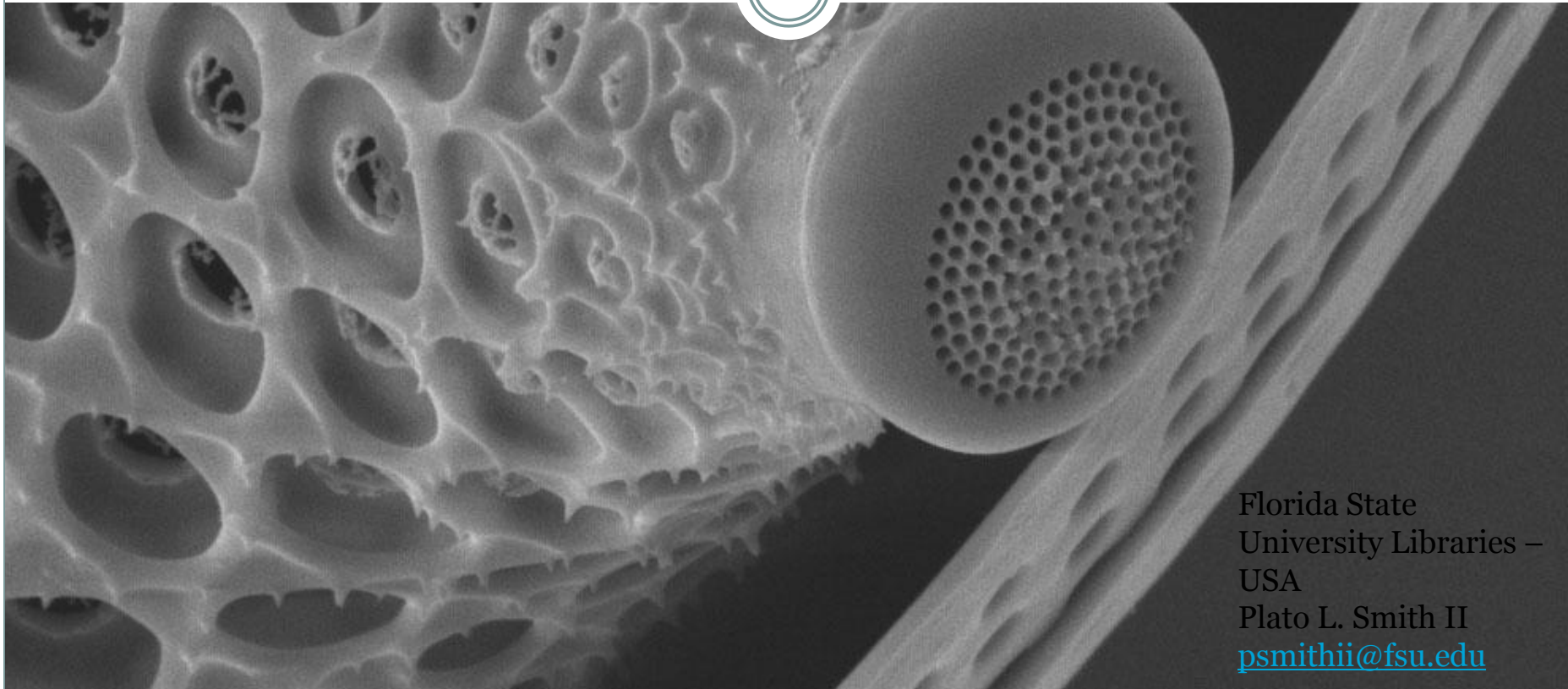


Developing small worlds of e-science: using quantum mechanics, biological science, and oceanography for education and outreach strategies for engaging research communities within a university



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$$\left\{ i\hbar \left(\frac{\partial}{\partial x_0} + \alpha_r \frac{\partial}{\partial x_r} \right) + \alpha_m m_0 c \right\} \psi = 0$$

Relativistic quantum mechanical wave equation formulated by Dirac in 1928

Models – Open Archival Information System (OAIS), DCC Curation Lifecycle, Boyer’s Model of Scholarship

