

DOE Data ID Service

Announcing and Registering DOE's Datasets via Announcement Notice (AN) 241.6

Version 5.2, January 2016

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1.0 About AN 241.6 and the Data ID Service

Announcement Notice (AN) 241.6 provides to the U.S. Department of Energy (DOE) Office of Scientific and Technical Information (OSTI) the metadata needed to identify/announce datasets resulting from work funded by DOE. The submitted information also allows The DOE Data ID Service, managed by OSTI, to assign Digital Object Identifiers (DOIs) to datasets and register them with [DataCite](#). This value-added step facilitates visibility, helps ensure long-term preservation, and supports better linkage between DOE's published research results and the underlying data.

The DOE Data ID Service is the official name covering both the submission process for metadata about datasets and the DOI registration process for those datasets. The DOE Data ID Service allows you to submit, edit, or retrieve dataset records. DOE organizations with a need to submit large volumes of data can manipulate records by performing HTTP operations on the AN 241.6 web service URL and providing XML metadata to create/update records (POST) or to retrieve records for review (GET). The web service allows automated submission of multiple records on a regular basis.

However, an [interface for manual entry](#) of one AN 241.6 record at a time is available, when logged into E-Link. Individual DOE researchers with an infrequent need to obtain a DOI for a dataset should contact their site's STI Manager to arrange for manual submittal. Note that a grantee, located in an organization without access to a DOE STI Manager, may go to <https://www.osti.gov/elink/241-6.do?ostiid=0&action=load> in order to submit metadata for a scientific research dataset.

1.1 General Requirements

These general requirements have been established for data registration. The submitter must:

- Provide, at minimum, the required metadata to enable basic, bibliographic citation
- Have authority (though not necessarily ownership) to make public the assets for which they wish to assign the DOIs.
- Guarantee the persistence of registered data
 - By ensuring that data will be stored and managed such that access and usability are provided indefinitely.
 - By maintaining and updating as necessary all URLs associated with the DOI
- Establish and maintain appropriate landing pages for registered DOIs

Note that the datasets themselves are not uploaded or stored at OSTI.

1.2 Understanding Key Components

Defining Datasets: Content and Granularity

Determining how DOIs should be applied to your data, i.e. at what level of granularity, is an important step in planning data registration. Some datasets are similar to collections in that they include multiple data files. The DOI can be assigned at the collection level, with the included data files listed individually on the dataset's landing page. Another option is to break the collection down in some logical way by topic, by geographic location, by time period, etc. and assign a DOI to

each of these smaller “sets” of multiple files. On the other extreme, a dataset may also be as simple as a spreadsheet.

Datasets are not always numeric in nature. A computer model and sets of “canned” input could be a dataset, while each of the simulations or output files could be assigned their own DOIs. A collection of photographs or a graphic of a workflow can be registered as a dataset. Interactive resources or audiovisual items may be assigned DOIs. Data “studies” can be registered also; these may include a variety of materials associated together as a “package.”

Subject expertise and knowledge of how your audiences normally look for your data will help you determine the appropriate content and boundaries of the datasets that you intend to register. OSTI can provide advice and share examples of best practices, but granularity decisions are ultimately the responsibility of the people who know the data best, i.e. the creators, the analysts, or the data center experts at your submitting organization.

The Digital Object Identifier (DOI)

Each time a new submitting entity becomes a new “data client,” OSTI requests from DataCite a numeric prefix which will belong only to that one, specific entity. A data client may be a data center, a lab division, or a facility. Often, the data client is defined as one specific project. DataCite and the DOE Data ID Service ensure that no two data clients, regardless of how they are defined, will ever have the same DOI prefix.

A DOI consists of the number 10, followed by a period, followed by the data client’s prefix, a forward slash, and a numeric suffix. The suffix assigned by OSTI is the OSTI ID, a unique identifier that every record processing through any of OSTI’s systems must receive. If needed, data submitters may discuss with OSTI, prior to beginning production, the option of including their own unique character string to be inserted into the center of the DOI format.

What makes the DOI not only a unique identifier, but a “persistent” identifier is the commitment behind it. Data clients commit to update the URLs for their DOIs whenever a posted landing page and its associated dataset must be moved to a new online address. The DOI will never change, but the URL, which is invisibly “bonded” to a DOI in the DataCite Registry, *can* change. Changing the URL in DataCite’s Registry is accomplished through a simple POST operation to update the affected record.

