University of Miami's Esploro Journey: Leveraging Human Eco-systems & Intelligence to Train AI Models

UNIVERSITY OF MIAMI
LIBRARIES

Kineret Ben-Knaan, Angela Clark-Hughes & Elizabeth Gushee

CNI – December 13th, 2021

University of Miami | FAST FACTS

383 million
IN FY2020 RESEARCH EXPENDITURES

Established in
1925

3 thousand
FACULTY

11 thousand
UNDERGRADUATE STUDENTS

6 thousand
GRADUATE STUDENTS

3 campuses: Coral Gables, Medical, Marine & Atmospheric Sciences

12 schools and colleges

7 libraries (Interdisciplinary, Law, Medical, Music, Architecture, Business, Marine & Atmospheric Sciences)

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UM Research Information Landscape

"UM must invest in our research infrastructure to support & expand UM's academic research and impact."

Dr. Erin Kobetz, VP for Research & Scholarship

Shared Challenges

- ✓ Many tools / needs
- ✓ Distributed campus
- ✓ No Central Data Source
- ✓ Siloed Data
- ✓ Communication

Shared Aspirations

- ✓ Support Scholarship
- ✓ Highlight Expertise
- ✓ Facilitate Connections
- ✓ Research & Discovery
- ✓ Curated Data

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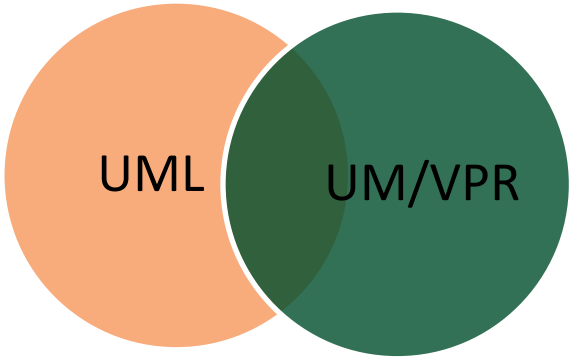
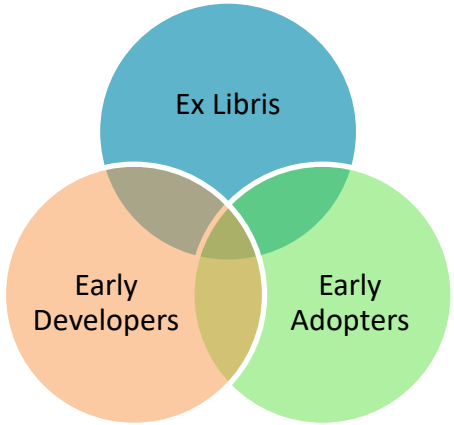
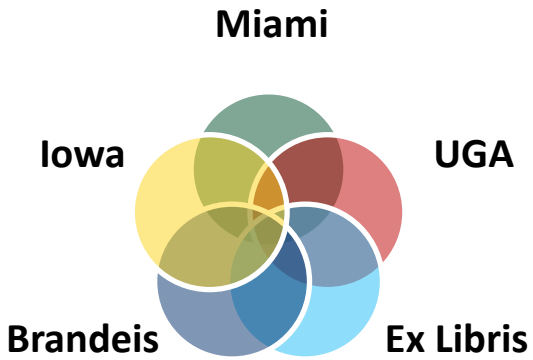
Ex Libris' Esploro Profile

