

The ECMWF BUFR Toolbox

Filter options

Filter by data value

Descriptors

Descriptor List

Value List

BufType:

BufSubtype:

Centre:

Subcentre:

WMO ident

WMO block:

WMO station:

Area

BL Lat:

BL Lon:

TR Lat:

TR Lon:

Date/Time

Date yyyyymmdd:

Time 1 (hhmm):

Time 2 (hhmm):

Remove all filters

Cancel

BufR Toolbox

File Options Help

message number subset number Go to msg/subset display bitmap

Section 0	Section 1	Section 2	Section 3	Data	Data, bitmaps expanded
Index	Descriptor	Name	Value	Units	
0001	001063	ICAO LOCATION INDICATOR	1008	CCITTAS (LFOT)	
0002	002001	TYPE OF STATION	1	CODE TABLE 0020...	
0003	004001	YEAR	2007	YEAR	
0004	004002	MONTH	10	MONTH	
0005	004003	DAY	18	DAY	
0006	004004	HOUR	9	HOUR	
0007	004005	MINUTE	4	MINUTE	
0008	005002	LATITUDE (COARSE ACCURACY)	47.45	DEGREE	
0009	006002	LONGITUDE (COARSE ACCURACY)	0.72	DEGREE	
0010	007001	HEIGHT OF STATION	1.08E2	M	
0011	007006	HEIGHT ABOVE STATION	1.0E1	M	
0012	011001	WIND DIRECTION	4.0E1	DEGREE TRUE ...	
0013	011016	EXTREME COUNTERCLOCKWISE WIND DIRECTION OF A VARIA...	1.0E1	DEGREE TRUE ...	
0014	011017	EXTREME CLOCKWISE WIND DIRECTION OF A VARIABLE WIND ...	7.0E1	DEGREE TRUE ...	
0015	011002	WIND SPEED	4.1E0	M/S	
0016	011041	MAXIMUM WIND SPEED (GUSTS)	**	M/S	
0017	007006	HEIGHT ABOVE STATION	2.0E0	M	
0018	012001	TEMPERATURE/DRY BULB TEMPERATURE	2.842E2	K	
0019	012003	DEW POINT TEMPERATURE	2.802E2	K	
0020	010052	ALTIMETER SETTING (QNH)	1.031E5	PA	
0021	020009	GENERAL WEATHER INDICATOR (TAF/METAR)	**	CODE TABLE 0200...	
0022	007006	HEIGHT ABOVE STATION	0.0E0	M	
0023	010004	PRESSURE	1.0179E5	PA	

next msg rewind file show all next subset

expanded file: /scratch/ma/maa/FB.conv message: 3542 subset: 1 of 1 total msgs: 69918 filtered: 129258

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The ECMWF BUFR Toolbox

- **JAVA GUI provides an easy interface to display BUFR data**
- **Linked to standard BUFRDC software and will be made available to download from the ECMWF website**
- **Decode and display BUFR data and encode and create a single subset message**

