Digital Earth in Data Intensive ERA

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Summary of session

Future Earth is a new 10-year international research initiative that will develop the knowledge for responding effectively to the risks and opportunities of global environmental change and for supporting transformation towards global sustainability in the coming decades.
The International Society for Digital Earth (ISDE) aims to promote international cooperation in light of Digital Earth Vision, and facilitates Digital Earth technologies to play key roles in, *inter alia,* economic and socially-sustainable development, environmental protection, early warning and disaster mitigation, natural resources conservation, education and improvement of the well-being of the society in general.

The session started by introducing the concept of 'Digital Earth' presenting the various activities of the International Society for Digital Earth. It was mentioned that the technology is evolving, and ISDE is adapting accordingly, from requesting to have everything at the computer desk, to now accessing everything you need through smart-phone or social media. Such a future computer platform has to enable unrestricted access to information to everybody, but at the same time it has to allow withdrawal to anyone that so desire.

The need to build a knowledge base was mentioned several times. We need to have a unified web source authoritative, accessible, and usable with timely information, with a user friendly machine interface. Any user shall consult the information, and if necessary go back to the data owners for further details.

NASA indicated that NASA has always dealt with large, extremely large, data sets. It is a common opinion that NASA's core business is only data acquisition (e.g. Earth Observation), but it is not so much well known that NASA also have excellent modeling capabilities.

NASA's NEX initiative is a virtual collaborative effort, designed to engage and enable the Earth Science community in discovery and decision making, by combining observations, super-computing and social network. Today, new approaches make sit possible that a well structured intelligent computer infrastructure, allows the processing of 340 billion of pixels in only 3 hours. In this way data acquired by the sensor (e.g. satellite) is processed and converted into a platform for scientists to allow them to start populating their research data and associated derived information.

Satellites have produced and are producing an enormous amount of data. Cloud computing is now required in order to better support the fast processing, the integration and assimilation of all this satellite data into models for simulating potential results. Cloud computing shall be an on-demand and elastic computing infrastructure. Current state of the art indicates that this new approach is very promising.

The session illustrated how Europe is addressing the issue of ‘digital data’ through a wide variety of initiatives. The INSPIRE initiative has the goal to set up a legislative framework for sharing spatial data in the European Union.

In conclusion Future Earth is starting to bring together researchers to share data, information and knowledge. The International Society of Digital Earth is considering how to develop a platform to enable all this knowledge sharing. There are starting to be working examples of such a computer platforms. All this research indicates that scientists are joining efforts in order to convert data into knowledge and to create a web based platform that brings all this knowledge to decision makers and the society in general for an improved understanding of our planet, a scientific sound based management of our natural resources and an improved well being of the society.