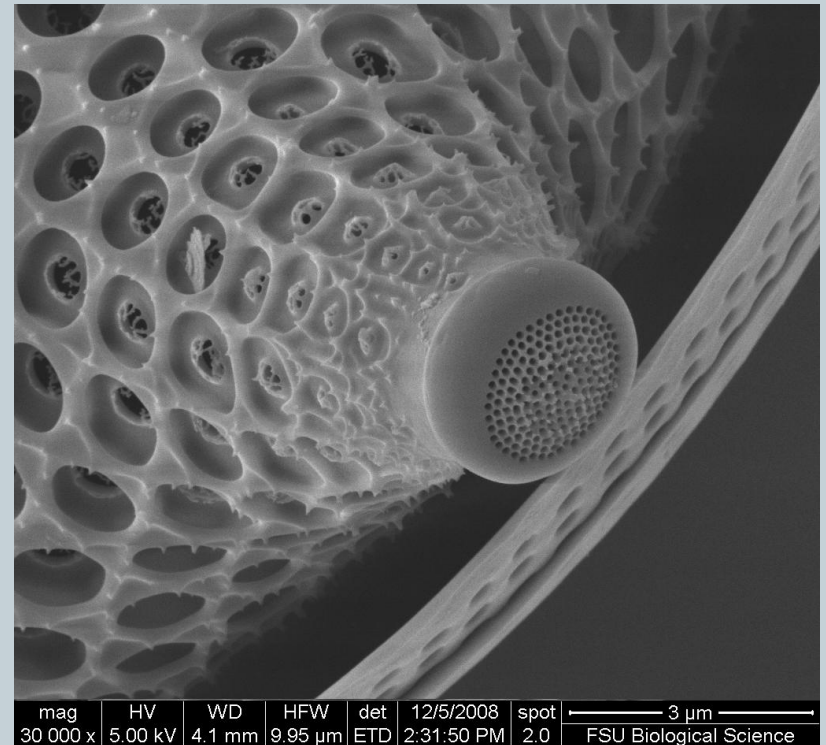


- International Standard Organization (ISO) OAIS – “provides a framework for understanding and increased awareness of archival concepts needed for Long Term digital information preservation and access; provides a framework for describing and comparing different Long Term Preservation strategies and techniques” (CCSDS, 2009).
- DCC Curation Lifecycle – “provides a graphical, high-level overview of the stages required for successful curation and preservation of data from initial conceptualisation or receipt” (DCC, 2010).
- Boyer’s Model of Scholarship (Nibert, 2008)
 - Discovery – Build new knowledge through traditional research
 - Integration – Interpret the use of knowledge across disciplines
 - Application – Aid society and professionals in addressing problems
 - Teaching – Study teaching models and practices to achieve optimal learning

Research Disciplines – Physics, Biological Science, and Earth, Ocean, & Atmospheric Science - cont.