Main window

Display BUFR message sections

Navigate through data file

Number of messages

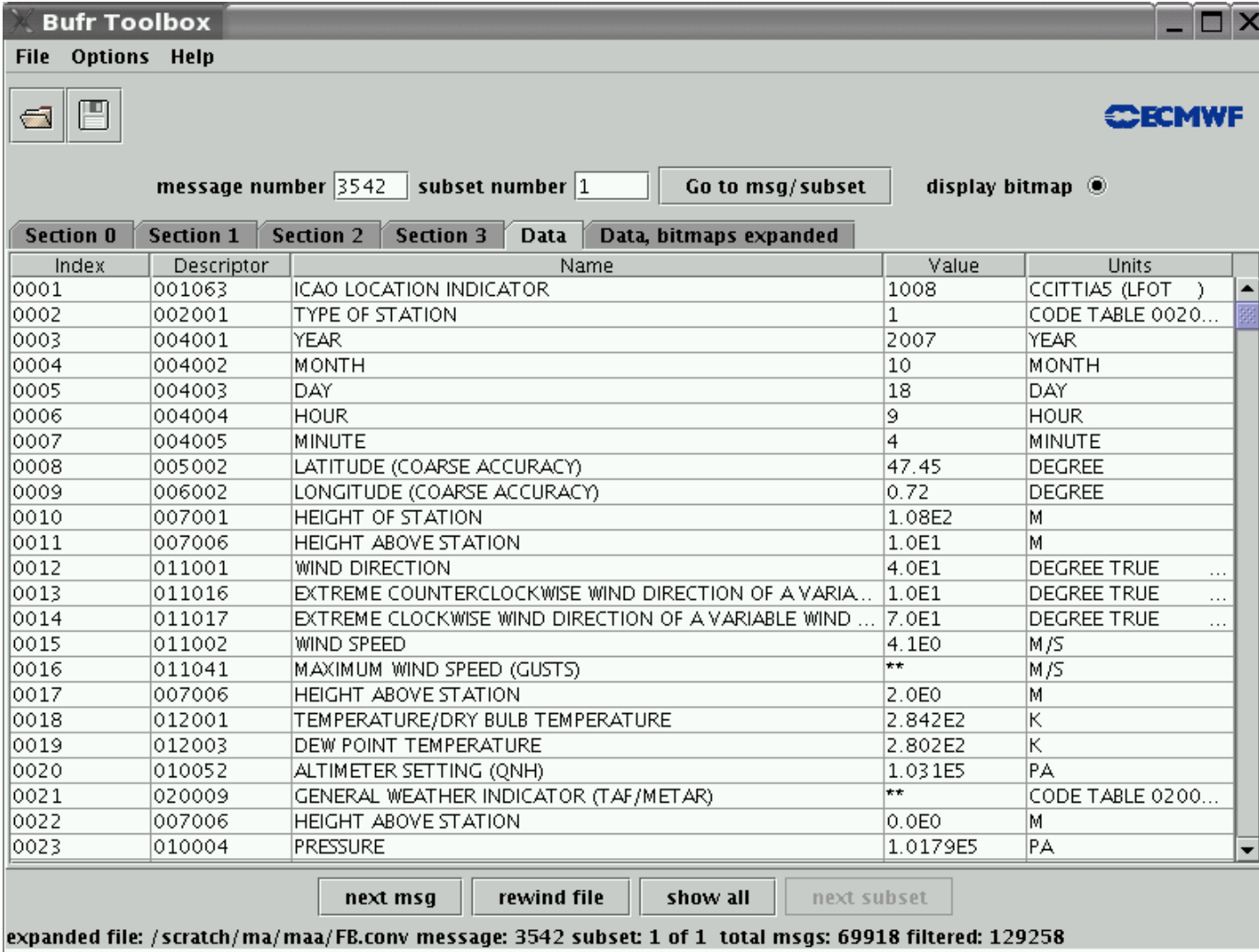
List all messages

The screenshot shows the Bufr Toolbox application window. At the top, there is a menu bar with 'File', 'Options', and 'Help'. Below the menu bar are icons for file operations and the ECMWF logo. The main area contains input fields for 'message number' (set to 1) and 'subset number' (set to 1), a 'Go to msg/subset' button, and a 'display bitmap' checkbox. Below these are tabs for 'Section 0', 'Section 1', 'Section 2', 'Section 3', 'Data', and 'Data, bitmaps expanded'. The 'Section 1' tab is active, displaying a list of fields and their values:

LENGTH OF SECTION 1 (BYTES)	18
BUFR EDITION NUMBER	3
ORIGINATING CENTRE	98
UPDATE SEQUENCE NUMBER	1
FLAG (PRESENCE OF SECTION 2)	128
BUFR MESSAGE TYPE	0
BUFR MESSAGE SUBTYPE	1
VERSION NUMBER OF LOCAL TABLE	1
YEAR	7
MONTH	10
DAY	18
HOUR	10
MINUTE	0
BUFR MASTER TABLE	0
VERSION NUMBER OF MASTER TABLE	6
ORIGINATING SUB-CENTRE	0

