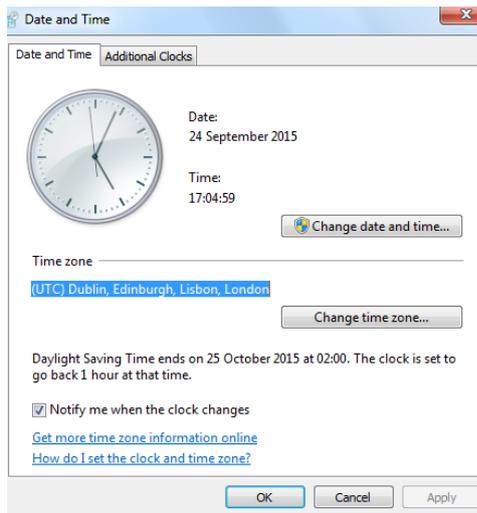


Wrong displays of DateTime fields from PostgreSQL to KNIME

It seems that when reading datetime fields from PostgreSQL into KNIME they are displayed wrongly.

- We are using KNIME 2.12.1 and PostgreSQL 9.4
- Our time zone: UTC



- Our problem: Original data (UTC) and data in local time (Europe/London) appear to be the same (regardless of the type of time zone correction we use in the connector node).
- Previous evidence: It seems that a bug was reported some time ago (using KNIME 2.7.4), but the problem persists:

<https://tech.knime.org/forum/knime-general/bug-wrong-display-of-date-and-time-fields-read-from-postgresql>

PostgreSQL:

Table creation:

```
CREATE TABLE public.fnt_readings_110098713
(
    lak_ref integer,
    meterid character varying(255),
    readingdatetime timestamp with time zone,
    reading integer,
    estimatedreading boolean
)
WITH (
    OIDS=FALSE
);
```

When the table is created “readingdatetime” is defined as *timestamp with time zone* which is stored internally as UTC (see below).

Query and results:

The screenshot shows a SQL query in a graphical query builder. The query is:

```
select lak_ref, meterid, readingdatetime, readingdatetime AT TIME ZONE 'GMT' as timeInGMT, readingdatetime AT TIME ZONE 'BST' as timeInBST, readingdatetime AT TIME ZONE 'Europe/London' as localtime, reading
from fat_readings_110098713
where (readingdatetime > '2013-03-30 23:00:00') AND (readingdatetime < '2013-10-27 04:00:00')
order by readingdatetime asc
```

The results table shows the following columns: lak_ref, meterid, character, varies, readingdatetime, timegmt, timebst, localtime, and reading integer. The 'readingdatetime' column is highlighted in yellow, and the 'localtime' column is also highlighted in yellow. Two blue arrows point to the 'readingdatetime' and 'localtime' columns. A separate window shows the 'show timezone:' output, indicating 'UTC'.

