilitator: Gordon Reichert
Presentation from Statistics Canada on their crop yield method
- 16:20 Session 2.9 **Statistical methods for analysing EO data for crop yield estimation**
Presenter: Kerrie Mengersen
Reference: UN Task Team on Satellite Imagery and Geospatial data report
- 17.00 Close

Day 3 Earth Observation Data and Official Statistics

- 9.00 **Welcome to final day**
Presenter: Kerrie Mengersen
- 9.15 Session 3.1 **Demonstration: Crop yield estimation using R**
Facilitator: Jacinta Holloway
Demonstration of working with time series crop data and predicting crop yield.
- 10.30 Break
- 10.45 Session 3.2 **Presentation from FAO (TBA)**
Presenter: TBA
- 11.45 Session 3.3 **Environmental statistics and data science**
Short presentations by: Jillian Campbell from UN Environment, Joe Preskett chief data scientist at ONS, David Adieno Data Advisor at Civicus.
- 12.15 Session 3.4 **Roundtable Discussion:
Where to from here? Opportunities and challenges of using
Earth Observation data in practice**
Facilitator: Kerrie Mengersen
Facilitated discussion with workshop participants
- 12.40 Session 3.5 **Final comments and Feedback on Workshop**
Facilitator: Kerrie Mengersen
- 13.00 **Close of Workshop**