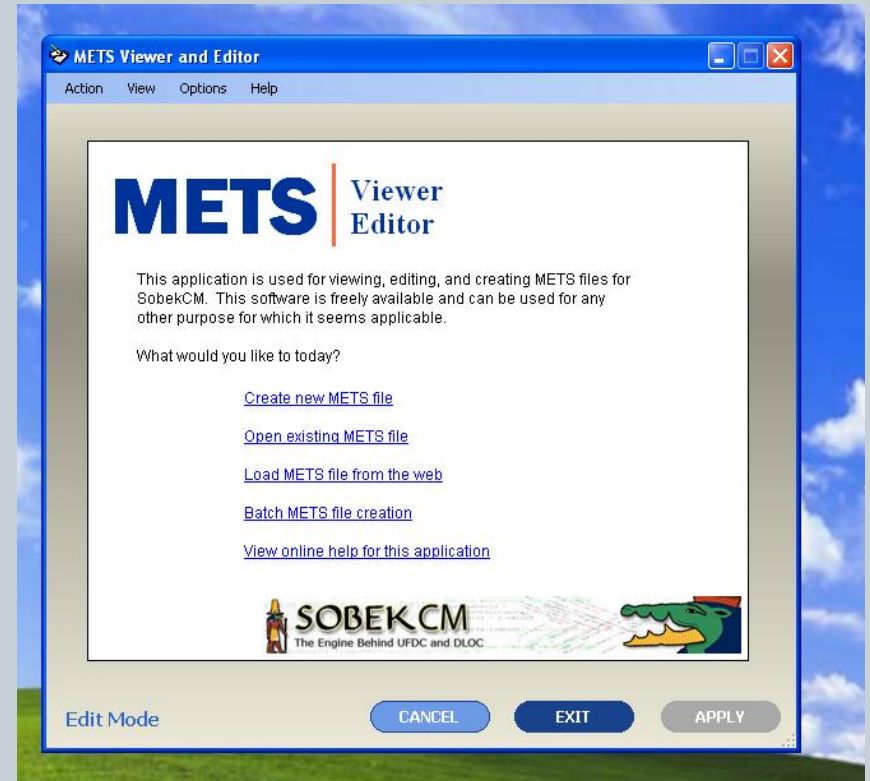
- Biological Science – Dr. A.K.S.K. Prasad
 - 14 images open-access (online); SEM/LM images; thousands (offline)
 - OCLC WorldCat, OPAC, DigiTool accessible
 - FDA & MetaArchive preserved (Diatomscapes I & II collections)
- Earth, Ocean, & Atmospheric Science – various FSU faculty/scientists
 - 21 tech reports open-access
 - DigiTool accessible
 - OCLC WorldCat, OPAC, FDA & MetaArchive (in process)



Dr. Prasad's research - PC-D2K87243
Cerataulus smithii SJB-Gulf_002

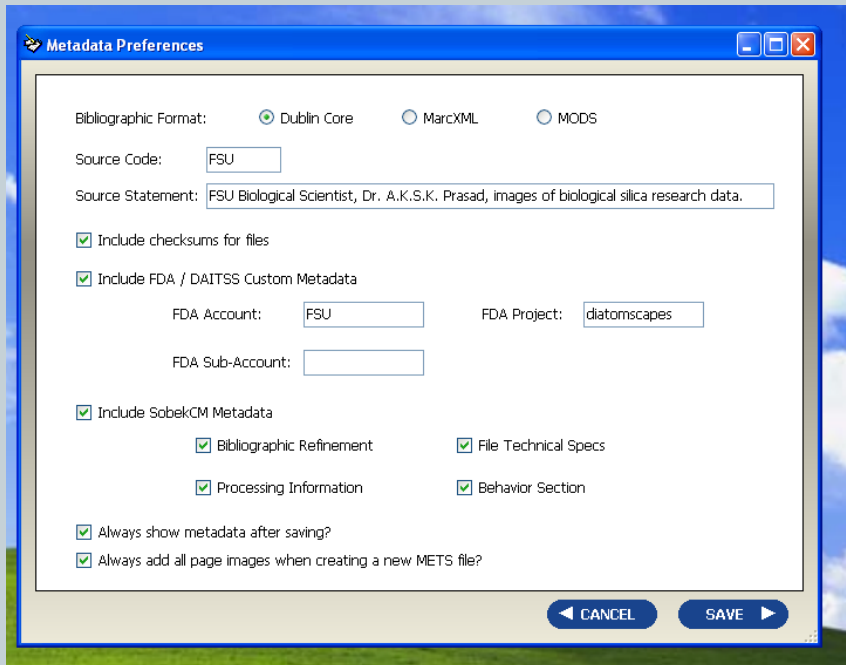
Representation – Metadata Encoding Transmission Standard (METS) Creation Tool (testing)

- Developed by University of Florida (UF)
- Open-source SobekCM Online METS metadata creator/editor tool
- Allows the user to enter all of the bibliographic information, and assign page names and divisions to the structure map.
- Creates OAIS AIP for FDA
- Used by University of Central (UCF)
- Currently being tested by Florida International University (FIU) and Florida State University (FSU)

