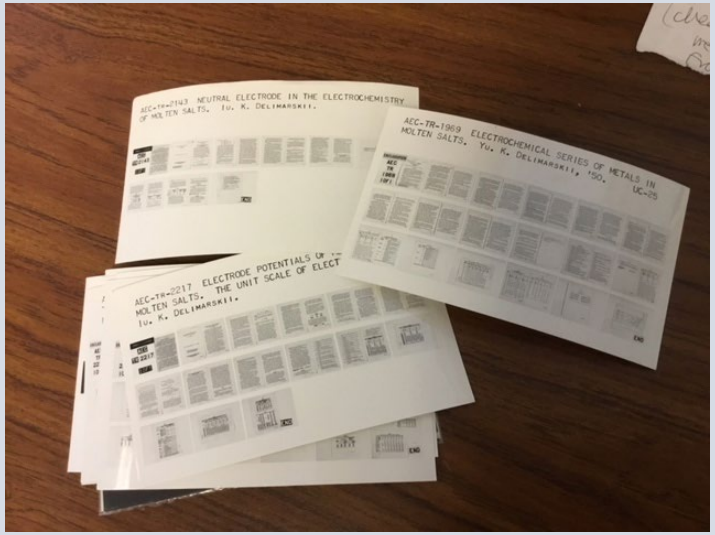
Technical Reports in Atmospheric Sciences



Chris Sherratt
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Atmospheric Sciences 101

ASLI, February 2021

Outline for today

- Description of Tech Reports
- General Tips
  - Repositories
  - Databases
- Tracking an example
- HathiTrust
- Questions and Discussion

What’s a technical report?

- "A technical report is a document written by a researcher detailing the results of a project and submitted to the sponsor of that project."
- Not peer reviewed
- Often contains more information than a published article
- Often published before articles
- Many are classified and not all older reports are declassified
- Will contain acronyms or codes that identify the lab or provenance

(This was inspired by libguide at Texas A & M)

https://tamu.libguides.com/c.php?g=604517&p=4189873

Common issuing bodies

- NOAA
- NCAR
- WMO
- Hanscom Air Force Geophysical Lab
- NASA
- AWS, Air Weather Service
- Naval Postgraduate School (Monterey)
- DOE
- Foreign Technology Division,
    - Wright- Patterson AFB

General Tips

- There’s no one order to searching for tech reports
- Try Google by keyword and report title in quotes
- If Google fails, start searching specific databases
  - (Local) library catalogs
  - NTIS (requires subscription)
  - NTRL
  - DOE’s osti/.gov
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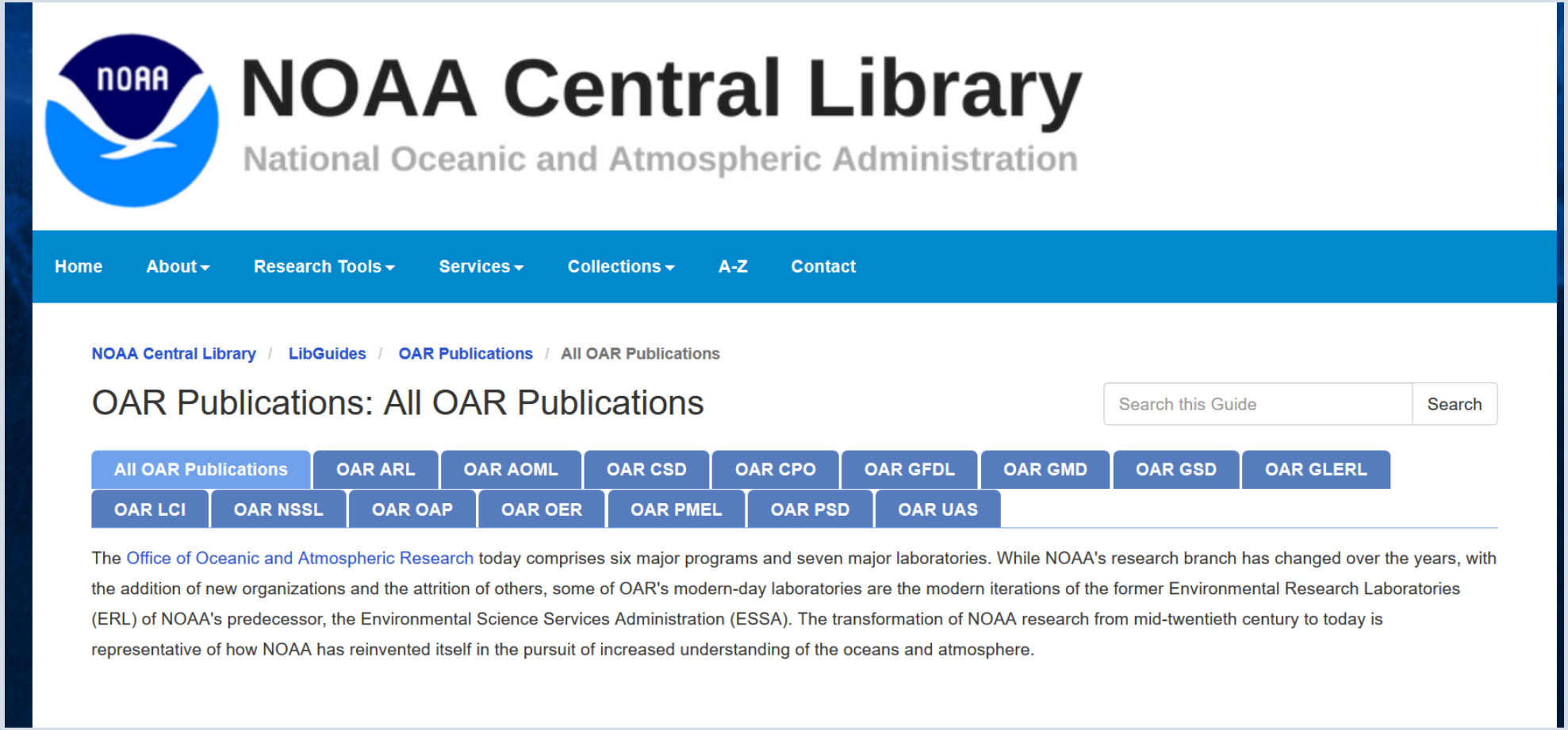
Examples of Repositories