DOIs assigned by OSTI can have customer-specified intelligence built into the character string, if desired. DOIs can also be “reserved” by a submitter until such time as the submitter has the landing page and data ready for access. See section 4.0 of this document: [Special Functionalities and Use Cases](#).

DataCite recommends that DOIs in a citation or database be displayed as live links, i.e. with <http://dx.doi.org/> preceding the beginning of the actual DOI numbers or characters. This is not a requirement, but it is a “best practice.”

Example: <http://dx.doi.org/10.5439/1021460>

The Landing Page

A “landing page” or introductory page is recommended by DataCite for all registered data and actually required in two cases (See next paragraph). The DOI points to the landing page, which in turn, links out to the dataset itself. The landing page, which must always be publicly accessible, provides context for the dataset. The landing page may contain one or more of the following:

- Information on how a full, formal citation of the data should appear,
- Access information, including a notice of temporary restriction, if a dataset is not yet ready for public access.
- Links to software or toolkits needed to open, download, or analyze the data,
- A listing of the individual data files that may be included in the registered dataset (with links to them),
- Update and version information,
- Contact information.

DataCite notes two cases when a landing page is mandatory rather than recommended. A landing page is mandatory for any data that cannot be viewed using standard desktop software. A landing page is also mandatory when the data temporarily **or long-term** has restricted access. Because DOIs are not deleted from the DataCite Registry, a landing page can also serve as a “tombstone page” when a dataset must become unavailable. The tombstone page should tell a user who has followed the original DOI to that point what has happened to the data, why, and provide a contact for further questions.

In cases where neither a landing page nor a dataset can be accessed yet, but a DOI is needed to share among members of a project or collaboration, submitters may discuss with OSTI how to “reserve” a DOI for future registration. [See examples of good landing pages at the end of this document.](#)

2.0 Using the DOE Data ID Service API

2.1 Authentication

Access to the API/web service for the DOE Data ID Service requires the submitting site to have an active, approved account through an approved web service account for [E-Link](#). Once an account is established, the account holder then submits records to a test environment and does a coordinated review of the results with OSTI before POSTing the first “live” file in production mode. The test URL is

<https://www.osti.gov/elinktest/2416api>. OSTI's production web service for announcing datasets is available at <https://www.osti.gov/elink/2416api>.

OSTI's AN 241.6 Web Service supports HTTP Basic authentication over Secure Socket Layer (SSL), and each POST or GET request requires authentication. With this method, the client connects to one of the HTTPS URLs; the POST and GET verb commands will pass along the standard Authentication HTTP header (base64 encoding).

2.2 POST (Submit/Update) and GET (Retrieve) [Client to OSTI]

If authentication is successful, the input body of the request is read as an XML document; The document is then parsed, and submitted appropriately. HTML status codes (200=OK, 401=Unauthorized, 500=System error, etc.) and an XML response, which includes certain metadata fields, are returned at the end of processing each request. An error message will be included for each failed record, as well.

The POST request is used to submit metadata for a new record that will receive a new DOI. It is also used to edit or update an existing record that has previously been submitted. When POSTING to an existing record in order to update it, the OSTI ID must be included in the XML record. The updated information will then overwrite the previously submitted information. **NOTE: If the OSTI ID is not included, the DOE Data ID System will attempt to re-register and obtain a new DOI. This situation requires significant effort to correct.**

Metadata can be retrieved for any record previously submitted by your organization by using a GET request and supplying the `osti_id` argument on the command line. Authentication is required and is handled in the same fashion as a Create/Update command. The requested OSTI ID returns that specific XML record. A GET operation will not update a record, however.

2.3 Response and Notifications from the AN 241.6 API/Web Service [OSTI to Client]

OSTI's server makes an immediate response when the client-side server sends a POST or a GET request. The primary goal of the response is two-fold: let the client server "know" if it connected successfully and provide a status message about the record that was POSTed or retrieved. The status says SUCCESS if the record correctly transmitted and the metadata loaded into the processing system. It will also indicate if the record was "added" (meaning it was a new one that had not ever been submitted before), "updated" (meaning a record previously submitted was edited and resubmitted or, if was a reserved record, released). If the status includes the word "reserved," it means that the record was a newly transmitted record that E-Link put automatically into SAVED status. It will not submit or process until retransmitted without the `<set_reserved/>` tag and with a URL to the dataset's landing page. See section 4.0 of this document: [Special Functionalities and Use Cases](#).

