HAIL DATA!

A Data Preservation Saga

Sandra Schwab
Larry Laliberte
Anna Bombak

University of Alberta Libraries
Digital Initiatives

Secondary Documentation

Atmospheric Data

stored on magnetic tape

DATA CAPTURE

DATA RESCUE

DATA REUSE

1956-1985

DATA CAPTURE

DATA RESCUE

DATA REUSE

Secondary Documentation

Atmospheric Data

stored on magnetic tape

Secondary Documentation

hosted on library website

Data

CD-ROMs with backup copies

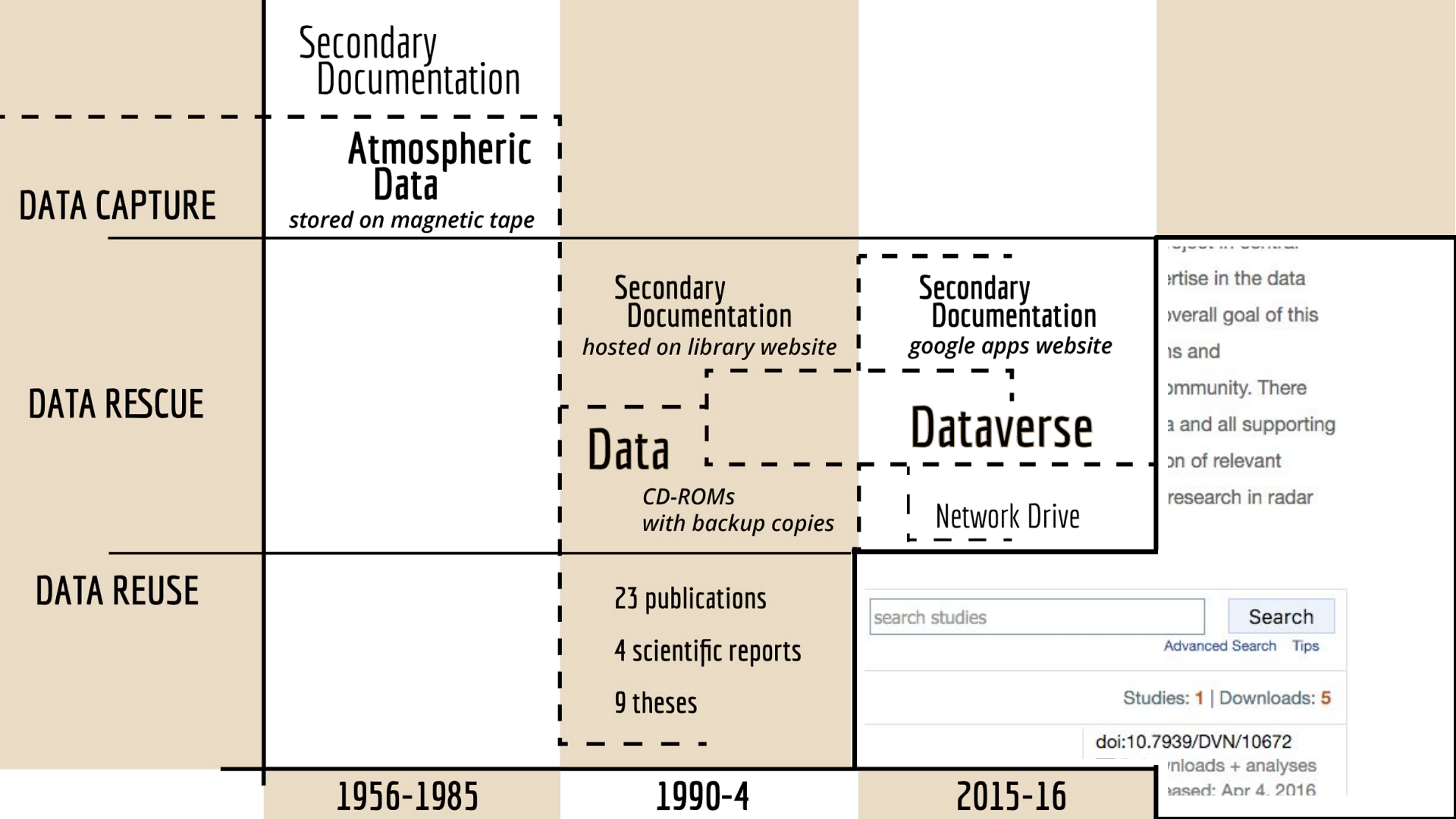
23 publications

4 scientific reports

9 theses

1956-1985

1990-4


Secondary Documentation
DATA CAPTURE
Atmospheric Data
stored on magnetic tape
DATA RESCUE
Secondary Documentation
hosted on library website
Secondary Documentation
google apps website
Dataverse
Data
CD-ROMs
with backup copies
Network Drive
DATA REUSE
23 publications
4 scientific reports
9 theses
search studies
Search
Advanced Search Tips
Studies: 1 | Downloads: 5
doi:10.7939/DVN/10672
1956-1985
1990-4
2015-16

The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive Dataverse

A valuable meteorological data archive collected by the Alberta Research Council over the course of the Hail Studies Project in central Alberta was in jeopardy of becoming unusable as the digital data stored on magnetic tape degrade over time, and expertise in the data collection, calibration, and interpretation becomes scarce. An archiving project has been put in place to rescue it. The overall goal of this project is to preserve the digital radar, aircraft, upper air and surface precipitation data along with supporting calibrations and documentation; to transfer this archive to the University of Alberta; and to make the archive available to the scientific community. There were three distinct operations carried out to ensure the long-term preservation of the archive; retrieval of the digital data and all supporting (secondary) data sources; transfer of digital data from magnetic tape to compact disk; and the collection and preparation of relevant documentation describing the data. The archive will provide researchers with a documented dataset to support further research in radar meteorology, climate change, hydrology, cloud physics, mesoscale meteorology and severe weather phenomena.

