NNDC Report FY2010

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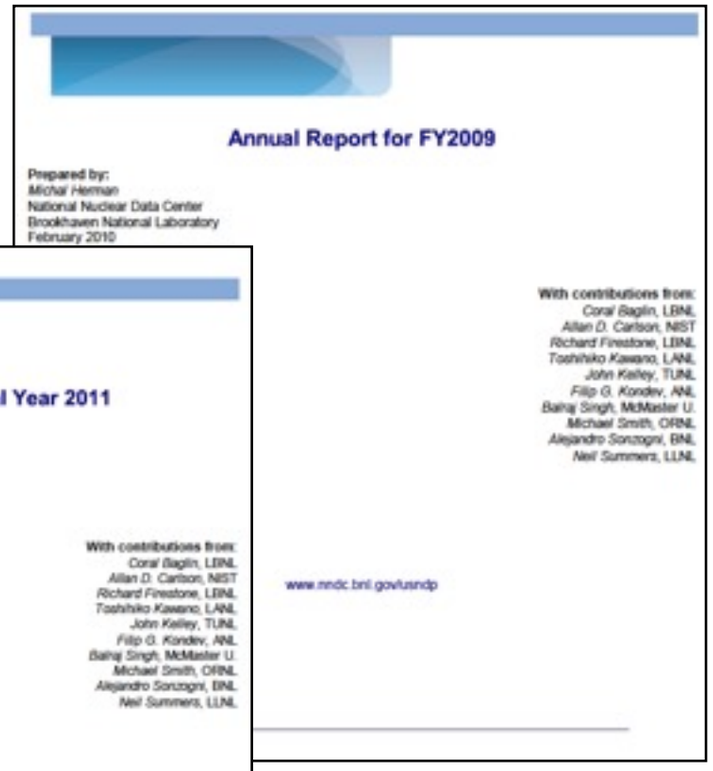
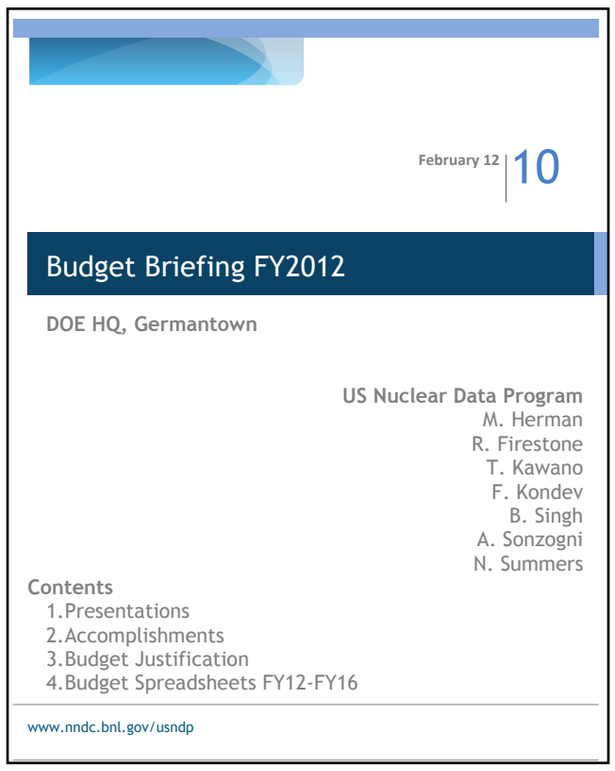
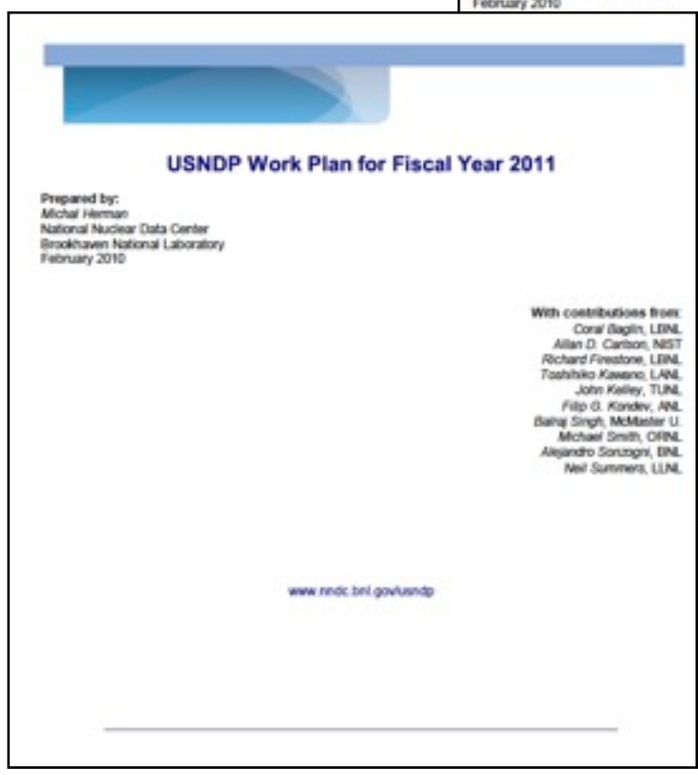
Coordination and reporting