The notification status says FAILURE if the record was unable to load into the processing system for any reason. The FAILURE response includes a status message indicating the error or problem that kept the record from loading. Errors leading to a FAILURE response occur when a required metadata field is missing, when a site URL cannot be validated as correct by the automated validation process, when a value is too long for the field it must load into, etc.

An example of each response type appears below. Note that the successful record returns its newly assigned OSTI ID and its newly assigned DOI. The response for the failed record has neither, since OSTI IDs and DOIs cannot be given to records that never actually make it into the processing system.

POST SUCCESSFUL – SAMPLE RESPONSE FROM AN 241.6 API/WEB SERVICE

```
<?xml version="1.0" encoding="UTF-8"?>
<records>
<record>
<osti_id>1035366</osti_id>
<product_nos>none</product_nos>
<title>ARM Climate Modeling Best Estimate Lamont, OK (ARMBE-CLDRAD SGPC1)</title>
<contract_nos>AC05-00OR22725</contract_nos>
<doi>http://dx.doi.org/10.5439/1035366</doi>
<status>SUCCESS Record added</status>
<status_message></status_message>
</record>
</records>
```

POST FAILURE – SAMPLE RESPONSE FROM AN 241.6 API/WEB SERVICE

```
<?xml version="1.0" encoding="UTF-8"?>
<records>
<record>
<osti_id>0</osti_id>
<product_nos>none</product_nos>
<title>ARM Climate Modeling Best Estimate Lamont, OK (ARMBE-CLDRAD SGPC1)</title>
<contract_nos>AC05-00OR22725</contract_nos>
<doi></doi>
<status>FAILURE</status>
<status_message>Data too long, maximum number characters for dataset type is
2</status_message>
</record>
</records>
```

Once testing is complete and the submitting site is working in the production environment, OSTI also sends an automated email to those at the site that wish to be on the distribution list. The email reports the same information as the server response message but can reach a wider audience, if necessary. Note that it is the submitting

organization’s responsibility to review the returned messages, correct any errors, and resubmit the failed records.

3.0 DOE Data ID Service Metadata

The following two tables list the required and optional metadata fields, their XML tags, and the related business rules governing submission to the DOE Data ID Service. Records without required fields will fail to load and will not receive DOIs. The other fields available for use are optional, though several, such as the Description, are highly encouraged. Third party indexing services often integrate with the DataCite Registry to reflect the DOIs and associated information in their own products. The more metadata these services can pick up from DataCite, the more retrievable your datasets will be.

3.1 AN 241.6 Required Fields

The following table lists the required fields for the AN 241.6 API/web service. Records without required fields will fail to load into E-Link for processing. They will not receive OSTI IDs or DOIs. The OSTI ID is required for all POST requests where the intent is to edit or update records. The GET request must also include the OSTI ID and will allow retrieval of a record previously submitted by your site.

Please note that there are two ways to submit Creator/PI/Author names. These two methods cannot be combined in one record. A record must use either the single tag <creators> and combine all names into one character string **OR** if any of the names have an accompanying ORCID, a record must use the <creatorsblock> which includes several tags for each creator name. The preferred method (because it easily handles ORCID and affiliations) is to use the <creatorsblock>.

REQUIRED

	Field Name	XML Tag Name	Additional Information
1	OSTI ID+	<osti_id/>	Note that the OSTI ID is required in all requests intended to edit or update records. When POSTing new records to OSTI, no <osti_id> tag is needed in the XML. E-Link automatically assigns an OSTI ID to each record successfully submitted; you will receive it in the XML response returned to your site by the 241.6 API/web service.
2	Site Code	N/A	Automatically determined by the authenticated E-Link User account
3	Dataset Type*	<dataset_type/>	Dataset Type refers to the main content of the dataset. Only one value is allowed. Use the two-letter code shown below:

