ICOADS: Update Status and Data Distribution

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CLIMAR-III, 6-9 May 2008, Gdynia, Poland

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Topic Outline

- Data Distribution
  - *How well are we doing? Metrics*
- Release 2.5 (new)
  - *Introduction and Status*
  - *Next Presentation, "Data Characteristics and Future Directions", Woodruff et al.*

Data Distribution

- All available options @ http://icoads.noaa.gov/

International COADS

Jump to: ICOADS

Search for: Go!

Search options... Contact us Privacy policy

ETMC

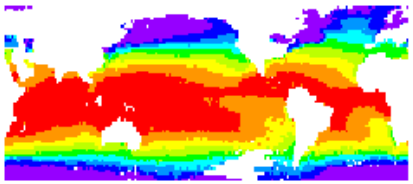
RECLAIM

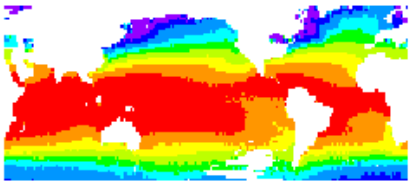
Events:

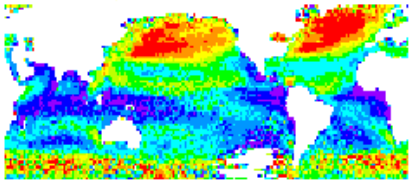
CLIMAR-III
6-9 May 2008,
Gdynia, Poland

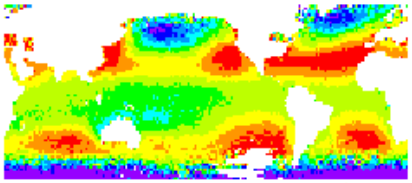
MARCDAT-II
17-20 Oct. 2005,
Exeter, UK

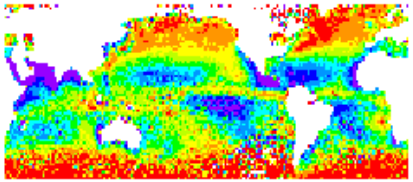
International Comprehensive Ocean-Atmosphere Data (ICOADS)


sea surface temperature


air temperature


wind


sea level pressure


cloudiness

Chronology and News
Project Status
Related Data and Resources

Data and Metadata
Publications
Contact Points

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Data

- All Observations
- All Monthly Summary Statistics (1°, 2°)

- Observations as Example (ditto for Stats)
  - *Direct File download*

- Fortran language code **software**.
- IMMA **documentation** .

View/Download Selected Files | Perl Download Script | Csh Download Script

INDEX	File Name	Description	Size	Data Format	Archive Format	Date Archived
1	IMMA_2.4_1784_1799.tar	178402-179912	567.3K	IMMA	Z.TAR	07/19/2007
2	IMMA_2.4_1800_1849.tar	180001-184912	42.1M	IMMA	Z.TAR	07/19/2007
3	IMMA_2.4_1850_1899.tar	185001-189912	275.8M	IMMA	Z.TAR	07/19/2007
4	IMMA_2.4_1900_1929.tar	190001-192912	740.5M	IMMA	Z.TAR	07/19/2007
5	IMMA_2.4_1930_1949.tar	193001-194912	624.6M	IMMA	Z.TAR	07/19/2007
6	IMMA_2.4_1950_1959.tar	195001-195912	607.4M	IMMA	Z.TAR	07/19/2007
7	IMMA_2.4_1960_1969.tar	196001-196912	1.1G	IMMA	Z.TAR	07/19/2007
8	IMMA_2.4_1970_1974.tar	197001-197412	658.3M	IMMA	Z.TAR	07/19/2007
9	IMMA_2.4_1975_1979.tar	197501-197912	682.9M	IMMA	Z.TAR	07/19/2007

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Sub-selection Interface IMMA observation example

- Temporal and spatial selection

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- QA/QC, trimming flag, data mixture choices
  - *Seeded with 'Enhanced Filtering'*

- ○ Standard Filtering
- ◉ Enhanced Filtering
- ○ Make your own Filtering Selection

day night options	☑ day night obs.	☐ night obs. only	☐ day obs. only	
platform type options	☐ ships obs. only	☑ ships + buoys + others		
source exclusion flags	☑ used	☐ ignored		
composite QC flags	☑ used	☐ ignored		
outlier trimming level	☐ 2.8 sigma	☐ 3.5 sigma	☑ 4.5 sigma	☐ untrimmed

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- Pick variable from IMMA Core section

The IMMA Core

Reset Core Selection

Click imma_short.pdf for detail desciption of the IMMA Core Fields.