Image courtesy of Ex Libris

Strategic Partnerships







Open & curated record of research output

UM Assembled: Research Deans, Research IT, Medical IT, Research Administration

Development of Research Information Hub
Esploro

Expertise & Advocacy

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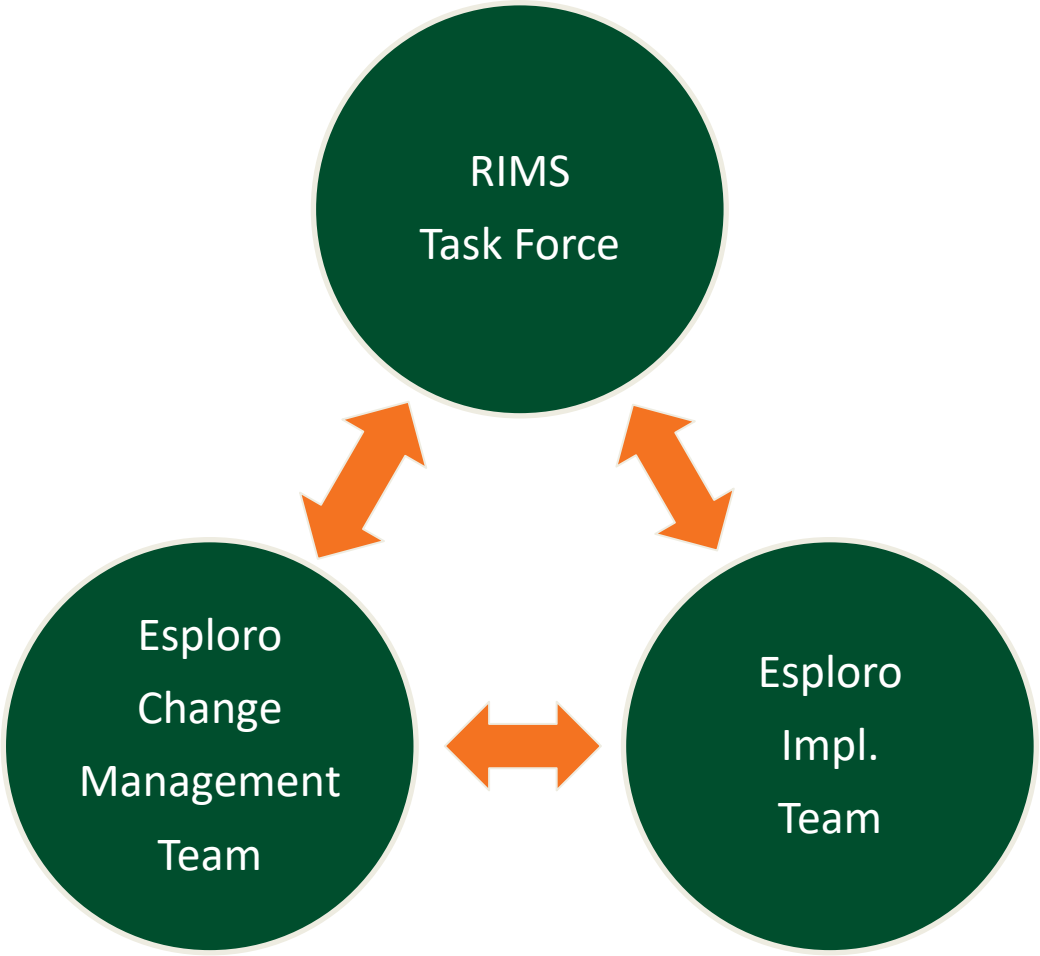
Strategic Groups | Strategic Relationships - Miami

- **Research Information Management Systems Task Force (2019-)**
  - Assess UM RIMS Environment
  - Make recommendations about current needs & investments
  - Create long-terms RIMS strategy (systems, people, $$$)

- **Esploro Implementation Working Group (2018-)**
  - Inform Esploro development
  - Migrate from legacy system
  - Stage environment for integration
  - Launch Repository
  - Populate & Launch Research Profiles (Utilizing AI)

- **Esploro Change Management Working Group (2021-)**
  - Prepare University for shift to single platform
  - Pilots