		<p>Two Digit Code</p> <p>AS Animations/Simulations</p> <p>GD Genome/Genetic Data - Information that is numeric or alpha-numeric in nature (such as gene sequences) or that is a specialized mix of text and non-text information conveying results of genetics/genome research</p> <p>IM Interactive Data Map(s) – A non-static interface and the GIS data and/or shape files that generate it.</p> <p>ND Data primarily expressed with numbers; other content is secondary and supporting.</p> <p>IP Still Images or Photos – Images or photos produced by a scientific instrument or that convey scientific results of experiments. Scientific images that might constitute a data set could be images of cells or molecules that are typically taken with electron microscopes, 3-D structures of proteins or nanomaterials, images captured during an accelerator run, images from astronomy, etc.</p> <p>FP Figures/Plots – These datasets are composed mainly of data diagrams, charts, drawings, and data plots.</p> <p>SM The key factor for this dataset type is that it's more than just a mixture of “stuff” on a Web page. It has structure, organization, search and retrieval capability, and the way the information is put together is what gives it meaning. The information does not exist elsewhere except in pieces. There should be some non-text content in the mix as well.</p> <p>MM Multimedia - Videos documenting (showing) experiments or results.</p> <p>SW Software – Software created with DOE funding must be announced to the Energy Software Technology Center (ESTSC) via the AN 241.4, but metadata for a software application or utility may also be submitted through the AN 241.6 in order to obtain and register a DOI for the software.</p>	Definition
4	Dataset Title	<title/>	Full title of the dataset. Include version numbers and specific date ranges when applicable.
5.1	Creator(s)/ Principal Investigator(s)*/ Authors	<creators/>	You may use this field if you are NOT submitting ORCID IDs with any of the creator/PI (or author) names in the record. Format for names is last name, first name, middle initial. Multiple creator names, separated with a semi-colon and a space are allowed.
5.2	Creator(s)/ Principal Investigator(s)*/ Authors	<creatorsblock> <creators_detail> <first_name></first_name> <middle_name></middle_name> > <last_name></last_name> <affiliation></affiliation> <private_email></private_email> >	Use the <creatorsblock> tags if you ARE including ORCID number with any of the creators/PIs (authors) in the submitted record. When the submitted record has the <creatorsblock> tags, ALL creator/PI/author names MUST be broken

		<orcid_id></orcid_id> </creators_detail> </creatorsblock>	out into this block format (even if only one of the names has an accompanying ORCID).
6	Dataset Product Number(s)*	<product_nos/>	The most important identifying numbers given to the dataset by the host or originating organization. Separate multiple values with a semi-colon followed by a space. 'None' is an acceptable value when necessary.
7	DOE Contract Number(s)*	<contract_nos/>	Use the format of the contract "as is," but please leave off any preceding "DE". If multiple DOE contract and/or grant numbers apply, separate with a semi-colon followed by a space. (See new tag for non-DOE contract/award number(s), item 15 in the list below of optional metadata.)
8	Originating Research Organization*	<originating_research_org/>	Use the spelled-out text exactly as shown in the Originating Research Organization Authority at https://www.osti.gov/mlink/authorities.jsp If work for this product was done at more than one research organization, multiple values may be listed; they should be separated by a semicolon and a space. The primary DOE organization should be listed first, followed by any others. If non-DOE orgs are included, input the spelled-out, full name of the organization.
9	Publication/ Issue Date*	<publication_date/>	Use one of these three Publication Date formats: <ul style="list-style-type: none"> • mm/dd/yyyy • yyyy • yyyy Month
10	Language*	<language/>	E-Link will default to English. Authority values are available for other languages at https://www.osti.gov/mlink/authorities.jsp
11	Country of Origin/ Publication*	<country/>	E-Link will default to U.S. If other country names are needed, Authority values are available at https://www.osti.gov/mlink/authorities.jsp
12	Sponsoring Organization(s)*	<sponsor_org/>	Use the spelled-out text as shown in the Sponsoring Organization Authority at https://www.osti.gov/mlink/authorities.jsp If funding for this product was provided from more than one organization, multiple values may be listed; they should be separated by a semicolon and a space.

			<p>The primary DOE sponsor should be listed first, followed by any others.</p> <p>If any of the others are not included in the Sponsor Organization Authority (non-DOE organizations, for example), please include the spelled-out, full name of the other sponsoring organization.</p>
13	Site URL*	<site_url/>	OSTI cannot accept, store, or post datasets. The URL should link to a valid, html “landing page” for the dataset.
14	Contact Name and Position*	<contact_name/>	Admin info only; it will not be displayed in public databases.
15	Contact Organization*	<contact_org/>	Admin info only; it will not be displayed in public databases.
16	Contact E-mail*	<contact_email/>	Admin info only; it will not be displayed in public databases.
17	Contact Phone	<contact_phone/>	Admin info only; it will not be displayed in public databases.

3.2 AN 241.6 Optional Fields

The following is a list of optional fields for the AN 241.6 API/web service. Inclusion of some of these fields, such as the Description, is highly encouraged, however.