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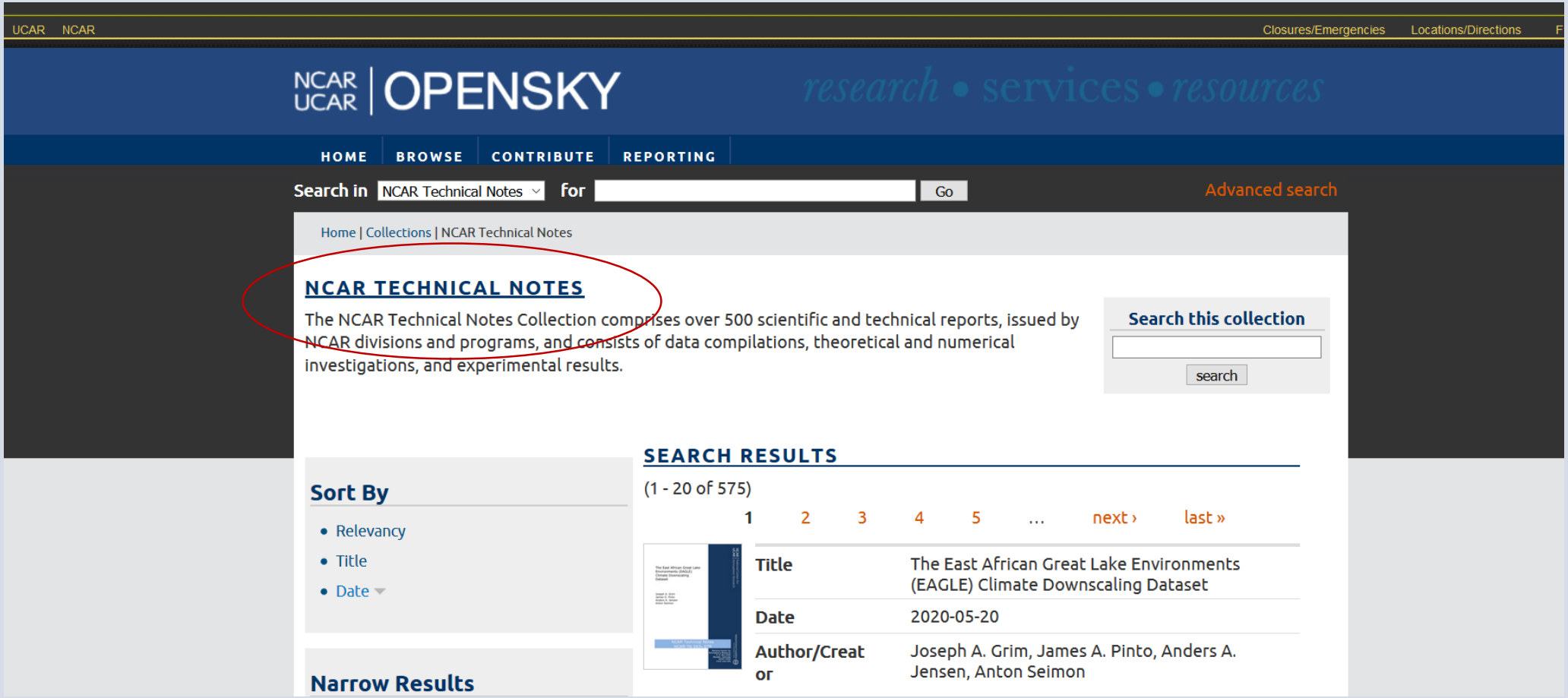

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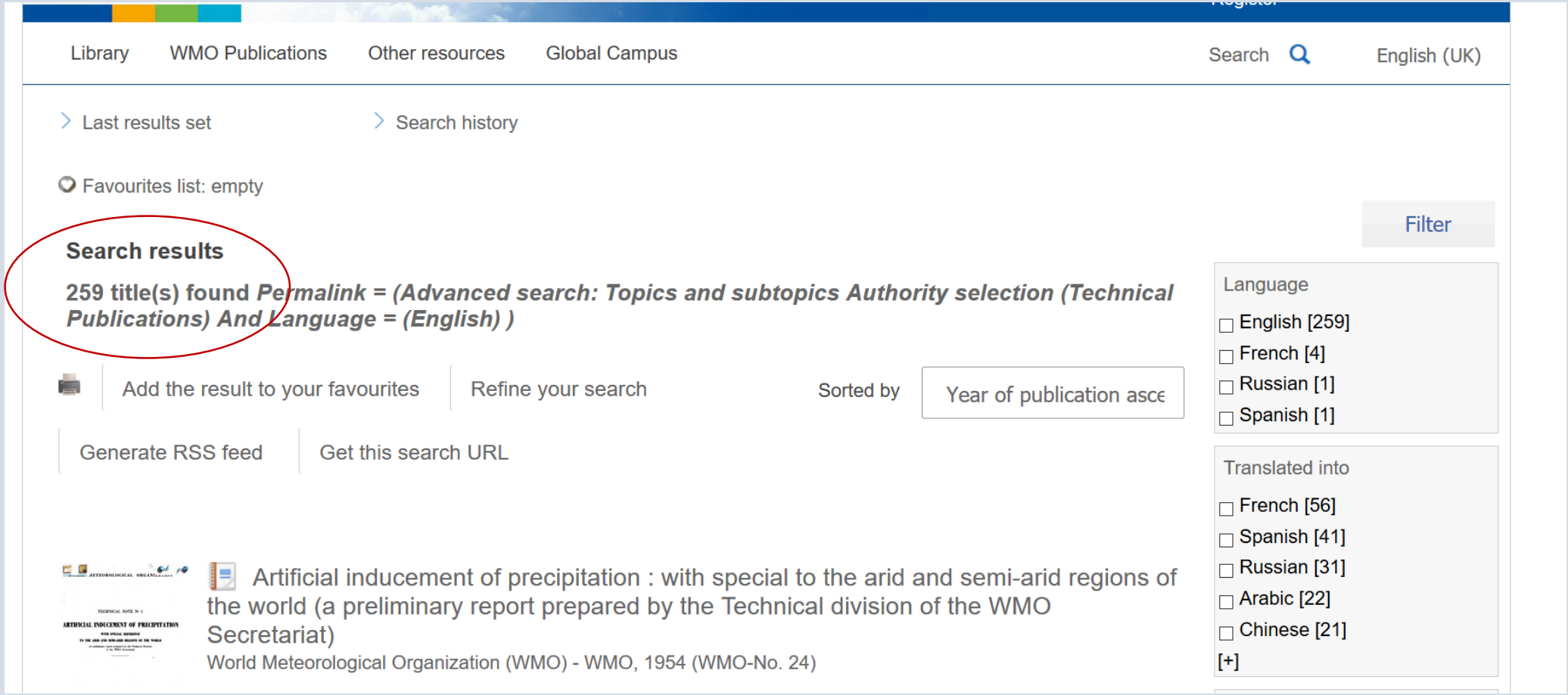