☑ YR	year UTC	☑ MO	month UTC	☑ DY	day UTC
☑ HR	hour UTC	☑ LAT	latitude	☑ LON	longitude
☐ IM	IMMA version	☐ ATTC	attm count	☐ TI	time indicator
☐ LI	latitude/long. indic.	☐ DS	ship course	☐ VS	ship speed
☐ NID	national source indic.	☐ II	ID indicator	☐ ID	identification/call sign
☐ C1	country code	☐ DI	wind direction indic.	☐ D*	wind direction
☐ WI	wind speed indicator	☐ W*	wind speed	☐ VI	VV indic.
☐ VV*	visibility	☐ WW	present weather	☐ W1*	past weather
☐ SLP*	sea level pressure	☐ A*	characteristic of PPP	☐ PPP*	amt. pressure tend.
☐ IT	indic. for temperatures	☐ AT*	air temperature	☐ WBTI	indic. for WBT
☐ WBT*	web-bulb temperature	☐ DPTI	DPT indic.	☐ DPT*	dew-point temp.
☐ SI	SST meas. method	☐ SST*	sea surface temp.	☐ N*	total cloud amount

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- Pick record ID information from ICOADS Attachment

ICOADS attm

Clear&Close ICOADS attm Selection | Reset ICOADS attm Selection

Click imma_short.pdf for detail description of ICOADS attm Fields.

☐ B10	10 degree box number	☐ B1	1 degree box number	☑ DCK	deck
☑ SID	source ID	☑ PT	platform type	☐ DUPS	dup status
☐ DUPC	dup check	☐ TC	track check	☐ PB	pressure bias
☐ WX	wave period indicator	☐ SX	swell period indicator	☐ C2	2nd country code

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- Other IMMA attachments
  - *Ship Metadata (Kent and Berry, 1973-2006)*

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- Select Auxiliary Data to supplement ICOADS
  - *Data sources not in ICOADS, any IMMA format data*
  - *Believed to be:*
    - Convenient data service for collaborators
    - Early access to new data for users

ICOADS Auxiliary Data Selection (Optional)

DS Name	DS Type	DCK	SID	Date Range*	Description
☑ ICOADS	ICOADS	1-999	1-120	None	data in ICOADS archive
☐ RussRV	New	735	64-65	1936-2000	Russian research vessel obs.
☐ JapanWhaling	New	761	115-116	1946-1984	Japanese Whaling Ship Data
☐ PMELJAMSTEC	Replacement	144	117-120	1990-1997	PMEL/JAMSTEC buoy data
☐ COAPSRV	New	740	130	1990-1998	COAPS research vessel obs.
☐ USMMJ	New	704	125	1878-1894	US Marine Meteorological Journals
☐ RNWW2	New	245	126	1936-1948	UK Royal Navy WW II Logs
☐ CLI21	New	730	124	1662-1855	Climatological Database for the World's Oceans

* Available date ranges of the listed data sources that are NOT included in ICOADS yet

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From the Observation Interface

NCAR ICOADS Observation Interface Requests (IMMA Core + ICOADS Attm)

Year	Enh. Filter	Stand. Filter	Self-def. Filter	Total Users	Other Attms	Aux. Data
2007	**317**	49	33	**399**	26	**5**

Percentage of Variables Requested Through Observation Interface (11/05-03/08)

	SST	W	D	AT	SLP	DPT	WH	WD	SH	WW	SD
%	**75**	**67**	**65**	**60**	**52**	35	**30**	**27**	**25**	25	**25**

- 70-80% Users choose Enhanced Filtering (recommended choice)
- About one request per day (399)
- Lower than anticipated use of Auxiliary Data (5)
- Top % variable, expected (SST, W, D, AT, SLP)
- Interesting 25% request wave data (WH, WD, SH, SD)

Data Metrics, NCAR

From the Observation Archive, File Download

NCAR ICOADS Observation Archive File Downloads		
Year	**Unique Users**	**Data Volume (GB)**
2007	**192**	619