OPTIONAL

	Field Name	XML Tag Name	Additional Information
1	Creator(s)/PI Email Address(es)	<creators_emails/>	Admin info only; it will not be displayed in public databases.
2	Related Resource	<related_resource/>	<p>This is a place to provide the full bibliographic citation for the key paper that the dataset supports.</p> <p>(See new tag, item 16 below) now available to handle multiple related resources and how they are related)</p>
3	Availability	<availability/>	Normally used to provide the name of an organization, a division within a lab, a specific employee’s title, etc. to which a request for further information may be made.
4	Contributor Organizations	<contributor_organizations/>	Provide the names of any organizations that have significantly contributed to the gathering, formatting, analysis, etc. of the dataset. These are organizations that would not otherwise be credited because they will not be listed in the Originating Research/Submitting Organization field, or in the Sponsoring Organization field. Separate multiple entries with a semicolon and a space.

			Official names of collaborations should be provided in the Contributor Org field as well and NOT in the author fields.
5	Other Identifying Numbers(s)	<other_identifying_nos/>	Any other numbers that users might wish to retrieve on or need to recognize. If there are multiple values in this field, separate them with a semicolon followed by a space.
6	Subject Categories	<subject_categories_code/>	Use the complete value (numerical code and spelled-out category title) as shown in the Subject Category Authority at https://www.osti.gov/mlink/authorities.jsp . As many multiples as needed are allowed in this tag set; separate them with a semicolon and a space. List the primary subject category first.
7	Keywords	<keywords/>	Words or phrases or both may be included. Separate multiple entries with a semi-colon and a space.
8	Description	<description/>	Provide a clear, concise summary of the content of the dataset, as well as specialized parameters that describe the data. Specialized parameters may include a date range during which information was taken (such as May, 01 2002 - December 31, 2002), geographic information (such as a specific state, region, country, latitude and longitude, etc.), information such as well depth ranges, temperature ranges, etc.
9	DOI	<doi/>	Provide the DOI only if one has already been registered by a different organization prior to the dataset being submitted to OSTI.
10	Dataset's File Extension	<file_extension/>	Some common file extensions are .txt, .csv, .ps, etc.
11	Software needed to utilize dataset	<software_needed/>	Specialized software tools are often developed to allow a user to manipulate data in various ways. If these tools are available for the user but do not have to be used with the data, they do not need to be listed. However, if there is a piece of software without which a user cannot open, see, or use the dataset, that software should be noted in this field
12	Dataset Size	<dataset_size/>	Optional. Indicate approximate size in number of files, in megabytes, or in other ways appropriate for the dataset's content.
13	DOI Infix	<doi_infix>	This tag is used if a submitter wishes to provide a customized character string that will be inserted by OSTI into the middle of the DOI. The DOI Infix can be project-specific or dataset-specific.
14	Notice to reserve a DOI	<set_reserved/>	If a DOI is needed before the dataset and its landing page are in place on the host

			website, the <set_reserved> tag can be sent in the metadata record to notify OSTI's system that this record must be put into SAVED status and should not be transmitted to the DataCite Registry until the submitter updates the record to release it and make the DOI go "live."
15	Other non-DOE Contract/Award Number(s)		Enter contract or award numbers that are not assigned by DOE (an NSF award number, for example). Multiple entries are allowed. They must be separated by a semi-colon followed by a space.
16	Related Identifier(s)	<pre> <relidentifiersblock> <relidentifier_detail> <related_identifier> </related_identifier> <related_identifier_type> </related_identifier_type> <relation_type> </relation_type> </relidentifier_detail> </relidentifiersblock> </pre> <p>(Note that the top level tags have been shortened by leaving off part of the word "related." Be sure to correctly spell those tags and the interior tags where the words are completely spelled out)</p>	<p>Identifiers of related resources. These identifiers must be DOIs. Each DOI included as a related identifier must be part of the overall <relatedidentifiersblock> in the XML record. Up to 20 related identifiers may be provided and each one appears in a nested <relatedidentifiers_detail> set of tags.</p> <p>The DOI itself is then placed in the <related_identifier> tag, and the value for the required <related_identifier_type> is simply the word DOI.</p> <p>If a related_identifier is used, the <relation_type> tag is also placed in the overall block. The <relation_type> tag indicates, with controlled vocabulary, the relationship of the resource being registered (A) and the related resource (B). The related resource may be another dataset, a journal article or other publication, an image or video file, etc.</p> <p>The controlled vocabulary terms are listed below.</p> <p>IsCitedBy Cites IsSupplementTo IsSupplementedBy IsContinuedBy Continues HasMetadata IsMetadataFor IsNewVersionOf IsPreviousVersionOf IsPartOf HasPart IsReferencedBy References IsDocumentedBy</p>

