WiNDC Update

Adam Christensen
Martha Loewe
Thomas Rutherford
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Quick Overview

- Data updates
- Data Interface updates

Why?

- Because data changes
- Need to to invent a methodology to ensure robustness

Data Philosophy

- Original source data changes asynchronously
  - … format of data also changes
- WiNDC release versions offer a full (i.e., all sources) data snapshot in time
  - API connections are great, but not all sources have this capability,
  - Data changes might impact solver → WiNDC tries to isolate the user from these issues
  - We test all the builds with new data releases
    - We still need to automate these tests, but requires development
- Need to be able to track this data over time, easily, and enable comparisons
- ***WiNDC 2.01 and WiNDC 2.1 are available now!***

WiNDC 2.01 - Some Details

- A full dataset is available for years 1997-2016
- Data mostly approximates the data released in WiNDC 2.0
- New Methodology on Census Data for State Government Finances
  - Relies on Census “Datasets” as the original data format rather than “Summary Tables”
    - https://www.census.gov/programs-surveys/state/data/datasets.html
  - Could enable finer grained mappings to WiNDC categories
  - Pain to process, but the datasets are more machine readable

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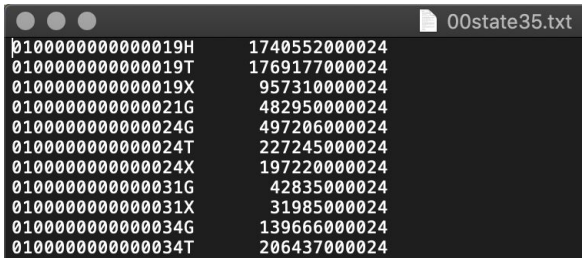

WiNDC 2.1 - Some Details

- A full dataset is available for years 1997-2017
- All data back to 1997 was reloaded from all the original sources
    - Data as far back as 1999 is still being updated (but most data that is updated is after 2014)
    - Most changes were to BEA, Census data
- Added in NASS Ag Census 2017 Data
- New Methodology on Census Data for State Government Finances

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Both versions are available in the new data interface