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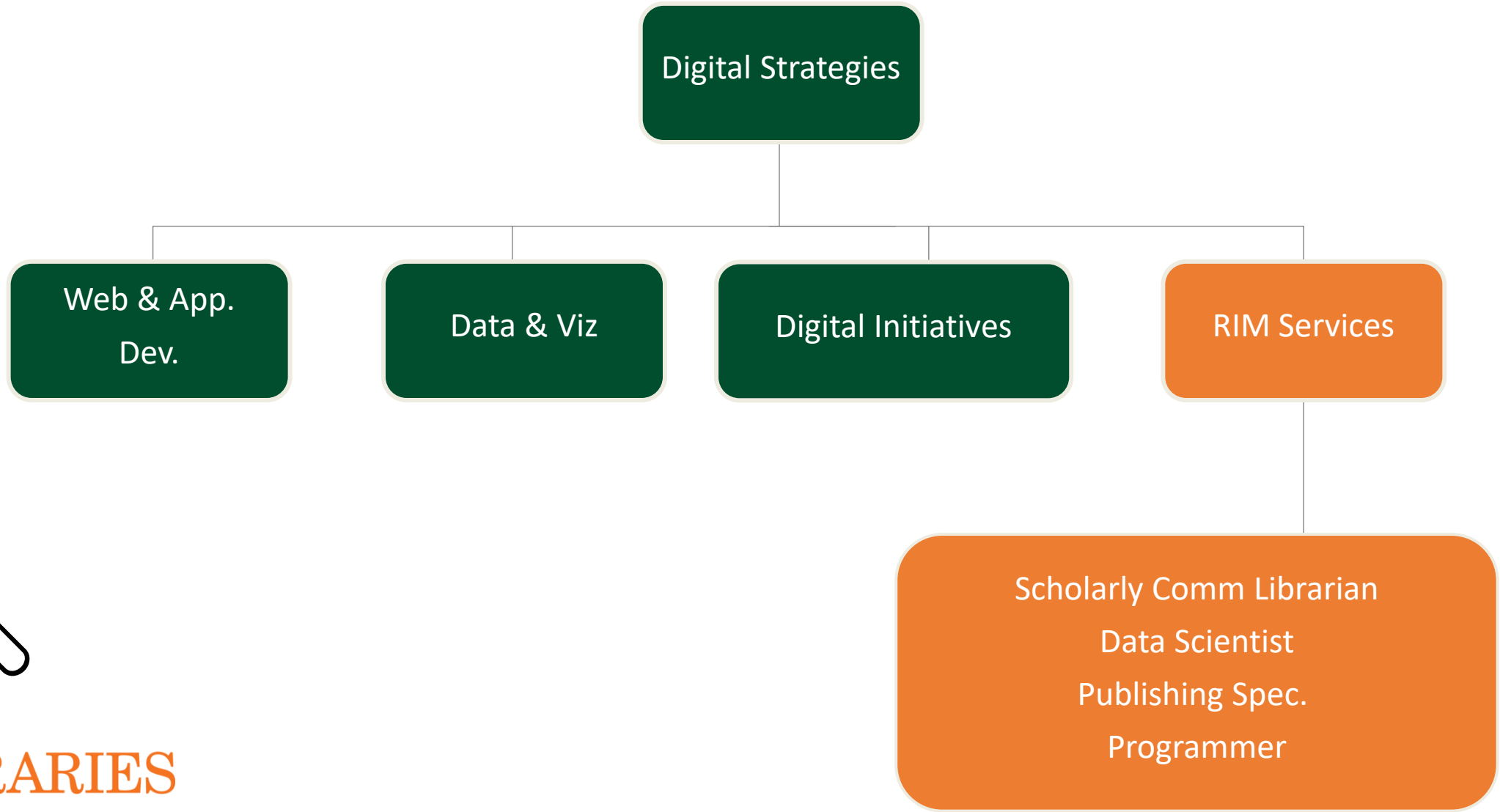
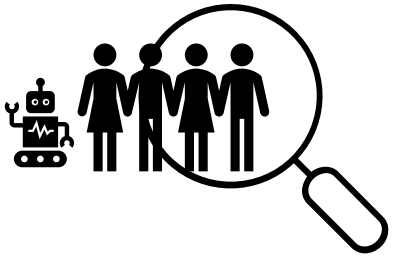
Sustainability: "We're gonna need a bigger boat."





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The (Now) Known

Read This!