- CSEWG-USNDP Annual Meetings held (Nov 2009)
  Summary and Minutes (web only) issued (Dec 2009)
- USNDP Report FY09 & Workplan FY11 issued (Feb 2010) Web based!
- USNDP Budget Briefing FY12 held at DOE-SC (Mar 2010) Web based!
- Work on Report FY10 will start in November
- Work on Work plan FY12 will start early next year







NNDC computer facility

- Upgrade of the Linux cluster mother node
  - from 1 to 2 Xenon processors
  - from 4 to 16 GB RAM
  - increased disk space
- Installation of the new backup server
- GForge server lunched in January 2010, to be replaced by a more powerful server in spring 2011

Databases and Services

Database management

- All NNDC databases run on MySQL
- NSR, XUNDL, ENSDF, NuDat maintained and distributed regularly
- CSISRS/EXFOR database maintained regularly
- GForge server started in January 2010 (see next slide)

NNDC Web service, more details in talk by Boris

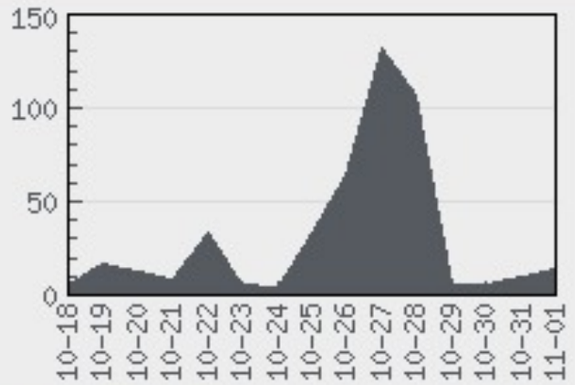
- Data retrievals increased by 1%; 2.355 million retrievals in FY10
- Sigma-3.1 released in October 2009
  - ROSFOND, CENDL-3.1, and JENDL-4.0 added later
  - Plots of fission yields
  - Pre-calculated integral quantities (thermal, RI, Maxwellian average)
  - Improved zooming
- Active communication with users available for NNDC-general, CSISRS, ENDF, Wallet Cards

NNDC GForge server
https://ndclx4.bnl.gov/gf/

FORGE Advanced Server

- Number of projects:13
  - structure: 8
  - reactions: 5 (ENDF/B-VII, ENDF-6 Manual, EMPIRE)
- Number of accounts: 52
  - structure: 12
  - reactions: 40
- Most downloaded:
  - ENDF-6 Manual - 595 times
  - ENDF/B-VII.1beta0 - 327 times

Activity



Recently Registered Projects

(2010-01-26) ENDF-6 Manual
(2010-01-19) EMPIRE Nuclear Reaction Code System
(2009-10-30) ENDF/B-VII

Top Downloads

(595) ENDF-6 Manual
(345) ENDF/B-VII

Browse Project Topics

Scientific/Engineering (3)

Support and Docs

GForge Help Forum & Docs

Package Name	Latest Release	Maturity	Files	FileSize	Downloads
ENDFB-VII.1	beta0	4 - Beta	ENDF-B-VII.1beta0.tgz	203.85 Mb	327
		4 - Beta	ENDF-B-VII.1beta0-checkr-errors	18.61 Kb	2
		4 - Beta	ENDF-B-VII.1beta0-fizcon-errors	36.78 Kb	1
		4 - Beta	ENDF-B-VII.1beta0-new-rev-list.txt	5.68 Kb	15