The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive

search studies

Search

Advanced Search Tips

Sort By: Global ID

Studies: 1 | Downloads: 5

The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive
by Alberta Research Council

doi:10.7939/DVN/10672
5 downloads + analyses
Last Released: Apr 4, 2016

UAL Dataverse Network >

The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive Dataverse

THE ALBERTA HAIL PROJECT METEOROLOGICAL AND BARGE-HUMPHRIES RADAR ARCHIVE
doi:10.7939/DVN/10672UNF:5:vmA2Nsena81SculonaGEiw==
Version: 6 – Released: Mon Mar 14 12:15:39 MDT 2016

CATALOGING INFORMATION | Data & Analysis | Comments (0) | Versions

Data Citation

If you use these data, please add the following citation to your scholarly references. Why cite?

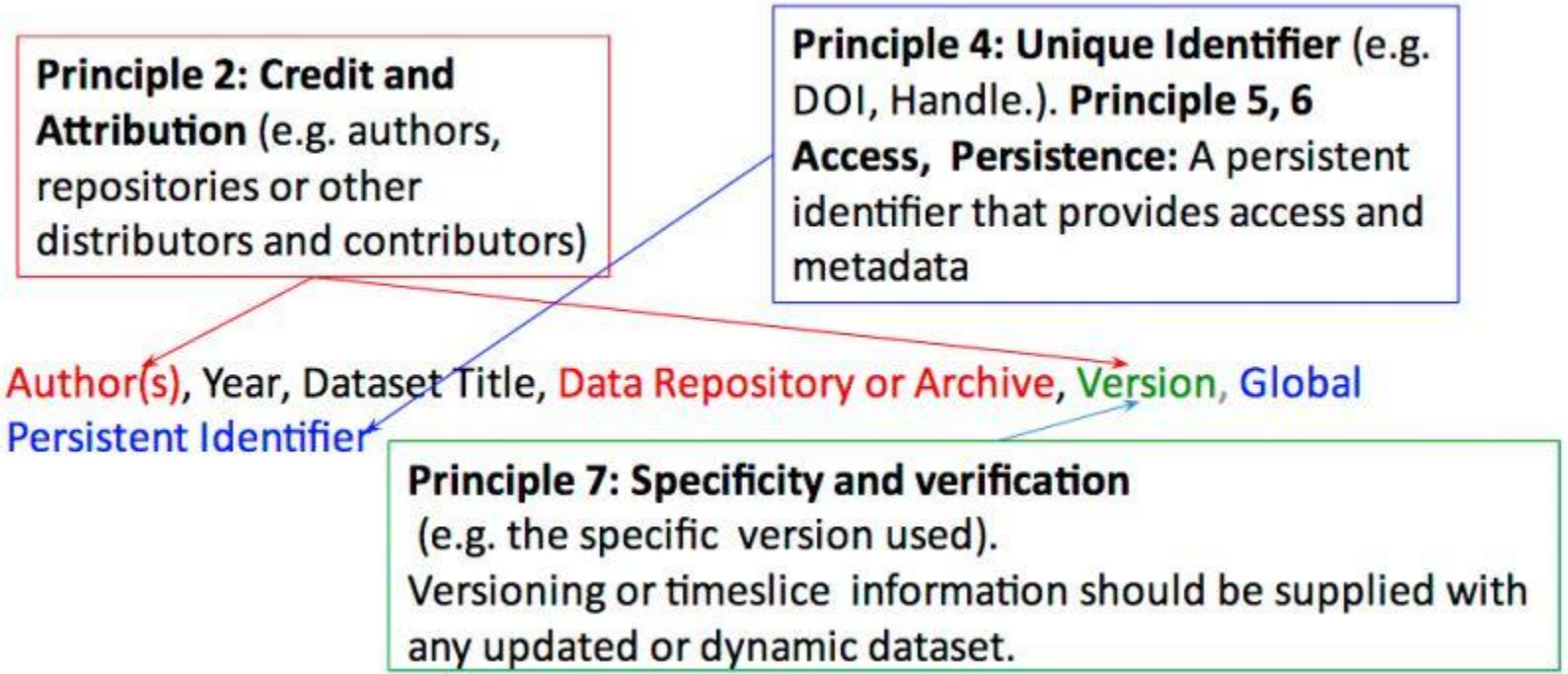
```
Alberta Research Council, 1995, "The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive",
http://dx.doi.org/10.7939/DVN/10672 UNF:5:vmA2Nsena81SculonaGEiw== Data Library [Distributor] V6 [Version]
```

Citation Format Print ▾

Data Citation Details

Title	The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive
Subtitle	Alberta Hail Project, 1956-1985; ARC Radar Projects, 1989 and 1991
Study Global ID	doi:10.7939/DVN/10672
Authors	Alberta Research Council
Producer	Alberta Research Council (ARC)
Production Date	August, 1995
Distributor	Data Library (DL), University of Alberta
Contact	Data Library (University of Alberta), data@uaberta.ca
Distribution Date	August, 1995
Deposit Date	January 26, 2016
Original Dataverse	The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive Dataverse