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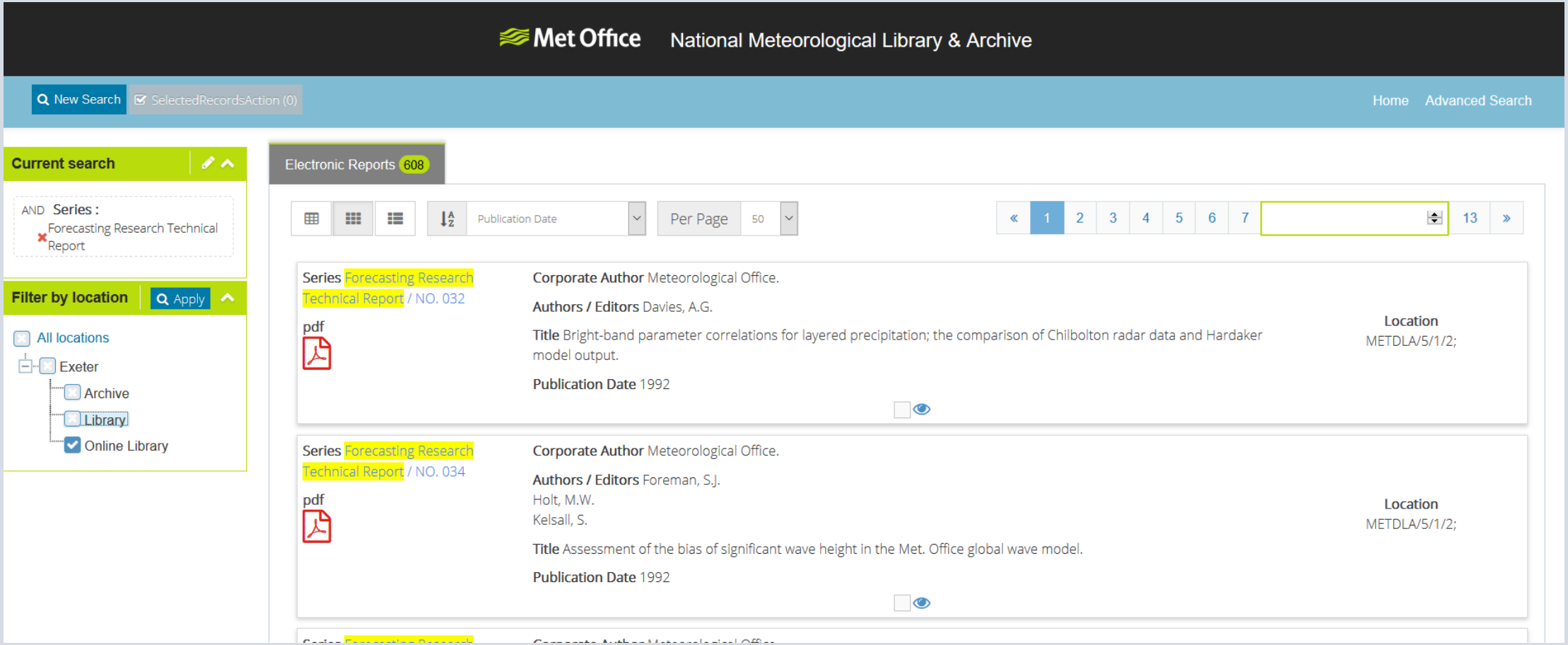
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« 1 2 3 4 5 6 7 13 »
Series Forecasting Research Technical Report / NO. 032
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Corporate Author Meteorological Office.
Authors / Editors Davies, A.G.
Title Bright-band parameter correlations for layered precipitation; the comparison of Chilbolton radar data and Hardaker model output.
Publication Date 1992
Location
METDLA/5/1/2;
Series Forecasting Research Technical Report / NO. 034
pdf
Corporate Author Meteorological Office.
Authors / Editors Foreman, S.J.
Holt, M.W.
Kelsall, S.
Title Assessment of the bias of significant wave height in the Met. Office global wave model.
Publication Date 1992
Location
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European Centre Medium-Range Weather Forecasting

ECMWF

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Proceedings	(167)

Sort by Relevancy Title Year of publication

Showing 1–10 of 873 results for **Technical memorandum** ×

A proposal for modifying the Kessler rain-scheme

J.-F. Geleyn

1979, ECMWF Technical Memoranda, Technical memorandum, ECMWF.

9524-proposal-modifying-kessler-rain-scheme.pdf

Monthly report on ECMWF's operational model's performance, September 1979

J.-F. Geleyn, C. Girard

1979, ECMWF Technical Memoranda, Technical memorandum, ECMWF.

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TRAIL: Technical Report and Image Archive