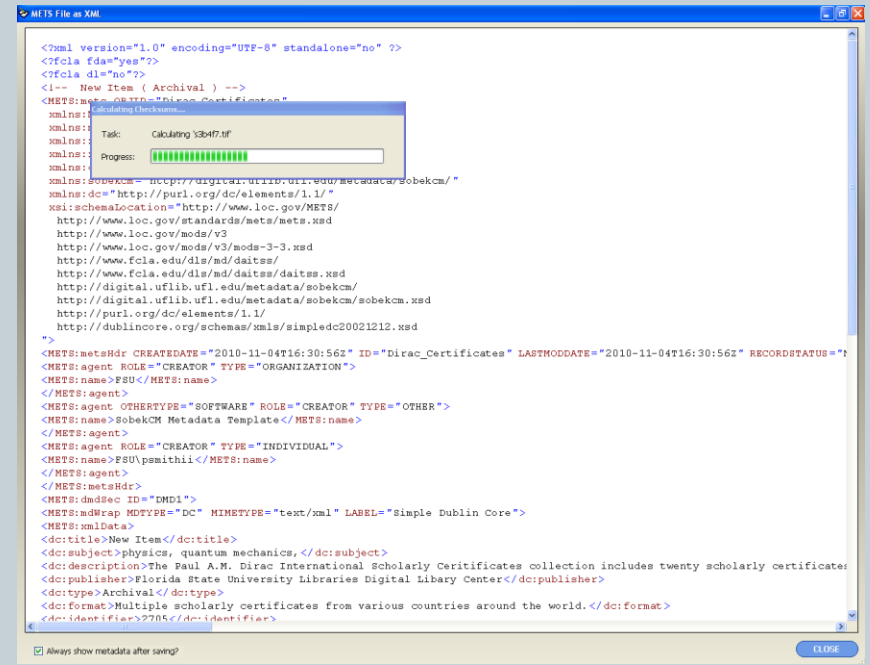


FSU began testing 2010-11-04

Representation – Metadata Encoding Transmission Standard (METS) Creation Tool (testing) – cont.



METS creation data entry bibliographic information – metadata standards, checksums, & FDA preservation options



METS creation tool checksums demo example of Paul Dirac certificate tiff file images



Preservation – Florida Digital Archive (FDA)

- FDA – FSU joined 2009
- Digital preservation strategy
- DAITSS open-source software
- OAIS conformance (METS SIP, AIP)
- Checksum AIP required
- Requires FDA agreement (free)

The screenshot shows a web browser window displaying the FSU_DIATOMSCAPES package information. The browser address bar shows the URL: http://fda.fda.edu/statistics/package/E20081001_AAAAE#. The page title is FSU_DIATOMSCAPES. Below the title, there is a section for 'totals' showing 40 files and 5 GB of bytes. An 'admin.info' section provides details about the package name (FSU_DIATOMSCAPES), ingest time (Wed Oct 01 16:12:42 -0400 2008), volume, issue, title (The e-Curation of Diatomscapes. Images of Biological Silica), and extension record (Ext Rec). Below this, a table lists the files with their IDs, names, MD5 hashes, SHA1 hashes, and sizes.