JOINT DECLARATION OF DATA CITATION PRINCIPLES



https://www.force11.org/group/joint-declaration-data-citation-principles-final

Data Citation Details	
Title	The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive
Subtitle	Alberta Hail Project, 1956-1985; ARC Radar Projects, 1989 and 1991
Study Global ID	doi:10.7939/DVN/10672
Authors	Alberta Research Council
Producer	Alberta Research Council (ARC)
Production Date	August, 1995
Distributor	Data Library (DL), University of Alberta
Contact	Data Library (University of Alberta), data@uaberta.ca
Distribution Date	August, 1995
Deposit Date	January 26, 2016
Original Dataverse	The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive Dataverse
Description and Scope	
Keywords	hail; rain; climate; Alberta
Related Material	Johnson, M., et al. "Alberta Hail Project Data Archive Available On The World Wide Web." *Bulletin Of The American Meteorological Society* 3 (1996): 564. *General OneFile*.
Time Period Covered	1956 - 1991
Kind of Data	HTML / plain text data; Tabular SPSS data
Data Availability	
Original Archive	Data Library, University of Alberta
Number of Files	55
Terms of Use	
Conditions	Your use of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive, which is accessed through network services provided by the Data Library at the University of Alberta, is subject to the following conditions: 1. these data are to be made freely available only to the scientific research community, whether national or international. 2. these data are provided for the exclusive purposes of teaching, academic research and publishing, and/or planning of educational services and may not be used for any other purposes without the explicit written approval, in advance, of the Data Library at the University of Alberta 3. the Alberta Research Council, the Atmospheric Environment Service and the University of Alberta will be acknowledged in any anticipated presentations and papers associated with the ARCHIVE. 4. the citation for the ARCHIVE is: Alberta Research Council. The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive:[computer files], Edmonton, Alberta, CANADA. Alberta Research Council [producer], University of Alberta Data Library [distributor]. August 1995.
Dataverse Network Terms of Use	View Terms of Use [+]

Download the cataloging information in XML format - DDI (without variables) / DDI (full)

metadata can be harvested by other repositories
ERA
<odesi>
other dataverses

The Alberta Hail Project Meteorological and Barge-Humphries Radar Archive Dataverse

THE ALBERTA HAIL PROJECT METEOROLOGICAL AND BARGE-HUMPHRIES RADAR ARCHIVE
doi:10.7939/DVN/10672UNF:5:vmA2Nsena81SculonaGEiw==
Version: 7 – Released: Mon Apr 04 12:09:18 MDT 2016

Use the check boxes next to the file name to download multiple files. Data files will be downloaded in their default format. You can also download all the files in a category by checking the box next to the category name. You will be prompted to save a single archive file. Study files that have restricted access will not be downloaded.

Due to the large number of files associated with this study, only 25 files are loaded at a time.

Select all files | Download Selected Files | Show All Files | Showing 25 of 57 Total Files | Total Downloads: 5

1. Website		
web_HTML_Archive.7z application/octet-stream - 7 MB - 1 download MD5 Checksum: 969d64775c7c3c2684c2a800d270044a	Download	This is a HTML archive of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive website.
web_plainText_Archive.7z application/octet-stream - 2 MB - 0 downloads MD5 Checksum: 0d97b330f793a677b739543bb1df59da	Download	This is a plain text archive of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive website.
web_README.txt Plain Text - 1 KB - 0 downloads MD5 Checksum: e57609e69629e630df2034201f6c5fc5	Download	Instructions for the use of plainText_Archive and HTML_Archive
2. Hail Data		
CartoDB_HailData.csv Plain Text - 11 MB - 3 downloads MD5 Checksum: e52759cfa17735e3c9ce0e13c6337730	Download	CSV file with latitude and longitude coordinates, used to create the CartoDB map visualization.
HailData_1957-1985.7z application/octet-stream - 724 KB - 0 downloads MD5 Checksum: fbdd642d7eff1bbc769d081e00228816	Download	Raw Hail data, 1957-1985. This file contains the raw .DAT files compiled to create the file hailData.tab
hailData.tab Tab Delimited - 6 MB - 1 download/analysis MD5 Checksum: c44880f38e6ef526e418192bf4c07870 TABULAR DATA | 68485 Cases | 32 Variables	Download as... Access Analysis + Subsetting	Raw hail data, obtained from the original textual .DAT files View Data Citation [+]
Hail.ipynb Plain Text - 10 KB - 0 downloads MD5 Checksum: e9ac75b43ae0f95c6253dd8668ba4b82	Download	iPython notebook file with the code that parses the Hail Data.
3. Rain Data		
RainData_1974-1985.7z application/octet-stream - 526 KB - 0 downloads MD5 Checksum: 01fb765ed24d79d9d3aa49a0983c698a	Download	Raw Rain data, 1974-1985. This file contains the raw .DAT files compiled to create the file rainData.tab
rainData.tab Tab Delimited - 3 MB - 0 downloads + analyses MD5 Checksum: 62a4bba94df85d05845caddcee521249 TABULAR DATA | 76175 Cases | 14 Variables	Download as... Access Analysis + Subsetting	Raw rain data, obtained from the original textual .DAT files View Data Citation [+]