YEARS

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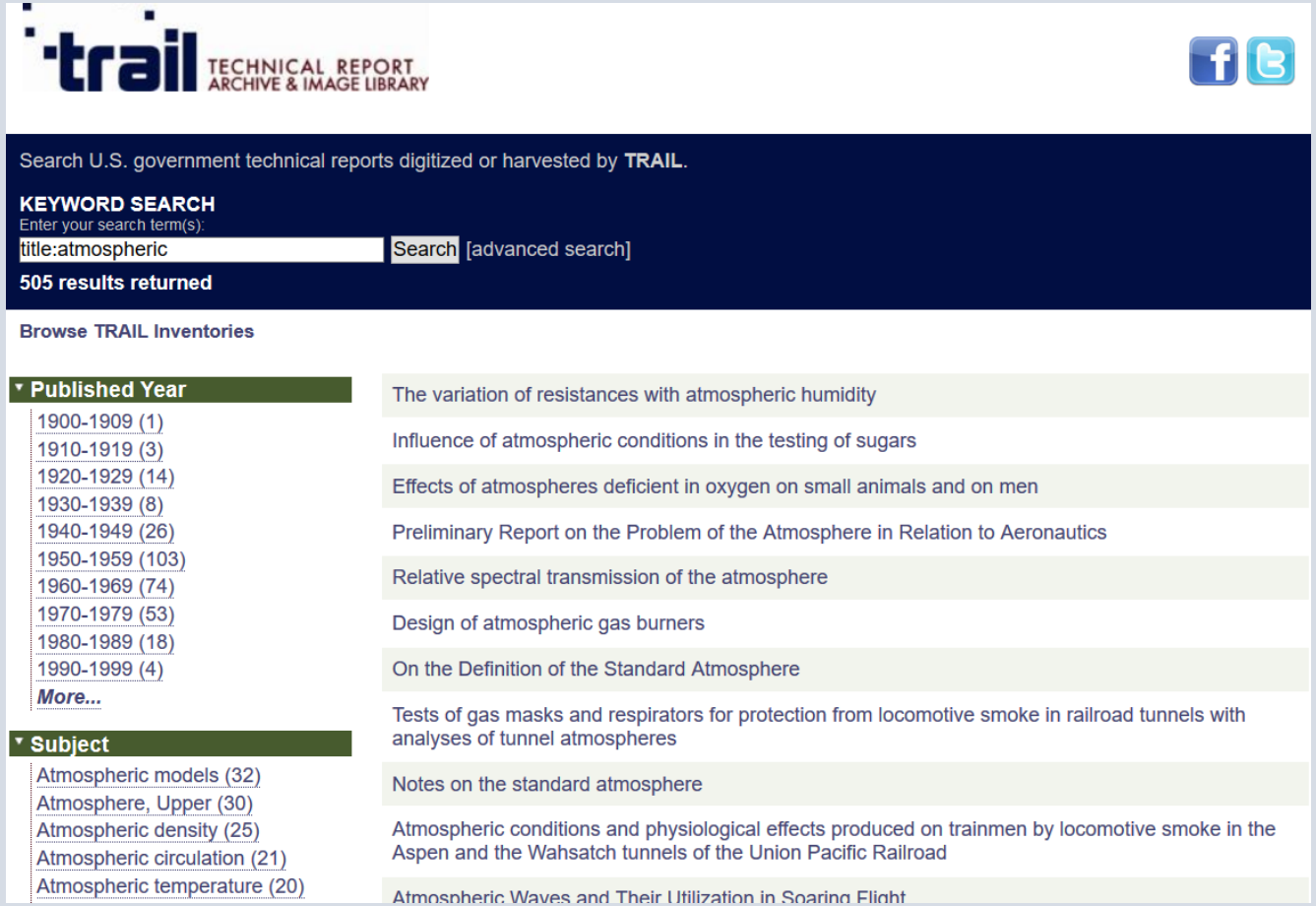
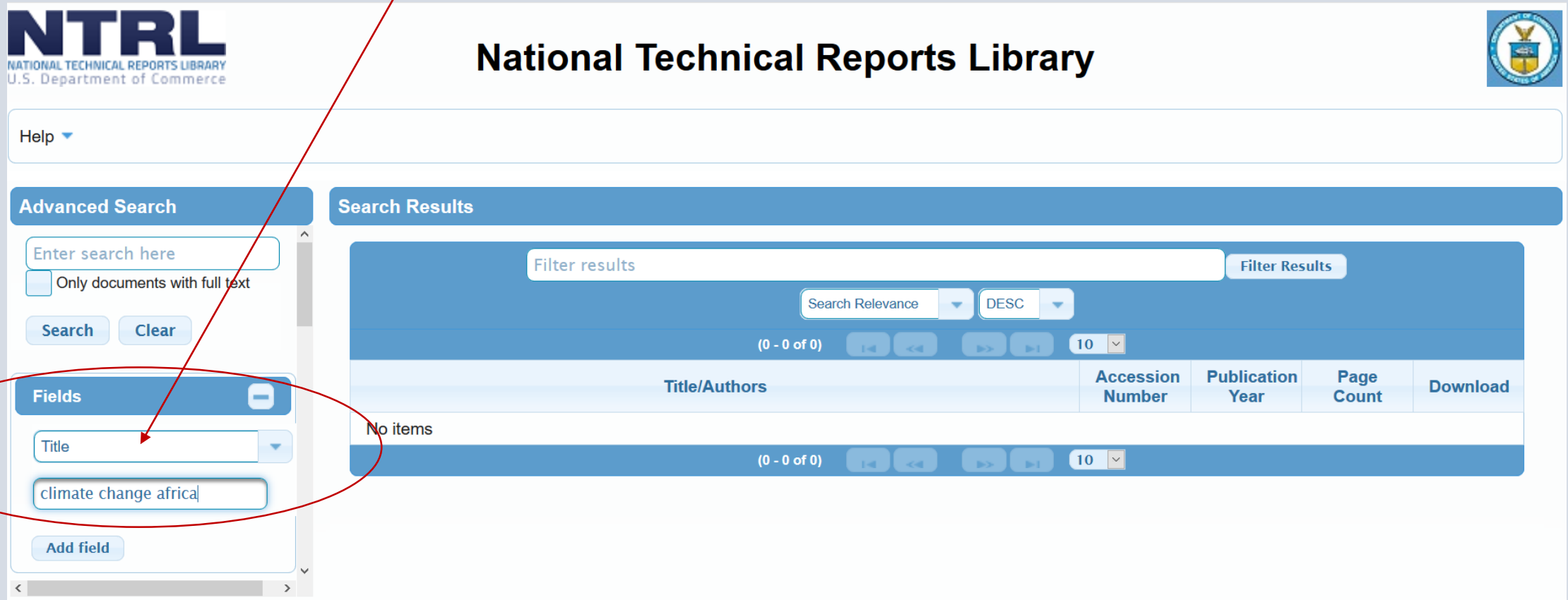
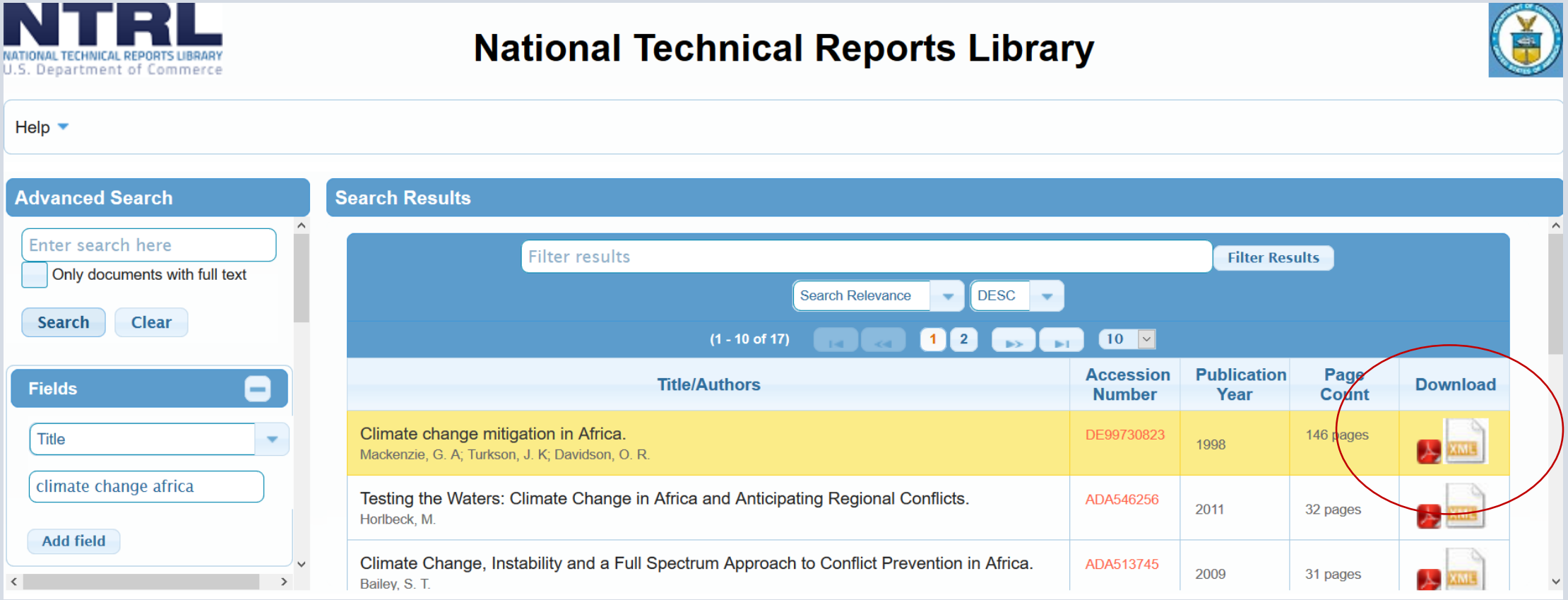