- Surprising number of Unique Users download files (192)

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From the Monthly Summary Statistics Interface

NCAR ICOADS Monthly Summary Statistics Interface			
Year	**Requests**	**Unique Users**	**Data volume (GB)**
2007	**251**	**101**	13

Percentage of Variable Requested Through Statistics Interface
(11/05-03/08)

	SST	AT	W	V	U	SLP	R	C
%	**83**	36	32	27	27	19	16	15

- Requests (251), Users (101) => 2 to 3 requests per user
- SST dominates as the preferred variable, over 80%
- About 90% choose Enhanced Statistics (not shown)

Data Metrics, NCAR

From the Monthly Summary Statistics Archive, File Downloads

NCAR ICOADS Monthly Summary Statistics File Downloads		
Year	**Unique Users**	**Data Volume (GB)**
2007	**68**	41

- Not many Unique Users for archive files (68)

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Data Metrics, NCAR

Top 10 International Rankings

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Countries Using the Interfaces
(Obs. + Statistics, 11/05-03/08)
Ordered by Number of Requests

Rank	Country	Unique Users	Requests	Data Volume (GB)
1	U.S.A.	163	768	185
2	U.K.	30	107	14
3	INDIA	11	84	5
4	CANADA	20	69	20
5	BRAZIL	7	57	5
6	JAPAN	11	37	40
7	SPAIN	13	32	3
8	P.R.CHINA	19	29	8
9	PORTUGAL	9	28	.3
10	GERMANY	9	26	10
Total		**385**	**1448**	**376**

Countries Downloading Archive Files
(Obs. + Statistics, 11/05-03/08)
Ordered by Number of Files Downloaded

Rank	Country	Unique Users	Files	Data Volume (GB)
1	U.S.A.	158	2101	422
2	JAPAN	27	747	175
3	P.R.CHINA	38	455	127
4	FRANCE	15	434	29
5	U.K.	29	261	95
6	TAIWAN	8	144	61
7	GERMANY	14	141	66
8	INDIA	19	135	78
9	AUSTRALIA	7	118	35
10	CUBA	1	104	24
Total		**443**	**5213**	**1268**

- Rankings vary between preference, interfaces .vs. file downloads
  - U.S. is ranked #1 in both - good for U.S. budget justifications
- Many Unique Users in both cases (385 and 443)
  - Both services are important

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Summing it all up

Grand Totals All Products (11/05-03/08)		
	Unique Users	Data Volume (GB)
TOTAL	**723**	1693
% Monthly Summary Statistics	**38%**	10%
% Observations	**62%**	90%

- Over about 2.5 years
  - 700+ Unique Users
- ~ 40% use MSS, ~ 60% use Observations

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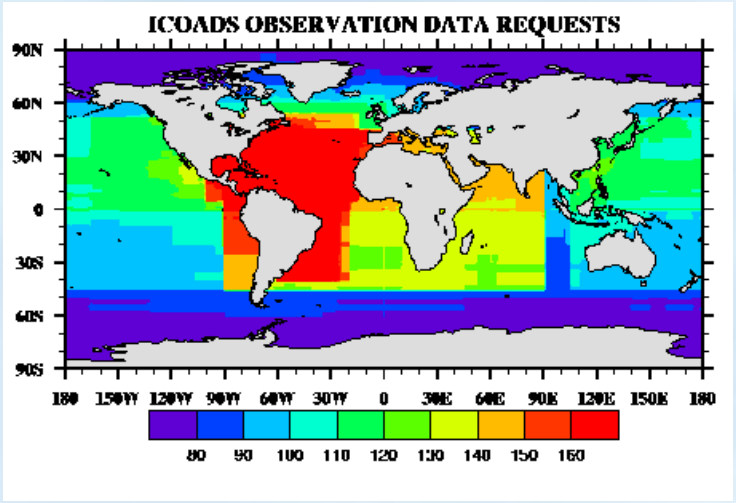
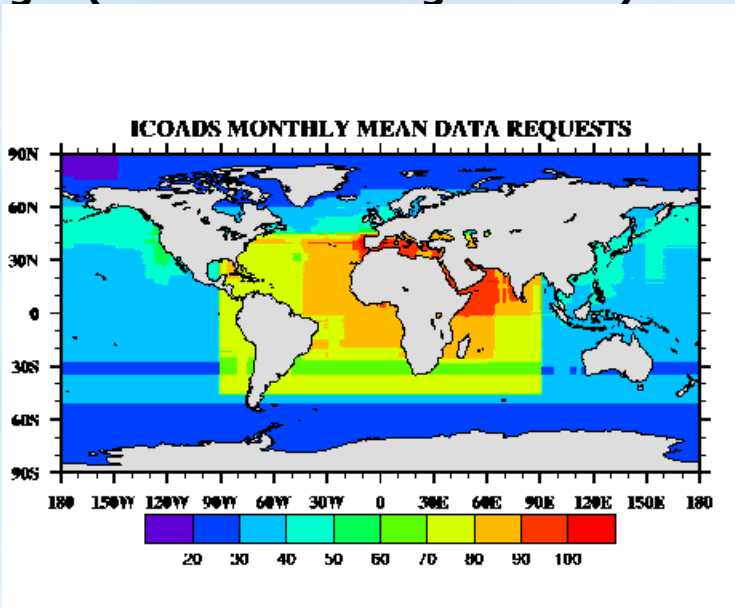
What areas of data are most interesting? (From subsetting metrics)