THE ALBERTA HAIL PROJECT METEOROLOGICAL AND BARGE-HUMPHRIES RADAR ARCHIVE
doi:10.7939/DVN/10672UNF:5:vmA2Nsena81SculonaGEiw==
Version: 6 – Released: Mon Mar 14 12:15:39 MDT 2016
Data File: rainData.tab

< Back to Study

DOWNLOAD SUBSET | Recode & Case-Subset | Descriptive Statistics | Advanced Statistical Analysis

Selected Variables

Choose File Format to download selected variables:

- (•) Text
- ( ) R Data
- ( ) S plus
- ( ) Stata

Create Zip File

Select variables from table below (selected variables will be displayed above)

Show 10 Variables

Variable Information Table 1 2

	Type	Name	Label	Summary
☐	Character (Date Value)	date	Date	
☐	Discrete	typeofreport	Type of Report	
☐	Discrete	year	Year	
☐	Discrete	month	Month	
☐	Discrete	day	Day	
☐	Discrete	MER	Meridian	
☐	Discrete	RGE	Range	
☐	Discrete	TWP	Township	
☐	Discrete	SEC	Section	
☐	Discrete	UID	UID	

Variable Information Table

Type	Name	Label	Summary
Character (Date Value)	date	Date	
Discrete	typeofreport	Type of Report	
Discrete	year	Year	
Discrete	month	Month	
Discrete	day	Day	
Discrete	MER	Meridian	
Discrete	RGE	Range	
Discrete	TWP	Township	
Discrete	SEC	Section	
Discrete	UID	UID	
Discrete	timeofrain	Time of Rain	
Discrete	duration	Duration of Rain (in minutes)	
Discrete	measured	Measured	
Discrete	rainfall	Rainfall (mm)	

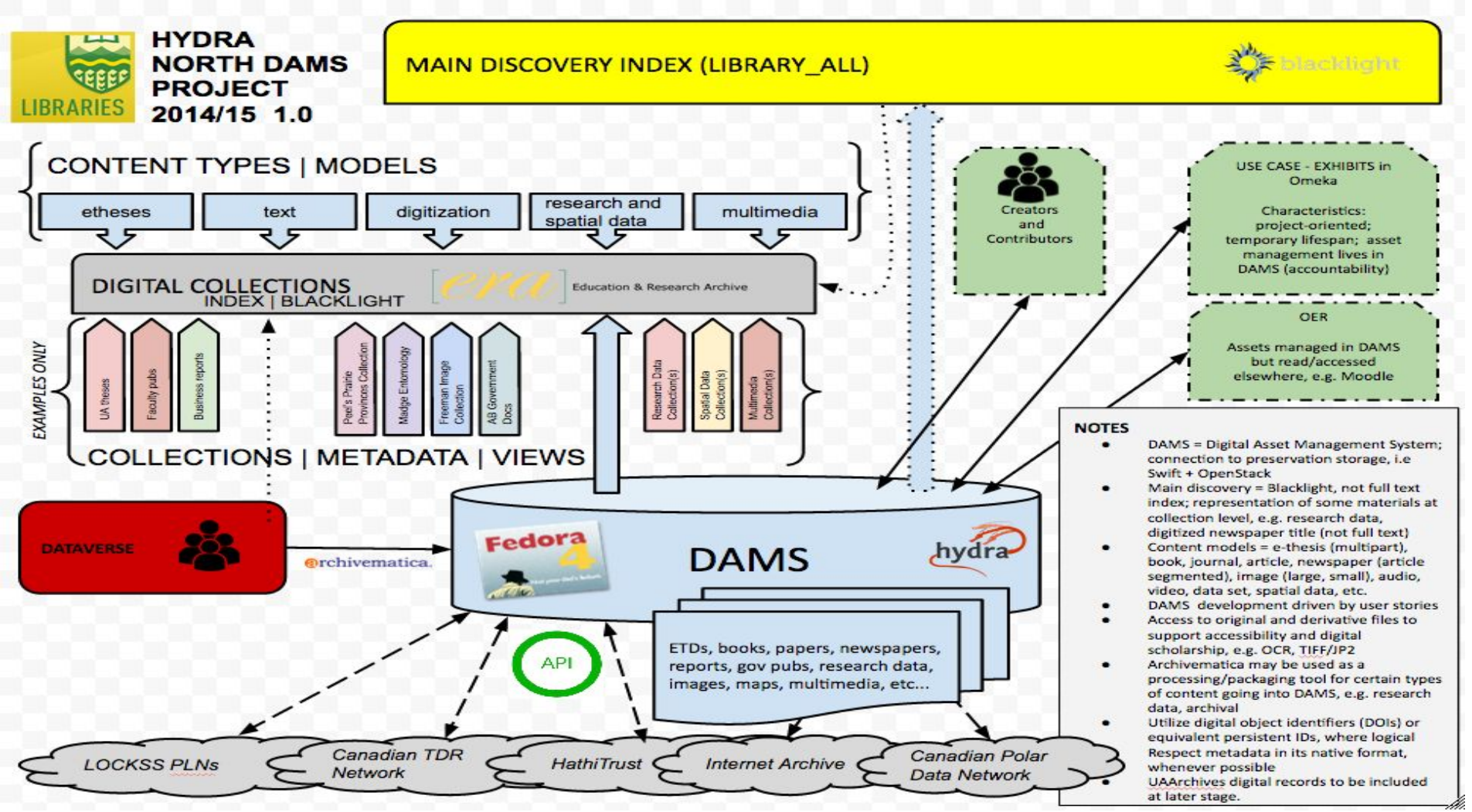
Value (Label)	Frequency
74	5625.0
75	4153.0
76	6417.0
77	7011.0
78	5199.0
79	11186.0
80	8172.0
81	5050.0
82	5688.0
83	7190.0
84	5768.0
85	4715.0
86	1.0
UNF	UNF:5:hRYTi7y7PtcuvjN9TMNNag==