Update to Data Interface

- Motivated by a need to:
  - Easily compare data over time
  - Relies on open source tools (python)
  - Provide a platform that can leverage powerful data analysis tools (Pandas)
  - Dropping direct support for SQL data, but Pandas has nice methods to export to SQL
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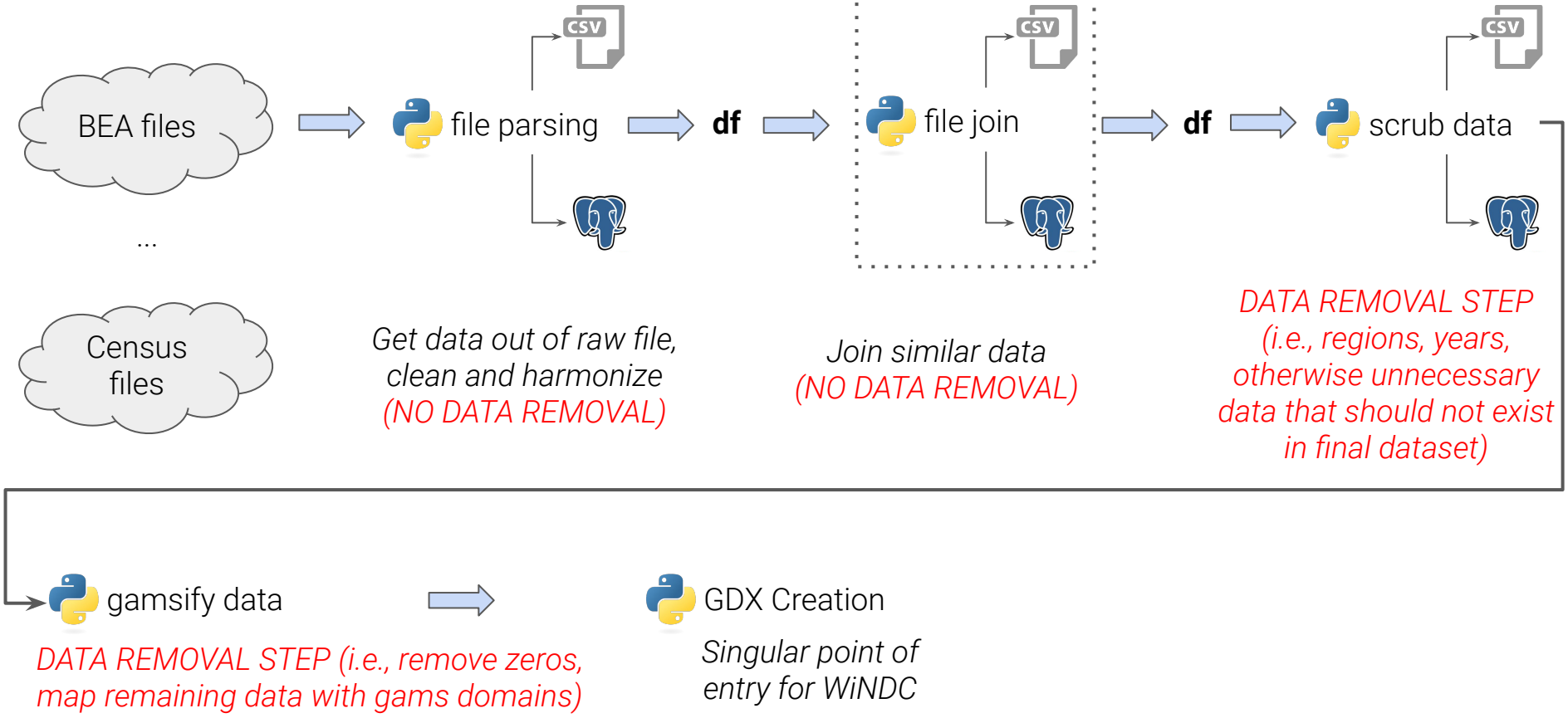
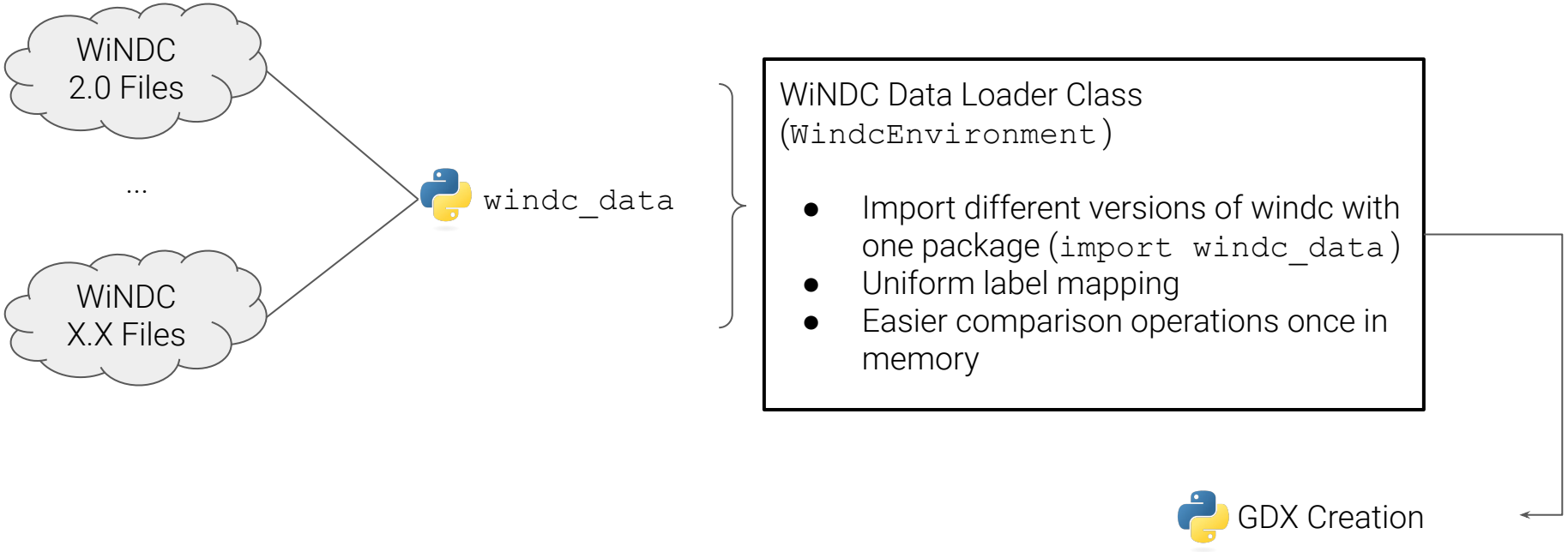
The Old Interface



Build Class Structure to Enable Data Processing



`windc_data` includes tools...

