



Save an ocean of time: streamline data wrangling with R

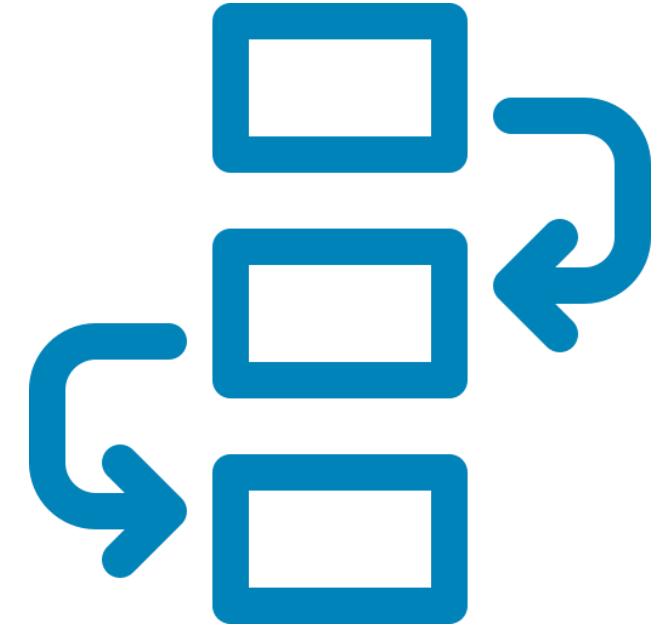
Danielle Dempsey
Centre for Marine Applied Research
Nova Scotia, Canada
rstudio::conf
2022-07-28