4. Transponder Data		
TransponderData_1978-1985.7z application/octet-stream - 3 MB - 0 downloads MD5 Checksum: cc37bb4ce4c8bec71aa06d1b3957e9bc	Download	Raw Transponder data, 1978-85
5. Network Data		
NetworkData_1975-1984.7z application/octet-stream - 278 KB - 0 downloads MD5 Checksum: 2390e5319891ecce3099b07f64bbbceb	Download	Raw Network data, 1975-84
6. Mobile Data		
MobileData_1982-1985.7z application/octet-stream - 6 KB - 0 downloads MD5 Checksum: 08dd8db9d61885a449216d72b0fa551b	Download	Raw Mobile data, 1982-85
7. Aircraft Data		
AircraftData_1983A-E.7z application/octet-stream - 374 MB - 0 downloads MD5 Checksum: 4e13d77b4cf2f88495687134c207e80f	Download	Raw Aircraft Data, 1983A-E
AircraftData_1984A-C.7z application/octet-stream - 248 MB - 0 downloads MD5 Checksum: acb052bddb4eeff62bdb91dd0d6dbd16	Download	Raw Aircraft Data, 1984A-C
AircraftData_1985A-C.7z application/octet-stream - 190 MB - 0 downloads MD5 Checksum: 7c0d5b9926f8fa265c23567666b46e08	Download	Raw Aircraft Data, 1985A-C
8. C-Band Radar Data		
C-Band.7z application/octet-stream - 320 MB - 0 downloads MD5 Checksum: 0cee6f95bd83356e6eec920a77fc3125	Download	Raw C-Band radar data
9. S-Band Radar Data		
S-Band_1979A-B.7z application/octet-stream - 401 MB - 0 downloads MD5 Checksum: b57a43ee856da7abeed6ed661fabe3dd	Download	Raw S-Band radar data, 1979 A-B
S-Band_1979C-D.7z application/octet-stream - 462 MB - 0 downloads MD5 Checksum: a7ab35848c932960f62855420998eaf5	Download	Raw S-Band radar data, 1979 C-D
S-Band_1979E-F.7z application/octet-stream - 448 MB - 0 downloads MD5 Checksum: 314d74be95e6cf4512206484e8d7545f	Download	Raw S-Band radar data, 1979 E-F
S-Band_1979G-H.7z application/octet-stream - 376 MB - 0 downloads MD5 Checksum: a7b14177187b7dc4a128c1d950d24b5d	Download	Raw S-Band radar data, 1979G-H
S-Band_1980A.7z application/octet-stream - 293 MB - 0 downloads MD5 Checksum: f370ee1558dc2f1d9bc8069fec6fbbf7	Download	Raw S-Band radar data, 1980A
S-Band_1980B.7z application/octet-stream - 264 MB - 0 downloads MD5 Checksum: c7169ccc6825a7338fbda68ab8d6fd3f	Download	Raw S-Band radar data, 1980B
S-Band_1980C.7z	Download	Raw S-Band radar data, 1980C

