



WAVEFORMS FROM NUCLEAR EXPLOSIONS (WFNE)

DATA REPOSITORY:

- Will be open for the research community's access to source parameter data and associated waveforms from worldwide nuclear explosions for both historic and recent events.
- It is based on the former NEDB, which had contained data collected, analyzed and assembled by SAIC/Leidos, using a very large number of sources and ground truth information.
- It will contain newly published or revised information, including the recent DPRK events.
- It can be easily accessed via a web interface through table and map-based selection tools to present:
 - Event or groups of events
 - Relative event source locations and comparisons to imagery features (Ground Truth comparisons)
 - Bulletin information: origin and arrivals
 - Information on stations reporting the explosion
 - Observed travel time residuals
 - Waveform selection, display, filter, zoom, pan left-right
 - Data download in "event bundles"

CONTENT

1. Nuclear explosion source data for all explosions

- 2157 nuclear explosions, each with a preferred origin and several associated origins obtained from different sources
- 5875 distinct origins for the 2157 nuclear explosions
- 1548 ground truth (GT) 0-10 locations
- mb magnitude for 925 nuclear explosions; Ms magnitude for 230 nuclear explosions; yield or maximum yield estimate for 2154 nuclear explosions
- Other source metadata

2. Bulletin data for 1174 WFNE nuclear explosions

- Published Bulletin Data - ISC and REB
- Seismic Travel Time Residuals for ISC initial P relative to predictions from preferred origins using IASP91.

3. Archived waveform data for 678 WFNE nuclear explosions

- Recording station characteristics
- Availability of waveforms/station coverage
- Waveform selection and preview options
- Waveform and parametric data downloads

4. Event Summaries for each region

- Summary of ground truth and historical information for the explosions detonated in the region
- Discussion of geological information, imagery vs. the seismic locations, magnitude and yield estimate, etc.
- References

Waveforms For Nuclear Explosions (WFNE)

The WFNE consists of source information (date/time, location, yield, seismic magnitude, burial depth, etc.), drawn from a variety of official and unofficial sources, and a collection of related digital waveform data for all nuclear explosions conducted from 1945-2017. The WFNE website includes 2157 announced or presumed nuclear explosions, 678 of which have over 60,000 digital waveforms available from WFNE.

A range of options are provided for accessing/downloading these data resources including menu-based and map-based alternatives. For a complete description of the WFNE data resources and access tools, the [WFNE User Manual](#) provides an orientation and guide including a summary of what data are available, functionality of various web-based access and display options, and step-by-step examples for several typical WFNE data queries.

Some features of the WFNE website are still being developed or supplemented.

[WFNE User Manual](#)

Show Regions / Sub-Regions

Country: [All] Region: [All] Sub-Region: [All]

Date Range: From: 1945/07/16 00:00:00 To: 2017/09/03 23:59:59

Lat / Lon Bounds: Minimum Latitude: -49.5 Maximum Latitude: 73.85 Minimum Longitude: -172.2 Maximum Longitude: 179.179

Event Size: Magnitude (mb) or Yield (kt)