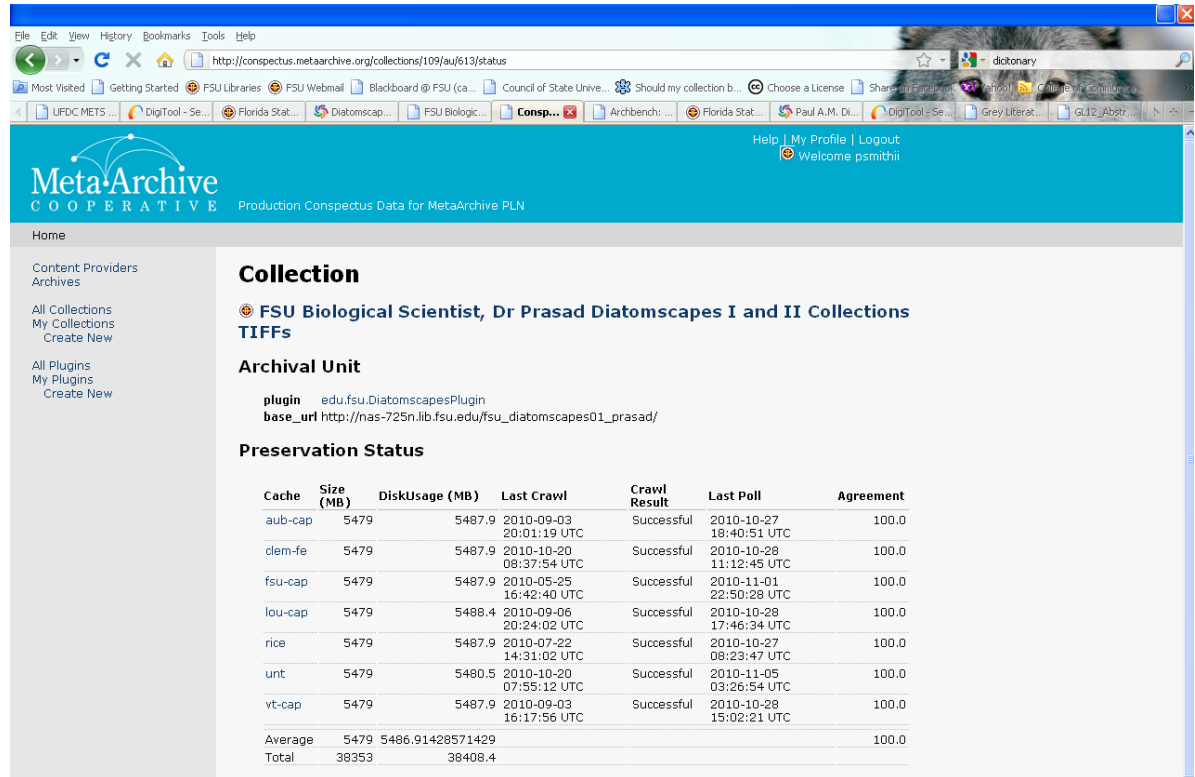
id	name	md5	sha1	size
F20081001_AAAGUD	2K14635.tif	1965b0120489c765be945c53dd547c3 6 817f2ead072a3120ab02e96029c37351764e904a	303.2 MB	
F20081001_AAAGUE	2K14636.tif	1c04ee73246557a3a3 65cd6bdeb404c3 eabe099072db7d703f54700d75295f0bdad2dc56	183.6 MB	
F20081001_AAAGUF	2K14648.tif	481c6bb2ab5a0e4fb6490d3804df9a4 20c2cf4c8f9a04c15c5df03b31918212dd33ab	301.5 MB	
F20081001_AAAGUG	b-1606.tif	9ccd63eb2e899c4bdd585c2861b383a 7047580790d1129b620d777d859cc12bbc2327ee	284.4 MB	
F20081001_AAAGUH	b-1606copy.tif	4e95554e8cc5e748f58c8e23fa3c3 659 41568c9d023af038f1b2de6a204ece17252f241c	10.9 MB	
F20081001_AAAGUI	delphineis_prasad_1986.tif	ed1c67610d6fff82f6c70d8eb687ebe51 5195ace1ec9f48f6082e88dc8d13ec20d207cc3	16.8 MB	
F20081001_AAAGUJ	diatom.tif	f4ce994a7d9b42de9afc89edf0e9fcd 3df8a41225c595959d566dea3ed16a842038336a	190.5 MB	
F20081001_AAAGUK	diatoms_metadata_2005.txt	617cebda0c77a2cbfbfd343d1755fc d9611b42abbdf278cbb9e9da9f505e6f28993a3c8	12.2 KB	
F20081001_AAAGUL	EM962533.tif	663663982dde11d79d28560725a26b55 9c59391d0206017d275661567e633064ced0bb96	296.6 MB	
F20081001_AAAGUM	EM962533_copy.tif	c2cade1d4b370df701503a6547ce8700 44116ddfca39954559a1198096b28a93295819b9	10 MB	
F20081001_AAAGUN	EM972940.tif	74858066904ef86df25b3398b6625166 d29ebf1d7295ad45ef495101f7fb9834686eaca	303 MB	
F20081001_AAAGUO	EM972940_copy.tif	218a024ae2f2810ae6ff27a26baa158 bf3326426582f3503dab7f6c4f2a9eb8535cc113a	9.1 MB	
F20081001_AAAGUP	EM993714.tif	de1ceb4c946bb6335efa4b21b0832367 2f58ecaeabc76de6994f292d2c4b3b9dca3b893f	296.4 MB	
F20081001_AAAGUQ	EM993714_copy.tif	7ba254a410994c35a1b3352319820d8b a232a0c9c90360956830eff7ded6c5628fb3fa3a	12.3 MB	
F20081001_AAAGUR	EM993715.tif	a844b66e1ea2abcbad8fa4ee370cd9c4 37d38d481b44ec3bdf3fc8aa078be6045d993509	309.3 MB	
F20081001_AAAGUS	EM993721.tif	6fd7d1927668abca5f8f6933e2c9f7b5 99790d74428697ba8d7bb02fdae63f34c782cee0	298.1 MB	
F20081001_AAAGUT	EM993721_copy.tif	b1197c6a9b0419f127d04693b82f7a2a 1865a065d230123ace271e562044731782f384d8	10.9 MB	
F20081001_AAAGUJ	EM993801.tif	c15240d62d1110f6d885c6b7c3e8886 acbc5943661bbdc1738c346dfc13abc57ef7f80d	309 MB	
F20081001_AAAGUV	EM993801_copy.tif	9cb568f6629e0831d6d66ec841c9289b f441cd98b62912402dcd4126f6b98d55d0f3e08	11.7 MB	
F20081001_AAAGUW	FSU_DIATOMSCAPES.xml	e34901dbdf5da0d32427b8a983105cb5 c00c203d9db9a3c1c7e850487b1cea48197e73c6	12.7 KB	