Features:

- Observations - Atlantic Ocean
- Monthly Summary Statistics - Mediterranean Sea, Northwest Indian Ocean

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Products:

- Monthly Summary Statistics Files (1°,2°)
  - *netCDF format*
- Long-term Means (LTM) (2°)
  - *netCDF format*
- Near-Real Time (NRT) ICOADS-like extensions
  - *Based on GTS, abbreviated (limited statistics and variables) format*
  - *Observations,*
    - ASCII format
  - *Monthly Summary Statistics*
    - ASCII and netCDF format

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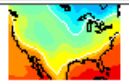
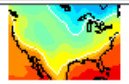
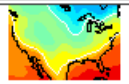
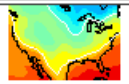
Illustration of Web Access

ICOADS 2-degree Enhanced

Sea Surface Temperature

Create a plot or subset.	Statistic	Start Date	End Date	Level	Link to files
 Make plot or subset	Monthly Fifth Sextile	1800/1	2007/5	Surface	sst.sextile5.nc
 Make plot or subset	Monthly First Sextile	1800/1	2007/5	Surface	sst.sextile1.nc
 Make plot or subset	Monthly Fraction of Observations in Daylight	1800/1	2007/5	Surface	sst.day_fraction.nc
 Make plot or subset	Monthly Mean	1800/1	2007/5	Surface	sst.mean.nc

- Point and click with one statistic (e.g. mean) per file
- Full record length (1800-5/2007) in one file
- Very handy for climate studies and analysis tools (NCL, GRADS, MatLab, NCO, etc)

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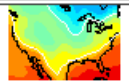
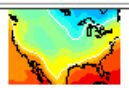
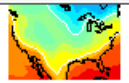
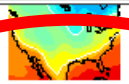
ICOADS 2-degree Enhanced

Sea Surface Temperature

Create a plot or subset.	Statistic	Start Date	End Date	Level	Link to files
 Make plot or subset	Monthly Fifth Sextile	1800/1	2007/5	Surface	sst.sextile5.nc
 Make plot or subset	Monthly First Sextile	1800/1	2007/5	Surface	sst.sextile1.nc
 Make plot or subset	Monthly Fraction of Observations in Daylight	1800/1	2007/5	Surface	sst.day_fraction.nc
 Make plot or subset	Monthly Mean	1800/1	2007/5	Surface	sst.mean.nc

Features:

- Make plot or create subset file

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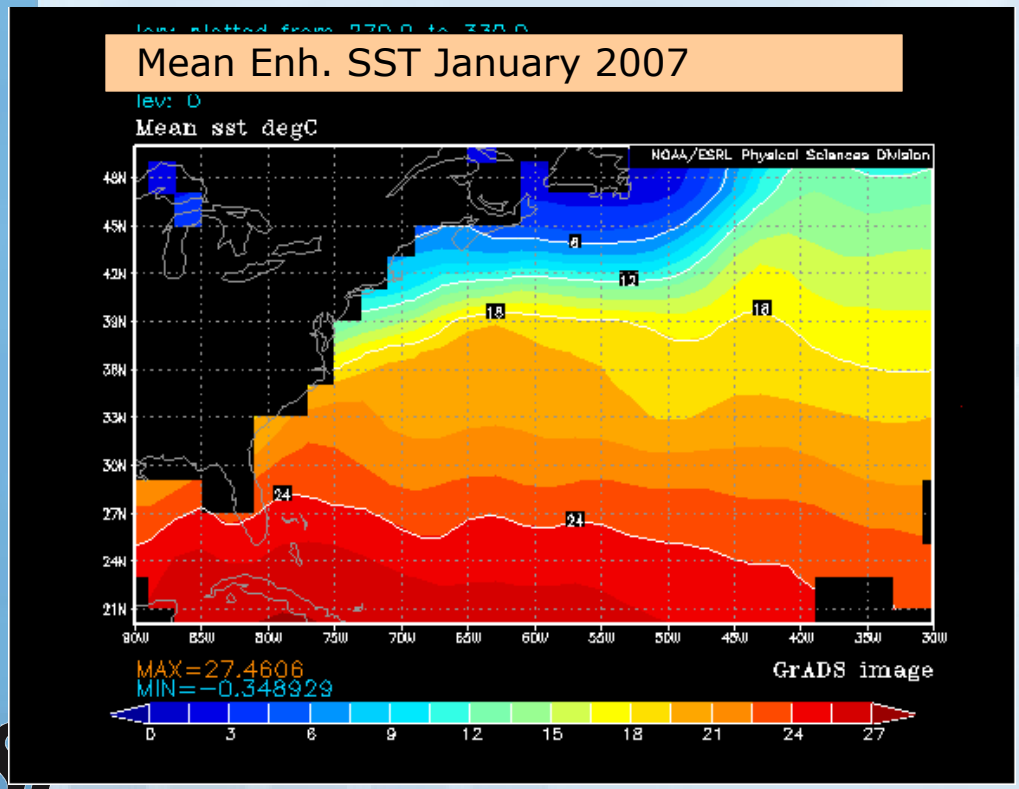
- Select region and time
- Create plot(s), and/or output dataset in netCDF



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Web Access @ NOAA/ESRL
Percentage of 2007 Access
Total = **560**K Accesses (files, images, subsets)
Estimates from Web Logs

	Monthly Summary Statistics	ΛTM∏c	NRT	Total
HTTP	**12**	1	**65**	78
OPeNDAP	**16**	< 1	< 1	16
OPeNDAP Server	< 1	< 1	< 1	< 1
LAS		**6**		6

Web Highlights

- NRT, most desired (65%)
- MSS; HTTP(12%), OPeNDAP (16%)
- LAS, 6% across products

FTP Highlights

- 25K Transfers
- MSS and NRT Monthly, most desired (10K & 14K)

FTP Access @ NOAA/ESRL
2007 (scaling based on 10 month record)
Estimates from Web Logs

	Monthly Summary Statistics	ΛTM∏c	NRT Monthly	NRT Obs.	Total
Transfers (K)	**10**	.8	**14**	.8	**25**
Volume (GB)	357	< 1	30	8	395