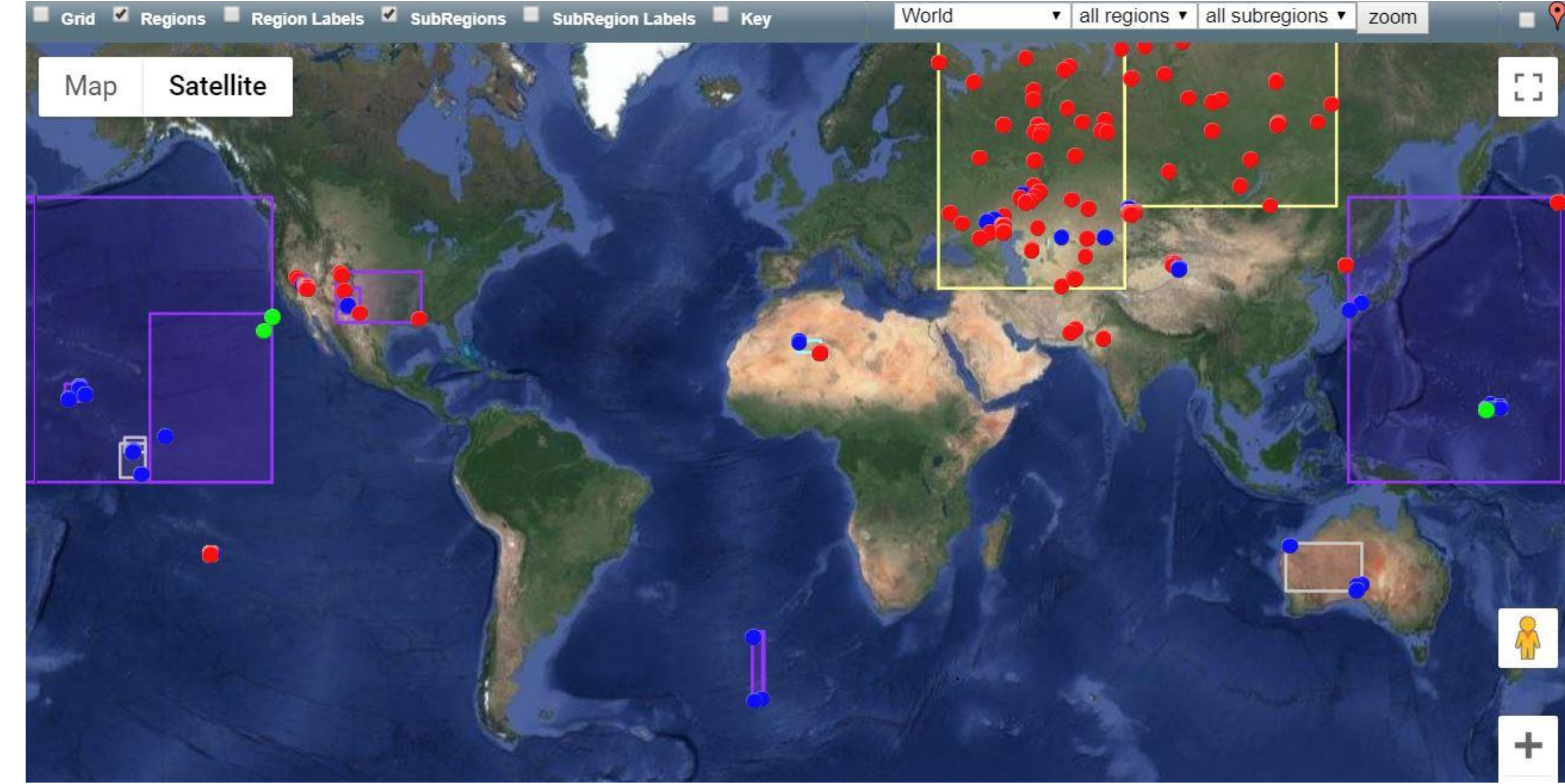
Waveform Data Only: Yes No

Source Type: Atmospheric Underground Underwater

Map Based Selection: Yes No

Submit Request Reset Values

WFNE entry page



Event List

Country: China Region: Lop Nor SubRegion: Lop Nor Tunnels

Date Time: 1996/07/29 09:00:00 to 1996/07/29 23:59:59

Depth Range: 41.735 to 41.735 Latitude: 41.735 to 41.735 Longitude: 84.3981

Event Size: 4.7 to 4.7 Magnitude: 4.7 to 4.7 Yield: 0 to 0

Source Type: Atmospheric, Underground, Underwater

Retrieved on 2019/04/29 17:17:03 by 2019119

COUNTRY	SOURCE TYPE	DATE TIME	LAT	LO	DEPTH	YIELD	MB	YMAX	NSIA	AUTH
CHN	Underground	1996/07/29 09:00:00	41.735	84.3981	0	0	4.7	0	0	ISC

Event List > Source Data

Country: United States Region: NNSS SubRegion: Frenchman Flat

Preferred Solution

COUNTRY	SOURCE TYPE	DATE TIME	LAT	LO	DEPTH	YIELD	MB	YMAX	NSIA	AUTH
USA	Underground	1952/05/05 00:00:00	37.0833	-103.0833	0	0	5.1	0	0	ISC

Event List > Origin List

Country: China Region: Lop Nor SubRegion: Lop Nor Tunnels

Preferred Solution

COUNTRY	SOURCE TYPE	DATE TIME	LAT	LO	DEPTH	YIELD	MB	YMAX	NSIA	AUTH
CHN	Underground	1996/07/29 09:00:00	41.735	84.3981	0	0	4.7	0	0	ISC

Download Event Bundle

Select groups of events, source locations and preferred solution

Event List > Source Data

Country: United States Region: NNSS SubRegion: Frenchman Flat

Preferred Solution

COUNTRY	SOURCE TYPE	DATE TIME	LAT	LO	DEPTH	YIELD	MB	YMAX	NSIA	AUTH
USA	Underground	1952/05/05 00:00:00	37.0833	-103.0833	0	0	5.1	0	0	ISC