Manage Packages

NNDC Personnel Status

Personnel changes

- Sujit Tandel left NNDC March 2010 (on leave of absence since June 2009)
- Tim Johnson joined NNDC in March 2010, staff position, structure data
- Chris Ouellet left NNDC in April 2010, postdoc position, structure data
- Sam Hoblit joined NNDC in April 2010, staff position, nuclear reaction data
- Caleb Mattoon left NNDC in August 2010, staff position, reaction data

Staff	FTE	Heads	FTE (USNDP)
Permanent	7.35	10	6.00
Temporary	2.33	2	2.33
Professional	3.70	4	3.70
Contractors	2.25	10	2.25
Total	15.63	26	14.28

Nuclear Structure Data

NSR - bibliography compilation,
more details in talk by Boris

- 3,818 entries compiled in FY2010 (~41% more than in FY2009)
- contributions from NDS-IAEA and E. Betak (under NNDC contract)
- New software for automatic key-wording under development

NuDat - ENSDF browser

- NuDat-2.5 maintained regularly, 1.273M retrievals in FY10 - combined with Chart of Nuclides

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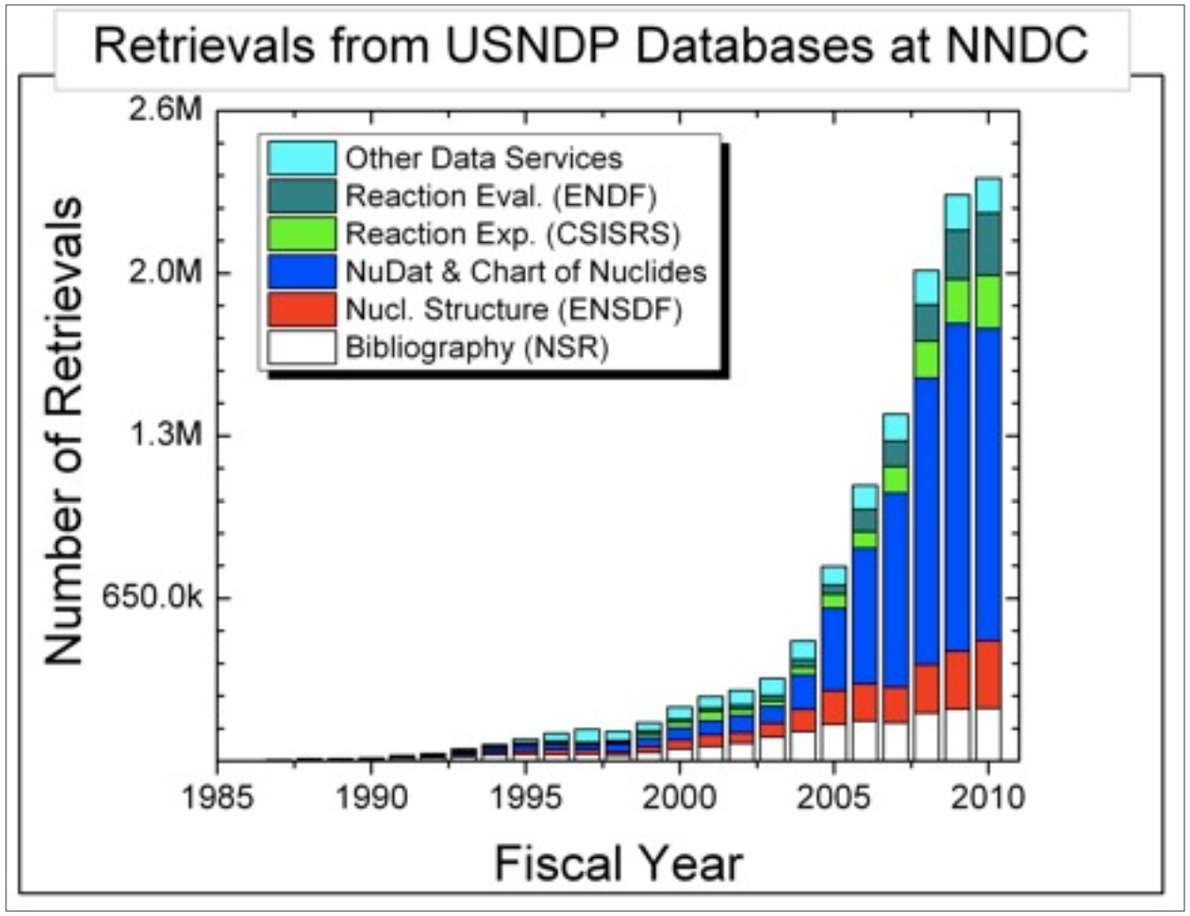


