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An Observation and Computational Variable-Tagging System for Climate Change Informatics



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ANALYSIS SCENARIOS

1.Evaluation of model biases in hydrology (precipitation, soil water, runoff, river discharge) over the Rio Grande Basin. User: climate modeler.

2. Investigation of projected changes in hydrology of Rio Grande Basin using the Variable Infiltration Capacity Macroscale Hydrologic Model. User: watershed hydrologist/modeler.

BARRIERS TO INTEROPERABILITY

♦Data reside in numerous agencies Each source has its own metadata and search interface

♦ Scientists are familiar with

observational or modeling data, not both

Multiple temporal and spatial scales

♦Numerous formats

♦Lack of formal descriptions (ontologies)

DATA REQUIREMENTS

validation

PCMDI

 stream flow water quality precipitation temperature sediment data

 soil moisture vegetation index

limate Change Search by tag: A tagging submit You searched for: FIR Search by variable name Search by variable name: Found 10 variables, displaying first 10 Description Name oc submit COL FIRE CLOSS total column-level fire C loss submit CHANR COL_FIRE_NLOSS total column-level fire N loss OCHANR ICE FIRA net infrared (longwave) radiation Search by variable description: submit FIRA R Rural net infrared (longwave) radiation CHARGE FIRA U Urban net infrared (longwave) radiation submit FIRE CHOCNR emitted infrared (longwave) radiation FIRESEASONL annual fire season length MEAN FIRE PROB e-folding mean of daily fire probability Top Tags: PFT_FIRE_CLOSS total pft-level fire C loss PFT_FIRE_NLOSS total pft-level fire N loss Precipitation (17) QC_500m Streamflow (9) Rain (2) CAK OAK Department of Energy (DOE) Security Notic Snow/Ice (2) RIDGE ORNI, Climate Change Science Institute ORNI, Environmental Data Science & Syste Atmospheric Gas (1) Urban Lands (1) stream flow (1) Search on observation and Tagging function: evaporation (1) computational variables by: ♦ Tags connect unfamiliar variables air (1) Names Testing (1) Community keywords ♦Tags ♦Controlled vocabulary (NASA) Variables tagged 'Precipitation' Description Global Change Master Directory) Variable Name RAIN PREC F RESULTS RAINFM2A RAINATM **MODIS** land team 1. Refine the analysis by integrating Observational and Model data. Demonstrate the benefit of applying information science methods to scientific knowledge capture in the context of integrated climate and environment research. 3. Perform an end-to-end analysis of the impact of climate

change on a basic unit of analysis: the watershed.

of Energy, the DOE Office of Science The work was p