



## **The Coordinated Energy and Water cycle Observations Project (CEOP) Data Integration Approach**

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Many of the Projects under the World Climate Research Programme (WCRP) bring together numerous types of data to perform climate research on various regional and time scales using routine operational/research global observations and process studies. The Coordinated Energy and Water cycle Observations Project (CEOP) [under the Global Energy and Water Cycle Experiment (GEWEX)] goal is to demonstrate skill in predicting changes in water resources and soil moisture on time scales up to seasonal and annual as an integral part of the climate system. In order to satisfy the multi-disciplinary scientific objectives of CEOP, an integrated approach to bring together such global in-situ observations, remote sensing (satellite), and model output was needed. Both a centralized and distributed integrated data management strategy was then designed and implemented to incorporate and distribute such research quality data.

There are multitudes of global/regional surface in-situ measurements made globally that are quite disparate in type, number, quality, and format. The concept of a "Reference Site" combining specialized observations of sub-surface (soil temperature and moisture profiles), near-surface (standard meteorological parameters, radiation, flux), and lower tropospheric profiles (tower, rawinsonde, lidar, wind profiler) over various spatial scales (from single point to 104 square km) was created for evaluation with satellite data and model output analyses. A network of 36 such Reference Sites from various climatic regions was identified and organized through coordination of CEOP's Regional Hydroclimate Projects (RHPs). Standardized observation times/averaging and format (with complete metadata) was agreed upon and a "composite" in-situ database developed. This presentation will describe CEOP's data integration approach and "lessons learned" from such a prototype network for use in global climate studies.