ENSDF

8 mass chains completed and submitted (5 NNDC, 3 Collaboration)

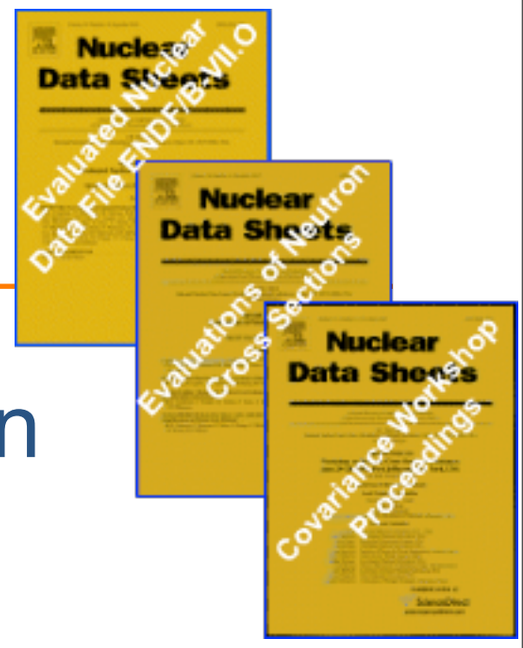
Evaluated:

A= 36 (4 nuclides, Nica; *Canada)
A=37 (3 nuclides, Nica; *Canada)
A=65 (13 nuclides Browne,Tuli)
A=95 (10 nuclides, Basu,Sonzogni;*India)
A=99 (14 nuclides, Browne,Tuli)
A=142 (16 nuclides, Johnson,Symochko,Fadil,Tuli)
A=150 (17 nuclides, Basu,Sonzogni)
A=161 (14 nuclides, Reich)
*collaboration
NNDC share of nuclides = 92 (last year = 106)

Published: 6 mass chains
A=65, 66, 72*, 95*, 163*

Reviewed: 8 mass chains
Browne 1(77); Johnson 1(89); Oulette 2(34,65); Reich 2 (50,66), Sonzogni 1(71),
Tuli 1(117)

Nuclear Data Sheets



- 10 issues published on ENSDF evaluations in 2010, total number of pages 2800
- 1 issue devoted to reaction data, 200 pages
  - NJOY paper
  - 2 papers on fission yields
- Most cited (according to Scopus)
  - ENDF/B-VII.0: Next Generation ... 255 times
  - EMPIRE: Nuclear Reaction Model... 53 times
  - Nuclear Data Sheets for A = 40 13 times
  - Nuclear Data Sheets for A = 24 12 times
- Impact factor 1.145 (last year 3.404)

Nuclear Reaction Data

CSISRS compilation (experimental data)

- 126 papers compiled, 131 included in the library (45-n, 81-cp, 5-γ papers)

Development of EMPIRE, more details in EMPIRE talk

- DDHMS preequilibrium model extended to produce exclusive spectra
- Further improvements of the resonance module
- New parametrization of the fission channel
- Development migrated to GForge (Subversion)
- Parallel processing on the NNDC cluster