Research Information Management in the United States, Part 1 & 2 (OCLC Research 2021)

https://www.oclc.org/research/areas/research-collections/rim-at-us-institutions.html

Build	Build in collaboration across all stakeholders
Communicate	Communicate often
Prepare	Prepare for the long-haul
Expect	Expect mushroom events
Tie	Tie the project to other strategic initiatives
Invest in	Invest in People | Invest in Data

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The Adoption of Esploro & Artificial Intelligence (AI)

The Goal

Build a unified system of record that reflects a complete picture of the research and scholarly outputs conducted by University of Miami's affiliated researchers using Ex Libris's Esploro.

Smart Canvas

The institution is tasked with bringing in its researchers' information (HR data) and their research outputs by utilizing the system's Machine Learning and integration features as well as Ex Libris' **'Central Discovery Index' ("CDI").**

Author Matching Algorithm mechanisms

(Machine Learning) are imbedded in the following processes:

- **Smart Expansion** (retrospective outputs import)
- **Smart Harvesting** (filling up information gaps, newer publications and ongoing outputs updates)*

* *Recommended to be used after Smart Expansion procedure.*

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Esploro's Machine Learning Algorithm| Framing

How Esploro AI works?	What problem the AI is trying to solve?	What AI algorithms can't do?
Esploro's Author Matching Algorithm learns how to match scholars to their research outputs by considering various identifying data points from the researcher's record and their previously known assets, against records covered in Ex Libris's CDI. The algorithm assesses the probability of a particular record to be the output of a given researcher and ranks the confidence level of its determination.	By automatically capture relevant scholarly outputs and match them with the institution's affiliated researchers, the AI aims to automate the updating processes of researcher profiles, and thus reduce the effort needed to sustain a RIM system that is relevant and up to date.	AI can't be self-taught from scratch. It requires humans in the loop and lots of tagged data. 

Source: Smart Harvesting AI; Growing Your Research Information Hub, Exlibris

“We know more than we can tell”