Databases

NTRL National Technical Reports Library
Example search: climate change Africa in TI



Offers more historical coverage; results include PDFs if available



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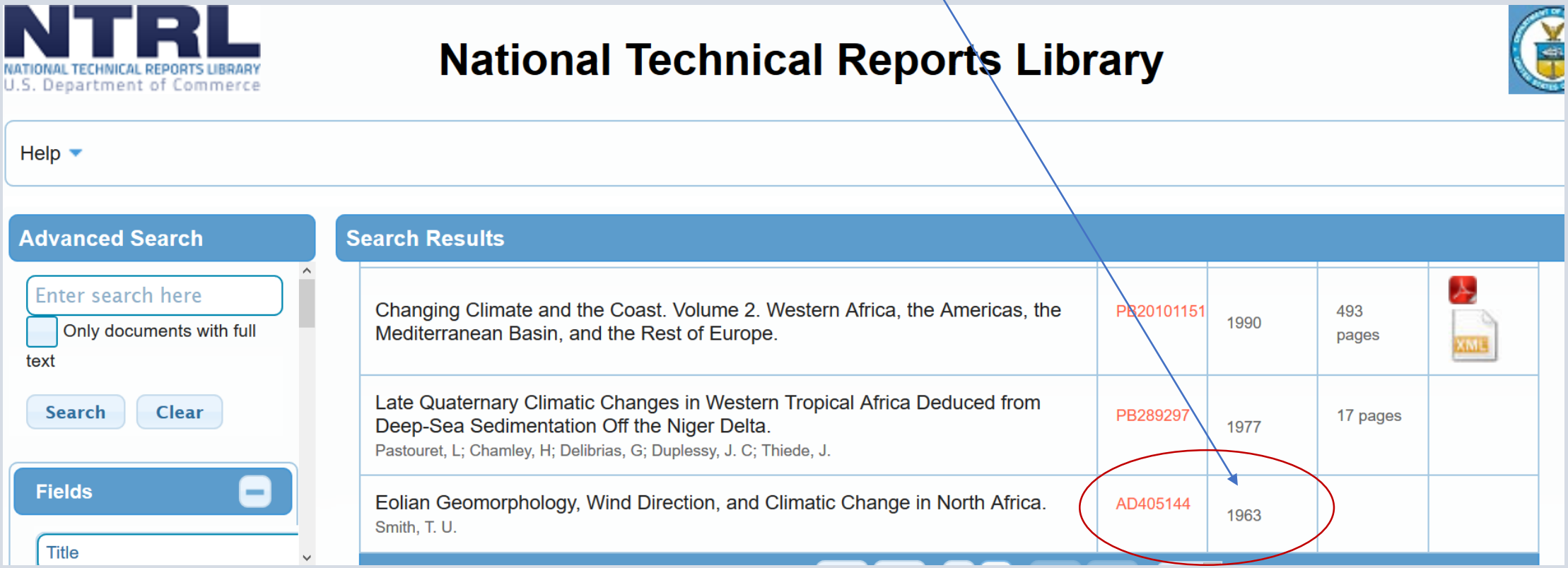

Double click the title for details

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Eolian Geomorphology, Wind Direction, and Climatic Change in North Africa.

AD405144

Publication Date	1963
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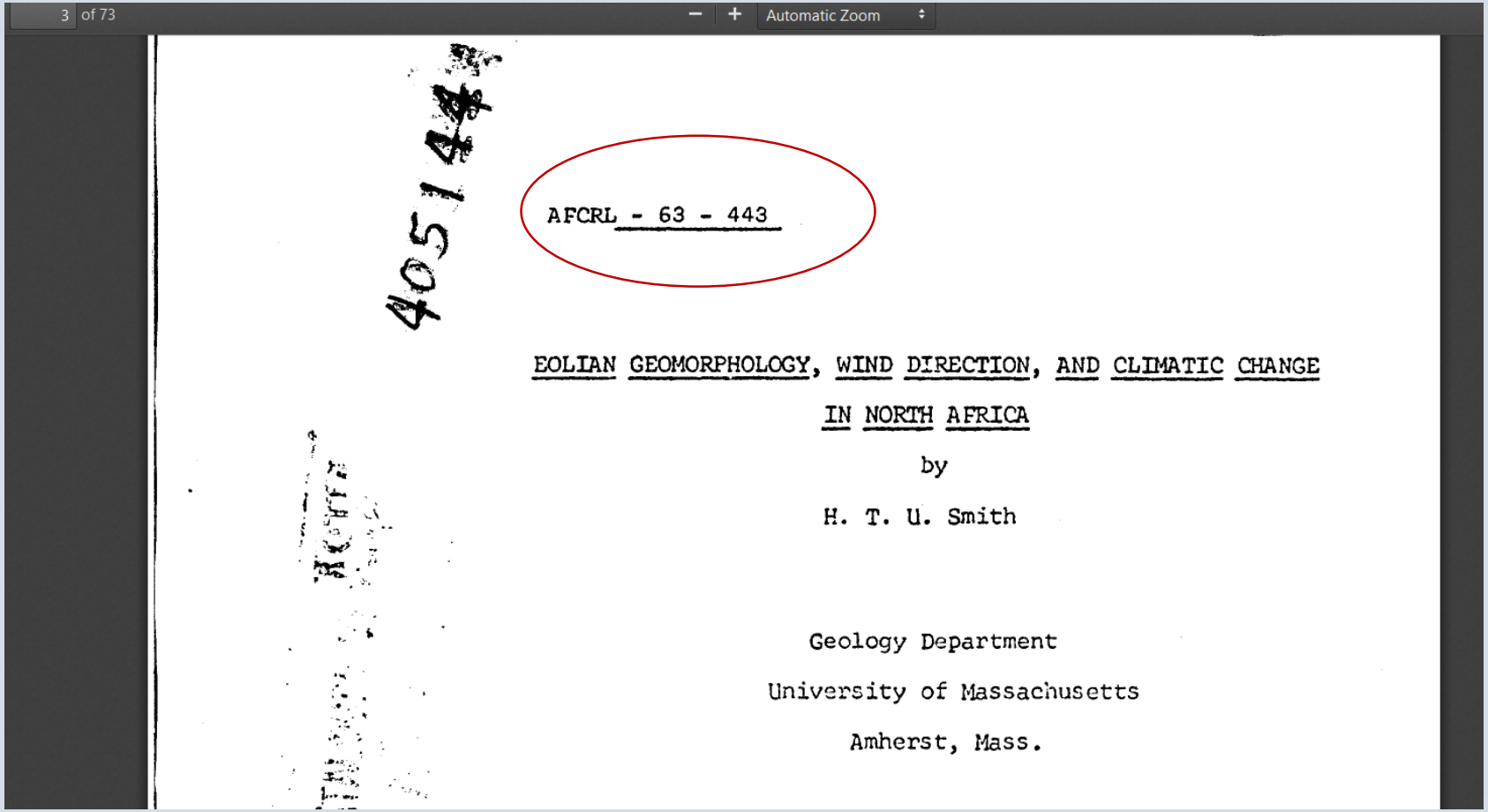