WFNE References: Authority = Springer

Springer, 2019. Nuclear Explosions: A History of the World's Most Powerful Weapons. Springer, 2019. 304 pp. ISBN: 978-1-4939-9999-9

Event

2016/09/09 00:30:01 41.2992 129.0491 0 Y 5.1

Associated Solutions

ID	DATE TIME	LAT	LO	DEPTH	YIELD	YMAX	NSIA	AUTH
2016/09/09 00:30:01	41.2992	129.0491	0	Y	5.1			ISC

Select associated source metadata and references

Event

2016/09/09 00:30:01 41.2992 129.0491 0 Y 5.1

Associated Solutions

ID	DATE TIME	LAT	LO	DEPTH	YIELD	YMAX	NSIA	AUTH
2016/09/09 00:30:01	41.2992	129.0491	0	Y	5.1			ISC

Ground Truth comparisons

Event List > Station List (21 stations with waveforms)

Country: USSR Region: Novaya Zemlya SubRegion: Matochkin Shar

Preferred Solution

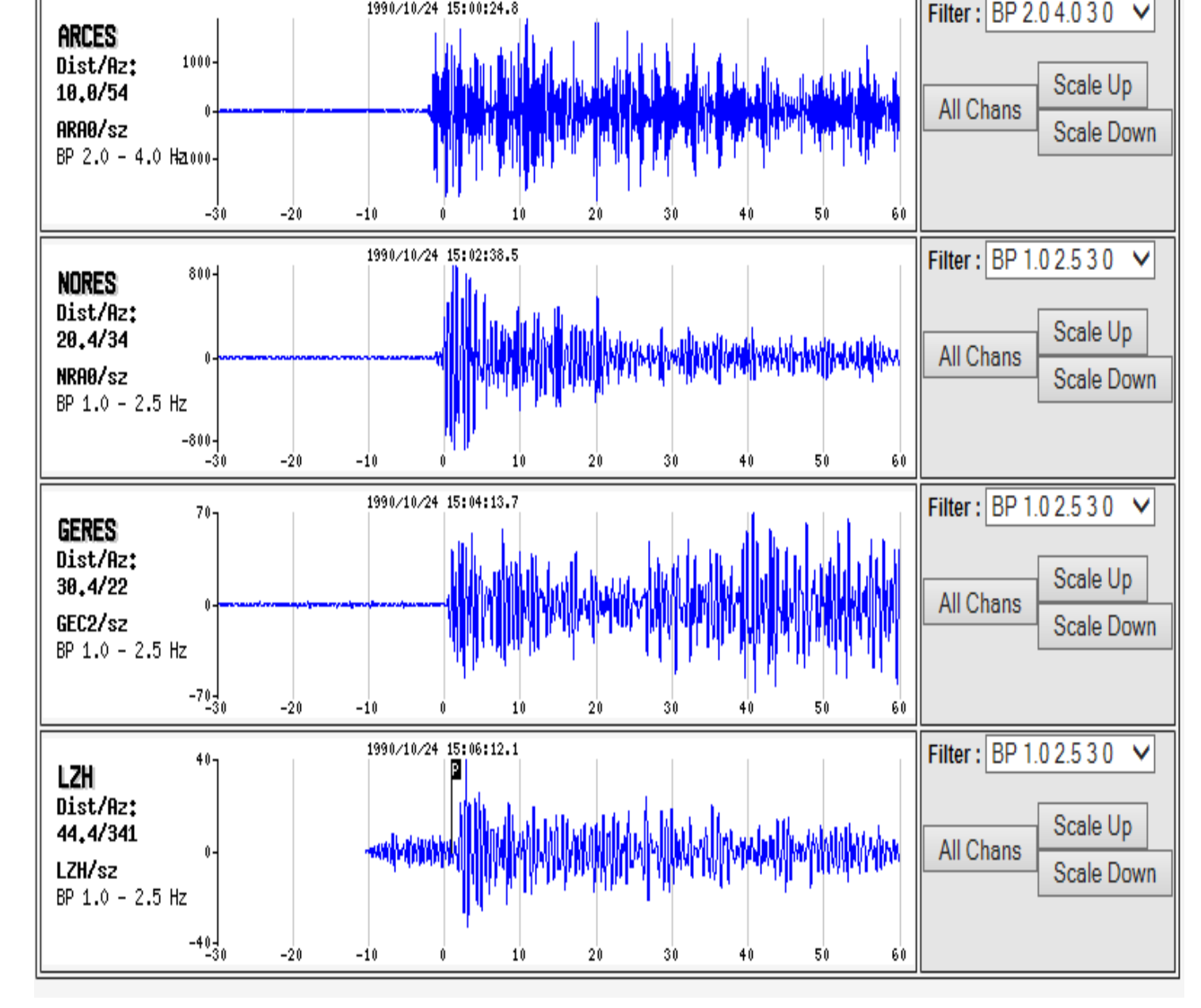
COUNTRY	SOURCE TYPE	DATE TIME	LAT	LO	DEPTH	YIELD	MB	NORIGIN
SOV	Underground	1990/10/24 14:58:00.000	73.3264	64.7828	1	0.01	150	5.7 6