			Documents IsCompiledBy Compiles IsVariantFormOf IsOriginalFormOf IsIdenticalTo IsReviewedBy Reviews IsDerivedFrom IsSourceOf
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4.0 Special Functionalities and Use Cases

Two new functionalities were added to the AN 241.6 API/web service in 2014. One allows a user to create a “customized” DOI, one that has intelligence specific to the submitter included in it. The other allows submitters who do not yet have a landing page to which a DOI can link to “reserve” a DOI in E-Link for future registration with DataCite. These functionalities are also available on the AN 241.6 on the E-Link website.

4.1 Creating an “Intelligent” DOI

If you need to have project-specific or dataset-specific intelligence added to the DOI that the DOE Data ID Service assigns your dataset and then sends to DataCite for registration, these are the steps to do so:

- Provide all metadata in your submitted record as usual, including the link to the dataset’s landing page, PLUS include this tag: <doi_infix>. The value can be anything you want it to be – letters, numbers, or a combination. Please, however, do not make it ridiculously long.
- OSTI takes the infix value you have provided and inserts it between the unique prefix that you, as a submitter, have been given and the unique OSTI ID that forms the suffix for each DOI.

Example: DOI prefix/DOI infix/OSTI ID
10.19597/myprojectname/1105143

The important thing to remember is that DataCite gives OSTI the unique number for your organization that will be automatically placed at the beginning of your DOIs (*prefix*), **you** create and provide in your metadata the intelligent string of numbers and/or characters that will form the middle of your DOIs, (*infix*) and OSTI adds the OSTI ID number assigned to the record at the end of your DOIs (*suffix*).

4.2 Reserving a DOI for Future Registration

Sometimes a researcher needs to know what his DOI for his data will be even before he knows where he will post the landing page that his DOI will link to. He may wish to share the DOI with members of his collaboration. Reserving a DOI in the DOE Data ID Service supports this need. It ensures that a researcher knows what his DOI is for a particular dataset but also ensures that the assigned DOI does not travel to DataCite before the researcher is ready for it to do so. If the DOI “travels” to DataCite before there is a valid URL that forms the basis of the DOI, DataCite will reject that DOI, which means it is not registered and cannot function as a live link. If you need to reserve a DOI through the automated submission method, when neither landing page nor dataset are yet available, these are the steps:

- Provide metadata in your submitted record, but DO NOT include a value in the <site_url> tag.
- DO put the tag <set_reserved/> in the record. No value needed, just the tag.
- The record will be automatically put into SAVED status in E-Link but it will have the OSTI ID and the DOI we assign it. Those values will be returned to you by the OSTI server and via email as normal. The email will note that your DOI is reserved rather than registered. Nothing goes to DataCite from OSTI.
- When you are ready to have the DOI go live and link to a landing page, take the <set_reserved> tag out and put the URL to the landing page in the record and send it again in a POST operation. REMEMBER, HOWEVER, THAT A POST OPERATION THAT IS INTENDED TO UPDATE A RECORD MUST ALSO INCLUDE the <osti_id> TAG AND THE CORRECT OSTI ID.

The important thing to remember, when you are ready to make your assigned DOI go “live” and display in the DataCite Registry, is YOU HAVE ONE TAG TO TAKE OUT (<set_reserved/>) AND TWO TAGS WITH VALUES TO PUT IN: <osti_id> with the correct ID and <site_url> with the URL to the landing page.

If you are submitting a 241.6 Announcement Notice through the manual interface on E-Link, simply SAVE the record after you have entered the metadata into the fields. You can then login to E-Link at any time and change the status to SUBMIT, which will send it on its way through processing and to DataCite.

4.3 Versioning: Submitting major/minor versions of a dataset

Being able to successfully track the different versions of a dataset as it is updated or corrected is important both for current access and for any envisioned reuse. DataCite recommends that a new DOI be registered when a major version change occurs, such as from version 1.0 to version 2.0. There are currently two easy ways to ensure that users will always know which version of a dataset they are retrieving in a search or seeing in a citation:

- Always include the version number as part of the dataset’s title in the metadata record. This ensures that third-party indexers will automatically pick up the version number with the title and also that the version number will show up in any formal citation of the dataset.
- Provide in the metadata a submitter-originated character string that will be inserted into the middle of the DOI when it is assigned by the DOE Data ID Service. (See 4.1 for how to create an “intelligent” DOI.)

