


A (Very) Rough Idea:  
**Raster Binning  
& Masking Services**



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seeking feedback from the  
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# Motivations


- EarthCube questions (Web Services Concept Group) have included:
  - Should Earthcube standardize a form for (irregularly shaped) space-time queries?
  - Might this improve x-domain studies?
- Known use cases need query responses that
  - Fall between metadata & data values, yielding space-time distributions (“inventories”?)
  - Project onto users’ (not providers’) maps

# A Common Pattern in (X-Domain) Studies

-  Data queries occur in succession

  -  Across multiple, diverse sources





  -  Becoming increasingly refined

-  Needed info often begins with the distribution of pertinent data (not their precise values)

  -  Esp. when data are function samples



# An Idea - Rasterized Masking & Binning Services

-  (OPeNDAP-like) data access services could be extended to offer
  -  Binning services: return (on user-defined raster) the space-time distribution of data that satisfy specified criteria
  -  Masking services: return results that fall within a space-time mask
-  A binning response might serve as mask for a subsequent query



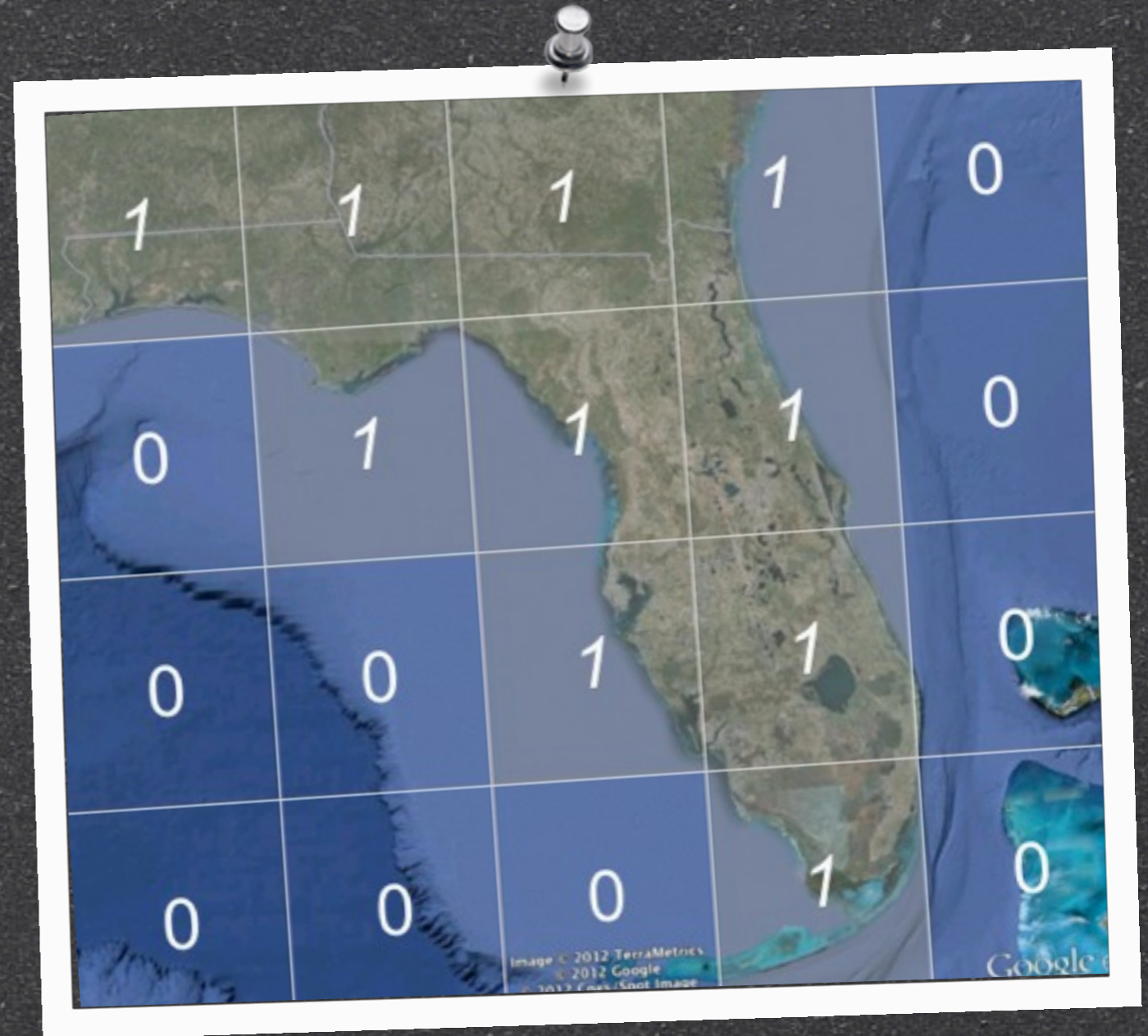
# Key - Dual-Purpose Rasters: “RBInMasks”

- As a query parameter, non-zero values form a mask that delineates a geospatial constraint
- As query output, cell values count samples that meet some criteria
  - Thus cells are bins & the raster represents a frequency distribution

# RBinMask as a Query Constraint

In a query, non-zero values form a mask that functions as an (irregularly shaped) geospatial constraint

The 20 cells of this RBinMask fill a lat-lon box over Florida (per backdrop image)



# RBinMask as a Query Response

As output from a query (say for winds over some threshold), cell values count samples that meet the criteria

This can now be used in a query against a completely different data source





# Summary

A new type of data query/response service built (perhaps for EarthCube) around a standardized space-time raster that has a dual function. Via Raster Binning & Masking Services (RBinMasks), users would gain a means to specify (irregular) space-time regions of interest and to gain space-time distributions of pertinent data, without-- or before--retrieving actual values.