3 of 73 Automatic Zoom

405144

AFCRL - 63 - 443

EOLIAN GEOMORPHOLOGY, WIND DIRECTION, AND CLIMATIC CHANGE IN NORTH AFRICA

by

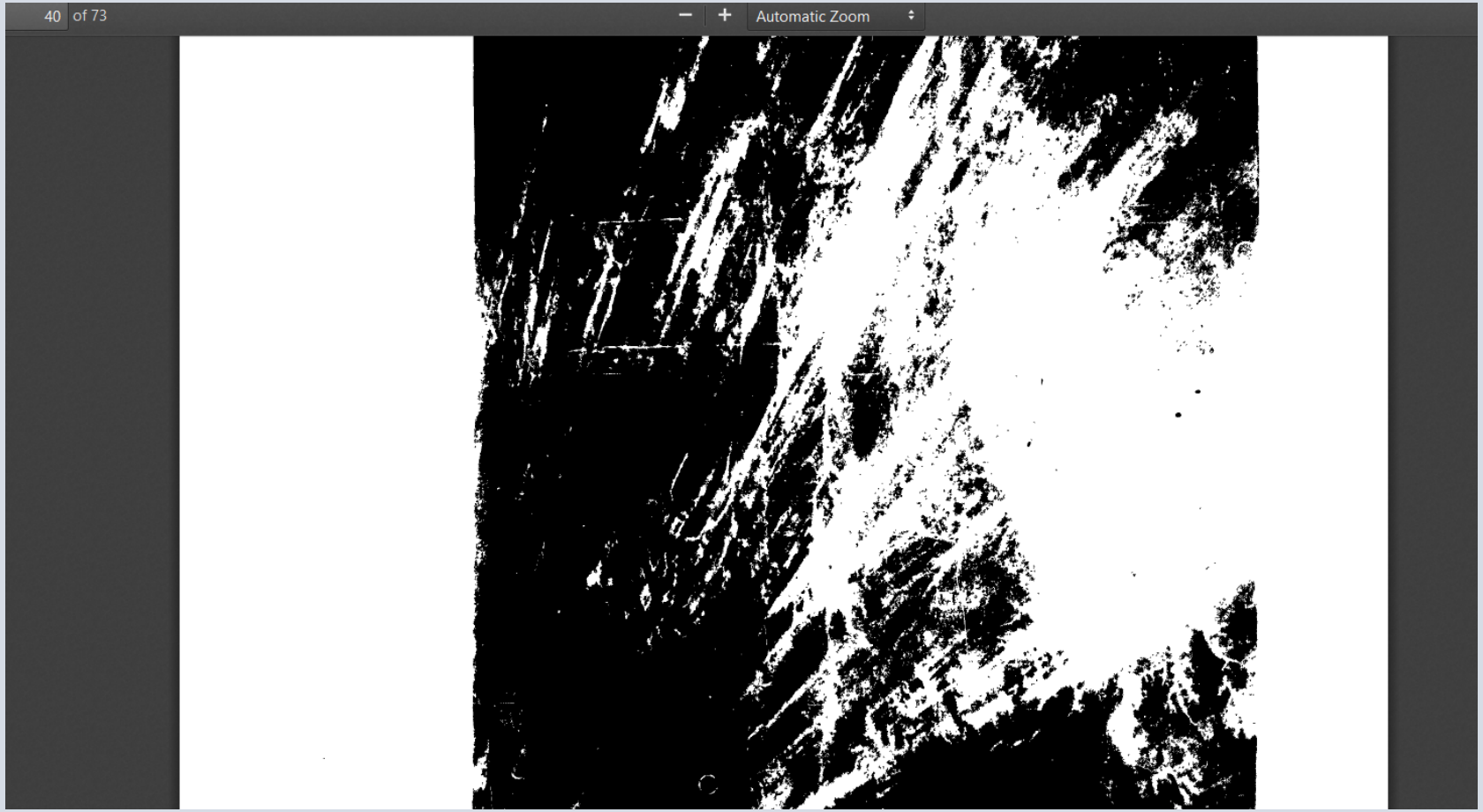
H. T. U. Smith

Geology Department

University of Massachusetts

Amherst, Mass.

Beware, Scans: “Fig. 4. Sand streamers aligned with wind direction and trending indifferently across minor drainage lines”



