Let’s talk

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Based on a work at https://github.com/hadley/data-science-in-tidyverse

What you used to do

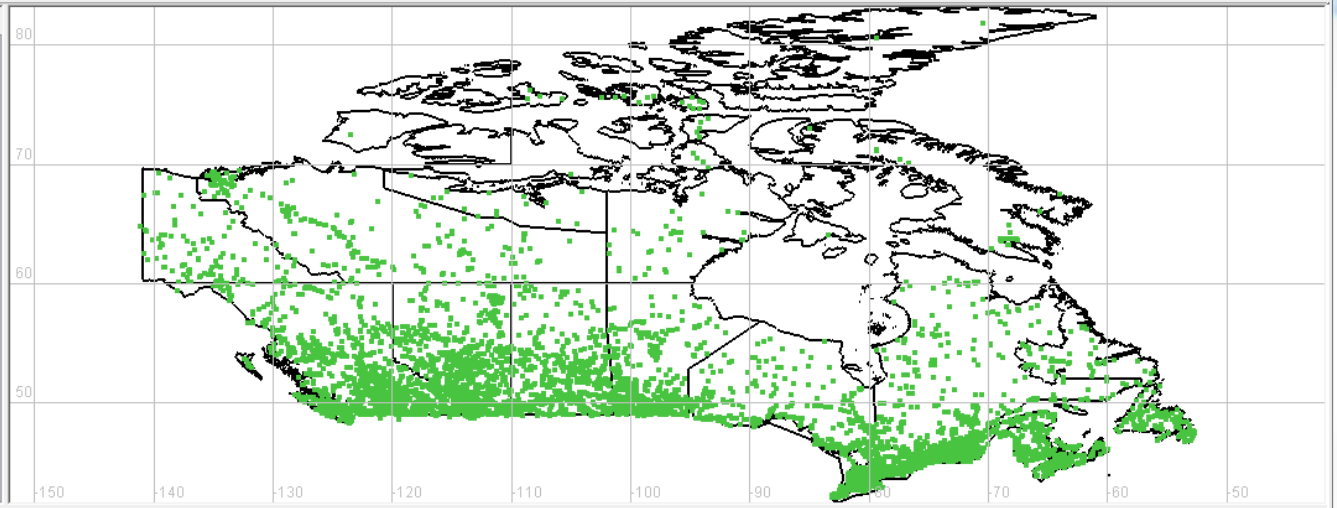
Environment Canada Data Explorer (Version:2.1.8) - HYDAT Version:1.0 (Oct. 17,2016)

File Export View Help

Stations

Base Maps

- PoliticalBoundaries
- RiversAndLakes_7.5m
- Cities_7.5m
- RiversAndLakes_1m
- Cities_1m
- Roads_1m
- MajorDrainageBasins
- SubDrainageBasins
- SubSubDrainageBasins



Station Number | Hyd Status | Data Period 1850 to 2016 | Has Flow | Has Level | Has Sed | Is Real Time | Is RHBN | Favourites | Apply Filter | Reset Filter | 7791/7791

Station Name | Regulation | Total Years 0

Province | Oper Sched | Drainage Area 0

Station	Fav	StationName	HydStatus	Prov	Latitude	Longitude	DrainageArea	Years	From	To	Reg.	Flow	Level	Sed	OperSched	RealTime
01AA002		DAAQUAM (RIVIERE) EN AVAL DE LA RIVIERE SHIDGEL	Discontinued	QC	46.5575	-70.08111	598	11	1967	1977		Yes			Continuous	
01AD001		MADAWASKA (RIVIER) EN AVAL DU BARRAGE TEMISC...	Discontinued	QC	47.54833	-68.63639	2690	80	1918	1997	Yes	Yes			Continuous	
01AD002		SAINT JOHN RIVER AT FORT KENT	Active	ME	47.25806	-68.59583	14700	89	1926	2014		Yes			Continuous	Yes
01AD003		ST. FRANCIS RIVER AT OUTLET OF GLASIER LAKE	Active	NB	47.20661	-68.95694	1350	65	1951	2015		Yes	Yes		Continuous	Yes
01AD004		SAINT JOHN RIVER AT EDMUNDSTON	Active	NB	47.36078	-68.32489	15500	30	1968	2014		Yes	Yes		Continuous	Yes
01AD005		MADAWASKA (RIVIERE) AU RESERVOIR TEMISCOUATA	Discontinued	QC	47.57056	-68.64306	2590	9	1966	1974	Yes		Yes		Continuous	
01AD008		LONG (LAC) PRES DE LES ETROITS	Discontinued	QC	47.39083	-68.89833	108	3	1972	1974			Yes		Continuous	