At the bottom of the window, there are buttons for 'next msg', 'rewind file', 'show all', and 'next subset'. A status bar at the very bottom displays the text: 'expanded file: /scratch/ma/maa/FB.conv message: 1 subset: 1 of 1 total msgs: 69918 filtered: 8007'.

Decoded data



Bufr Toolbox

File Options Help

message number subset number display bitmap

Section 0 Section 1 Section 2 Section 3 Data Data, bitmaps expanded

Index	Descriptor	Name	Value	Units
0001	001063	ICAO LOCATION INDICATOR	1008	CCITTIA5 (LFOT)
0002	002001	TYPE OF STATION	1	CODE TABLE 0020...
0003	004001	YEAR	2007	YEAR
0004	004002	MONTH	10	MONTH
0005	004003	DAY	18	DAY
0006	004004	HOUR	9	HOUR
0007	004005	MINUTE	4	MINUTE
0008	005002	LATITUDE (COARSE ACCURACY)	47.45	DEGREE
0009	006002	LONGITUDE (COARSE ACCURACY)	0.72	DEGREE
0010	007001	HEIGHT OF STATION	1.08E2	M
0011	007006	HEIGHT ABOVE STATION	1.0E1	M
0012	011001	WIND DIRECTION	4.0E1	DEGREE TRUE ...
0013	011016	EXTREME COUNTERCLOCKWISE WIND DIRECTION OF A VARIA...	1.0E1	DEGREE TRUE ...
0014	011017	EXTREME CLOCKWISE WIND DIRECTION OF A VARIABLE WIND ...	7.0E1	DEGREE TRUE ...
0015	011002	WIND SPEED	4.1E0	M/S
0016	011041	MAXIMUM WIND SPEED (GUSTS)	**	M/S
0017	007006	HEIGHT ABOVE STATION	2.0E0	M
0018	012001	TEMPERATURE/DRY BULB TEMPERATURE	2.842E2	K
0019	012003	DEW POINT TEMPERATURE	2.802E2	K
0020	010052	ALTIMETER SETTING (QNH)	1.031E5	PA
0021	020009	GENERAL WEATHER INDICATOR (TAF/METAR)	**	CODE TABLE 0200...
0022	007006	HEIGHT ABOVE STATION	0.0E0	M
0023	010004	PRESSURE	1.0179E5	PA

expanded file: /scratch/ma/maa/FB.conv message: 3542 subset: 1 of 1 total msgs: 69918 filtered: 129258