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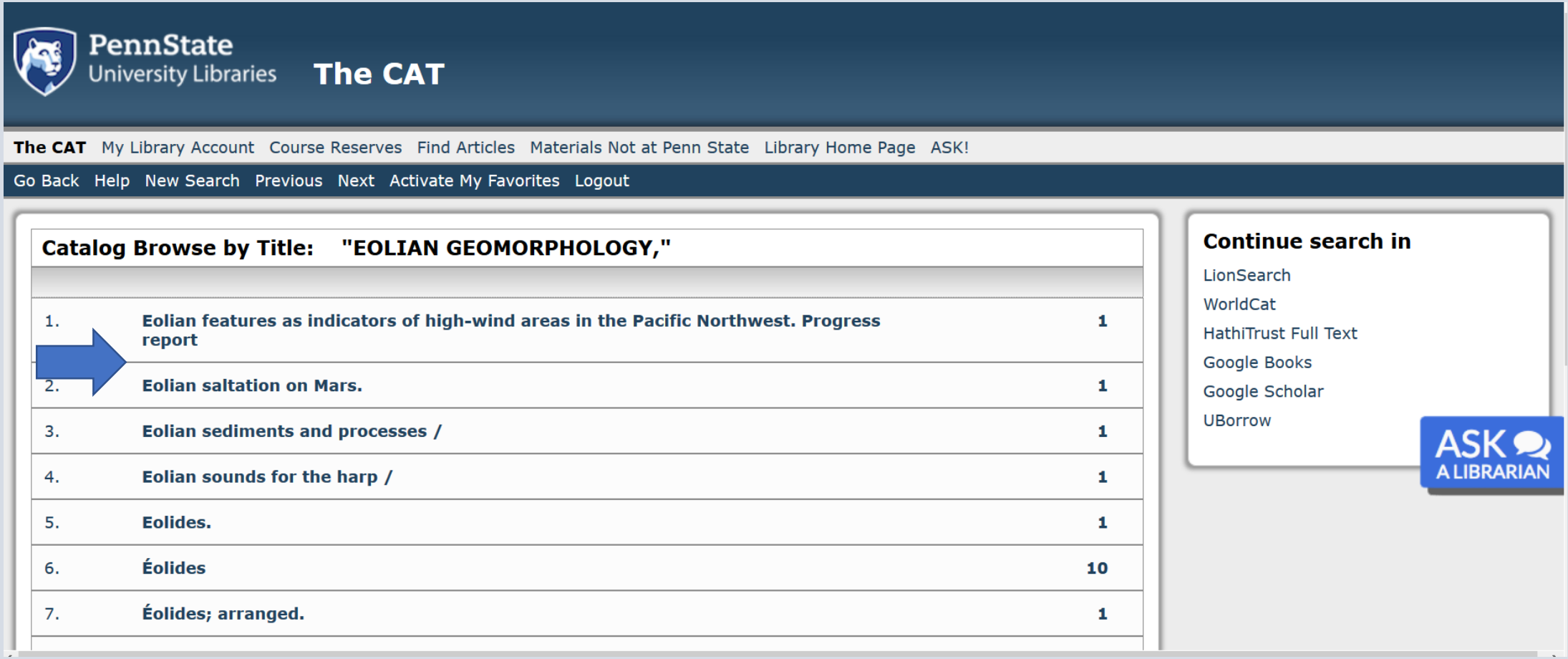

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Eolian saltation on Mars. - NASA/ADS

by DJ MacKinnon · 1987

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MacKinnon, D. J.

A computer model was developed in order to examine the effects of the wind field and surface collisions on the Martian saltation cloud. The distribution of incidence speeds and angles assumed by one grain in this model characterizes reasonably well the quantitative physical processes in the saltation cloud. Saltating grains that transfer small fractions of their horizontal momentum to the surface attain higher speeds, rise higher above the surface, and achieve longer trajectories than do saltating grains that transfer larger amounts of momentum; relatively small differences in the coefficients of restitution yield significant differences in the saltation cloud. It is also shown that grains can both assume long trajectories and transfer large amounts of momentum to the surface for the rapid development of the saltation cloud.

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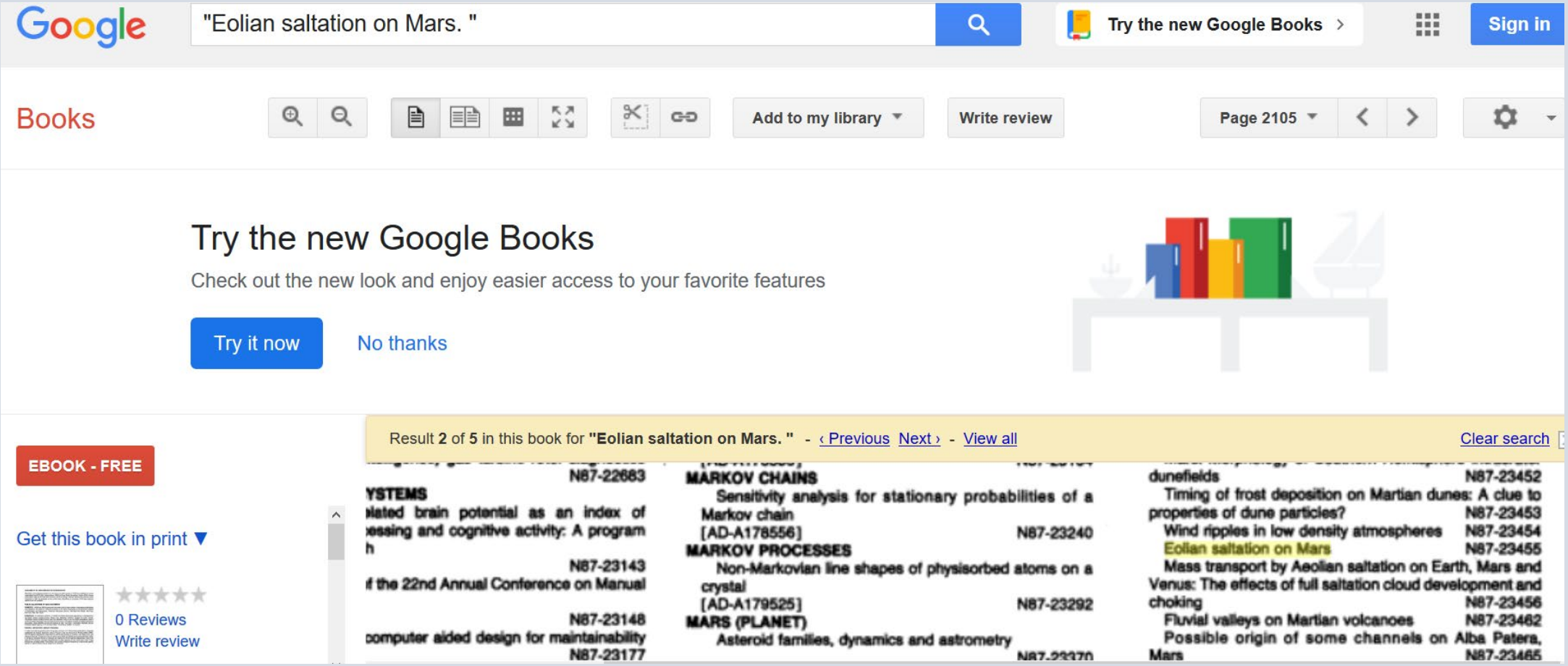
NASA’s STAR gives an N87-23455



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Eolian saltation on Mars

A computer model was developed in order to examine the effects of the wind field and surface collisions on the Martian saltation cloud. The distribution of incidence speeds and angles assumed by one grain in this model characterizes reasonably well the quantitative physical processes in the saltation cloud. Saltating grains that transfer small fractions of their horizontal momentum to the surface attain higher speeds, rise higher above the surface, and achieve longer trajectories than do saltating grains that transfer larger amounts of momentum; relatively small differences in the coefficients of restitution yield significant differences in the saltation cloud. It is also shown that grains can both assume long trajectories and transfer large amounts of momentum to the surface for the rapid development of the saltation cloud.