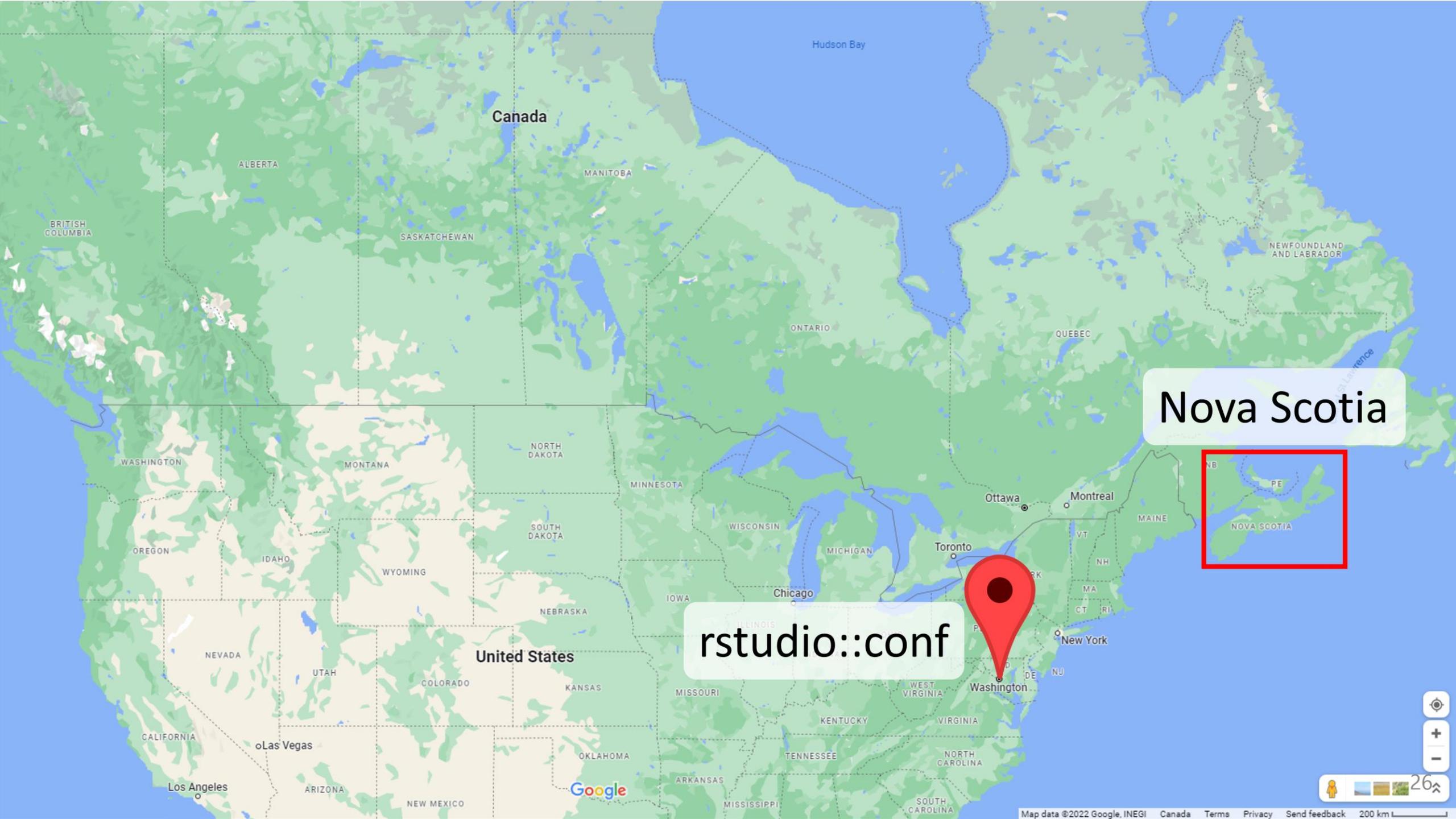
**Save
Time**



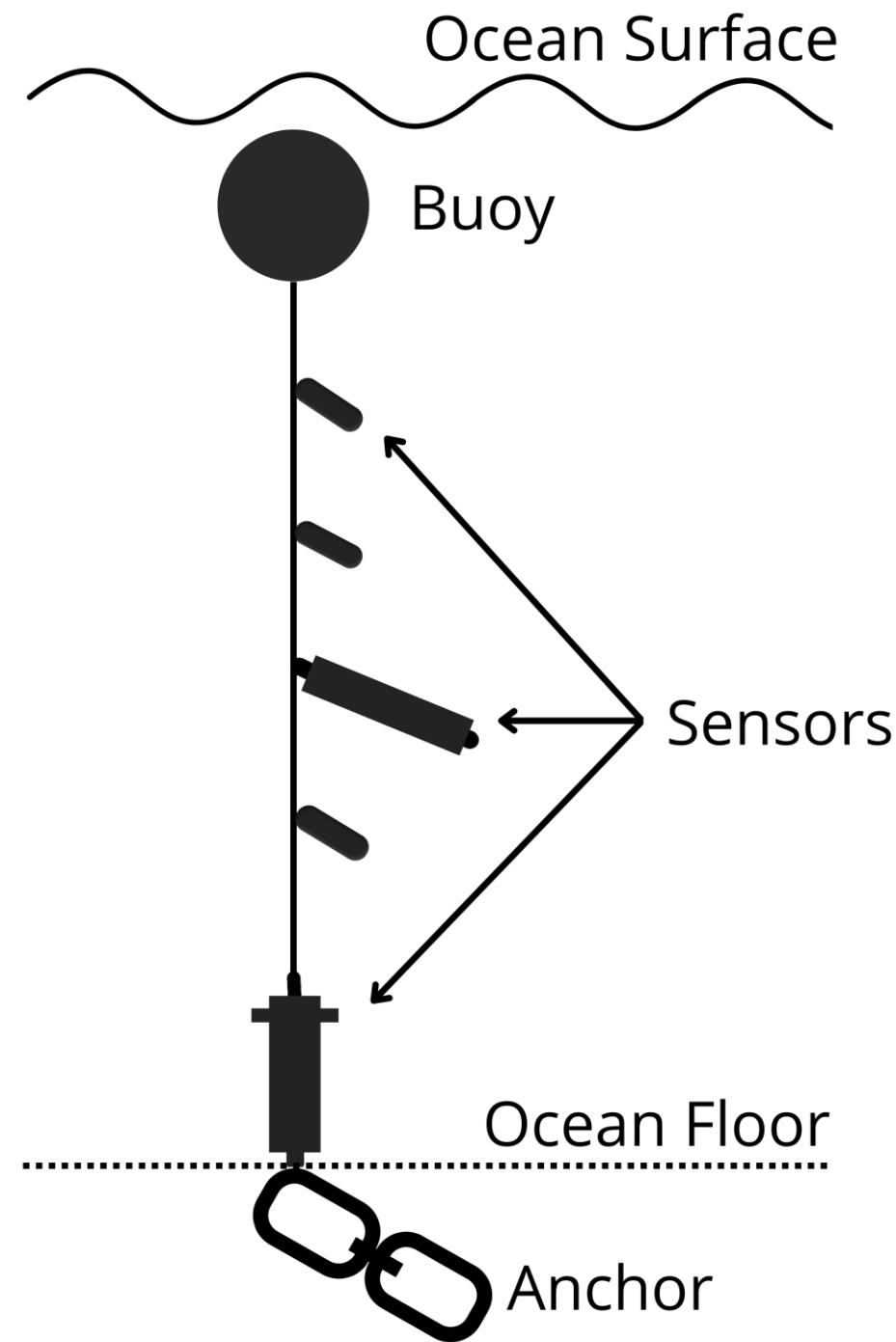
**Reduce
Errors**



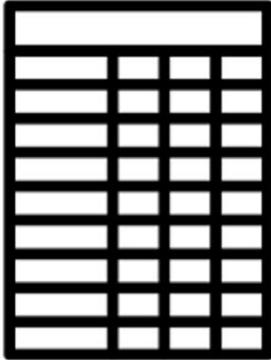
**Improve
Workflow**







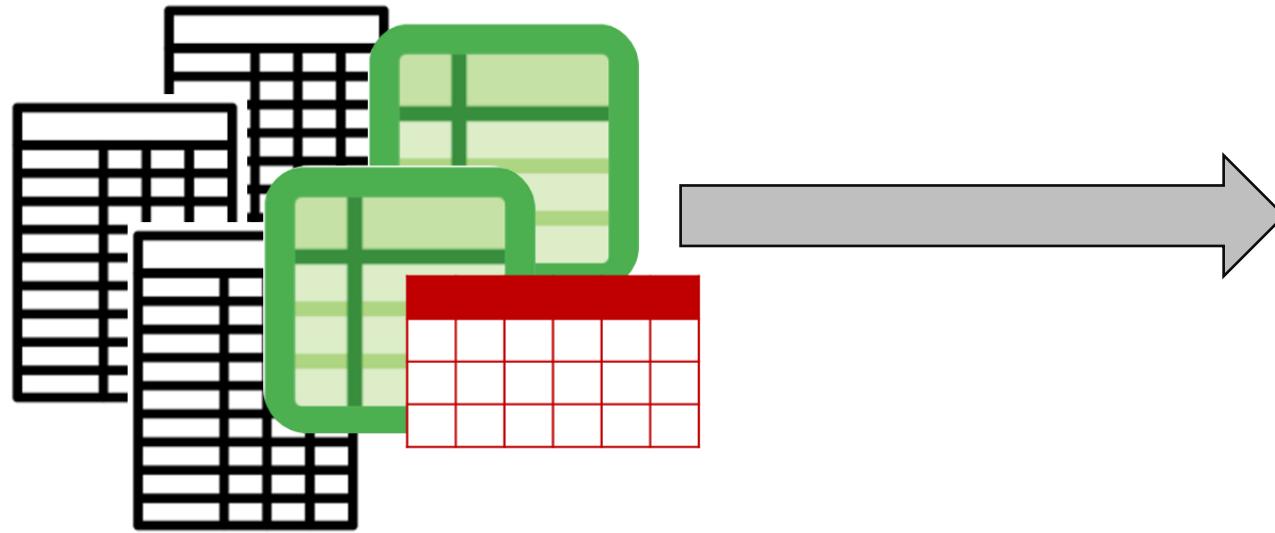
	A	B	C
1	Plot Title:	10194899	
2	#	Date Time, GMT+00:00	Temp, °C
3	1	2018-02-20 18:00	1.751
4	2	2018-02-20 18:15	1.724
5	3	2018-02-20 18:30	1.724
6	4	2018-02-20 18:45	1.67
7	5	2018-02-20 19:00	1.67
8	6	2018-02-20 19:15	1.67
9	7	2018-02-20 19:30	1.643
		2018-02-20 19:45	1.615
		2018-02-20 20:00	1.615
		2018-02-20 20:15	1.615
		2018-02-20 20:30	1.588
		2018-02-20 20:45	1.561
		2018-02-20 21:00	1.561
		2018-02-20 21:15	1.561
		2018-02-20 21:30	1.588