- Cleaning data is a problem
- `windc_data` attempts to help you with this...
  - We've heard from several groups that want to add in new data to WiNDC
  - Need a way to create a ***global*** WiNDC "notation" and apply that notation to a number of data sources
  - Some automation is helpful to get the data harmonized... still will always require some level of human interaction

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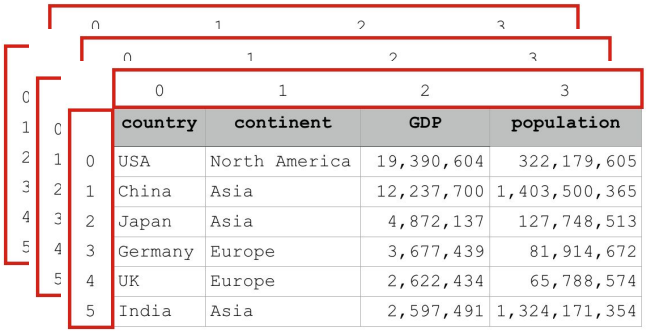

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0	USA	North America	19,390,604	322,179,605
1	China	Asia	12,237,700	1,403,500,365
2	Japan	Asia	4,872,137	127,748,513
3	Germany	Europe	3,677,439	81,914,672
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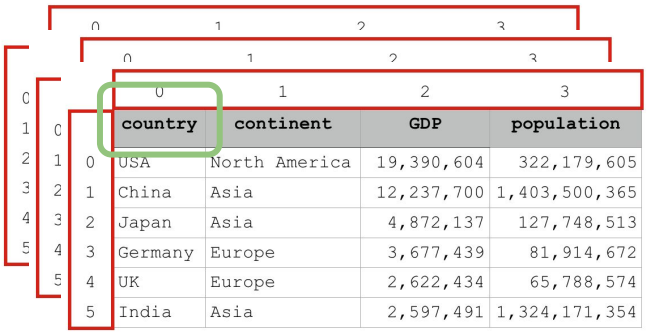

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WiNDC Notation for "`windc.country`":

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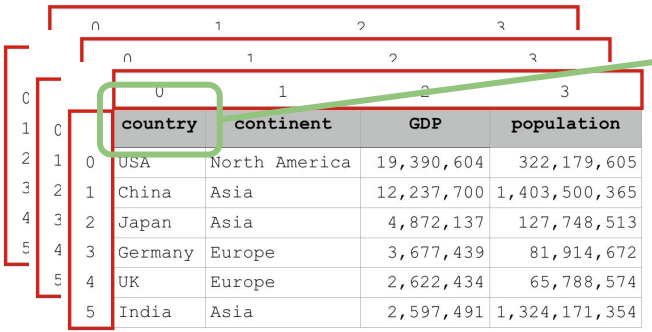

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```
notation_link["gdp"] =
[("country", "windc.country")]
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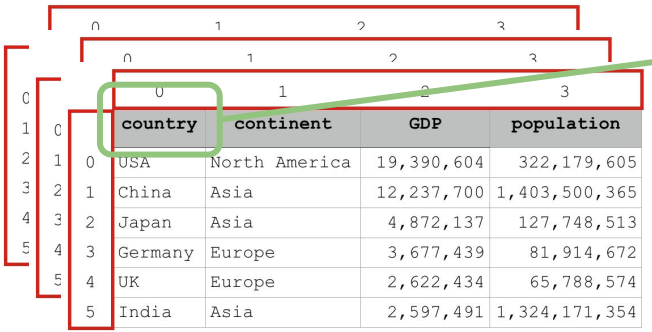

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.test_notation() output...

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column name year linked to year
**** Drop detected... ({data} is a proper superset of {notation})
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year :: eia_emissions

0 Notation elements not in Data	** 17 Drop Candidates **
[]	['1980', '1981', '1982', '1983', '1984', '1985', '1986', '1987', '1988', '1989', '1990', '1991', '1992', '1993', '1994', '1995', '1996']

```
column name State linked to region.fullname
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State :: eia_emissions

Valid dense data detected...
{data} == {notation}

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User should arrive at valid data before creating the GDX

Good news!

- Users of WiNDC do not need to do all these cleaning operations
- All all users need to do is `.rebuild(gdxout=True)`

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Live Demo Time