

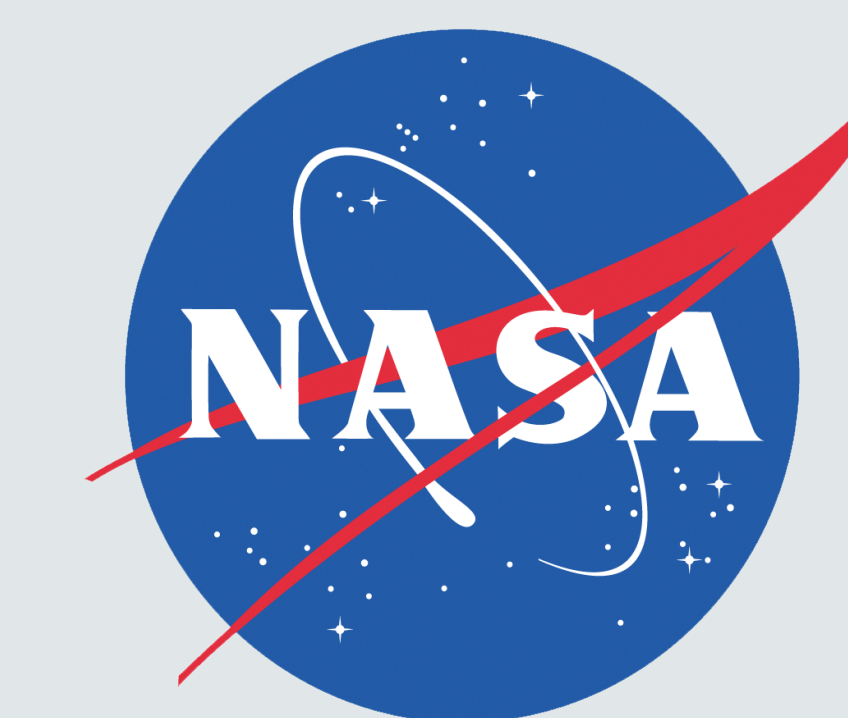
# WCS Web Coverage Service

## Challenges for NASA's Earth Science Data

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NASA's Earth Observing System Data and Information System (EOSDIS) is evolving to expose data using standards based geospatial web services, e.g. Web Coverage Service (WCS), Web Mapping Service (WMS). There is a need for fusion of services with existing data systems, and integration with new systems such as NASA's Cumulus, which will be a cloud-based source of NASA data.

In recent work<sup>4</sup>, we sought to understand how our users accessed data, and how this could be achieved more simply via services. In our study, NASA's team identified a minimum standard for services, with capabilities that address the needs of most users. With some experience gained in the publication of data sets with WCS v1.1.1, we saw that WCS v2.0.1 with the Earth Observation extension is better suited to meet our user's needs. In summary, we developed methods to simplify the publication of NASA data sets via services, with the capability to enable common type of subsetting, e.g. spatial, temporal, variable (band or parameter) subsetting.

Use Cases	WCS Version			
	1.0.0	1.1.x	2.0.1	2.0.1 w/ EO Extensions
<b>Data subsetting infrastructure</b>	Single variable only	Multi-variable support	Multi-variable support	Coverage sets allow for scalable capabilities
<b>Science user scripting</b>	Simple single file download	Issues with multi-part response	Simple single file download or multi-part download	Access to stitched mosaics
<b>GIS tool support</b>	Robust	Single variable 2-D layer only	Scarce	Experimental