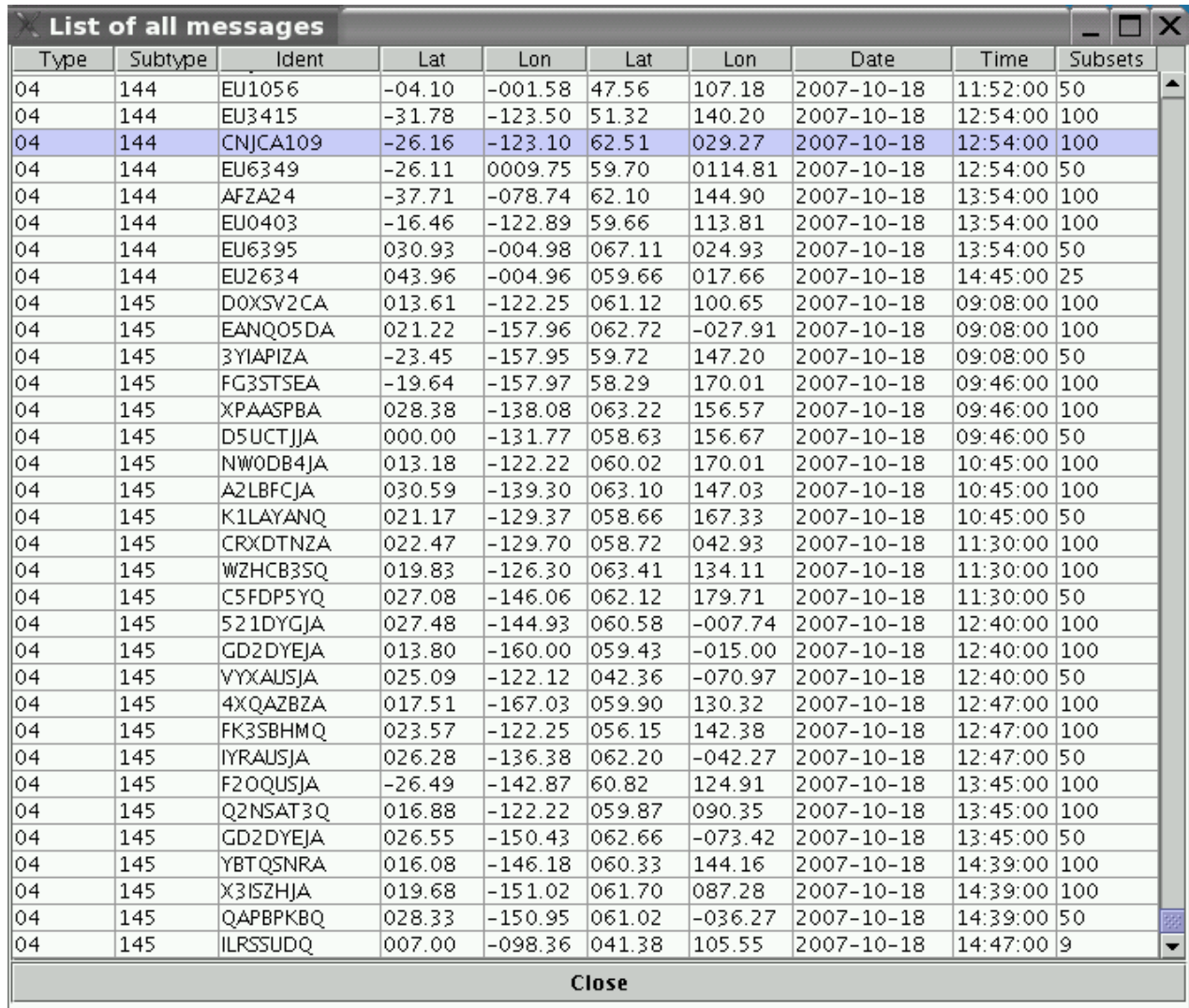
Decoded data with a bitmap

The screenshot shows the Bufr Toolbox application window. At the top, there is a menu bar with 'File', 'Options', and 'Help'. Below the menu bar are icons for file operations and the ECMWF logo. The main interface includes input fields for 'message number' (set to 1) and 'subset number' (set to 1), a 'Go to msg/subset' button, and a 'display bitmap' radio button which is selected. Below this is a tabbed interface with tabs for 'Section 0', 'Section 1', 'Section 2', 'Section 3', 'Data', and 'Data, bitmaps expanded'. The 'Data, bitmaps expanded' tab is active, displaying a table of decoded data. The table has columns for 'Value' and 'Value', and a vertical scroll bar on the right. At the bottom of the window, there are buttons for 'next msg', 'rewind file', 'show all', and 'next subset', along with a status bar showing the expanded file path and message/subset information.