Ready

Station: 08MF005 Data Type: Real-Time Apply

Filter items Showing 1 to 20 of 2,103 entries | Show 20 entries

This table provides real-time data in tabular format.

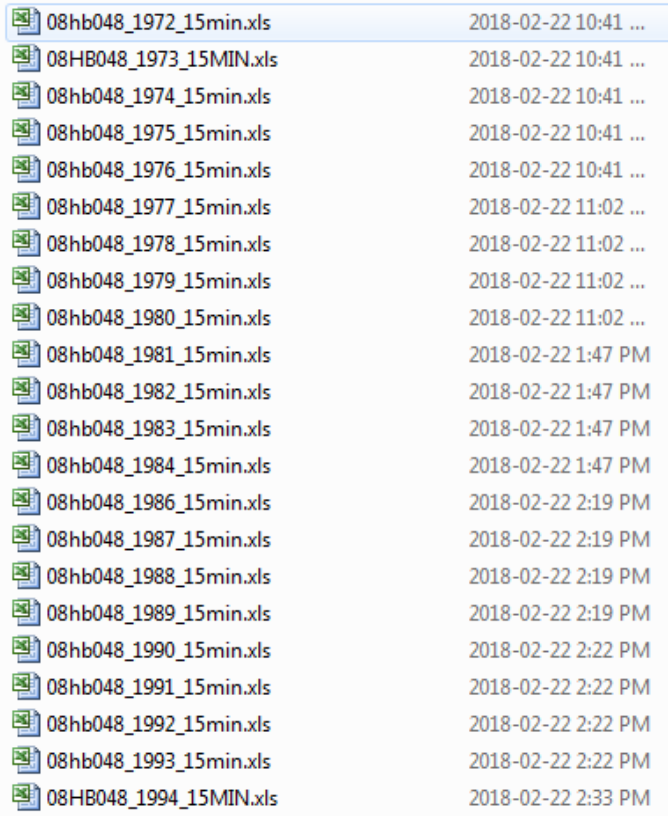
Date (PST)	Primary water level (m)	Discharge (m^3/s)
2018-05-03 07:10:00	7.097	6,070
2018-05-03 07:05:00	7.094	6,060
2018-05-03 07:00:00	7.086	6,040
2018-05-03 06:55:00	7.086	6,040
2018-05-03 06:50:00	7.079	6,030
2018-05-03 06:45:00	7.099	6,070
2018-05-03 06:40:00	7.098	6,070
2018-05-03 06:35:00	7.075	6,020
2018-05-03 06:30:00	7.066	6,010
2018-05-03 06:25:00	7.115	6,100
2018-05-03 06:20:00	7.099	6,070
2018-05-03 06:15:00	7.090	6,050
2018-05-03 06:10:00	7.060	6,000
2018-05-03 06:05:00	7.044	5,970
2018-05-03 06:00:00	7.114	6,100
2018-05-03 05:55:00	7.080	6,030
2018-05-03 05:50:00	7.097	6,070
2018-05-03 05:45:00	7.091	6,050

Results

Becomes a file storage issue

Not reproducible

Too many clicks!