Biological Science Diatomscapes I & II collections preserved via FDA

(Note: This collection was the first to be preserved via FDA as part of demo preservation pilot project & was later used to influence senior management for FSU Libraries to join FDA)

Preservation – MetaArchive

- MetaArchive – FSU joined 2004
- Distributed digital preservation strategy
- LOCKSS open-source software
- OAIS conformance (SIP, AIP)
- Requires XML plugins, manifest page, conspectus DB entry
- Requires cooperative agreement (fee)



The screenshot shows a web browser window displaying the MetaArchive website. The URL in the address bar is <http://conspectus.metaarchive.org/collections/109/au/613/status>. The page header includes the MetaArchive logo and navigation links like 'Home', 'Content Providers Archives', 'All Collections My Collections Create New', and 'All Plugins My Plugins Create New'. The main content area is titled 'Collection' and displays the following information:

Collection
FSU Biological Scientist, Dr Prasad Diatomscapes I and II Collections TIFFs

Archival Unit

plugin edu.fsu.DiatomscapesPlugin
base_url http://nas-725n.lib.fsu.edu/fsu_diatomscapes01_prasad/

Preservation Status

Cache	Size (MB)	DiskUsage (MB)	Last Crawl	Crawl Result	Last Poll	Agreement
aub-cap	5479	5487.9	2010-09-03 20:01:19 UTC	Successful	2010-10-27 18:40:51 UTC	100.0
clem-fe	5479	5487.9	2010-10-20 08:37:54 UTC	Successful	2010-10-28 11:12:45 UTC	100.0
fsu-cap	5479	5487.9	2010-05-25 16:42:40 UTC	Successful	2010-11-01 22:50:28 UTC	100.0
lou-cap	5479	5488.4	2010-09-06 20:24:02 UTC	Successful	2010-10-29 17:46:34 UTC	100.0
rice	5479	5487.9	2010-07-22 14:31:02 UTC	Successful	2010-10-27 08:23:47 UTC	100.0
unt	5479	5480.5	2010-10-20 07:55:12 UTC	Successful	2010-11-05 03:26:54 UTC	100.0
vt-cap	5479	5487.9	2010-09-03 16:17:56 UTC	Successful	2010-10-28 15:02:21 UTC	100.0
Average	5479	5486.91428571429				100.0
Total	38353	38408.4				

