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Earth System Grid and EGI interoperability

J. Raciazek, M. Petitdidier, A. Gemuend, and H. Schwichtenberg
Institute de Recherche en sciences de lénvironnement, Pierre Simon Laplace, 4 place Jussieu, 75252 Paris Cedex 05

The Earth Science data centers have developed a data grid called Earth Science Grid Federation (ESGF) to give the scientific community world wide access to CMIP5 (Coupled Model Inter-comparison Project 5) climate data. The CMIP5 data will permit to evaluate the impact of climate change in various environmental and societal areas, such as regional climate, extreme events, agriculture, insurance… The ESGF grid provides services like searching, browsing and downloading of datasets. At the security level, ESGF data access is protected by an authentication mechanism. An ESGF trusted X509 Short-Lived EEC certificate with the correct roles/attributes is required to get access to the data in a non-interactive way (e.g. from a worker node). To access ESGF from EGI (i.e. by earth science applications running on EGI infrastructure), the security incompatibility between the two grids is the challenge: the EGI proxy certificate is not ESGF trusted nor it contains the correct roles/attributes. To solve this problem, we decided to use a Credential Translation Service (CTS) to translate the EGI X509 proxy certificate into the ESGF Short-Lived EEC certificate (the CTS will issue ESGF certificates based on EGI certificate authentication). From the end user perspective, the main steps to use the CTS are: the user binds his two identities (EGI and ESGF) together in the CTS using the CTS web interface (this steps has to be done only once) and then request an ESGF Short-Lived EEC certificate every time is needed, using a command-line tools. The implementation of the CTS is on-going. It is based on the open source MyProxy software stack, which is used in many grid infrastructures. On the client side, the “myproxy-logon” command-line tools is used to request the certificate translation. A new option has been added to “myproxy-logon” to select the original certificate (in our case, the EGI one). On the server side, MyProxy server operates in Certificate Authority mode, with a new module to store and manage identity pairs. Many European teams are working on the impact of climate change and face the problem of a lack of compute resources in connection with large data sets. This work between the ES VRC in EGI-Inspire and ESGF will be important to facilitate the exploitation of the CMIP5 data on EGI.