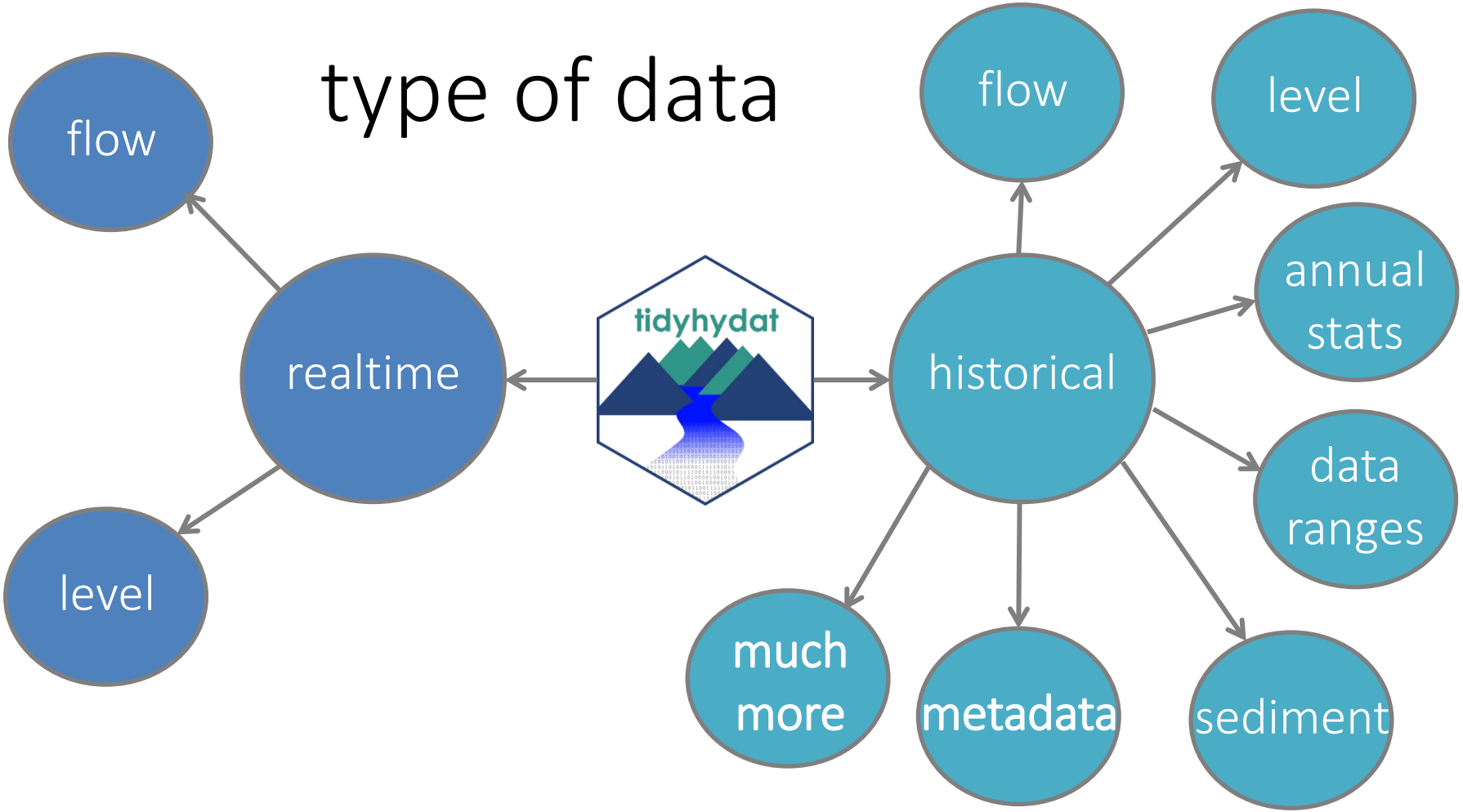
Your turn

Open up 01-tidyhydat-intro.Rmd

- TODO: Screenshot of Files pane

Steps for tidyhydat

type of data


flow
realtime
level
tidyhydat
historical
flow
level
annual stats
data ranges
much more
metadata
sediment

Anatomy of an R function

```
fraser <- hy_daily_flows(station_number = "08MF005")
```

Object Function Argument Value

Realtime – functions with a `realtime` prefix

Historical – functions with a `hy` prefix

Getting help

- To find all the functions in a package we can input this line:

```
help(package = "tidyhydat")
```

- To seek out help for an individual function type

```
?function_name:
?hy_daily_levels
```

Your turn

- Try grabbing daily flow data for the following stations: 07EF001, 02HA013
- Give each resulting object a unique name
- Inspect the results

What stations are you interested in?