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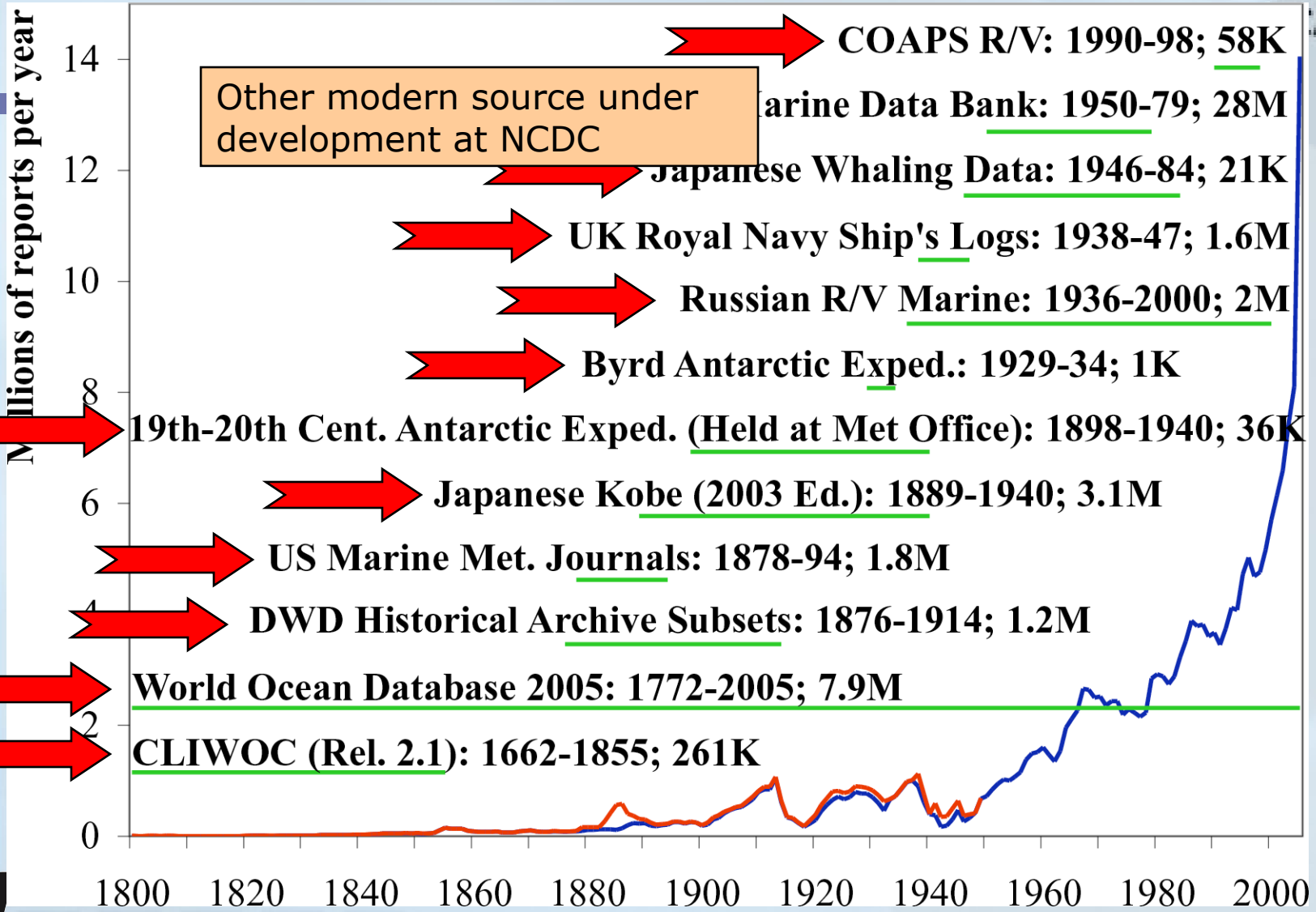
Release 2.5 Status, New Release '08

Release 2.5, Long-period reprocessing 1662 -> 2000

- Progress to date
  - *Period of record completed, 1662 - 1949 (obs. and summaries)*

Release 2.5 Status, New Release '08



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Future for Data Distribution and Release 2.5

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Data Distribution

- Find better ways to promote Auxiliary Data usage
  - *More obvious presence on the interface?*
  - *Automatic inclusion with proper documentation?*
- Work toward a routine ICOADS near-real time update
  - *Possibly monthly*
  - *Retire 'light weight' NRT products currently available*
  - *Create compliant MSS and Observation Products*
- Provide observational data from NCDC

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Future for Data Distribution and Release 2.5

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Release 2.5

- Complete Release 2.5 data processing
- Refresh archives at the partners sites
- Notify Users of Release 2.5 availability
  - *Automated from 'registration' data base at NCAR*
- NOAA/ESRL has proposed a press release for ICOADS Release 2.5
- BAMS Article
  - *Probably good idea, expanded POR, new data sources*

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Summary

- ICOADS data distribution is going well
  - *Reaching the International community*
  - *Find MSS and Observations archives to both be important*
  - *Find file download and subsetting both to be important*

- Completing Release 2.5 is still a big task, but it is underway

International COADS

- Global community has/is adding great value ICOADS

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END

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http://icoads.noaa.gov/

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Roles at the US Partners

NOAA/ESRL

- ICOADS Project Coordination and Home Website
- Documentation and IMMA format development
- User software, Release data processing
- Data Access

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- Long-term data preservation
- Data Access

NOAA/NCDC

- Long-term data preservation
- Real-time data collation
- Data rescue, i.e. CDMP