lak_ref	meterid	character	varies	readingdatetime	timegmt	timebst	localtime	reading integer
1	61620	110098713		2013-03-30 23:15:00+00	2013-03-30 23:15:00	2013-03-31 00:15:00	2013-03-30 23:15:00	504725
2	61621	110098713		2013-03-30 23:30:00+00	2013-03-30 23:30:00	2013-03-31 00:30:00	2013-03-30 23:30:00	504725
3	61622	110098713		2013-03-30 23:45:00+00	2013-03-30 23:45:00	2013-03-31 00:45:00	2013-03-30 23:45:00	504725
4	61623	110098713		2013-03-31 00:00:00+00	2013-03-31 00:00:00	2013-03-31 01:00:00	2013-03-31 00:00:00	504725
5	61624	110098713		2013-03-31 00:15:00+00	2013-03-31 00:15:00	2013-03-31 01:15:00	2013-03-31 00:15:00	504725
6	61625	110098713		2013-03-31 00:30:00+00	2013-03-31 00:30:00	2013-03-31 01:30:00	2013-03-31 00:30:00	504725
7	61626	110098713		2013-03-31 00:45:00+00	2013-03-31 00:45:00	2013-03-31 01:45:00	2013-03-31 00:45:00	504725
8	61627	110098713		2013-03-31 01:00:00+00	2013-03-31 01:00:00	2013-03-31 02:00:00	2013-03-31 02:00:00	504725
9	61628	110098713		2013-03-31 01:15:00+00	2013-03-31 01:15:00	2013-03-31 02:15:00	2013-03-31 02:15:00	504725
10	61629	110098713		2013-03-31 01:30:00+00	2013-03-31 01:30:00	2013-03-31 02:30:00	2013-03-31 02:30:00	504725
11	61630	110098713		2013-03-31 01:45:00+00	2013-03-31 01:45:00	2013-03-31 02:45:00	2013-03-31 02:45:00	504725
12	61631	110098713		2013-03-31 02:00:00+00	2013-03-31 02:00:00	2013-03-31 03:00:00	2013-03-31 03:00:00	504725
13	61632	110098713		2013-03-31 02:15:00+00	2013-03-31 02:15:00	2013-03-31 03:15:00	2013-03-31 03:15:00	504725
14	61633	110098713		2013-03-31 02:30:00+00	2013-03-31 02:30:00	2013-03-31 03:30:00	2013-03-31 03:30:00	504725
15	61634	110098713		2013-03-31 02:45:00+00	2013-03-31 02:45:00	2013-03-31 03:45:00	2013-03-31 03:45:00	504725
16	61635	110098713		2013-03-31 03:00:00+00	2013-03-31 03:00:00	2013-03-31 04:00:00	2013-03-31 04:00:00	504725
17	61636	110098713		2013-03-31 03:15:00+00	2013-03-31 03:15:00	2013-03-31 04:15:00	2013-03-31 04:15:00	504725
18	61637	110098713		2013-03-31 03:30:00+00	2013-03-31 03:30:00	2013-03-31 04:30:00	2013-03-31 04:30:00	504725
19	61638	110098713		2013-03-31 03:45:00+00	2013-03-31 03:45:00	2013-03-31 04:45:00	2013-03-31 04:45:00	504758
20	61639	110098713		2013-03-31 04:00:00+00	2013-03-31 04:00:00	2013-03-31 05:00:00	2013-03-31 05:00:00	504776
21	61640	110098713		2013-03-31 04:15:00+00	2013-03-31 04:15:00	2013-03-31 05:15:00	2013-03-31 05:15:00	504776
22	61641	110098713		2013-03-31 04:30:00+00	2013-03-31 04:30:00	2013-03-31 05:30:00	2013-03-31 05:30:00	504776
23	61642	110098713		2013-03-31 04:45:00+00	2013-03-31 04:45:00	2013-03-31 05:45:00	2013-03-31 05:45:00	504776
24	61643	110098713		2013-03-31 05:00:00+00	2013-03-31 05:00:00	2013-03-31 06:00:00	2013-03-31 06:00:00	504776
25	61644	110098713		2013-03-31 05:15:00+00	2013-03-31 05:15:00	2013-03-31 06:15:00	2013-03-31 06:15:00	504776
26	61645	110098713		2013-03-31 05:30:00+00	2013-03-31 05:30:00	2013-03-31 06:30:00	2013-03-31 06:30:00	504776
27	61646	110098713		2013-03-31 05:45:00+00	2013-03-31 05:45:00	2013-03-31 06:45:00	2013-03-31 06:45:00	504776
28	61647	110098713		2013-03-31 06:00:00+00	2013-03-31 06:00:00	2013-03-31 07:00:00	2013-03-31 07:00:00	504776
29	61648	110098713		2013-03-31 06:15:00+00	2013-03-31 06:15:00	2013-03-31 07:15:00	2013-03-31 07:15:00	504776

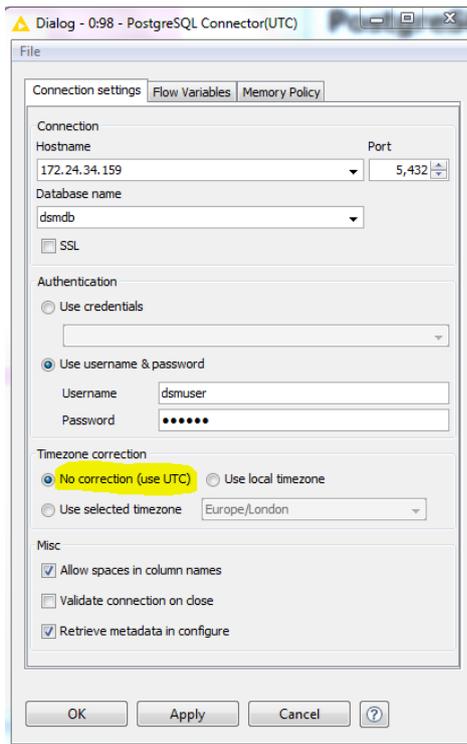
- “readingdatetime” is displayed in UTC and it is equal to the next column “GMT”.
- “BST” column goes one hour forward for the whole year.
- “localtime” (using Europe/London time zone): on the 31/03/2013 at 01:00 am (when the clock goes forward 1 hour), we have: 01:00 UTC/GMT and 02:00 local time (which is correct).

