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A reliable data collection and control system provided as a service within the global mercury observation network

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The overall goal of the on-going Global Mercury Observation System (GMOS) project is to develop a coordinated observation network on global scale for mercury, by integrating historical measurements across the globe with newly established GMOS land-based sites in the Northern and Southern Hemisphere, at high altitude and sea level locations. The measurement programme includes tropospheric measurements and oceanographic campaigns to provide a comprehensive assessment of mercury concentrations in ambient air and deposition. To facilitate data sharing with major stakeholders, policymakers and the public, an ad-hoc Cyber(e)-Infrastructure (CI) was developed.

The CI was designed to make data acquisition in near-real time, by apply advanced Information and Communication Technology (ICT) systems. To provide a common framework of analysis as well as a real-time control of instruments, a dedicated GMOS-Data Quality Management system (G-DQM) was developed as a web-based service. G-DQM is able to automatically screen and quality-control the incoming atmospheric mercury raw data allowing near-real time adaptive monitoring procedures. Dealing with site-specific conditions and their related instrumental settings, the G-DQM system may provide suitable feedback to all GMOS site operators.

The faithful application of the G-DQM system allows to identify the main frequent issues to be overcome for a reliable atmospheric mercury data collection. The use of this system is of greatest usefulness in preventing the production of poor-quality data and assuring comparability of different datasets recorded within the GMOS network.

Biography

Francesco D'Amore is PhD on Computer Science. He has a post-doc position at CNR - Institute of Atmospheric Pollution Research (CNR-IIA), working on e-Science, data harmonization and earth observation. His important works are related to the design and development of innovative Spatial Data Infrastructure, which are oriented to data quality assurance and monitoring.

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