Geophysical Research Abstracts
Vol. 15, EGU2013-6030, 2013
EGU General Assembly 2013

Data discovery and data processing for environmental research infrastructures

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The European ENVRI project (Common operations of Environmental Research Infrastructures) is addressing common ICT solutions for the research infrastructures as selected in the ESFRI Roadmap. More specifically, the project is looking for solutions that will assist interdisciplinary users who want to benefit from the data and other services of more than a single research infrastructure. However, the infrastructure architectures, the data, data formats, scales and granularity are very different. Indeed, they deal with diverse scientific disciplines, from plate tectonics, the deep sea, sea and land surface up to atmosphere and troposphere, from the dead to the living environment, and with a variety of instruments producing increasingly larger amounts of data. One of the approaches in the ENVRI project is to design a common Reference Model that will serve to promote infrastructure interoperability at the data, technical and service levels. The analysis of the characteristics of the environmental research infrastructures assisted in developing the Reference Model, and which is also an example for comparable infrastructures worldwide. Still, it is for users already now important to have the facilities available for multi-disciplinary data discovery and data processing. The rise of systems research, addressing Earth as a single complex and coupled system is requiring such capabilities. So, another approach in the project is to adapt existing ICT solutions to short term applications. This is being tested for a few study cases. One of these is looking for possible coupled processes following a volcano eruption in the vertical column from deep sea to troposphere. Another one deals with volcano either human impacts on atmospheric and sea CO_2 pressure and the implications for sea acidification and marine biodiversity and their ecosystems. And a third one deals with the variety of sensor and satellites data sensing the area around a volcano cone. Preliminary results on these studies will be reported. The common results will assist in shaping more generic solutions to be adopted by the appropriate research infrastructures.