All of these results are what one would expect.

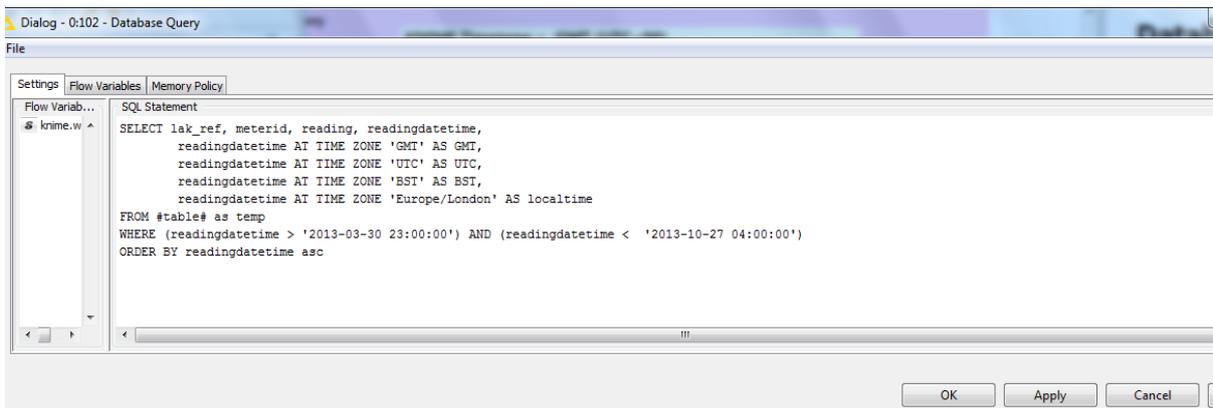
We are interested in working with UTC and local time (blue arrows). The rest of the columns are just to confirm that our results are correct and to compare with KNIME.

Knime:

From KNIME we connect to the database selecting as *timezone correction*: **UTC**



We run the same query as we did in PostgreSQL :



However the results are different from the ones we obtained in PostgreSQL:

Database Connection - 0:102 - Database Query

File

Table Preview Connection Spec - Columns: 8 Flow Variables

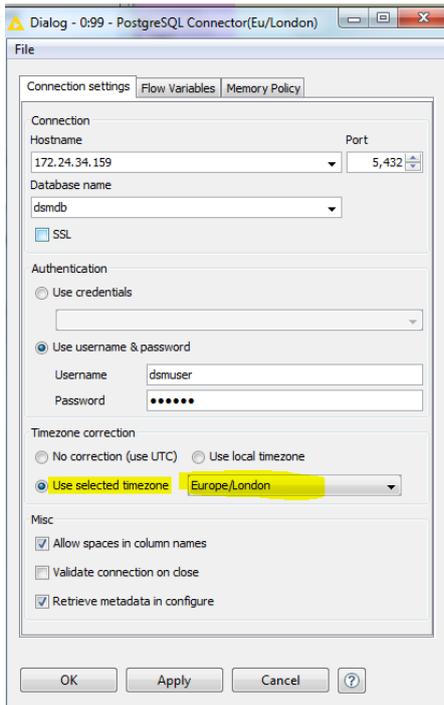
Cache no. of rows: 100

Row ID	lak_ref	S meterid	reading	readingdatetime	gmt	utc	bst	localtime
Row0	61620	110098713	504725	30.Mar.2013 23:15:00.000	30.Mar.2013 23:15:00.000	30.Mar.2013 23:15:00.000	31.Mar.2013 00:15:00.000	30.Mar.2013 23:15:00.000
Row1	61621	110098713	504725	30.Mar.2013 23:30:00.000	30.Mar.2013 23:30:00.000	30.Mar.2013 23:30:00.000	31.Mar.2013 00:30:00.000	30.Mar.2013 23:30:00.000
Row2	61622	110098713	504725	30.Mar.2013 23:45:00.000	30.Mar.2013 23:45:00.000	30.Mar.2013 23:45:00.000	31.Mar.2013 00:45:00.000	30.Mar.2013 23:45:00.000
Row3	61623	110098713	504725	31.Mar.2013 00:00:00.000				
Row4	61624	110098713	504725	31.Mar.2013 00:15:00.000	31.Mar.2013 00:15:00.000	31.Mar.2013 00:15:00.000	31.Mar.2013 01:15:00.000	31.Mar.2013 00:15:00.000
Row5	61625	110098713	504725	31.Mar.2013 00:30:00.000	31.Mar.2013 00:30:00.000	31.Mar.2013 00:30:00.000	31.Mar.2013 01:30:00.000	31.Mar.2013 00:30:00.000
Row6	61626	110098713	504725	31.Mar.2013 00:45:00.000	31.Mar.2013 00:45:00.000	31.Mar.2013 00:45:00.000	31.Mar.2013 01:45:00.000	31.Mar.2013 00:45:00.000
Row7	61627	110098713	504725	31.Mar.2013 01:00:00.000				
Row8	61628	110098713	504725	31.Mar.2013 01:15:00.000				
Row9	61629	110098713	504725	31.Mar.2013 01:30:00.000				
Row10	61630	110098713	504725	31.Mar.2013 01:45:00.000				
Row11	61631	110098713	504725	31.Mar.2013 02:00:00.000	31.Mar.2013 01:00:00.000	31.Mar.2013 01:00:00.000	31.Mar.2013 02:00:00.000	31.Mar.2013 02:00:00.000
Row12	61632	110098713	504725	31.Mar.2013 02:15:00.000	31.Mar.2013 01:15:00.000	31.Mar.2013 01:15:00.000	31.Mar.2013 02:15:00.000	31.Mar.2013 02:15:00.000
Row13	61633	110098713	504725	31.Mar.2013 02:30:00.000	31.Mar.2013 01:30:00.000	31.Mar.2013 01:30:00.000	31.Mar.2013 02:30:00.000	31.Mar.2013 02:30:00.000
Row14	61634	110098713	504725	31.Mar.2013 02:45:00.000	31.Mar.2013 01:45:00.000	31.Mar.2013 01:45:00.000	31.Mar.2013 02:45:00.000	31.Mar.2013 02:45:00.000
Row15	61635	110098713	504725	31.Mar.2013 03:00:00.000	31.Mar.2013 02:00:00.000	31.Mar.2013 02:00:00.000	31.Mar.2013 03:00:00.000	31.Mar.2013 03:00:00.000
