

EXTENDING OPENDAP'S DATA-ACCESS PROTOCOL TO INCLUDE ENHANCED PRE-RETRIEVAL OPERATIONS

Premise

The **impedance** of remote data usage grows as geoscience becomes more data-intensive & multidisciplinary

Foundational capabilities

- Since 1994, OPENDAP's Data Access Protocol (DAP):
- ➔ Data access as a **Web Service**
- DAP lowers data-xfer volumes via **subsetting services**
 - ❖ Array-style index constraints
 - ❖ Predicate-style filters

Impedances

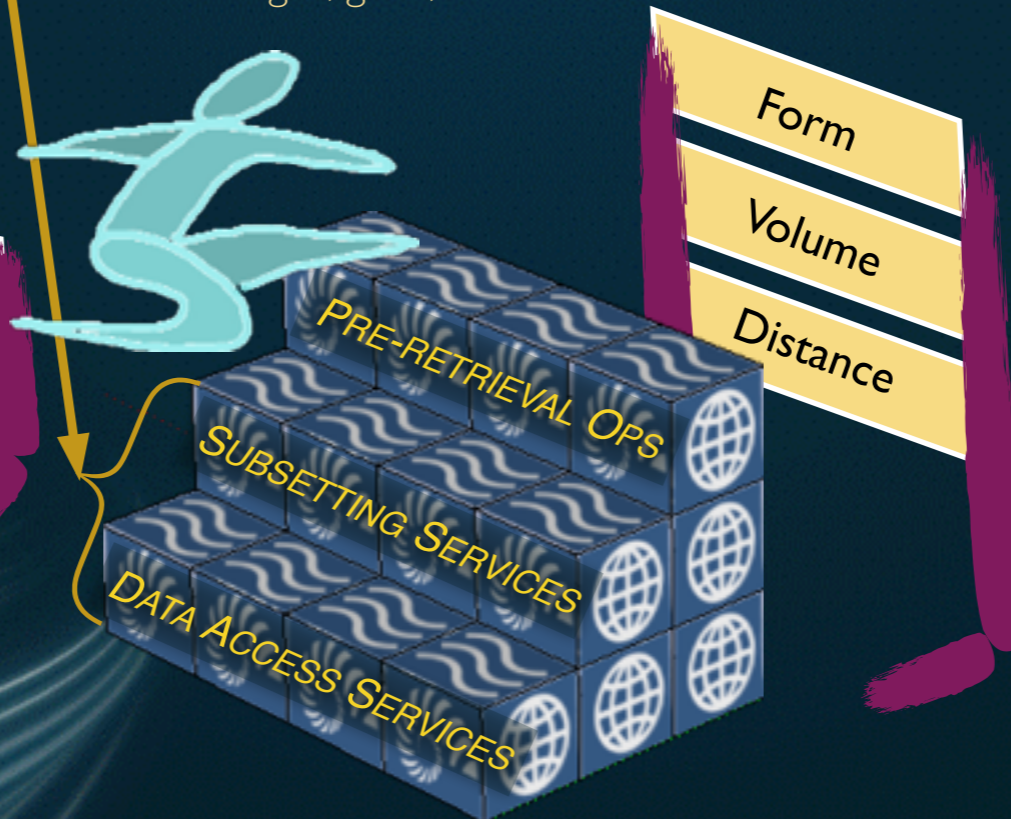
(Exacerbated by Internet latencies & trends toward small devices...):



Needed pre-retrieval ops

- Statistical summarization
 - ❖ Calculate **means**; form **masks**; accumulate counts (**binning**)...
- Regridding/resampling
 - ❖ Remap onto **spec'd meshes**...
- Criteria-driven subset creation
 - ❖ Select/build **data structures** that **satisfy a predicate**
- Feature extraction
 - ❖ Construct **lines/polygons** from images, grids, meshes...

* Invoked **server-side** during data acquisition



ODSIP = "Open Data Services Invocation Protocol"

Project ODSIP outcomes

- New data-acquisition method with an **algebra of pre-retrieval ops**
- Prototype use in 3 geo contexts
 - ❖ **Dynamic downscaling** - climate predictions for native-Hawaiian use (local scales)
 - ❖ **Storm surge prediction** - for coastal NC emergencies
 - ❖ **SST front analysis/synthesis** - from satellite images
- EarthCube **community engaged**

Input welcome!

Please share ideas for success, perhaps suggesting linguistic basis for ODSIP...

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