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Progress toward ODSIP — A Data-Service Invocation Protocol

Premise

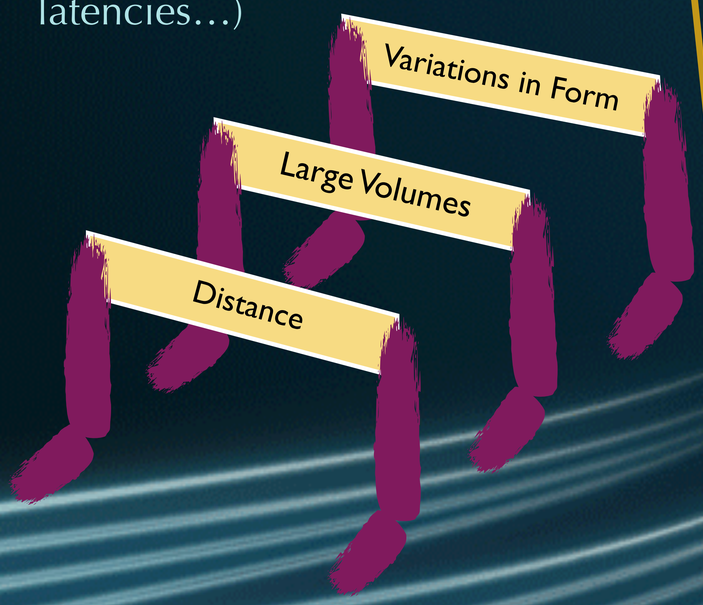
Data-intense, transdiscipline science
⇒ **remote** data use ⇒ **impediments**

Foundations (from ~1994)

- OpenDAP Protocol (DAP):
  Data access = Web Service
- DAP reduces data-xfer via **subsetting services:**
  - *Array-index constraints*
  - *Predicate-style filters*

Primary Impediments

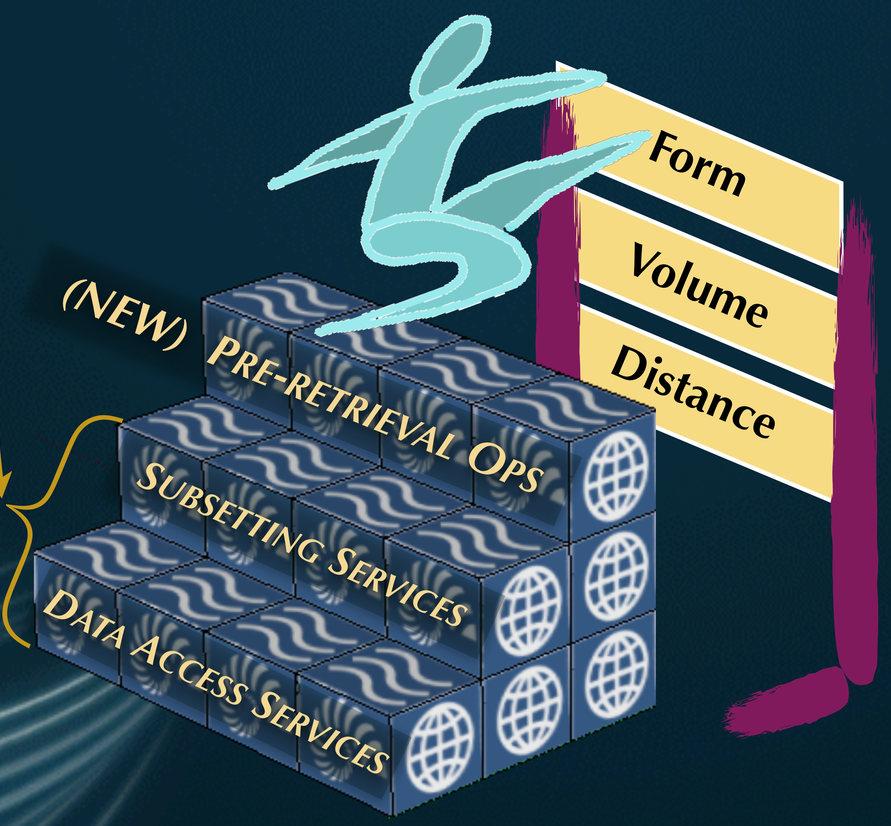
(exacerbated by small devices & Internet latencies…)



Now Demonstrable Server Functions

(invoked during data acquisition)

- From multiple datasets at once, request info aggregated into a single response…
  - *Concatenated as a large table (CSV)*
  - *Zipped as a set of netCDF files*
- From polygonal-mesh source data (UGRID), select a polygonal sub-mesh (in a bbox)
- Generate criteria-based geospatial masks & use them to select subsets



Intended Project Outcomes

- Prototype server(s) demonstrating data-transfer economies in 3 geoscience contexts:
  - ***Dynamic downscaling*** *— climate predictions for native-Hawaiian use (at local scales)*
  - ***Storm surge prediction*** *— for emergency mgmt in coastal NC*
  - ***SST-front analysis/synthesis*** *— for use in chlorophyl studies*
- A model for portable, extensible, Python-based server functions

The Building Block:

Data Acquisition *as a* ***Web Service***
with an extensible set of
Pre-Retrieval Ops

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