			Value	Value	Value	Value	
0001	OPERATOR	**	222000	225000	222000	222000	222
0002	GENERATING CENTRE(CODE TABLE 00103 1) ...	**	98	98	98	98	98
0003	GENERATING APPLICATION (CODE TABLE 00103...	**	1	10	66	66	66
0004	STATISTICS (008024/008023)	**	**	40	**	**	**
0005	INCREMENTAL UPDATE NUMBER	**	**	**	**	**	**
0006	MINIMISATION SIMULATION NUMBER	**	**	**	**	**	**
0007	WMO BLOCK NUMBER	... 10	70	**	**	**	**
0008	WMO STATION NUMBER	... 320	70	**	**	**	**
0009	TYPE OF STATION	1	70	**	**	**	**
0010	YEAR	2007	70	**	**	**	**
0011	MONTH	10	70	**	**	**	**
0012	DAY	18	70	**	**	**	**
0013	HOUR	10	70	**	**	**	**
0014	MINUTE	0	70	**	**	**	**
0015	LATITUDE (HIGH ACCURACY)	... 5.1.93	70	**	**	**	**
0016	LONGITUDE (HIGH ACCURACY)	... 8.32	70	**	**	**	**
0017	HEIGHT OF STATION	... 7.2E1	6.0E1	**	**	**	**
0018	PRESSURE	1.0181E5	6.0E1	**	**	**	**
0019	PRESSURE REDUCED TO MEAN SEA LEVEL	... 1.0265E5	6.0E1	**	**	**	**
0020	3 HOUR PRESSURE CHANGE	... 2.6E2	7.7E1	**	**	**	**
0021	CHARACTERISTIC OF PRESSURE TENDENCY	... 2.0E0	7.9E1	**	**	**	**
0022	WIND DIRECTION AT 10 M	... 2.9E2	7.0E1	**	**	**	**

expanded file: /scratch/ma/maa/FB.conv message: 1 subset: 1 of 1 total msgs: 69918 filtered: 129258

List of all messages



Type	Subtype	Ident	Lat	Lon	Lat	Lon	Date	Time	Subsets
04	144	EU1056	-04.10	-001.58	47.56	107.18	2007-10-18	11:52:00	50
04	144	EU3415	-31.78	-123.50	51.32	140.20	2007-10-18	12:54:00	100
04	144	CNJCA109	-26.16	-123.10	62.51	029.27	2007-10-18	12:54:00	100
04	144	EU6349	-26.11	0009.75	59.70	0114.81	2007-10-18	12:54:00	50
04	144	AFZA24	-37.71	-078.74	62.10	144.90	2007-10-18	13:54:00	100
04	144	EU0403	-16.46	-122.89	59.66	113.81	2007-10-18	13:54:00	100
04	144	EU6395	030.93	-004.98	067.11	024.93	2007-10-18	13:54:00	50
04	144	EU2634	043.96	-004.96	059.66	017.66	2007-10-18	14:45:00	25
04	145	DOXSV2CA	013.61	-122.25	061.12	100.65	2007-10-18	09:08:00	100
04	145	EANQO5DA	021.22	-157.96	062.72	-027.91	2007-10-18	09:08:00	100
04	145	3YIAPIZA	-23.45	-157.95	59.72	147.20	2007-10-18	09:08:00	50
04	145	FG3STSEA	-19.64	-157.97	58.29	170.01	2007-10-18	09:46:00	100
04	145	XPAASPBA	028.38	-138.08	063.22	156.57	2007-10-18	09:46:00	100
04	145	D5UCTJJA	000.00	-131.77	058.63	156.67	2007-10-18	09:46:00	50
04	145	NW0DB4JA	013.18	-122.22	060.02	170.01	2007-10-18	10:45:00	100
04	145	A2LBFCA	030.59	-139.30	063.10	147.03	2007-10-18	10:45:00	100
04	145	K1LAYANQ	021.17	-129.37	058.66	167.33	2007-10-18	10:45:00	50
04	145	CRXDTNZA	022.47	-129.70	058.72	042.93	2007-10-18	11:30:00	100
04	145	WZHCB3SQ	019.83	-126.30	063.41	134.11	2007-10-18	11:30:00	100
04	145	CSFDP5YQ	027.08	-146.06	062.12	179.71	2007-10-18	11:30:00	50
04	145	521DYGJA	027.48	-144.93	060.58	-007.74	2007-10-18	12:40:00	100
04	145	GD2DYEJA	013.80	-160.00	059.43	-015.00	2007-10-18	12:40:00	100
04	145	YYXAU5JA	025.09	-122.12	042.36	-070.97	2007-10-18	12:40:00	50
04	145	4XQAZBZA	017.51	-167.03	059.90	130.32	2007-10-18	12:47:00	100
04	145	FK3SBHMQ	023.57	-122.25	056.15	142.38	2007-10-18	12:47:00	100
04	145	IYRAU5JA	026.28	-136.38	062.20	-042.27	2007-10-18	12:47:00	50
04	145	F2OQUSJA	-26.49	-142.87	60.82	124.91	2007-10-18	13:45:00	100
04	145	Q2NSAT3Q	016.88	-122.22	059.87	090.35	2007-10-18	13:45:00	100
04	145	GD2DYEJA	026.55	-150.43	062.66	-073.42	2007-10-18	13:45:00	50
04	145	YBTQSNRA	016.08	-146.18	060.33	144.16	2007-10-18	14:39:00	100
04	145	X3ISZHJA	019.68	-151.02	061.70	087.28	2007-10-18	14:39:00	100
04	145	QAPBPKBQ	028.33	-150.95	061.02	-036.27	2007-10-18	14:39:00	50
04	145	ILRSSUDQ	007.00	-098.36	041.38	105.55	2007-10-18	14:47:00	9