Referencing previous versions of a dataset is another way to assist users in tracking changes. For example, including the Related Identifiers block of tags in a metadata record would allow you, the submitter, to indicate a DOI which is a previous version of the updated dataset being submitted:

```
<relatedidentifiersblock>
<relatedidentifiers_detail>
<related_identifier>>10.5438/0007</related_identifier>
<related_identifier_type>DOI</related_identifier_type>
<relation_type>IsPreviousVersionOf</relation_type>
</relatedidentifiers_detail>
</relatedidentifiersblock>
```

As many as twenty related DOIs can be noted and their relationships can be included in the top level <relatedidentifiersblock> tag.

Major or minor version changes should also be noted in the Description field of the metadata record and on the target landing page that provides access to the data.

DataCite provides additional guidance when citing datasets that are constantly being updated. Their guidance is quoted verbatim here:

A special note regarding citation of dynamic datasets (Copied from DataCite’s documentation for version 3.1 of their metadata schema):

For datasets that are continuously and rapidly updated, there are special challenges both in citation and preservation. For citation, three approaches are possible:

- a) Cite a specific slice (the set of updates to the dataset made during a particular period of time or to a particular area of the dataset);
- b) Cite a specific snap shot (a copy of the entire dataset made at a specific time);
- c) Cite the continuously updated dataset, but add an Access Date and Time to the citation.

Note that a “slice” and “snap shot” are versions of the dataset and require unique identifiers. The third option is controversial, because it necessarily means that following the citation does not result in observation of the resource as cited.

Appendix I Landing Page Examples from CXIDB and ARM

CXIDB
Coherent X-ray Imaging Data Bank

Home Mission CXI File Format Browse Data **ata** Sponsors Contact Us

CXIDB ID 5

Citation Details

Title:	High-resolution x-ray diffraction microscopy of specifically labeled yeast cells
Authors:	Johanna Nelson et al.
Journal:	PNAS
Year:	2010
DOI:	doi:10.1073/pnas.0910874107

Experimental Conditions

Method:	Single Particle X-ray Diffraction Imaging
Sample:	Gold labeled frozen dried <i>Saccharomyces cerevisiae</i> yeast cells.
Wavelength:	1.653 nm
Lightsources:	ALS
Beamline:	9.0.1

Deposition Summary

Depositor:	Johanna Nelson
Contact:	jnelson@slac.stanford.edu
Deposition date:	2011-07-22
Last modified:	2011-07-22

Data Files

Diffraction Pattern:	cxidb-5.cxi
-----------------------------	-------------

2014 CXIDB. All rights reserved. Designed by Filipe Maia based on Zenlike.

A typical landing page for a CXIDB dataset

Description

This is the second of five exposures of the same sample at different tilts. This one is at +15 degrees tilt.

Check CXI IDs 4 to 8 for the complete set.

Link to actual dataset

The screenshot shows the ARM website interface for the AOSCPC datastream. The main content area displays the datastream name, active dates (2011.03.09 - 2013.07.14), measurement categories (Aerosols), and originating instrument (Aerosol Observing System (AOS)). A table lists measurements: Aerosol concentration (parts/cc) and Particle concentration (concentration (time)). The sidebar on the right contains sections for Documentation, Citation (with DOI: 10.5439/1025152 and a GENERATE CITATION button), and Order Data (with a BUILD AN ORDER button). Two green arrows with text annotations point to the Citation and Order Data sections.

