

DRIHM2US

(Distributed Research Infrastructure for Hydro-Meteorology to United States of America)

Summary: Hydro-Meteorology Research (HMR) is an area of critical scientific importance and of high societal relevance. It plays a key role in guiding predictions relevant to the safety and prosperity of humans and ecosystems from highly urbanized areas, to coastal zones, and to agricultural landscapes. Of special interest and urgency within HMR is the problem of understanding and predicting the impacts of severe hydro-meteorological events, such as flash-floods and landslides in complex orography areas, on humans and the environment, under the incoming climate change effects.

Thus, building on existing but regional projects such as DRIHM (Distributed Research Infrastructure for Hydro-Meteorology, EU) and CESM (Community Earth System Model, USA), DRIHM2US project will help in understanding the utilization of e-Infrastructures for advancing scientific collaboration on both sides of the Atlantic towards improving the predictive ability of severe storms and utilization of these predictions for hazard prediction and control under climate change effects. As such, HMR serves as a key example for the utilization of e-Infrastructures in Advancing Science of Service to Society and can be a lighthouse for broader directions within HMR and for other scientific disciplines.

Along these lines DRIHM2US will promote international cooperation between Europe and the USA for the development of a joint/common e-Infrastructure using HMR as an example, to ensure persistent availability and effective sharing of data and models across scientific disciplines, institutions, and national boundaries, specifically across the Atlantic.

The goal will be achieved by creating a forum of collaboration, based on a sequence of networking activities with EU and USA participants.

Objectives:

Scientific progress in the Earth Sciences is heavily based on the ability to share, analyze and archive extreme amounts of data, which are often collected dynamically from widely distributed sources, as well as complex and computationally demanding models/post-processing tools. Sharing, analyzing and archiving this data and model output is a very important but also challenging task facing the Earth Science community. Providing an integrated computing and data e-Infrastructure able to support application requirements in a scalable, extensible and interoperable fashion is the primary need and challenge.

The dramatic example of the synoptic-scale meteorological system (see figure), which raged from West Virginia to Maine from last October 29th until late October 30th (2011) and was blamed for at least 13 deaths, then it moved across the Ocean Atlantic and was responsible on November 4th for Genoa city (Liguria, North-Western Italy) being gutted by flash floods that erupted when 550 millimetres of rain -- a third of the average annual rainfall -- came down in 5 hours (6 dead people), is calling for a more comprehensive cooperation between EU and USA in the study of severe hydro-meteorological events and climate changes effects.



DRIHM2US

Project acronym:
DRIHM2US

Contract : RI-313122

Project type: CSA

Start date: 01-11-2012

Duration: 24 months

Total budget:
884 737 €

Funding from the EC:
500 000 €

Total funded effort in person-months:
71.5

Web site:
www.drihm2us.eu

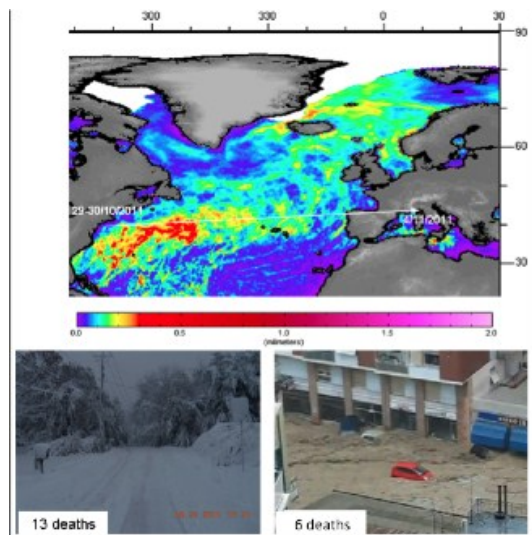
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Project participants:

CIMA	IT
LMU	DE
IMATI	IT
HRW	UK
DELTAES	NL
CUAHSI	USA
NCAR	USA
RUTGERS	USA

Keywords:
Hydrometeorology,
grid computing, high-
performance
computing, data,
models,
interoperability

**Collaboration with
other EC-funded
projects:**
DRIHM



Upper panel: satellite cloud liquid water composite (week ending 5/11/2011) clearly shows the cyclone track from USA east coast to Mediterranean. Lower left panel: snowstorm impacts example on USA east coast. Lower right panel: Genoa city (Italy) under massive flash-flood event

Thus the key objectives of the DRIHM2US project are:

- Analyzing requirements of the HMR community towards common e-Infrastructures within the EU and US;
- Investigating common ICT infrastructure approaches in order to lower access barriers;
- Inviting selected experts from both the HMR and ICT communities to perform hands-on plug-tests between current EU and US e-Infrastructures and HMR applications in dedicated workshops;
- Summarizing the results of these workshops and providing an outlook into the future based on the respective findings.

Action plan: DRIHM2US is a Coordination and Support Action. Consequently, DRIHM2US aims at coordinating research activities and policies related with special emphasis on the research topic (HMR) and on the geographic scale (Europe and the USA). In order to achieve the DRIHM2US objectives the project is organized in five work packages (WP): WP1: Project Management; WP2: Architecture Harmonization Analysis and Planning; WP3: Joint Prototypes and Experts Networking Sessions; WP4: Dissemination; WP5: Sustainable International Research Infrastructure.

An important driver behind the work package breakdown (and the project management in particular) is an effective and efficient interfacing with both the European Commission and the USA counterpart while at the same time liaising with special groups on both sides of the ocean (other initiatives, other projects) for addressing technical issues.

While WP4 (Dissemination) focuses on creating awareness and educating stakeholders on achieved results, WP2 (Architecture Harmonization Analysis and Planning) and WP3 (Joint Prototypes and Experts Networking Sessions) prepare the ground technically by analysing current approaches (WP2), deriving requirements (WP2), and specifying prototypes adhering to these requirements (WP3). WP5 (Sustainable International Research Infrastructure) advances the results achieved in other work packages by providing a sustainable framework, which supports a long-term vision of joint prototypes on EU and USA scientific data infrastructures.

International aspects: Leading HMR and ICT initiatives/Institutions, such as DRIHM (Distributed Research Infrastructure for Hydro-Meteorology), HyMeX (Hydrological cycle in the Mediterranean Experiment), CLIMB (Climate induced changes on the hydrology of Mediterranean basins: Reducing uncertainty and quantifying risk through an integrated monitoring and modeling system), ICORDI (International Collaboration on Research Data Infrastructure), and EUDAT (EUropean DATa) have already expressed interest in collaborating with DRIHM activities