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**QA4EO Workshop on Providing
Harmonised Quality Information in
Earth Observation Data by 2015**

18 – 20 October 2011

Chaired by the
Group on Earth Observations

Hosted by the
**RAL Space, Centre for Calibration of
Satellite Instrumentation (CCSI)**

in
Harwell, Oxford, United Kingdom

**Marie-Claire Greening
Greening Consulting Ltd**

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Talking Quality

An article on 25th February 2010 appeared in The Economist titled “Data Data Everywhere”. In that article one of the Economist’s correspondents, Kenneth Cukier, reported that, in general terms, information has “gone from scare to superabundant. This brings huge new benefits” said Cukier, “but also big headaches” (<http://www.economist.com/node/15557443>). At a recent workshop in the UK on data quality, Samy Gaiji, from the Global Biodiversity Information Facility (GBIF), further reflected on this fact and highlighted that, within the biodiversity field, there had been a huge exponential growth in the number of occurrence records observed / collected over the last decade. At the same meeting, Dan Cornford, from the University of Aston, suggested that the subsequent challenge for the Earth Observation (EO) community rests with the now numerous EO data providers. Those supplying EO data should do so in the easiest and most robust quality assured way, in order to allow the user to make an informed judgment on the data’s fitness for their own particular purpose.

Thus began the discussions at the workshop on “Providing Harmonised Quality Information in Earth Observation Data by 2015”. The workshop was held from 18-20 October in Harwell, Oxfordshire, UK. It was chaired by the Group on Earth Observations (GEO) and hosted by the RAL-Space, Centre for Calibration of Satellite Instrumentation (CCSI). The aim of the workshop was to present and discuss data quality assurance implementation examples across a wide variety of EO communities, from the data collectors in the field, through to those acquiring data more remotely from aerial platforms or from space. In general, the same quality issues affect all acquirers / users of EO data. In particular, the focus at the workshop were discussions on how quality information is derived, maintained and presented following the QA4EO (Quality Assurance Framework for Earth Observation) principle that all “data and derived products shall have associated with them a fully traceable indicator of their quality” (<http://www.qa4eo.org>).

Quality Assurance Framework for Earth Observation (QA4EO)

The Quality Assurance Framework for Earth Observation (QA4EO) was established and endorsed by the Committee on Earth Observation Satellites (CEOS; <http://www.ceos.org/>) as a direct response to a call from the Group on Earth Observations (GEO; <http://www.earthobservations.org/>). GEO had identified the requirement to establish an internationally harmonised Quality Assurance (QA) strategy to enable both easy and effective quality assessment of EO data and also interoperability between the diverse array of datasets available to users. QA4EO encompasses a framework and a set of key guidelines, derived from best practices, and with example templates included to aid implementation.

QA4EO Implementation

The workshop was attended by representatives from a wide variety of EO communities, including the European Environment Agency (EEA), US Environmental Protection Agency, the Global Biodiversity Information Facility, and various space agencies (including the European Space Agency (ESA), the National Aeronautics and Space Administration (NASA), the German Aerospace Centre (DLR), the Brazilian Space Agency (INPE) and the UK Space Agency (UKSA)). All those present recognised the need for better quality assurance practices and user

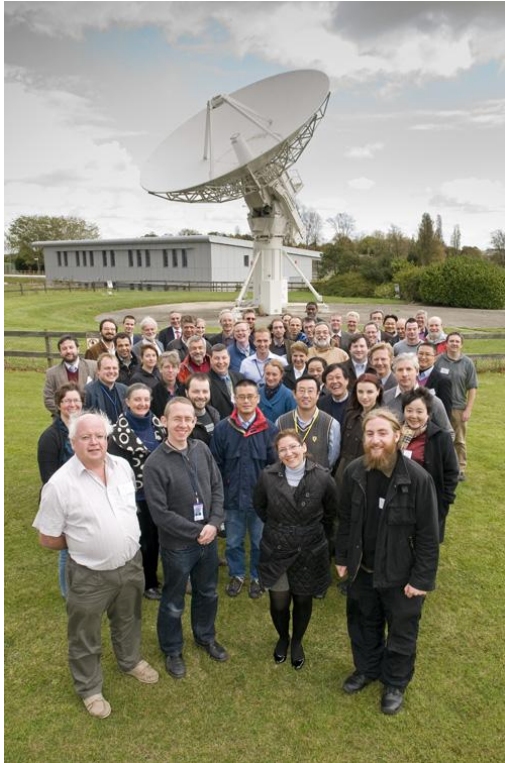
support. It became clear from the discussions that QA4EO is already part of the vocabulary and the question is not the need for QA4EO, rather how to implement it.

QA4EO implementation varies in ease or complexity between different user communities, with differences in approach often found even within the same community. Moreover, the implementation of QA4EO, with associated community best practices, will evolve in parallel to technology development. The EEA are actively promoting the concept of citizen scientists within its operations. The idea is that anyone who has access to the internet can be a data collector / provider, uploading their results via their PC or hand-held device. This way of operating brings along with it the question of the quality assurance of the data as “novice” users begin to be collect and submit data to the ever increasing number of EO databases. These new users, as data “providers”, will need to consider the quality of the data they are submitting in order to ensure that the QA4EO principles are bring met and that the data is fit for its ultimate purpose.

At the other end of the spectrum, in the inherently complex case of space, many agencies are already starting to promote the implementation of the QA4EO guidelines during different stages of a mission. This is an often lengthy and complex process and requires extensive resources, particularly when addressing data quality retrospectively for historical missions.

QA4EO provides EO data users with the framework to ensure that their data is quality assured to the level that they require. The aim is for QA4EO to be operationally implemented across all EO communities by 2015 as a mechanism to encourage and enhance interoperability and harmonisation of practice. The practicality of QA4EO implementation is thus the next major focus. A set of worked end-to-end scenarios shall be prepared and made available to users as exemplars to show how QA4EO can be practically implemented. The aim of QA4EO is to harmonise these efforts and to ensure that all EO data is quality assured and documented for the benefit of the users and their applications.

Further information on QA4EO, the workshop and the future implementation plans, can be found on the QA4EO website at <http://www.qa4eo.org>.



Participants to the QA4EO workshop in Harwell in October 2011