All

- Source data preparation

Acknowledge International Support

International COADS

- **Global community has/is adding great value ICOADS**

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- Sub-set Process
  - *Delayed processing - run in ~ 5 minute*
  - *Email notification*
  - *Users download*
  - *ASCII data*

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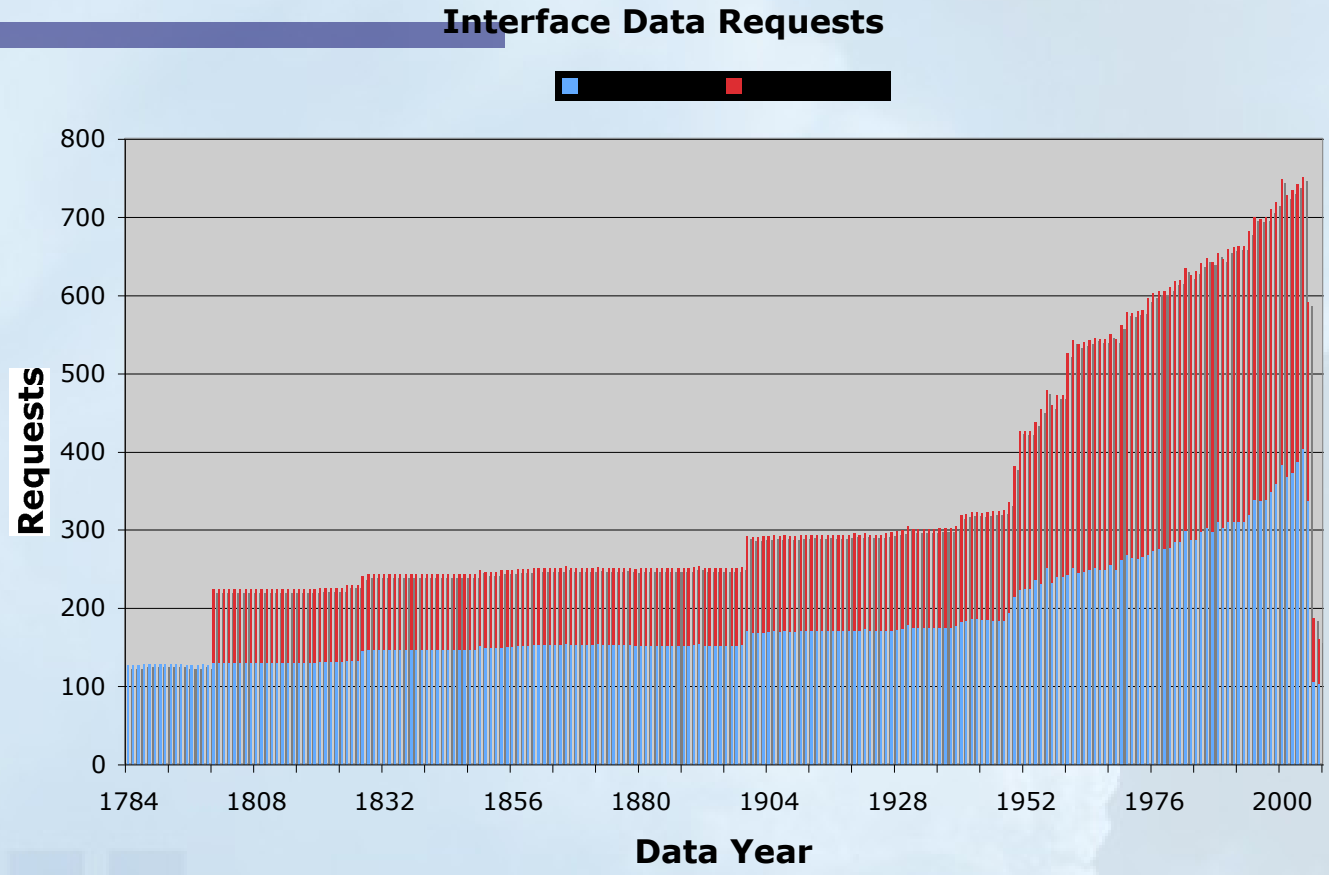
Data Metrics, NCAR

What time periods of data are most interesting? (11/05-03/08)



- Number of requests that touched specific data years
- 128 Requests go back to 1784 - climate interests are strong
- More interest in the modern period