Appendix II XML Sample Record

Below is an example of a 241.6 dataset record in XML format as it would be POSTED to OSTI's 241.6 web service. This would be treated by the DOE Data ID Service as a new record and would receive an OSTI ID and be assigned a DOI. These two identifiers would be returned to the submitting organization in both the server response and the results email.

```
<?xml version="1.0" encoding="UTF-8"?>
<records>
<record>
<osti_id></osti_id>
<dataset_type>ND</dataset_type>
<title>ARM Climate Modeling Best Estimate Lamont, OK (ARMBE-CLDRAD SGPC1)</title>
<creators>Renata McCoy; Shaocheng Xie;</creators>
<creators_emails></creators_emails>
<related_resource></related_resource>
<product_nos>none</product_nos>
<contract_nos>AC05-00OR22725</contract_nos>
<other_identifying_nos>sgpC1amrbe-cldrd-v3</other_identifying_nos>
<availability></availability>
<contributor_organizations>Pacific Northwest National Laboratory (PNNL); Brookhaven National
Laboratory (BNL); Argonne National Laboratory (ANL); Oak Ridge National Laboratory
(ORNL)</contributor_organizations>
<publication_date>05/14/2012</publication_date>
<language>English</language>
<country>US</country>
```

```

<sponsor_org>USDOE Office of Science (SC), Biological and Environmental Research
(BER)</sponsor_org>
<subject_categories_code>54 Environmental Sciences</subject_categories_code>
<keywords>Cloud fraction profiles; Total, high, middle, and low clouds; Liquid water path and precipitable
water vapor; Surface radiative fluxes; TOA radiative fluxes</keywords>
<description>The ARM CMBE-ATM [Xie, McCoy, Klein et al.] data file contains a best estimate of
several selected atmospheric quantities from ACRF observations and NWP analysis data.</description>
<site_url>http://iop.archive.arm.gov/arm-iop/0showcase-data/cmbe/cmbe/sgpC1/cmbe-cldrad/</site_url>
<doi></doi>
<file_extension>cdf</file_extension>
<software_needed></software_needed>
<dataset_size>12544 KB</dataset_size>
<contact_name> ARM Archive User Services</contact_name>
<contact_org> ORNL</contact_org>
<contact_email> armarchive@ornl.gov</contact_email>
<contact_phone> 888-276-3282</contact_phone>
</record>
</records>

```

Suppose you need to resubmit this record again because you forgot to list a lab that you want to include in <contributor_organizations>. You don't want to create a new record, and you can't submit a record with a URL in it that the system has already "seen" without doing that. Below is the example of what to do. Simply include the OSTI ID of the record you want to edit or update, make sure you've added or changed the information you want to edit, then POST your xml record again. Notice in the xml example above, the <osti_id></osti_id> tag is empty because you are submitting the metadata for the first time and creating a new record. Below, you now have the ID number in the OSTI ID tag, and you've added a new lab name to the <contributor_organizations> . The new lab name is highlighted here to draw your attention to it, but you do not need to highlight or emphasize it when you edit the record. The presence of the OSTI ID tells the system there's a change in the information somewhere...and the system will easily include that change.

```

<?xml version="1.0" encoding="UTF-8"?>
<records>
<record>
<osti_id>1224753</osti_id>
<dataset_type>ND</dataset_type>
<title>ARM Climate Modeling Best Estimate Lamont, OK (ARMBE-CLDRAD SGPC1)</title>
<creators>Renata McCoy; Shaocheng Xie;</creators>
<creators_emails></creators_emails>
<related_resource></related_resource>
<product_nos>none</product_nos>
<contract_nos>AC05-00OR22725</contract_nos>
<other_identifying_nos>sgpC1amrbe-cldrd-v3</other_identifying_nos>
<availability></availability>
<contributor_organizations>Pacific Northwest National Laboratory (PNNL); Brookhaven National
Laboratory (BNL); Argonne National Laboratory (ANL); Oak Ridge National Laboratory (ORNL);
Lawrence Livermore National Laboratory (LLNL)</contributor_organizations>
<publication_date>05/14/2012</publication_date>

```

<language>English</language>
<country>US</country>
<sponsor_org>USDOE Office of Science (SC), Biological and Environmental Research (BER)</sponsor_org>
<subject_categories_code>54 Environmental Sciences</subject_categories_code>
<keywords>Cloud fraction profiles; Total, high, middle, and low clouds; Liquid water path and precipitable water vapor; Surface radiative fluxes; TOA radiative fluxes</keywords>
<description>The ARM CMBE-ATM [Xie, McCoy, Klein et al.] data file contains a best estimate of several selected atmospheric quantities from ACRF observations and NWP analysis data.</description>
<site_url><http://iop.archive.arm.gov/arm-iop/0showcase-data/cmbe/cmbe/sgpC1/cmbe-cldrad/></site_url>
<doi></doi>
<file_extension>cdf</file_extension>
<software_needed></software_needed>
<dataset_size>12544 KB</dataset_size>
<contact_name> ARM Archive User Services</contact_name>
<contact_org> ORNL</contact_org>
<contact_email> armarchive@ornl.gov</contact_email>
<contact_phone> 888-276-3282</contact_phone>
</record>
</records>