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## From AMS to HERD: status and exploration of CLOUD solutions for cosmic ray data analysis

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The computing model of the AMS-02, DAMPE, and HERD Cosmic Ray experiments is designed to cope with several TB of ROOT files produced for every year of mission. Periodically the reprocessing of the full dataset is needed and, on a yearly basis, a massive MonteCarlo production of the various CR species must be run. For example, the data analysis is, typically, performed on reduced ntuples by tens of users. Both the data production and the data analysis for the AMS-02 experiment are run in the ~ 5 computing centers of the collaboration without any grid-like framework. In the last couple of years we started exploiting technical solutions provided by the "Dynamic On Demand Analysis Service" (DODAS) developed in the context of projects such as INDIGO-DataCloud, EOSC-hub, and XDC in order to seamlessly access cloud resources both commercial (Deutsche Telekom, Google-Cloud) and on premises (Cloud@ReCas, and Cloud@CNAF). The work is progressing toward a larger federation which includes many and different IaaS's into a single DODAS provided pool of resources. A concrete example is the successful initiative to include AMS-02 compute resources hosted at ASI. The status of this activity will be shown including the experience and perspectives of the experiments both on computing and data handling.

Moreover future experiments, such as HERD, are exploring the possibility of a more seamlessly integrate data access and management combining well-known technologies such as IAM, XROOTD and Rucio, with the possibility of deploying the required services on INFN-Cloud resources. Current efforts on these activities will also be discussed.

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