CDI FY17 Request for Proposals

Web Mapping Application for a Historical Geologic Field Photo Collection

Submission Title: Web Mapping Application for a Historical Geologic Field Photo Collection

Lead PI: Sarah Nagorsen

Mission Area: Other

Region: Pacific Region

Organization: Science Publishing Network

OrcId: http://orcid.org/0000-0001-5901-0279

Phone: (650)329-5064; (248) 802-3688

Email: snagorsen@usgs.gov

City: Menlo Park

State: California

Co-PIs and Collaborators:

Type: Collaborator

Name: Christopher Soulard

Mission Area: Climate and Land-Use Change

Region: Pacific Region

Organization: Western Geographic Science Center

OrcId: http://orcid.org/0000-0002-5777-9516

Phone: 6503294317

Email: csoulard@usgs.gov

City: Menlo Park

State: CA

Type: Collaborator

Name: Drew Ignizio

Mission Area: Core Science Systems

Region: Southwest Region

Organization: Science Data Management, CSAS

OrcId: NA

Phone: 3032024082

Email: dignizio@usgs.gov

City: Fort Collins

State: CO

Type: CO-PI

Name: Jason Sherba

Mission Area: Climate and Land-Use Change

Region: Pacific Region

Organization: Western Geographic Science Center

OrcId: http://orcid.org/0000-0001-9151-686X

Phone: 6503294248

Email: jsherba@usgs.gov

City: Menlo Park

State: California

Science Support Framework Element 1: Data

Science Support Framework Element 2: Web Services

Science Support Framework Element 3: Science Data Lifecycle - Publishing/Sharing

In-Kind Match: $15,200.00

List of anticipated deliverables from the project: Deliverables of the Web Mapping Application for a Historical Geologic Field Photo Collection project include the following: (1) An online Web mapping application that shows historical geologic field photos of the Grand Canyon region in spatial context, including options to view and download the photos and metadata. (2) Open source code for a Web mapping application that can be adjusted to fit any geologic field photo collection. (3) A process for efficiently publishing/releasing future Web mapping applications of field photos.

Lead Cost Center: USGS Science Publishing Network

Notes, Comments: n/a

Project Description: The Menlo Park Publishing Service Center (USGS Science Publishing Network) has been asked to publish a collection of about 1,500 geotagged, geologic field photos collected during 43 years of geologic mapping in the Grand Canyon region. Traditional USGS information products (such as Open-File Reports [OFRs] and Scientific Investigations Reports [SIRs]) are not effective or accessible ways to share these field photos with researchers, stakeholders, and citizens. Therefore, we are requesting funds to create a Web mapping application by using processes employed by a past CDI project (Land Cover Trends Field Photo Map) to (1) make the Grand Canyon field photo collection available, navigable, and downloadable online, and (2) create a generalized photo viewer application using ScienceBase services that meets USGS Science Publishing Network standards. By creating new workflows, we aim to reframe how geologic data are shared online so that future field photo collections can be efficiently published this way.

Total Budget: $40,000.00

Statement of Interest
Community for Data Integration Funding FY17

SECTION 1. PROJECT SUMMARY

Project title: Web Mapping Application for a Historical Geologic Field Photo Collection

Name of USGS lead principal investigator: Sarah Nagorsen, Geologic Map/Technical Editor, snagorsen@usgs.gov.

Please provide a brief narrative summary of the project based on the goals and the Science Support Framework in the context of the Evaluation Criteria for the Statement of Interest and Full Proposal listed in the RFP:

The Grand Canyon geologic field photo collection contains 1,500 geotagged photos collected during geologic mapping of the region from 1967 to 2010. The photos document some key geologic features, structures, and rock unit relations that were used to compile seven geologic maps published at 1:100,000 scale, and many more maps published at 1:24,000 scale, of the entire Grand Canyon region. Metadata accompany each photo and include photo captions, coordinates, and codes that place photos in one of the following categories: sedimentary rocks, metamorphic rocks, igneous rocks, faults and folds, breccia pipes and collapse structures, landslides, arches and windows, sinkholes, or springs and waterfalls. The spatial format of this geologic field photo collection makes it a great candidate for a Web mapping application, rather than a traditional USGS information product, such as a Data Series, Open-File Report, or Scientific Investigations Report. Integrating the Grand Canyon geologic field photo collection into a Web mapping application would result in a process and product that could be added to and modified to include other regions.

Geologic features that are discovered and photographed in the field are part of the evidence and data that are used to compile a geologic map. As more scientists use GIS for geologic mapping, the quantity and quality of digital, geotagged geologic field photos increases. However, many field photos are not published or released because traditional USGS information products don't allow users to easily explore and interact with field photo collections. Effective sharing of field photos often requires the ability to convey photo context in terms of the surrounding landscape and the relative position of photos within a study site.

Repurposing an existing photo mapping application (Land Cover Trends Field Photo Map) to fit a geologic field photo collection and to meet USGS Science Publishing Network standards and workflows will open up a new avenue for scientists to effectively and efficiently publish their field photos alongside the geologic maps and publications those photos support. The Land Cover Trends Field Photo Map was built by using open source JavaScript packages, such as leaflet.js and leaflet.photo.js. This application allows for quick and intuitive exploration of field photos through a Web interface as well as photo filtering by tag and spatial extent. Using the Grand Canyon geologic field photo collection as an example, we intend to update this application to create a general framework for sharing field photo collections within an interactive mapping application. The Web mapping application will use ScienceBase services to serve photos and photo metadata managed through ScienceBase.

Because this project leverages an existing photo mapping application and the field photo collection is in good shape, we anticipate that the project can be completed in 5 months. With 38% matching funds from the USGS Science Publishing Network, the proposed project would include (1) a team member from the Publishing Network who has experience with GIS, USGS information products, and USGS publishing workflows; (2) team members from the Western Geographic Science Center who have developed the Land Cover Trends Field Photo Map and have experience building Web mapping applications; and (3) a team member from ScienceBase who has experience using Python to import large datasets into ScienceBase.

General project steps include the following:

(1) Complete photo caption edit, obtain USGS publishing approvals, and update geodatabase information accordingly.
(2) Upload photo collection and photo metadata to ScienceBase.
(3) Reconstruct Land Cover Trends Field Photo Map code for the Grand Canyon field photo collection.
(4) Publish completed field photo collection as a USGS General Information Product or alternative information product.
(5) Make final Web mapping application code available via USGS bitbucket/Github (or other online repository), submit final project report, and present project process and results at CDI annual meeting.

SECTION 2. ESTIMATED BUDGET

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. PERSONNEL (SALARIES including benefits):		
Federal Personnel Total: Formatting, programming, and technical support.	$40,000	$15,200
Total Salaries:	**$40,000**	**$15,200**
2. TRAVEL EXPENSES:		
Travel Total: One trip to CDI meeting by project lead(s)	$1,500	--
Total Travel Expenses:	**$1,500**	--
GRAND TOTAL:	**$41,500**	**$15,200**