Biological Science Diatomscapes I & II collections preserved via Auburn, Clemson, FSU, Louisville, University North Texas, and Virginia Tech LOCKSS caches
(Note: This collection was the first FSU collection to be successfully preserved via MetaArchive in 2009)

Dissemination – OPAC, OCLC WorldCat, DigiTool



The screenshot shows the Florida State University Libraries OPAC interface. The search term 'diatomscales' has been entered, and the results page displays one record: 'Diatomscales I : Images of biological silica.' The record includes the author 'A.K.S.K. Prasad', the publisher 'Florida State University, Dept. of Biological Science', and a summary stating it consists of 14 images of biological silica. The interface also features navigation tabs for 'Books and more', 'Digital Collections', and 'Course Reserves', along with search filters and options to view the record in various formats.

FSU OPAC Diatomscales record

The screenshot shows the OCLC WorldCat search results for the same record. The title 'Diatomscales I : Images of biological silica.' is prominently displayed. The author is listed as 'A.K.S.K. Prasad' and the publisher as 'Florida State University, Dept. of Biological Science'. The summary indicates it is a 'Downloadable visual material' consisting of 14 images. The interface includes options to 'Add to list', 'Add tags', and 'Write a review'. It also shows the user is connected to the Florida State University network and provides links to electronic resources and local services.

OCLC WorldCat Diatomscales record

Dissemination – OPAC, OCLC WorldCat, DigiTool –cont.

The image shows a screenshot of the Florida State University Libraries' Digital Collections website. The browser window is titled "DigiTool - Collections - Mozilla Firefox". The URL is http://digitool.fda.edu/R/TUBT4R2JA54NQ6M7YGCKG621CWNK7NGYS78MFPD4Q1123A75V5-00403?func=collections&collection_id=1758. The page header features the Florida State University logo and the text "FLORIDA STATE UNIVERSITY Libraries' Digital Collections". Below the header, there is a navigation bar with "Search", "Results", "Previous Searches", "My Space", "Login", and "End Session". The main content area displays search results for "Diatomscapes - images of biological silica". The results are sorted by "Ranking" and show records 1-14 of 14. The first six records are:

Rank	Image	Species Name	Author	Institution
1		<i>Staurosira venter</i> (Ehrenberg) Grunow	Dr. A.K.S.K. Prasad	Florida State University
2		<i>Odontella aurita</i> (Lynobye) Brébisson 1838	Dr. A.K.S.K. Prasad	Florida State University
3		<i>Azbellia nodulifer</i> (A. Schmidt) Fryxell & Sims	Dr. A.K.S.K. Prasad	Florida State University
4		<i>Surirella fastuosa</i> (Ehrenberg) Kützina	Dr. A.K.S.K. Prasad	Florida State University
5		<i>Desikaneis howellii</i> Prasad 1993	Dr. A.K.S.K. Prasad	Florida State University
6		<i>Delphineis livingstonii</i> Prasad 1986	Dr. A.K.S.K. Prasad	Florida State University

FSU Libraries DigiTool Diatomscapes record

Continuation – Horizon Issues, Ideas, & Plans



- Submitted a FSU Faculty Research Library Materials (FRLMG) for acquisition of digital curation/preservation publications 2010-10-25
- Submitted iConference 2011 proposal 2010-10-29
- Submitted IASSIST 2011 proposal 2010-11-03
- Develop a FSU Libraries Data Management Plan
 - Metadata, Data, Content, Submission, and Preservation Policies
 - Register policies in OpenDOAR & develop OAI base URLs
- Develop & register Open Access Repository Material Archiving Policies with ROARMAP (Registry of Open Access Repository Material Archiving Policies)
- Publish, promote, and preserve FSU faculty research
- Improve organization, digitization, workflows, preservation & collaborations
- Apply & secure grant funding in 2011 for development & curation