### Solutions

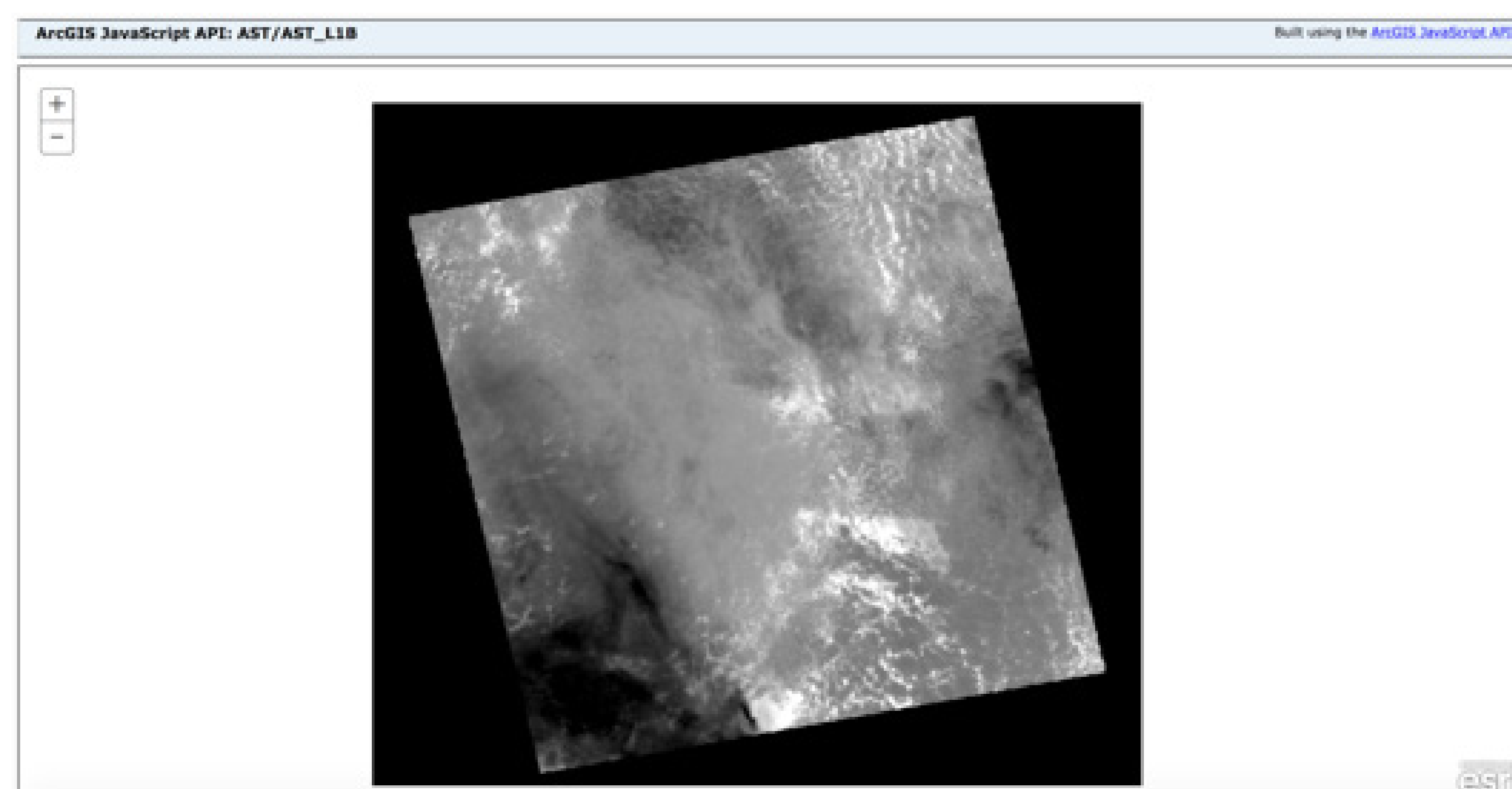
- Determine what is a suitable coverage for the dataset
- Band Extraction - Shortwave, infrared, Near Infra-Red (NIR), etc.
- Reprojection to valid projection ready for publishing
- Need to enable WCS reprojection for dataset
- Lots of differences between the versions of Open Geospatial Consortium (OGC) standards
- Implementing support for complex WCS schemas
- Need to verify spatial reference information prior to publication