STUDY VERSION DIFFERENCES

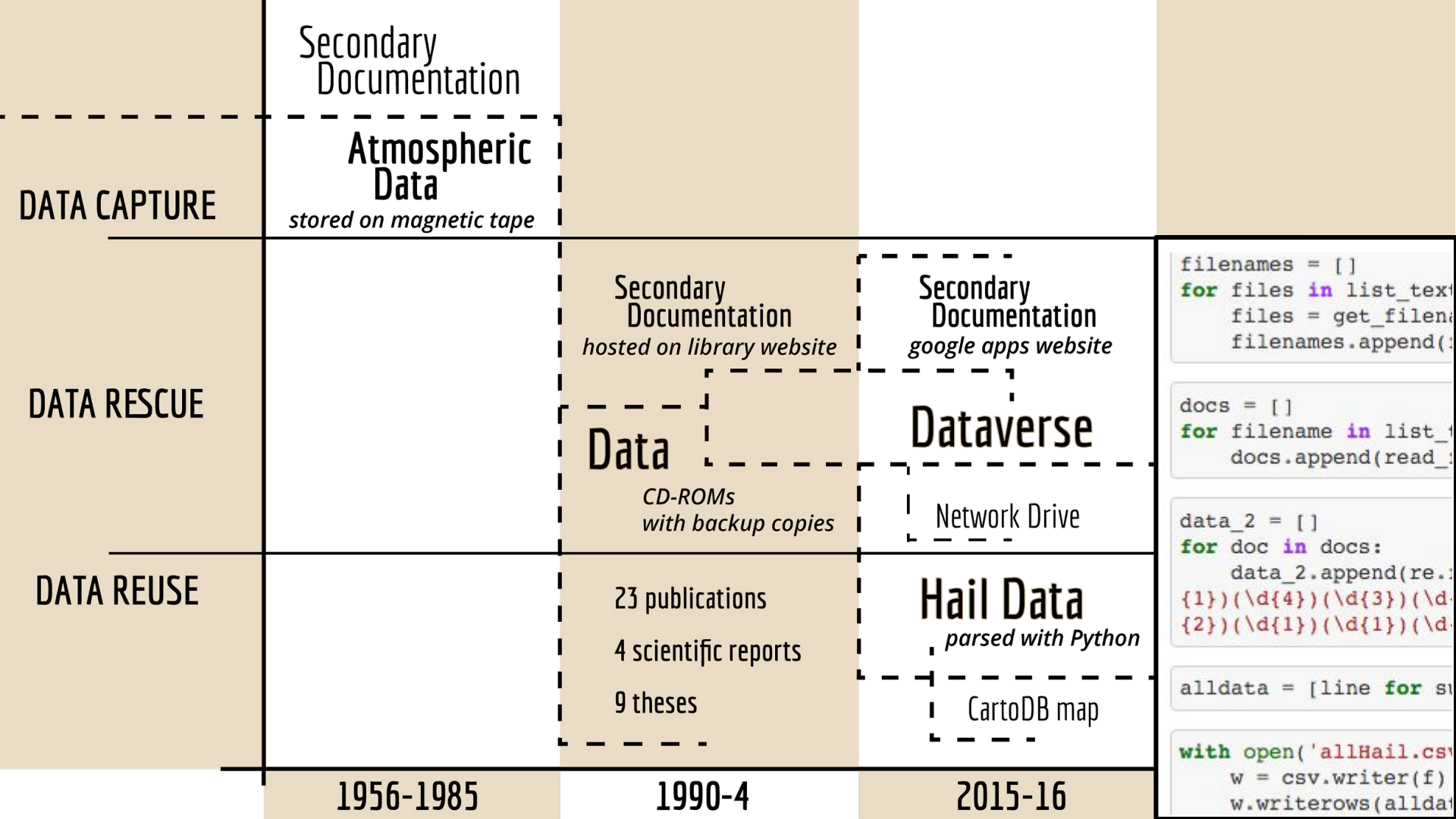
Compare the differences between versions below. Displayed are the fields or files that have been changed between the two versions you have selected to compare.

	Version: 2 Last Updated: Tue Jan 26 13:29:15 MST 2016	Version: 6 Last Updated: Mon Mar 14 11:52:34 MDT 2016
There are no differences in the Cataloging Information between the 2 versions		
Differences in Study Files		
File ID: 5024	File Name: hail_README.txt Category: Documentation Description: Instructions for the use of plainText_Archive and HTML_Archive	File Name: web_README.txt Category: 1. Website Description: Instructions for the use of plainText_Archive and HTML_Archive
File ID: 5025	File Name: hail_plainText_Archive.7z Category: Website Description: This is a plain text archive of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive website.	File Name: web_plainText_Archive.7z Category: 1. Website Description: This is a plain text archive of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive website.
File ID: 5026	Category: Data Description: CSV file with latitude and longitude coordinates, used to create the CartoDB map visualization.	Category: 2. Hail Data Description: CSV file with latitude and longitude coordinates, used to create the CartoDB map visualization.
File ID: 5027	File Name: hail_HTML_Archive.7z Category: Website Description: This is a HTML archive of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive website.	File Name: web_HTML_Archive.7z Category: 1. Website Description: This is a HTML archive of the Alberta Hail Project Meteorological and Barge-Humphries Radar Archive website.
File ID: 5028	Category: Data	Category: 2. Hail Data
File ID: 5029	Category: Data	Category: 3. Rain Data
File ID: 5031	[Empty]	File Name: C-Band.7z File Type: application/octet-stream File Size: 320 MB
File ID: 5042	[Empty]	File Name: S-Band_1979A-B.7z File Type: application/octet-stream File Size: 401 MB
File ID: 5043	[Empty]	File Name: S-Band_1979C-D.7z File Type: application/octet-stream File Size: 462 MB


HYDRA
NORTH DAMS
PROJECT
2014/15 1.0
LIBRARIES
MAIN DISCOVERY INDEX (LIBRARY_ALL)
blacklight
CONTENT TYPES | MODELS
etheses
text
digitization
research and spatial data
multimedia
Creators and Contributors
USE CASE - EXHIBITS in Omeka
Characteristics: project-oriented; temporary lifespan; asset management lives in DAMS (accountability)
DIGITAL COLLECTIONS
INDEX | BLACKLIGHT
era
Education & Research Archive
OER
Assets managed in DAMS but read/accessed elsewhere, e.g. Moodle
EXAMPLES ONLY
UA theses
Faculty pubs
Business reports
Peel's Prairie Provinces Collection
Madge Entomology
Freeman Image Collection
AB Government Docs
Research Data Collection(s)
Spatial Data Collection(s)
Multimedia Collection(s)
COLLECTIONS | METADATA | VIEWS
DATAVERSE
archivematica
Fedora 4
DAMS
hydra
API
ETDs, books, papers, newspapers, reports, gov pubs, research data, images, maps, multimedia, etc...
LOCKSS PLNs
Canadian TDR Network
HathiTrust
Internet Archive
Canadian Polar Data Network
NOTES
DAMS = Digital Asset Management System; connection to preservation storage, i.e Swift + OpenStack
Main discovery = Blacklight, not full text index; representation of some materials at collection level, e.g. research data, digitized newspaper title (not full text)
Content models = e-thesis (multipart), book, journal, article, newspaper (article segmented), image (large, small), audio, video, data set, spatial data, etc.
DAMS development driven by user stories
Access to original and derivative files to support accessibility and digital scholarship, e.g. OCR, TIFF/JP2
Archivematica may be used as a processing/packaging tool for certain types of content going into DAMS, e.g. research data, archival
Utilize digital object identifiers (DOIs) or equivalent persistent IDs, where logical
Respect metadata in its native format, whenever possible
UAArchives digital records to be included at later stage.