Close

Click a line to display
data for that
message

Data filtering

- **Filter a BUFR file to display only the desired observations**
- **Set values for any element(s) in the BUFR message and the program will find the subsets which match**
- **Data coverage map shows the geographical location of the observations**

Filter

Filter options

Filter by data value

Descriptors

Descriptor List	Value List

Set values

Value (from): (value to):

OK Cancel

Bufr type

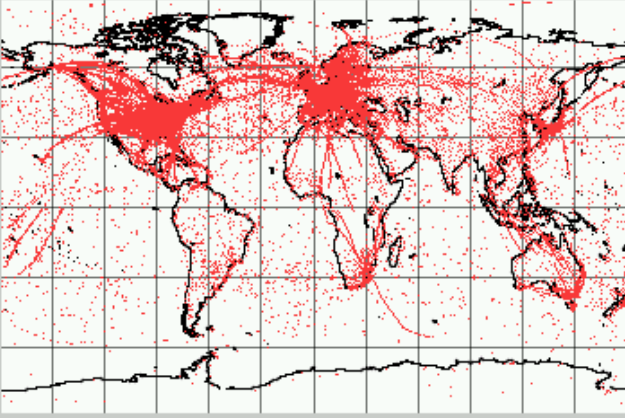
Bufr Type:
Bufr Subtype:

Centre

Centre:
Sub centre:

WMO ident

WMO block:
WMO station:



Area

BL Lat: BL Lon:
TR Lat: TR Lon:

Date/Time

Date (yyyymmdd):
Time 1 (hhmm):
Time 2 (hhmm):

Filter

Some other possible filters

Filter options

Filter by data value

Descriptors

Descriptor List

Value List

001006 AIRCRAFT FLIGHT NUMBER
007002 HEIGHT OR ALTITUDE
011001 WIND DIRECTION
011002 WIND SPEED

Set values

Value (from): (value to): Select values

OK Remove all filters Cancel

Bufr type

Bufr Type : Bufr Subtype : 144

Centre

Centre : Sub centre :

WMO ident

WMO block : WMO station :

Area

BL Lat : BL Lon : TR Lat : TR Lon :