### Challenges

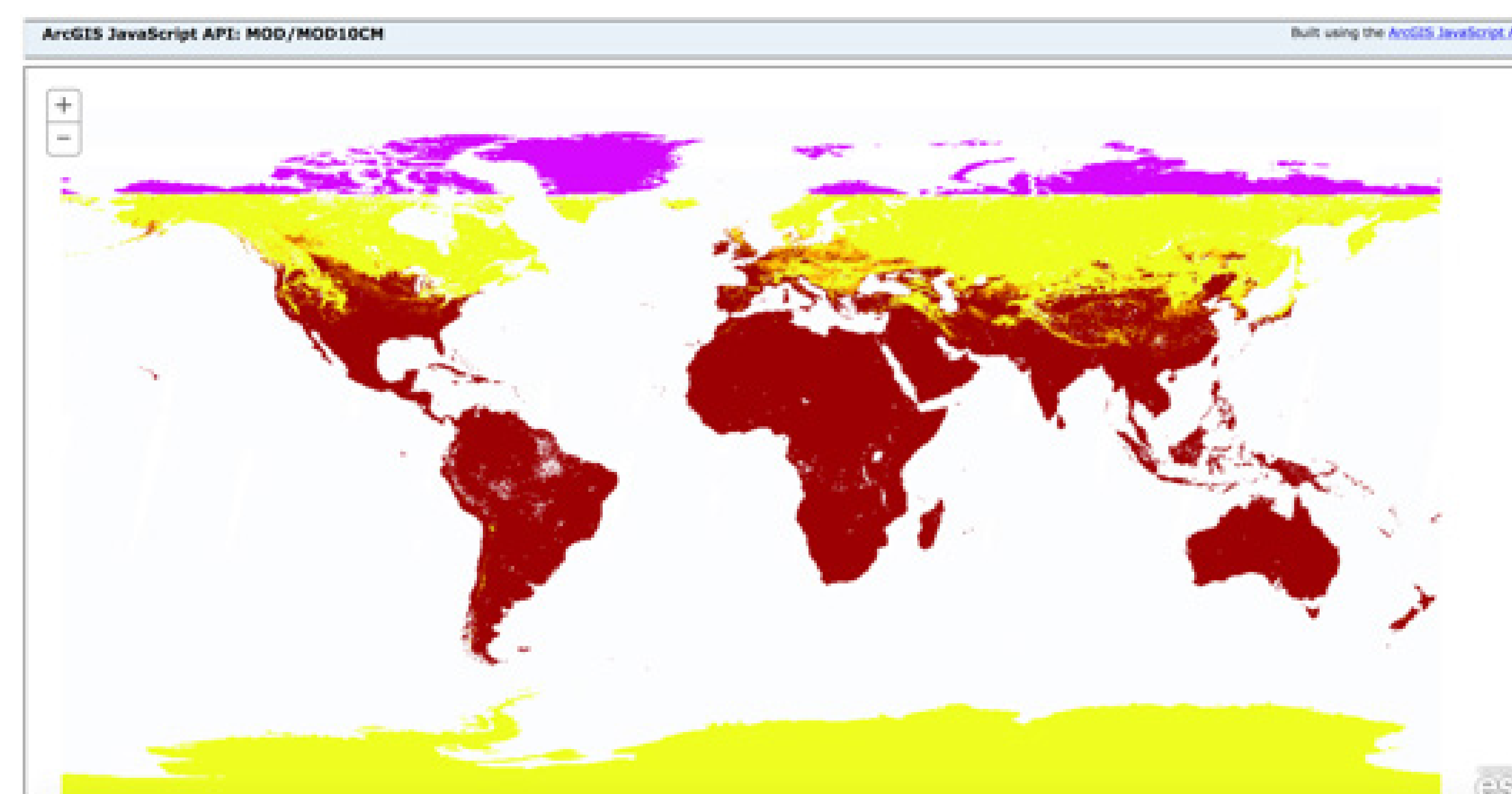
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## WCS Coverages

### ASTER Level 1T WCS Service



### MODIS MOD10CM Level 3 WCS Service



### Soil Moisture Active/Passive Level 3 WCS Service