Scholars Portal Project

- Scholars Portal of the Ontario Council of University Libraries is working with IQSS and Artefactual to move studies from Dataverse to Archivematica for the production of Archival Information Packages (AIPs)


Secondary Documentation
Atmospheric Data
stored on magnetic tape
DATA CAPTURE
DATA RESCUE
DATA REUSE
Secondary Documentation
hosted on library website
Secondary Documentation
google apps website
Dataverse
Data
CD-ROMs
with backup copies
Network Drive
23 publications
4 scientific reports
9 theses
Hail Data
parsed with Python
CartoDB map
1956-1985
1990-4
2015-16
filenames = []
for files in list_text
files = get_filena
filenames.append(
docs = []
for filename in list_t
docs.append(read_
data_2 = []
for doc in docs:
data_2.append(re.
{1})(\d{4})(\d{3})(\d
{2})(\d{1})(\d{1})(\d
alldata = [line for su
with open('allHail.csv
w = csv.writer(f)
w.writerows(alldat

Parsing the Data

File format changed from .DAT to .TXT
using Automator for Mac

```
Hail/76HAIL.txt
 176525100029382441010015100018002542299999200001339909992l9
 176525000135320551110015111401111272999999200001994109004l9
 176527001003452349999010999912000762299999100250994129009999
 176529100020490641645012165701099992299999920000099411900919
 176529001010381541200005115502599993299999200001254119009999
 176531010020460451637009162505599992999999101520994109000l9
 176531000132370751720030171004599993299999300201404319993999
```

Regular expression in Python parses each line of text...

```
r'^(\s)(\d{1})(\d{2})(\d{1})(\d{2})(\d{4})(\d{2})(\d{2})(\d{2})(\d
{1})(\d{4})(\d{3})(\d{4})(\d{3})(\d{1})(\d{3})(\d{1})(\d{1})(\d{1})
(\d{4})(\d{1})(\d{4})(\d{1})(\d{2})(\d{1})(\d{1})(\d{1})(\d{1})(\d
{2})(\d{1})(\d{1})(\d{1})
```

...storing the numbers as a comma separated list

```
[(' ', '1', '76', '5', '25', '1000', '29', '38', '24', '4', '1010',
'015', '1000', '180', '0', '254', '2', '2', '9', '9999', '2', '0000',
'1', '33', '9', '9', '0', '9', '99', '2', '1', '9')]
```

https://github.com/mediagestalt/Hail

Time & Date

Geographical Data

(use 1-29 to code rain cards)
[ ] - represents columns

[1] Blank
[2] TYPE OF REPORT
1 Mailed in 6 Rain only
2 Tele in 7 No hail/rain
3 Network rpts. 8 Out of proj.
4 Tele Survey area

[3] YEAR
[4] (Last two digits of year)

[5] MONTH
4 April 8 August
5 May 9 September
6 June 0 October
7 July

[6] DAY OF MONTH
[7] (e.g. 03,14, etc.)

[8] QUARTER (8,9,10,11)
[9] (NE,SE,SW,NW)
[10] 0 - No
1 - Yes
[11] 9999 Missing

[12] SECTION
[13] 01 - 36

[14] TOWNSHIP
[15] 01 - 99

[16] RANGE
[17] 01 - 30

[18] MERIDIAN
4,5 or 6

[19] TIME OF HAIL - D.S.T.
[20] 0000-2359

[39] HAIL SPACING OR DEPTH
(Largest Stones)
1 Spacing
2 Just covered
3 Depth
9 Missing or Melted

[40] ACTUAL SPACING OR DEPTH
Spacing in mm or depth
[41] 9998 if greater than
9999mm
2.5mm-0003
25.4mm-0025
[42] 2544mm-0254
[43] 2544.4mm-2544
00-Just Covered

[44] HAIL SPACING OR DEPTH
1 Spacing
2 Just covered
3 Depth
9 Missing or Melted

[45] ACTUAL SPACING OR DEPTH
Spacing in mm or depth
in mm.

[46]
[47] 9998 if 9999 MM or more
[48] 00 - Just Covered

[49] SOFT HAIL
0-No 1-Yes 8-Missing

% of soft hail
99 Missing or hard hail
[50] 01-98% of soft stones
[51] 00-100% soft stones

[23] DURATION - Minutes
[24] 000-998
[25] 999 - missing
1/2 min. - 001

[26] TIME OF RAIN - D.S.T.
[27]
[28] Same as hail
[29] 8888 - No Rain

[30] DURATION - MINUTES
[31]
[32] Same as Hail
999 Missing or No Rain

[33] MEASURED ESTIMATED MISSING
0 1 9

[34] RAINFALL EXAMPLE
[35] 000 - Trace 12.2-122
[36] 001 - 998 mm 1.2-012
998 - Not mentioned .2-002

HAIL SIZE
1 shot
2 pea
3 grape
4 walnut
5 golfball
6 larger
9 missing
[37] Maximum size
[38] Common Size