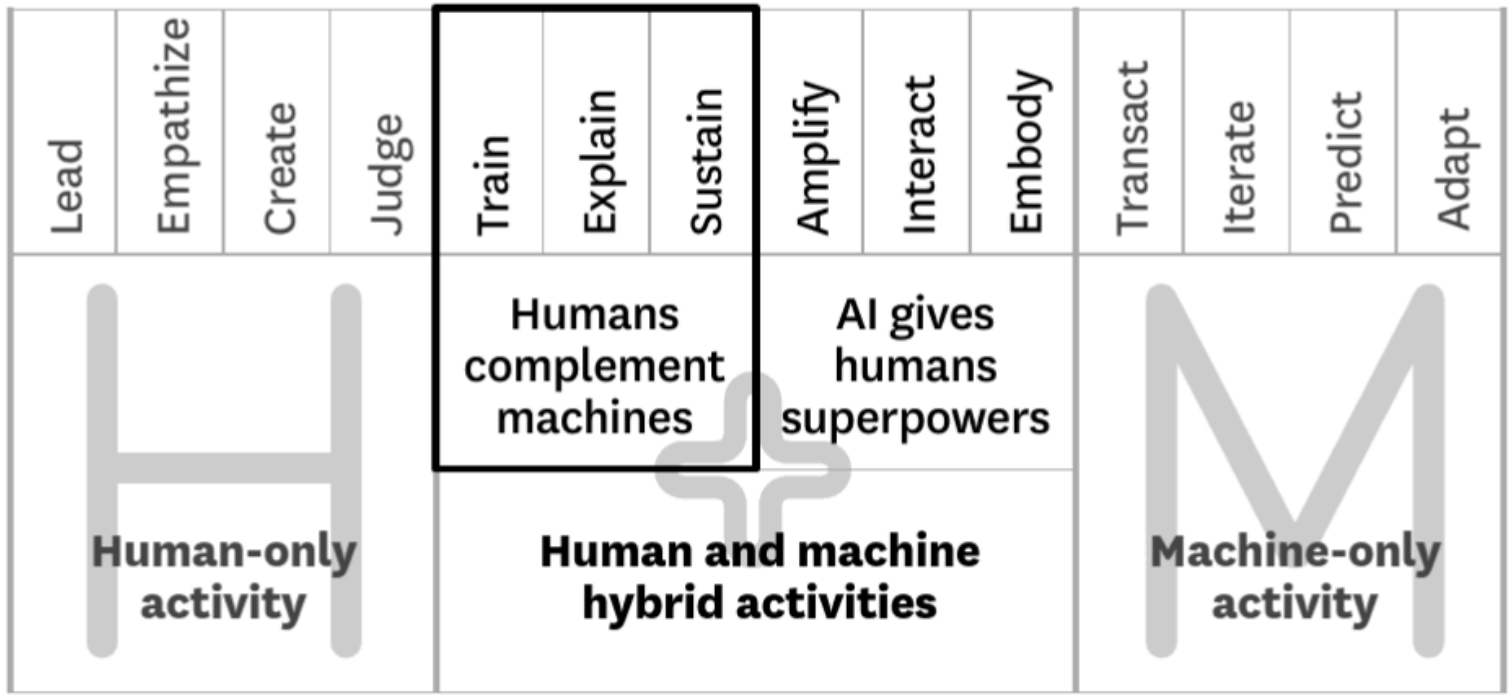
Polanyi’s Paradox

The Business of Artificial Intelligence; What it can — and cannot — do for your organization by Erik Brynjolfsson and Andrew McAfee (https://hbr.org/2017/07/the-business-of-artificial-intelligence).

Karen Zack/@teenybiscuit

Review, H. B., Davenport, T. H., Brynjolfsson, E., McAfee, A., & Wilson, H. J. (2019). *Artificial intelligence : The insights you need from harvard business review*. Harvard Business Review Press. https://ebookcentral.proquest.com/lib/miami/detail.action?docID=5830736

Human Machine Collaboration | The Missing Middle



The **Missing Middle** – The ways humans help machines and ways machines help humans

Daugherty, P. R., & Wilson, H. J. (2018). *Human + machine : Reimagining work in the age of ai*. Harvard Business Review Press. http://ebookcentral.proquest.com/lib/miami/detail.action?docID=51Ai 80063.

Bring in Research Outputs using Microsoft Academic Open Data

Smart Expansion via CDI (File example)

Sample file:

	FNAME	LNAME	ALMAID	DOI	PMID
2	Nathen	Askelsonn	askelsonn@uexl.edu	10.1080/036302421.2015.1050543	259966282
3	Nathen	Askelsonn	askelsonn@uexl.edu	10.1097/MLR1.0b013e31817d92cd	193003132
4	Nathen	Askelsonn	askelsonn@uexl.edu	10.1111/cdoe.120961	244837302
5	Nathen	Askelsonn	askelsonn@uexl.edu	10.1111/j.1752-7325.2012.003691.x	229946002
6	Nathen	Askelsonn	askelsonn@uexl.edu	10.1111/j.1752-7325.2012.003691.x	229946002
7	Nathen	Askelsonn	askelsonn@uexl.edu	10.1111/j.1754-4505.2010.001741.x	212356102
8	Nathen	Askelsonn	askelsonn@uexl.edu	10.1111/jopr.126671	288727322
9	Nathen	Askelsonn	askelsonn@uexl.edu	10.1111/jphd.120181	
0	Nathen	Askelsonn	askelsonn@uexl.edu	10.1177/10901981155805751	258623023
1	Nathen	Askelsonn	askelsonn@uexl.edu	10.1177/23800844177282371	
2	Nathen	Askelsonn	askelsonn@uexl.edu	10.1186/1471-2431-13-1581	240939703
3	Nathen	Askelsonn	askelsonn@uexl.edu	10.1377/hlthaff.2017.00481	284613453
4	Nathen	Askelsonn	askelsonn@uexl.edu	10.2105/AJPH.2012.3008991	232371633
5	Nathen	Askelsonn	askelsonn@uexl.edu	10.2105/AJPH.2017.3041781	292670563
6	Nathen	Askelsonn	askelsonn@uexl.edu		237563033

source : Smart Expansion via CDI

Research Outputs

1. UM Pure (Elsevier B.V)
2. Microsoft Academic Graph
3. Microsoft Academic REST API

Esploro Researchers Profiles

1. Smart Expansion via CDI
2. Controlled Smart Harvesting (Selected Researchers)
3. Analytics

Microsoft Academic

Arnab Sinha, Zhihong Shen, Yang Song, Hao Ma, Darrin Eide, Bo-June (Paul) Hsu, and Kuansan Wang. 2015. An Overview of Microsoft Academic Service (MA) and Applications. In Proceedings of the 24th International Conference on World Wide Web (WWW '15 Companion). ACM, New York, NY, USA, 243-246, doi: 10.1145/2740908.2742839 ;

