

Development of Recommended Practices and Workflow for Publishing Digital Data through ScienceBase for Dynamic Visualization

A Statement of Interest for the Community of Data Integration Request for Proposals FY 2016

SECTION 1. PROJECT ADMINISTRATIVE INFORMATION

- CDI science Support Framework Elements: Computational tools, web services
- Project Title: Development of Best Practices and Workflow for Publishing Digital Data through ScienceBase for Dynamic Visualization
- USGS Cost Center Requesting Funding: WY-MT Water Science Center
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- Description of Project: Develop a work flow and recommended practices for organizing and sharing data through interactive maps using ScienceBase web map services.
- List of Anticipated Deliverables:
 - Document and webinar: *Best Practices and Workflow for Publishing Digital Data through ScienceBase for Dynamic Visualization*

SECTION 2. ESTIMATED BUDGET

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. PERSONNEL (SALARIES including benefits):		
Federal Personnel Total	\$10,262	\$3,386
Contract/Collaborator Personnel Total	\$2,013	\$604
Total Salaries:	\$12,275	\$3,990
2. TRAVEL EXPENSES:		
Travel Total (per diem, airfare, mileage/shuttle)x # of trips:	\$1,256	\$0
Other Expenses (e.g. Registration Fees):		\$0
Total Travel Expenses:	\$1,256	\$0
3. OTHER DIRECT COSTS: (itemize)		
Equipment (including software, hardware, purchases/rentals):		\$0
Publication Costs:		\$0
Office Supplis, Training, Other Expenses (specify):		\$0
Total Other Direct Costs:	\$0	\$0
Indirect Costs (34.696%):	\$3,996	\$1,384
GRAND TOTAL:	\$17,527	\$5,375

SECTION 3. PROJECT SUMMARY

The ways scientists view and share data are changing with breathtaking speed. Some USGS scientists accustomed to graphing or mapping data and results in static graphics in USGS publications such as Scientific Investigation Reports would like to use new tools, such as web map services available through ScienceBase (<https://www.sciencebase.gov/about/content/connect-sciencebase-web-map-service-wms>), to generate interactive maps. However it's difficult to find guidance about how to organize data for interactive maps to share through such services. In addition, all USGS data intended for public release are subject to USGS Fundamental Science Practices (FSP) review, approval, and release requirements (<http://www.usgs.gov/fsp/>). FSP requirements recently have been revised to incorporate release of scientific data and metadata (http://www.usgs.gov/fsp/faqs_datarelease.asp); but not many USGS hydrologists have released data under the new requirements.

We propose to develop a work flow and recommended practices for organizing and sharing data through interactive maps using ScienceBase web map services. We will use one or more existing datasets and work with ScienceBase staff to set up the data within ScienceBase to serve the data interactively. We will document the process so that others can share data in a similar manner. Our team includes a USGS GIS analyst, USGS hydrologists, and USGS and Montana State University fisheries biologists.

Our ScienceBase data release titled *Potential Effects of Climate Change on Streamflow for Seven Watersheds in Eastern and Central Montana* is currently undergoing review. The data include simulated changes in streamflow at stream segments for baseline conditions and 3 future time periods, using temperature and precipitation from 3 different Regional Climate Models. These data currently are summarized in static plots and maps but could be more useful served as interactive maps, where a user could select a time period and model of interest to display.

The data release is part of a larger project: *Living on the Edge: Predicting Effects of Climate Change on Native Fishes in Northern Great Plains Streams*. Biologists have sampled fish assemblages at >1,600 sites across Montana, and estimated changes in fish assemblages based on watershed characteristics and simulated streamflow for projected future conditions. Those data also could best be shared and viewed using interactive maps.

Under this proposal, interactive maps will be developed for the streamflow data and the fisheries data. However, the main product of the proposed project will be the work flow and recommended practices document, not the actual interactive maps (though the interactive maps will serve as examples, all the CDI funding under this proposal will be applied to formatting and developing web services for the data and maps). The workflow and best practices will be shared in a webinar.

The workflow and recommended practices document can help USGS scientists more efficiently share their work using interactive maps and adhering to USGS FSP requirements.