Hail Size

3 egg 9 missing

[53] SURFACE TEXTURE
1 smooth 8 others
2 raspberry 9 missing
3 knobby

[54] WINDS
0 light (0 - 15 km/h)
1 moderate (15 - 40 km/h)
2 strong (40 - 65 km/h)
3 severe (over 65 km/h)
9 missing or gusty

[55] LIGHTNING
0-No 1-Yes 9-Don't know

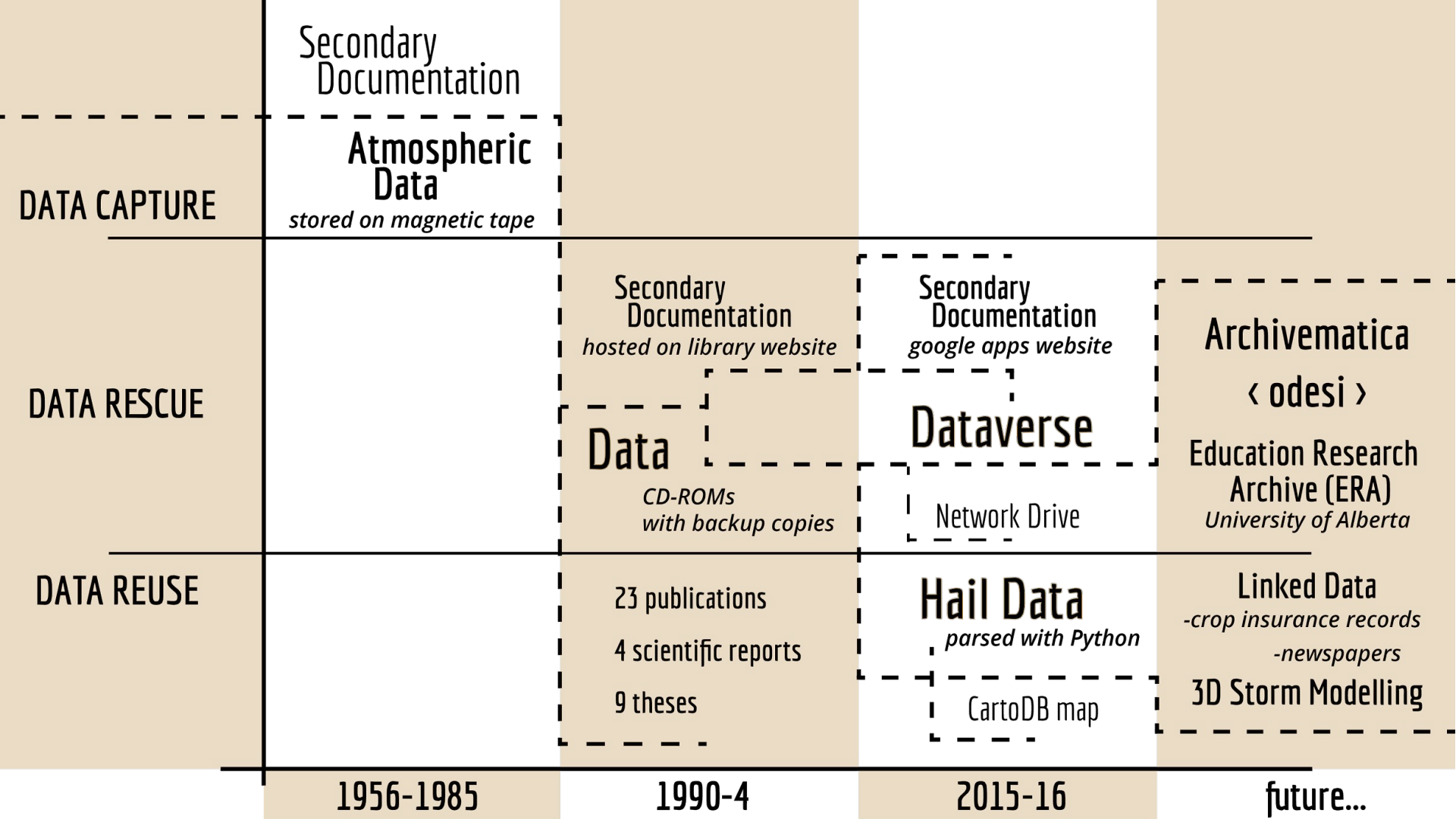
[56] DAMAGE PERCENTAGE
00 - 97
[57] 98 code 100%
99 missing

[58] CROP TYPES
0 mixed grain 5 rapeseed
1 wheat 6 garden
2 barley 7 rye
3 oats 8 other
4 hay 9 missing

[59] GROWTH STAGE
1 3-5 leaf 5 dough
2 shot blade 6 mature
3 heading 9 missing
4 blooming

[60] STORM APROACH DIRECTION
1-N 4-SE 7-W
2-NE 5-S 8-NW
3-E 6-SW 9-MISSING

Crop Type & Damage


Secondary Documentation
Atmospheric Data
stored on magnetic tape
DATA CAPTURE
DATA RESCUE
DATA REUSE
Secondary Documentation
hosted on library website
Secondary Documentation
google apps website
Archivematica
‹ odesi ›
Dataverse
Data
CD-ROMs with backup copies
Network Drive
Education Research Archive (ERA)
University of Alberta
23 publications
4 scientific reports
9 theses
Hail Data
parsed with Python
Linked Data
-crop insurance records
-newspapers
3D Storm Modelling
CartoDB map
1956-1985
1990-4
2015-16
future...