K. Wang et al., “A Review of Microsoft Academic Services for Science of Science Studies”, Frontiers in Big Data, 2019, doi: 10.3389/FDATA.2019.00045

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Esploro Dashboard

1. **Assessing Progress**
2. **Detecting Errors**
3. **Explaining machine outcomes**

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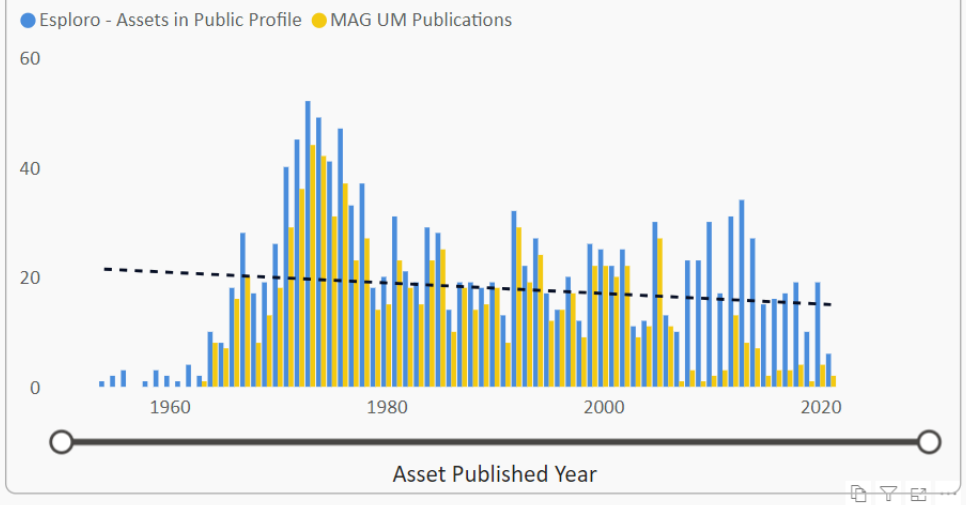
ExLibris Esploro

Esploro Overview | Researchers | Assets | Smart Harvest | Smart Expansion

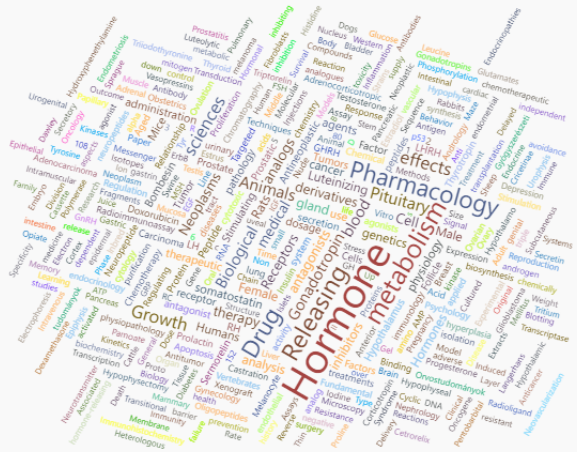
Pilot Groups
- Select all
- Sylvester
- School of Nursing & ...
- School of Architecture
- Rosenstiel School

Author Match Status
- Select all
- Added by System
- Affiliated/Matched ...
- Affiliated/Matched ...
- Affiliated/Strong ma...
- Affiliated/Uncertain ...
- Affiliated/Very stron...
- Affiliated/Very Stron...
- Approved

UM Affiliated Researchers' Publications As Shown in Esploro and Microsoft Academic by Y...



