Extending OPeNDAP to Offer Remapping Services

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This presentation articulates a preliminary concept for extending OPeNDAP—a widely used (SOA-style) data-access method that NASA considers a "community standard"—into the realm of remapping services. The need for remapping is especially critical in the context of trans-domain data use, as envisaged by the NSF's EarthCube initiative, e.g., so we propose embedding a new, well-defined framework for remapping services within a modestly revised version of OPeNDAP's data-access services. Our presentation addresses two aspects of this proposal: 1) the importance, to end users and to brokering services, of performing remapping calculations in close proximity to the data sources, i.e. embedding them in the data-access service; and 2) a tentative formulation for a generalized remapping abstraction.

Our premise for the latter formulation is that remapping needs arise from the many ways a (space-time) domain of interest may be partitioned or sampled to allow finite representations of (piecewise continuous) functions or variables over that domain. We assert that—by defining a few classes of partitions and samplings, a few classes of discrete function representations, and a few operations on these—most needs for remapping can be met within a compact framework of server functions that complement OPeNDAP's current set of data-access and subset-creating capabilities. For cases where more complex remapping is required, we intend OPeNDAP's server functions to be extensible via (plugin-style) handlers that can be invoked within the above framework.