Row16	61636	110098713	504725	31.Mar.2013 03:15:00.000	31.Mar.2013 02:15:00.000	31.Mar.2013 02:15:00.000	31.Mar.2013 03:15:00.000	31.Mar.2013 03:15:00.000
Row17	61637	110098713	504725	31.Mar.2013 03:30:00.000	31.Mar.2013 02:30:00.000	31.Mar.2013 02:30:00.000	31.Mar.2013 03:30:00.000	31.Mar.2013 03:30:00.000
Row18	61638	110098713	504758	31.Mar.2013 03:45:00.000	31.Mar.2013 02:45:00.000	31.Mar.2013 02:45:00.000	31.Mar.2013 03:45:00.000	31.Mar.2013 03:45:00.000
Row19	61639	110098713	504776	31.Mar.2013 04:00:00.000	31.Mar.2013 03:00:00.000	31.Mar.2013 03:00:00.000	31.Mar.2013 04:00:00.000	31.Mar.2013 04:00:00.000
Row20	61640	110098713	504776	31.Mar.2013 04:15:00.000	31.Mar.2013 03:15:00.000	31.Mar.2013 03:15:00.000	31.Mar.2013 04:15:00.000	31.Mar.2013 04:15:00.000
Row21	61641	110098713	504776	31.Mar.2013 04:30:00.000	31.Mar.2013 03:30:00.000	31.Mar.2013 03:30:00.000	31.Mar.2013 04:30:00.000	31.Mar.2013 04:30:00.000
Row22	61642	110098713	504776	31.Mar.2013 04:45:00.000	31.Mar.2013 03:45:00.000	31.Mar.2013 03:45:00.000	31.Mar.2013 04:45:00.000	31.Mar.2013 04:45:00.000
Row23	61643	110098713	504776	31.Mar.2013 05:00:00.000	31.Mar.2013 04:00:00.000	31.Mar.2013 04:00:00.000	31.Mar.2013 05:00:00.000	31.Mar.2013 05:00:00.000
Row24	61644	110098713	504776	31.Mar.2013 05:15:00.000	31.Mar.2013 04:15:00.000	31.Mar.2013 04:15:00.000	31.Mar.2013 05:15:00.000	31.Mar.2013 05:15:00.000
Row25	61645	110098713	504776	31.Mar.2013 05:30:00.000	31.Mar.2013 04:30:00.000	31.Mar.2013 04:30:00.000	31.Mar.2013 05:30:00.000	31.Mar.2013 05:30:00.000
Row26	61646	110098713	504776	31.Mar.2013 05:45:00.000	31.Mar.2013 04:45:00.000	31.Mar.2013 04:45:00.000	31.Mar.2013 05:45:00.000	31.Mar.2013 05:45:00.000
Row27	61647	110098713	504776	31.Mar.2013 06:00:00.000	31.Mar.2013 05:00:00.000	31.Mar.2013 05:00:00.000	31.Mar.2013 06:00:00.000	31.Mar.2013 06:00:00.000
Row28	61648	110098713	504776	31.Mar.2013 06:15:00.000	31.Mar.2013 05:15:00.000	31.Mar.2013 05:15:00.000	31.Mar.2013 06:15:00.000	31.Mar.2013 06:15:00.000
Row29	61649	110098713	504776	31.Mar.2013 06:30:00.000	31.Mar.2013 05:30:00.000	31.Mar.2013 05:30:00.000	31.Mar.2013 06:30:00.000	31.Mar.2013 06:30:00.000