(note: SALVO with eight shots)

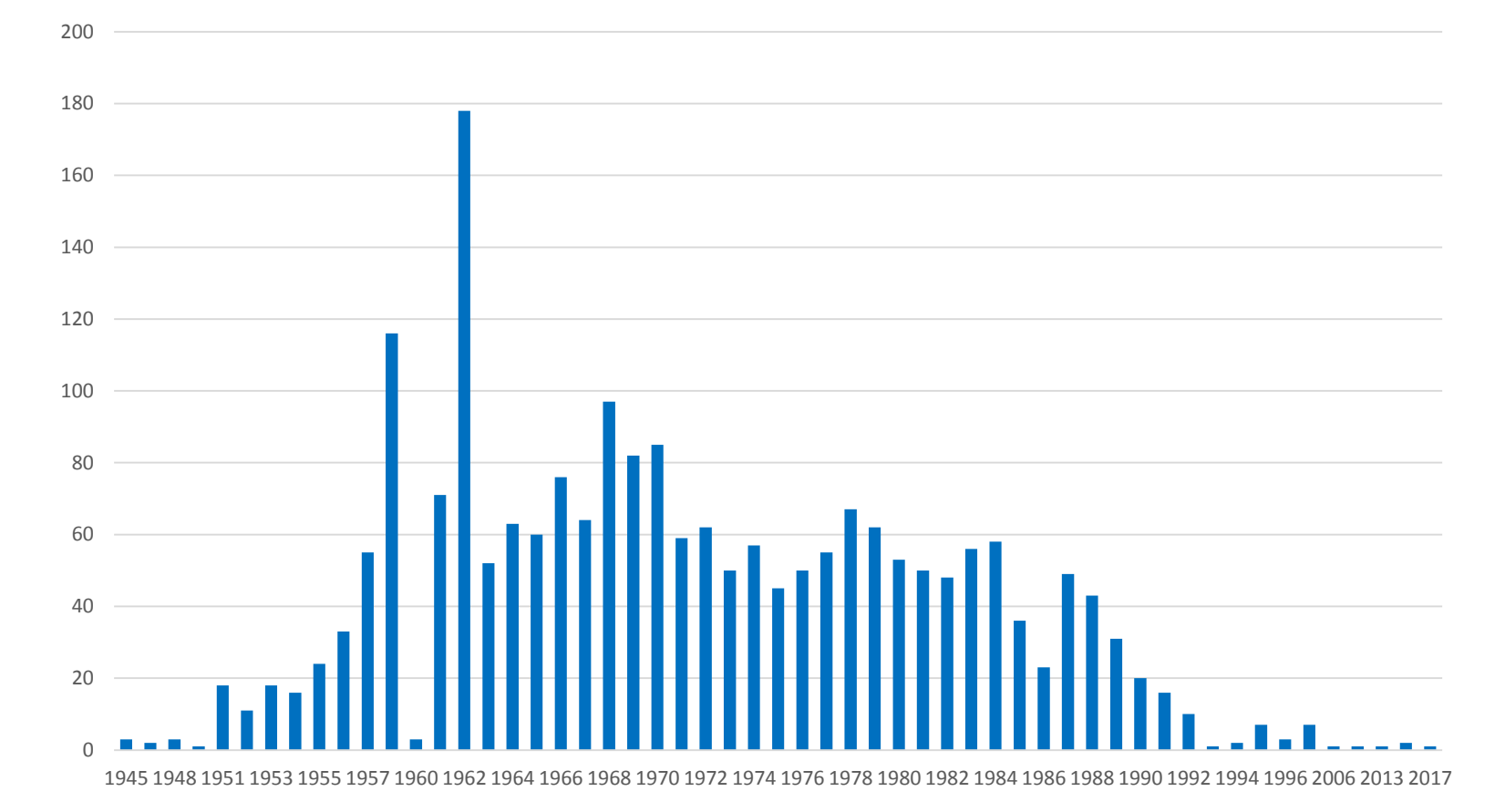
Event List > Station List > Waveforms

1990/10/24 14:58:00.000 [73.3264] [64.7828] [5.7] [001-150] [1]