Date/Time

Date (yyyymmdd) : Time 1 (hhmm) : Time 2 (hhmm) :

Only display obs with BUFR subtype 144 (amdar)

Zoom

Filter options Filter by data value

Descriptors

Descriptor List	Value List
001006 AIRCRAFT FLIGHT NUMBER	
007002 HEIGHT OR ALTITUDE	
011001 WIND DIRECTION	
011002 WIND SPEED	

Buftr type

Buftr Type:
Buftr Subtype:

Centre

Centre:
Sub centre:

WMO ident

WMO block:
WMO station:

Area

BL Lat: BL Lon:
TR Lat: TR Lon:

Date/Time

Date (yyyymmdd):
Time 1 (hhmm):
Time 2 (hhmm):

Value (from): (value to): **Select values** ▼

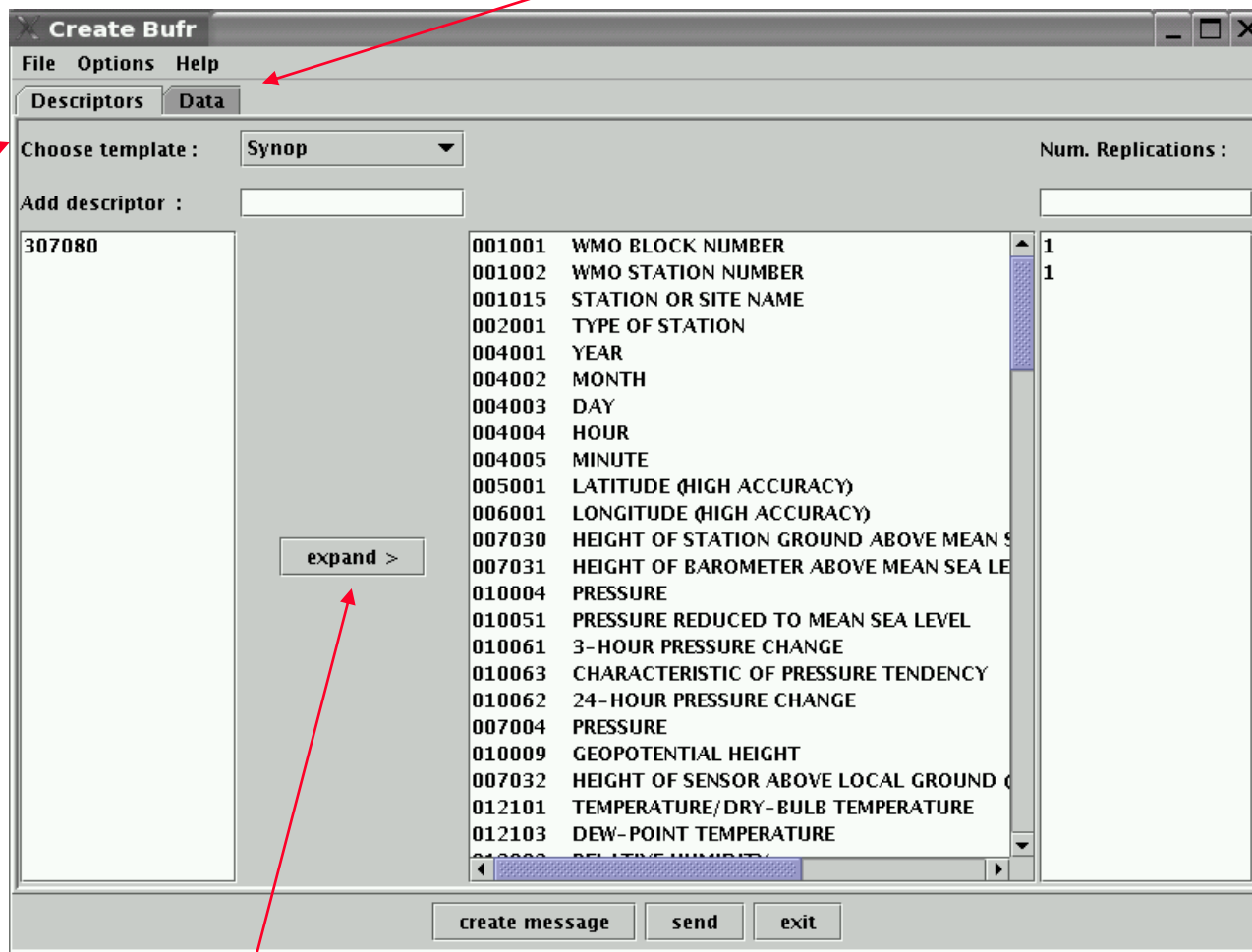
OK **Remove all filters** **Cancel**

Double-click on a dot on the map to display that subset

Create BUFR message

3. Go to data pane

1. Choose template or enter descriptor(s)



2. Expand descriptors

Create BUFR message data

Edit this column to enter data

Alphanumeric code symbolic letters

Index	Descriptor	Name	Value	Format	Units	Kdata
0000	001001	WMO BLOCK NUMBER	3	ll	NUMERIC	**
0001	001002	WMO STATION NUMBER	772	iii	NUMERIC	**
0002	001015	STATION OR SITE NAME	HEATH...		CCITTIAS	**
0003	002001	TYPE OF STATION	1	ix	CODE TABLE 2...	**
0004	004001	YEAR	**		YEAR	**
0005	004002	MONTH	**		MONTH	**
0006	004003	DAY	**	YY	DAY	**
0007	004004	HOUR	**	GG	HOUR	**
0008	004005	MINUTE	**	gg	MINUTE	**
0009	005001	LATITUDE (HIGH ACCURACY)	51.483		DEGREE	**