- Column “readingdatetime” differ from GMT or UCT after 02:00 am. This is surprising as in theory the three columns are in the same time zone.
- Column “BST” reports “readingdatetime” + 01 before the clock changes at 01:00 am (which is correct), but it has the same time as “readingdatetime” after 01:00 am (when in theory should keep the extra hour along the year).
- “localtime” column (Europe/London) is exactly the same than “readingdatetime” column (when it shouldn’t as local time should increase one hour when the clock go forward on the 31/03/2013 at 01:00 am).

Therefore, all columns display wrong dates regardless of the time zone selected. Any of this is an issue when using PostgreSQL, but it is a problem in KNIME.

If instead of using *No correction (UTC)* option when we connect to the database in KNIME, we select Europe/London time zone:



The following results are obtained:

Row ID	i_lak_ref	S_meterid	i_reading	readingdatetime	gmt	utc	bst	localtime
Row0	61620	110098713	504725	30.Mar.2013 23:15:00.000	30.Mar.2013 23:15:00.000	30.Mar.2013 23:15:00.000	31.Mar.2013 00:15:00.000	30.Mar.2013 23:15:00.000
Row1	61621	110098713	504725	30.Mar.2013 23:30:00.000	30.Mar.2013 23:30:00.000	30.Mar.2013 23:30:00.000	31.Mar.2013 00:30:00.000	30.Mar.2013 23:30:00.000
Row2	61622	110098713	504725	30.Mar.2013 23:45:00.000	30.Mar.2013 23:45:00.000	30.Mar.2013 23:45:00.000	31.Mar.2013 00:45:00.000	30.Mar.2013 23:45:00.000
Row3	61623	110098713	504725	31.Mar.2013 00:00:00.000	31.Mar.2013 00:00:00.000	31.Mar.2013 00:00:00.000	31.Mar.2013 02:00:00.000	31.Mar.2013 00:00:00.000
Row4	61624	110098713	504725	31.Mar.2013 00:15:00.000	31.Mar.2013 00:15:00.000	31.Mar.2013 00:15:00.000	31.Mar.2013 02:15:00.000	31.Mar.2013 00:15:00.000
Row5	61625	110098713	504725	31.Mar.2013 00:30:00.000	31.Mar.2013 00:30:00.000	31.Mar.2013 00:30:00.000	31.Mar.2013 02:30:00.000	31.Mar.2013 00:30:00.000
Row6	61626	110098713	504725	31.Mar.2013 00:45:00.000	31.Mar.2013 00:45:00.000	31.Mar.2013 00:45:00.000	31.Mar.2013 02:45:00.000	31.Mar.2013 00:45:00.000
Row7	61627	110098713	504725	31.Mar.2013 02:00:00.000				
Row8	61628	110098713	504725	31.Mar.2013 02:15:00.000				
Row9	61629	110098713	504725	31.Mar.2013 02:30:00.000				
Row10	61630	110098713	504725	31.Mar.2013 02:45:00.000				
Row11	61631	110098713	504725	31.Mar.2013 03:00:00.000	31.Mar.2013 02:00:00.000	31.Mar.2013 02:00:00.000	31.Mar.2013 03:00:00.000	31.Mar.2013 03:00:00.000
Row12	61632	110098713	504725	31.Mar.2013 03:15:00.000	31.Mar.2013 02:15:00.000	31.Mar.2013 02:15:00.000	31.Mar.2013 03:15:00.000	31.Mar.2013 03:15:00.000
Row13	61633	110098713	504725	31.Mar.2013 03:30:00.000	31.Mar.2013 02:30:00.000	31.Mar.2013 02:30:00.000	31.Mar.2013 03:30:00.000	31.Mar.2013 03:30:00.000
Row14	61634	110098713	504725	31.Mar.2013 03:45:00.000	31.Mar.2013 02:45:00.000	31.Mar.2013 02:45:00.000	31.Mar.2013 03:45:00.000	31.Mar.2013 03:45:00.000
Row15	61635	110098713	504725	31.Mar.2013 04:00:00.000	31.Mar.2013 03:00:00.000	31.Mar.2013 03:00:00.000	31.Mar.2013 04:00:00.000	31.Mar.2013 04:00:00.000
Row16	61636	110098713	504725	31.Mar.2013 04:15:00.000	31.Mar.2013 03:15:00.000	31.Mar.2013 03:15:00.000	31.Mar.2013 04:15:00.000	31.Mar.2013 04:15:00.000
Row17	61637	110098713	504725	31.Mar.2013 04:30:00.000	31.Mar.2013 03:30:00.000	31.Mar.2013 03:30:00.000	31.Mar.2013 04:30:00.000	31.Mar.2013 04:30:00.000
Row18	61638	110098713	504758	31.Mar.2013 04:45:00.000	31.Mar.2013 03:45:00.000	31.Mar.2013 03:45:00.000	31.Mar.2013 04:45:00.000	31.Mar.2013 04:45:00.000
Row19	61639	110098713	504776	31.Mar.2013 05:00:00.000	31.Mar.2013 04:00:00.000	31.Mar.2013 04:00:00.000	31.Mar.2013 05:00:00.000	31.Mar.2013 05:00:00.000
Row20	61640	110098713	504776	31.Mar.2013 05:15:00.000	31.Mar.2013 04:15:00.000	31.Mar.2013 04:15:00.000	31.Mar.2013 05:15:00.000	31.Mar.2013 05:15:00.000
Row21	61641	110098713	504776	31.Mar.2013 05:30:00.000	31.Mar.2013 04:30:00.000	31.Mar.2013 04:30:00.000	31.Mar.2013 05:30:00.000	31.Mar.2013 05:30:00.000
Row22	61642	110098713	504776	31.Mar.2013 05:45:00.000	31.Mar.2013 04:45:00.000	31.Mar.2013 04:45:00.000	31.Mar.2013 05:45:00.000	31.Mar.2013 05:45:00.000
Row23	61643	110098713	504776	31.Mar.2013 06:00:00.000	31.Mar.2013 05:00:00.000	31.Mar.2013 05:00:00.000	31.Mar.2013 06:00:00.000	31.Mar.2013 06:00:00.000

As happened before, columns “readingdatetime” and “localtime” are exactly the same (when they shouldn’t), but now it seems they are in Europe/London time zone: on the 31/03/2013 there is a jump from 00:45 to 02:00 am (there is no 01:00 am). The rest of the columns present the same pattern as earlier (but now with a jump from 00:45 to 02:00 am).

Conclusion:

It seems that KNIME read the data from PostgreSQL as it is specified in the database connector node. However, when we want to see the data in a different time zone, the results provided by KNIME are incorrect.

Questions:

- Why is “readingdatetime” not displayed as the same value as “UTC” or “GMT” in KNIME (when UTC is specified in the connector node)?
- Why BST adds an hour only for half of the year (and not for the whole year, when BST is defined as a timezone (=GMT+1) and “Europe/London” should be the timezone equating to “local time” (i.e. =GMT(=UTC+0) until BST begins, then BST (=UTC+1) while BST is active.
- **What should we do if we want to get the same results than in PostgreSQL? In particular, if we want to have a column in UTC and a column in local time?**