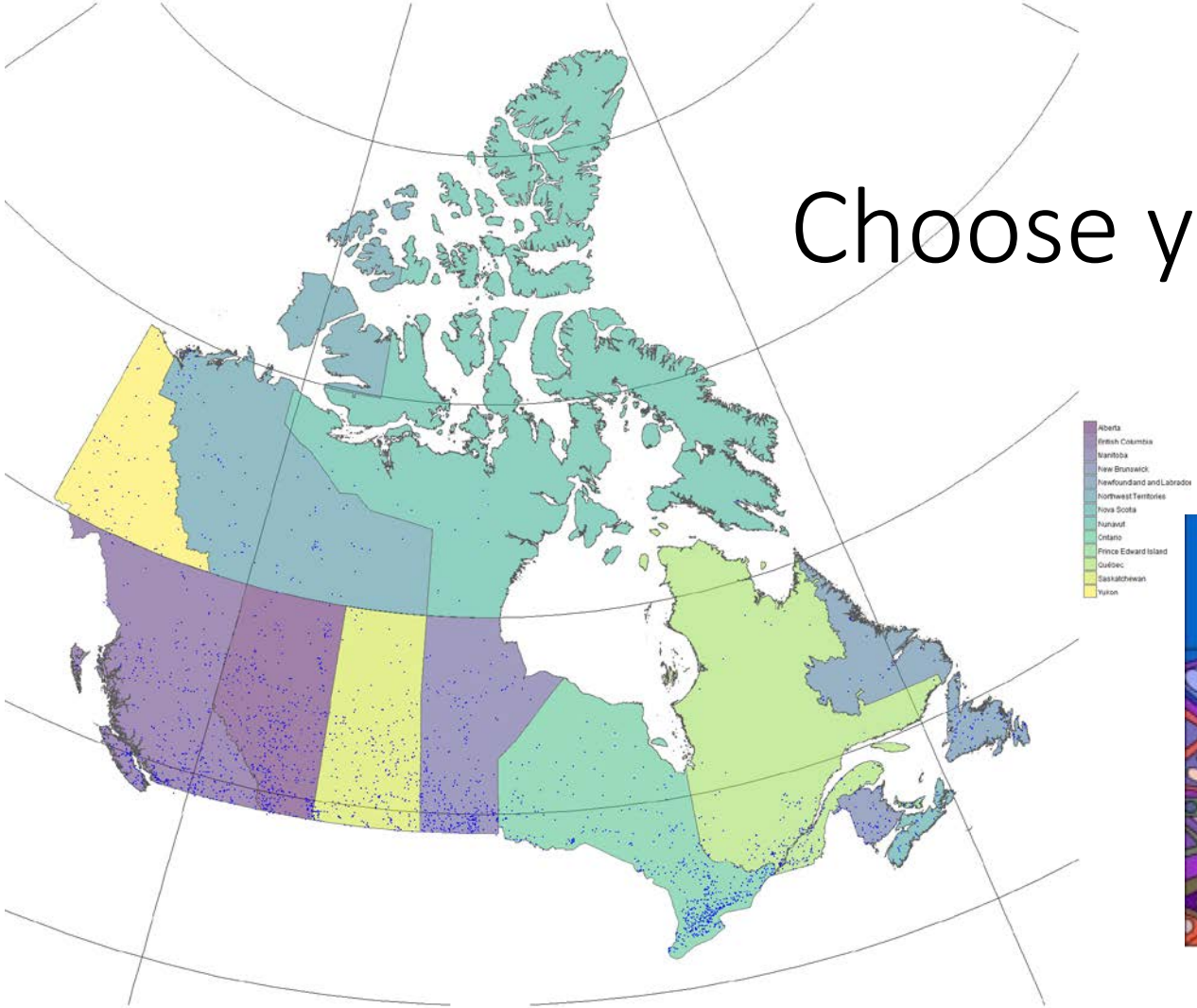
One station:

```
stns <- "07EF001"
```

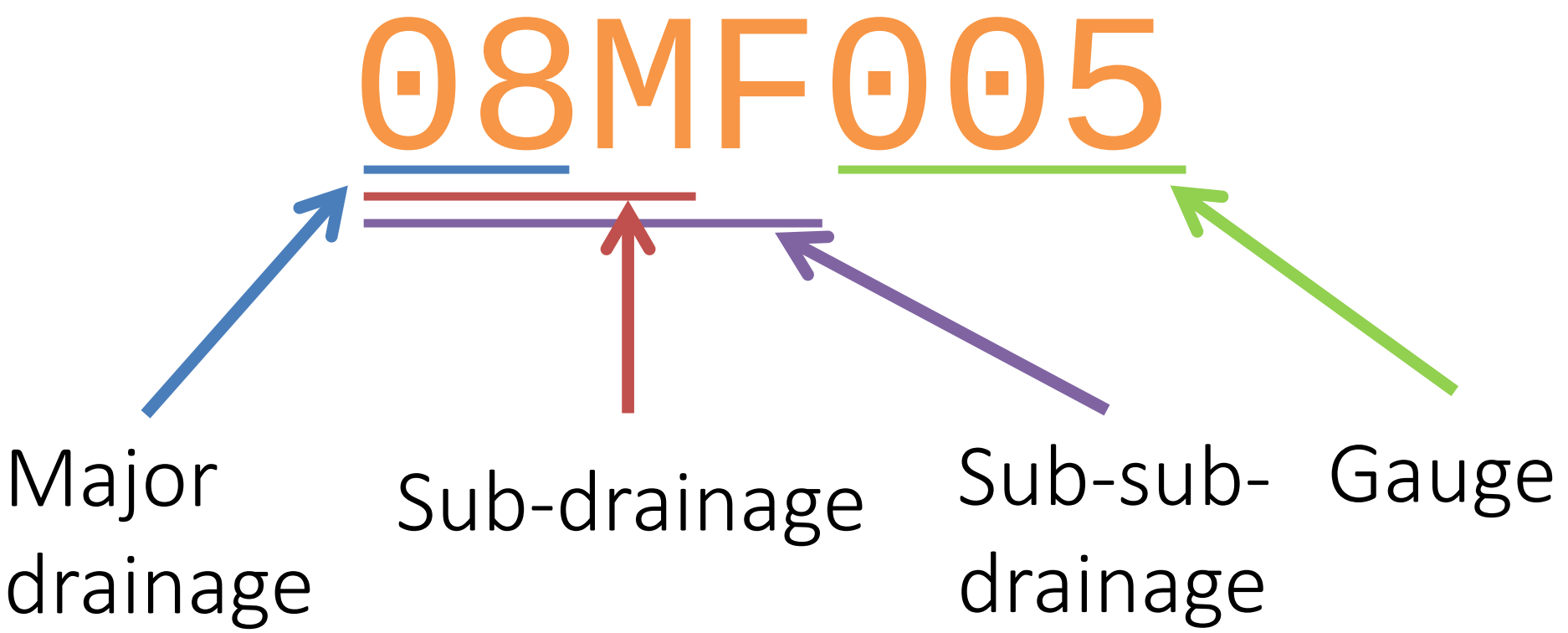
Two or more stations:

```
stns <- c("07EF001","02HA013")
```

Choose your station



Anatomy of a WSC station number



Your turn

- Create a vector using `c()` called `my_vector`
- Construct a data.frame object with `hy_daily_flows` that includes both stations
- Inspect that data.frame