Document ID	19870014022
Document Type	Other
Authors	Mackinnon, D. J. *(Geological Survey Flagstaff, AZ, United States)*
Date Acquired	September 5, 2013
Publication Date	May 1, 1987
Publication Information	Publication: NASA, Washington, Reports of Planetary Geology and Geophysics Program, 1986
Subject Category	LUNAR AND PLANETARY EXPLORATION

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EOLIAN SALTATION ON MARS

D.J.MacKinnon, USGS, Flagstaff, AZ 86001

At the high wind speeds necessary for saltation on Mars, individual sand grains assume relatively long low angle trajectories compared with those on the Earth. Williams and Greeley [1] argued that saltating grains on Mars do not transmit sufficient momentum to the surface for entrainment of secondary grains, and they concluded that the Martian saltation cloud has a low number density and the sediment flux is weak. I have developed a computer model in order to examine the effects of both the wind field and surface collisions on the Martian saltation cloud; results are summarized here.

Grain trajectories were derived by numerical solution of the exact two-dimensional equations of motion for a spherical sand grain embedded in an arbitrary wind field [2]. The saltating grain collides with an individual surface grain at a randomly chosen point within a collision cross section defined by the colliding grain and the surface grains. The surface grains lie in mutual contact on a horizontal plane. This collision model [3] does not account for entrainment of secondary grains; it focuses only on the primary saltating grain whose behavior dominates the saltation cloud [4]. The horizontal and vertical speeds of a saltating grain just after collison are restored to a fraction of the speeds before collision in proportion to two coefficients of restitution, EN and ET (Figure 1). The vertical wind speed is zero and the horizontal wind speed varies with height according to a logarithmic distribution [5] as scaled by the wind-shear speed.

The horizontal speed versus incidence angle for a single saltating grain just before each of 100 successive, random collisions with a surface of similar-size grains is shown in Figures 1 and 2. The distribution of incidence speeds and angles assumed by one grain in this model characterizes reasonably well the quantitative physical processes in the saltation cloud. Saltating grains (Figure 1a) that transfer small fractions of their horizontal momentum to the surface (ET=0.5) attain higher speeds, rise higher above the surface, and achieve longer trajectories than do saltating grains (Figure 1b) that transfer larger

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Eolian saltation on Mars

Author: Mackinnon, D. J.

Published: May 1, 1987.

Physical Description: 1 electronic document

Access Online: hdl.handle.net

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Summary:

A computer model was developed in order to examine the effects of the wind field and surface collisions on the Martian saltation cloud. The distribution of incidence speeds and angles assumed by one grain in this model characterizes reasonably well the quantitative physical processes in the saltation cloud. Saltating grains that transfer small fractions of their horizontal momentum to the surface attain higher

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Abstract
The research reported in this paper has been conducted during the period 15 June 1961 to 15 July 1963. The project has been organized in three phases: 1. Photographic field measurement program. 2. Aircraft measurements. 3. Synoptic and theoretical studies on clear-air turbulence (CAT) and atmospheric mesostructure. The research results of this project have been published in the reports listed in the references (1 through 15). This final report summarizes the findings and states recommendations as to application of results and areas of future research.

Author(s)
Reiter, Elmar R.; Colorado State University. Department of Civil Engineering; Colorado State University. Department of Atmospheric Science

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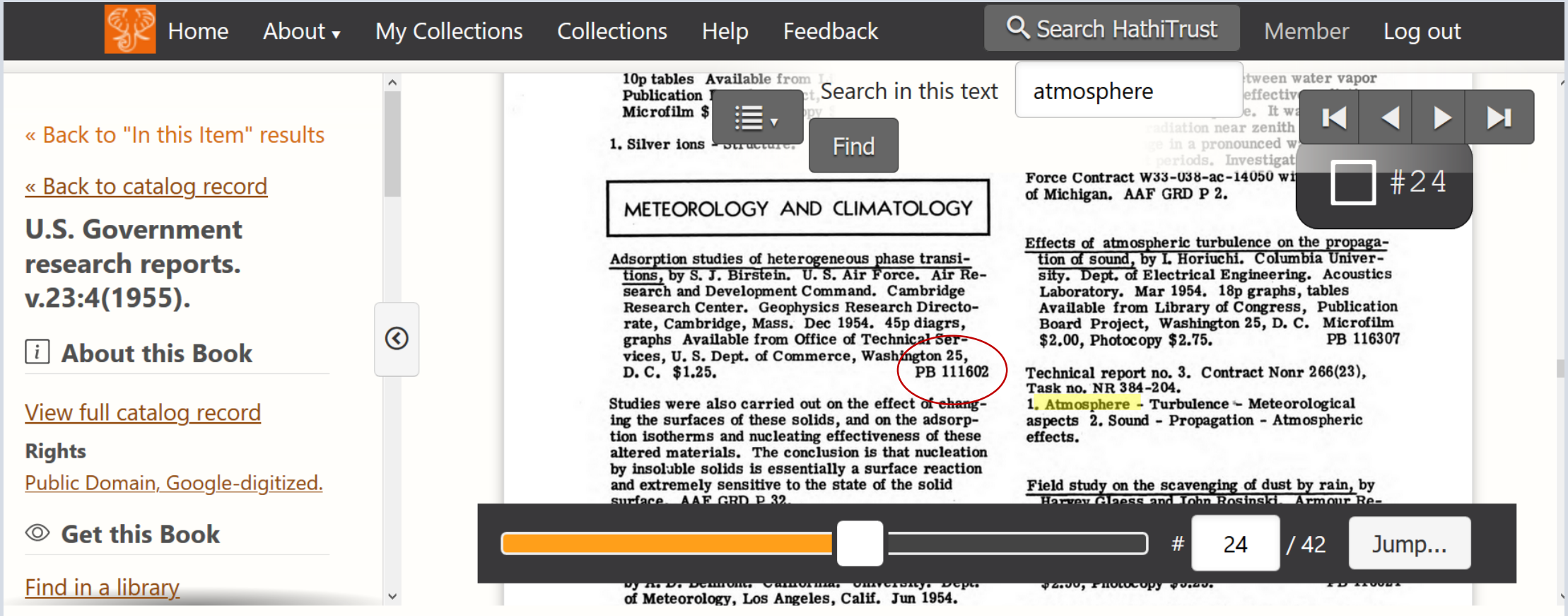

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