Nuclear Reaction Data

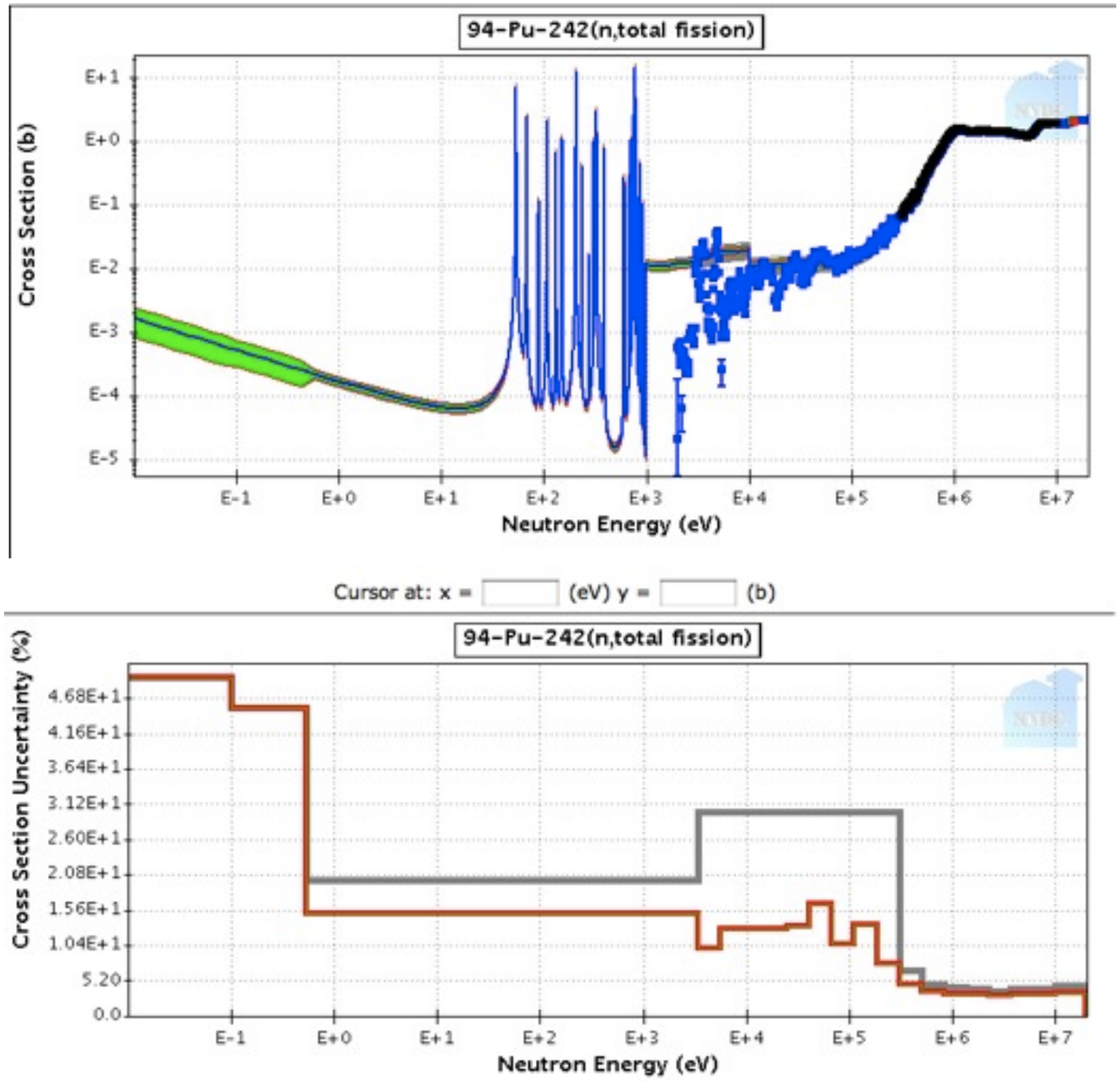
Covariance evaluations, details in talks by Pigni and Hoblit

- AFCI-2beta covariance library released with LANL - 110 materials: 12 light, 78 structural and fission products, 20 actinides.
- Collaboration with INL on assimilation of ^{56}Fe data

Data verification, more in talks by Ramon

- Processed all files in ENDF/B-VII.1beta0 with NJOY and checking codes
- Processed all 110 files for the AFCI-2beta covariance file
- Comparison of NJOY and PUFF codes
- Generated 33-group cross sections for VII.0, VI.8, CENDL-3.1, JENDL-4.0, ROSFOND, and JEFF-3.1 to be used in the AFCI QA system

AFCI-2 QA

Extended, graphical system for reviewing covariances

- Interactive comparison of uncertainties with the experimental data
- Interactive comparison of group-wise cross sections in different libraries
- Interactive comparison of group-wise uncertainties in different version of the AFCI library
- Comparison of integral quantities and their uncertainties in major libraries, Atlas and AFCI-2