0010	006001	LONGITUDE (HIGH ACCURACY)	0.45		DEGREE	**
0011	007030	HEIGHT OF STATION GROUND ABOVE MEAN SEA LEVEL (S...	24.0		M	**
0012	007031	HEIGHT OF BAROMETER ABOVE MEAN SEA LEVEL (SEE N...	25.0		M	**
0013	010004	PRESSURE	**	POPOPOPO	PA	**
0014	010051	PRESSURE REDUCED TO MEAN SEA LEVEL	**	PPPP	PA	**
0015	010061	3-HOUR PRESSURE CHANGE	**	ppp	PA	**
0016	010063	CHARACTERISTIC OF PRESSURE TENDENCY	**	a	CODE TABLE 1...	**
0017	010062	24-HOUR PRESSURE CHANGE	**	p24p24...	PA	**
0018	007004	PRESSURE	**	a3	PA	**
0019	010009	GEOPOTENTIAL HEIGHT	**	hhh	GPM	**
0020	007032	HEIGHT OF SENSOR ABOVE LOCAL GROUND (OR DECK OF...	0.0		M	**
0021	012101	TEMPERATURE/DRY-BULB TEMPERATURE	**	snTTT	K	**
0022	012103	DEW-POINT TEMPERATURE	**	snTdTd...	K	**
0023	013003	RELATIVE HUMIDITY	**		%	**
0024	007032	HEIGHT OF SENSOR ABOVE LOCAL GROUND (OR DECK OF...	0.0		M	**
0025	020001	HORIZONTAL VISIBILITY	**	VV	M	**
0026	007032	HEIGHT OF SENSOR ABOVE LOCAL GROUND (OR DECK OF...	0.0		M	**
0027	013023	TOTAL PRECIPITATION PAST 24 HOURS	**	R24R24...	KG/M**2	**
0028	007032	HEIGHT OF SENSOR ABOVE LOCAL GROUND (OR DECK OF...	**		M	**

Create BUFR and CREX message

Send to an ftp server

- **Release of beta version due before the end of the year – feedback welcome!**
- **Future development of web based applet version**