SPORT

SEMINAR SERIES PRESENTATION

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A TOOL FOR CONSTRUCTING DATA ALBUMS FOR SIGNIFICANT WEATHER EVENTS

Case study analysis and climatology studies are common approaches used in Atmospheric Science research. Research based on case studies involves a detailed description of specific weather events using data from different sources, to characterize physical processes in play for a given event. Climatology-based research tends to focus on the representativeness of a given event, by studying the characteristics and distribution of a large number of events. To gather relevant data and information for case studies and climatology analysis is tedious and time consuming; current Earth Science data systems are not suited to assemble multi-instrument, multi mission datasets around specific events. For example, in hurricane science, finding airborne or satellite data relevant to a given storm requires searching through web pages and data archives. This presentation will describe a knowledge synthesis engine to create curated "Data Albums" to support case study analysis and climatology studies.   The technological challenges in building such a reusable and scalable knowledge synthesis engine are several. First, how to encode domain knowledge in a machine usable form? This knowledge must capture what information and data resources are relevant and the semantic relationships between the various fragments of information and data. Second, how to extract semantic information from various heterogeneous sources including unstructured texts using the encoded knowledge?   Finally, how to design a structured database from the encoded knowledge to store all information and to support querying? The structured database must allow both knowledge overviews of an event as well as drill down capability needed for detailed analysis. An application ontology driven framework is being used to design the knowledge synthesis engine. The knowledge synthesis engine is being applied to build a portal for hurricane case studies at the Global Hydrology and Resource Center (GHRC), a NASA Data Center. This portal will auto-generate Data Albums for specific hurricane events, compiling information from distributed resources such as NASA field campaign collections, relevant data sets, storm reports, pictures, videos and other useful sources.

Refreshments will be provided!