Keywords in Publications



Name [Esploro]	Name [MAG]	Scopus Profile	MAG Author ID	Assets & ETDs	Assets in public	MAG matches Esploro	MAG pubs	% diff. MAG & Esploro
Schally, Andrew, Victor	Andrew V. Schally		1705353089	1,365	1,364	903	1,213	112.4%
Pericak-Vance, Margaret, A.	Margaret A. Pericak-Vance		2474661175	939	920	836	1,096	84.9%
Nemeroff, Charles	Nemeroff, Charles		1340583028	896	890	700	1,147	78.1%
Sacco, Ralph, L	Ralph L. Sacco		2103103388	855	846	764	1,025	82.9%
Total				99,764	95,011	79,562	132,084	72.5%

Asset Type	Assets & ETDs	Assets in public	Assets in profiles	Unapproved
Journal article	1,320	1,320	1,320	0
Conference proceeding	14	14	14	0
Other	13	13	13	0
Book chapter	12	12	12	0
Review	5	5	5	0
ETD-Doctoral	1			
Total	**1,365**	**1,364**	**1,364**	**0**

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Researcher Profiling

Smart Harvesting, Leverages Artificial Intelligence

1 "The progress of joint stock companies with limited and unlimited liability in the United Kingdom, during the fifteen years 1869-84" [with discussion]

Edit Asset | Approve

Researcher name: Levi, Lili
Affiliations: School of Law
Research topics: Law

Provisional asset ID: 991031566162902976
Journal article
Author name: L Levi
Publication details: Journal of the Royal Statistical Society, Series A, Vol.49, pp.241-272
Date: Publication 06/01/1886
DOI: -

Status: Pending Approval
Rank: Uncertain
Job ID: 15748869620002976
Job date: 04/02/2021

Asset Details
Authors L Levi
Abstract -

L Levi

Lili Levi, UM Law Professor

Leone Levi

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Vol. XLIX.] [Part II.

JOURNAL OF THE STATISTICAL SOCIETY,

JUNE, 1886.

"The Progress of Joint Stock Companies with Limited and "Unlimited Liability in the United Kingdom, during the "Fifteen Years 1869-84." (In continuation of a Paper read before the Society in January, 1870.) By Professor Leone Levi, LL.D., F.S.A., &c.

[Read before the Statistical Society, 20th April, 1886. The President, Sir Rawson W. Rawson, K.C.M.G., C.B., in the Chair.]

CONTENTS:

	PAGE		PAGE
I.—Extent and Use of Public Companies	241	VII.—Public and Private Companies	248
II.—Recent Legislation on Joint Stock Companies	242	VIII.—Co-operative Companies	248
		IX.—Dividends of Joint Stock	

JOURNAL ARTICLE

"The Progress of Joint Stock Companies with Limited and "Unlimited Liability in the United Kingdom, during the "Fifteen Years 1869-84." (In Continuation of a Paper read before the Society in January, 1870)

Leone Levi

Journal of the Statistical Society of London
Vol. 49, No. 2 (Jun., 1886), pp. 241-272 (32 pages)
Published By: Wiley

https://doi.org/10.2307/2979153

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Human / Machine Collaboration

“Train” UM’s Smart Harvesting AI together with Liaison librarians

Ecosystem Science & Policy, German Studies, International Studies, Political Science

Communication, Media, Geography, and Maps

Architecture and Art & Art History

Business and Economics

Science, Technology, Engineering, and Mathematics

Classics, English Literature, Theatre Arts

History and Modern Languages & Literatures

Music and Latin American Music

Medical & Health Sciences

Nursing & Health Sciences, Biology, and Psychology

Education and Arts & Sciences

Marine & Atmospheric Sciences and Marine Geosciences

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Piloting the Profiles

Esploro Implementation Team

Select Researchers

Marine & Atmospheric Sciences and Marine Geosciences

Architecture and Art & Art History

Nursing & Health Sciences, Biology, and Psychology

Liaison Librarians

UMIT, Office of Change Management & User Adoption

ORCiD Implementation

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MIAMI RESEARCH AND SCHOLARSHIP OFFICE of RESEARCH ADMINISTRATION

Brian J Soden

Professor, RSMAS - Atmospheric Sciences, Rosenstiel School, Schools & Colleges, University of Miami

1 *Ocean Sciences / Climate Change / Climate Modeling / Remote Sensing*

Overview | Output

Expertise 2

His areas of interest include understanding climate feedback processes, the atmospheric hydrological cycle, and the response of extreme weather events to global warming.