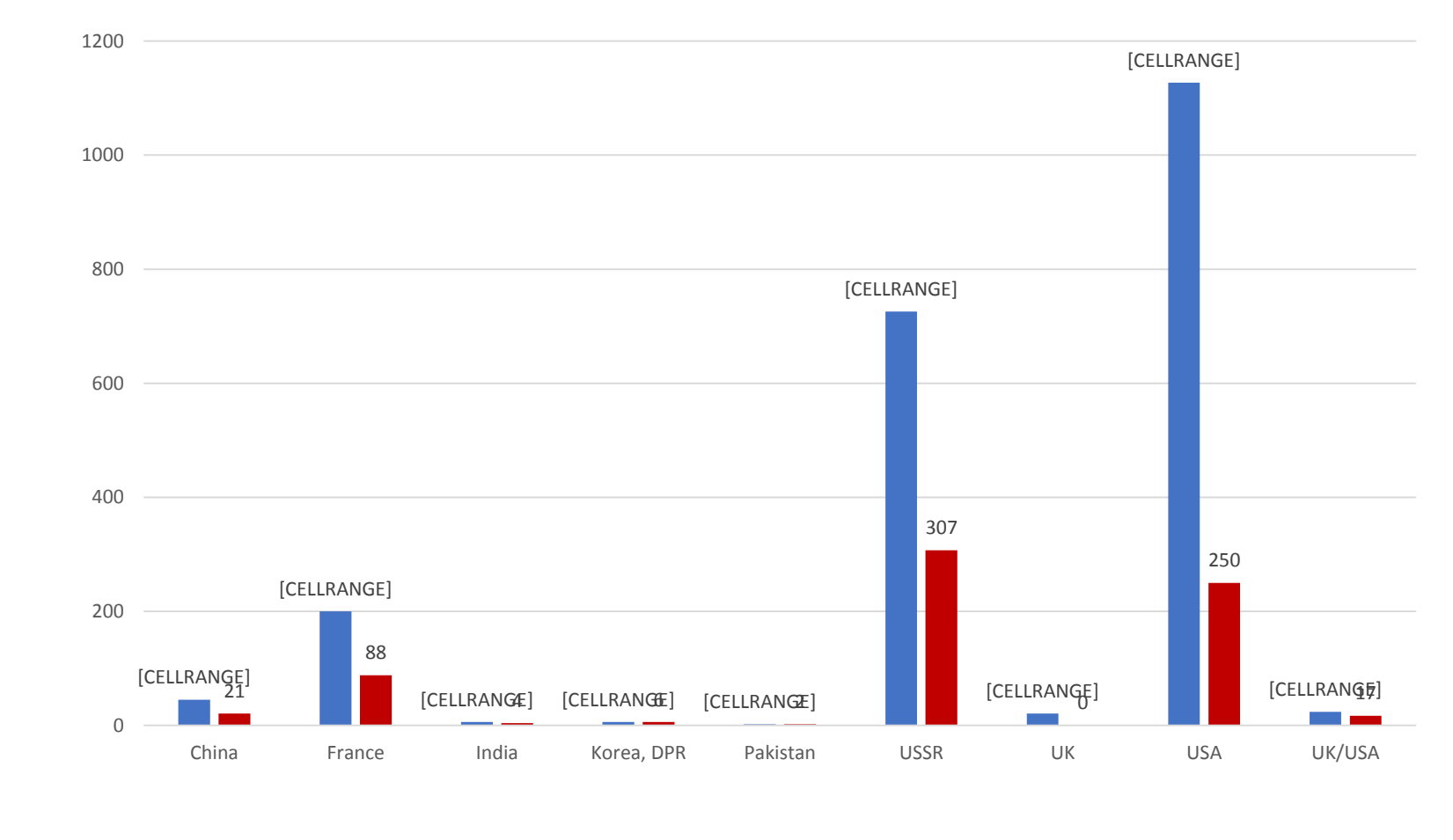
Page: 1 (Channel 1 - 4) Delta: 10 - 44 | (ARCES | NORES | GERES | LZH)



Visualize selected waveforms. Download event bundle.



Number of nuclear explosions detonated by each country (blue), and number of WFNE associated waveforms (red).



Number of nuclear explosions detonated by each country (blue), and number of WFNE associated waveforms (red).