Dr. Soden uses satellite observations and computer model simulations to understand how the atmosphere responds to natural and anthropogenic changes in climate. Specific areas of interest include the response of water vapor, clouds, precipitation and extreme weather events (e.g., tropical cyclones, floods, droughts) to increasing greenhouse gases.

Links 3

https://miami.pure.elsevier.com/en/persons/brian-j-soden

https://people.miami.edu/profile/b.soden@miami.edu

https://scholar.google.com/citations?hl=en&user=lSwuCeoAAAAJ

Show more

4 Organizational Affiliations

RSMAS - Atmospheric Sciences, Rosenstiel School, Schools & Colleges, University of Miami

Rosenstiel School, Schools & Colleges, University of Miami

5 Education

University of Chicago
MS

University of Miami
BS

6 Global ID

0000-0001-9693-8236

Scopus ID 7003543851

7 Email

b.soden@miami.edu

Phone

Office (305) 4214202

Address

Doherty Marine Science Center
4600 Rickenbacker Cswy
Floor 03 Room 373
Miami 33149-1031
United States

Brian J Soden

Professor, RSMAS - Atmospheric Sciences, Rosenstiel School, Schools & Colleges, University of Miami

Ocean Sciences / Climate Change / Climate Modeling / Remote Sensing

8

Overview | **Output**

All assets (136)

Publication (134)

- Journal article (130)
- Book chapter (2)
- Conference proceeding (2)

Conference/Event (1)

Dataset (1)

EXPORT ALL

JOURNAL ARTICLE

Observational Evidence of Increasing Global Radiative Forcing

by **Ryan J Kramer**, **Haozhe He**, **Brian J Soden**, **Lazaros Oreopoulos**, **Gunnar Myhre**, **Piers M Forster** and **Christopher J Smith**

Published 2021-04-16

Geophysical research letters, 48, 7, n/a

555

Changes in atmospheric composition, such as increasing greenhouse gases, cause an initial radiative imbalance to the climate system, quantified as the instantaneous radiative forcing. This fundamental metric has not been directly observed globally and previous estimates have come from models. In because current space-based instruments cannot distinguish the instantaneous radiative for

...more

9

JOURNAL ARTICLE

The Role of Radiative Interactions in Tropical Cyclone Development under Realistic Boundary Conditions

by **Bosong Zhang**, **Brian J Soden**, **Gabriel A Vecchi** and **Wenchang Yang**

Published 2021-03

Journal of climate, 34, 6, 2079 - 2091

2

AbstractThe impact of radiative interactions on tropical cyclone (TC) climatology is investigated using a global, TC-permitting general circulation model (GCM) with realistic boundary conditions. In this model, synoptic-scale radiative interactions are suppressed by overwriting the model-generated at radiative cooling rates with their monthly varying climatological values. When radiative inter

...more

JOURNAL ARTICLE

Compensation Between Cloud Feedback and Aerosol-Cloud Interaction in CMIP6 Models

by **Chenggong Wang**, **Brian J Soden**, **Wenchang Yang** and **Gabriel A Vecchi**

Published 2021-02-28

Geophysical research letters, 48, 4

181

The most recent generation of climate models (the 6th Phase of the Coupled Model Intercomparison Project) yields estimates of effective climate sensitivity (ECS) that are much higher than past generations due to a stronger amplification from cloud feedback. If plausible, these models require sub greenhouse gas reductions to meet global warming targets. We show that models with a m

...more

Questions?

Kineret Ben-Knaan
Research & Assessment Librarian &
Subject Liaison for Judaic Studies
kbenknaan@miami.edu

Angela Clark-Hughes
Director of the Rosenstiel School of Marine
& Atmospheric Science Library
aclark@rsmas.miami.edu

Elizabeth Gushee
Associate Dean
Digital Strategies
egushee@miami.edu

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