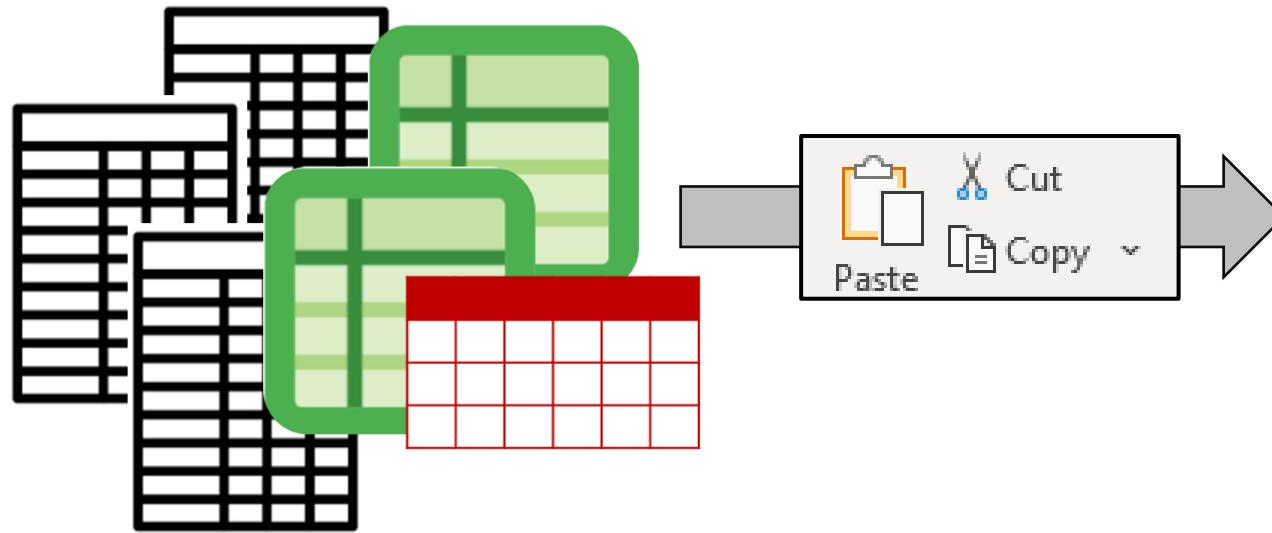
	A	B	C
1	Plot Title: 10194899		
2	#	Date Time, GMT+00:00	Temp, °C
3	1	2018-02-20 18:00	1.751
4	2	2018-02-20 18:15	1.724
5	3	2018-02-20 18:30	1.724
6	4	2018-02-20 18:45	1.67
7	5	2018-02-20 19:00	
8	6	2018-02-20 19:00	
9	7	2018-02-20 19:00	

	A	B	C	D	E
1	Date and Time (UTC)	Receiver	Description	Data	Units
2	2018-02-20 17:50	VR2AR-547087	Tilt angle	10	°
3	2018-02-20 17:50	VR2AR-547087	Rotation angle	302	°
4	2018-02-20 17:50	VR2AR-547087	Noise	164.8	mV
5	2018-02-20 17:50	VR2AR-547087	Seawater depth	39	m
6	2018-02-20 17:50	VR2AR-547087	Temperature	3.9	°C
7	2018-02-20 18:00	VR2AR-547087	Tilt angle	11	°
8	2018-02-20 18:00	VR2AR-547087	Rotation angle	307	°
9	2018-02-20 18:00	VR2AR-547087	Noise	149	mV
10	2018-02-20 18:00	VR2AR-547087	Seawater depth	39	m
11	2018-02-20 18:00	VR2AR-547087	Temperature	2.8	°C
12	2018-02-20 18:10	VR2AR-547087	Tilt angle	12	°
13	2018-02-20 18:10	VR2AR-547087	Rotation angle		
14	2018-02-20 18:10	VR2AR-547087	Noise		
15	2018-02-20 18:10	VR2AR-547087	Seawater depth		
16	2018-02-20 18:10	VR2AR-547087	Temperature		

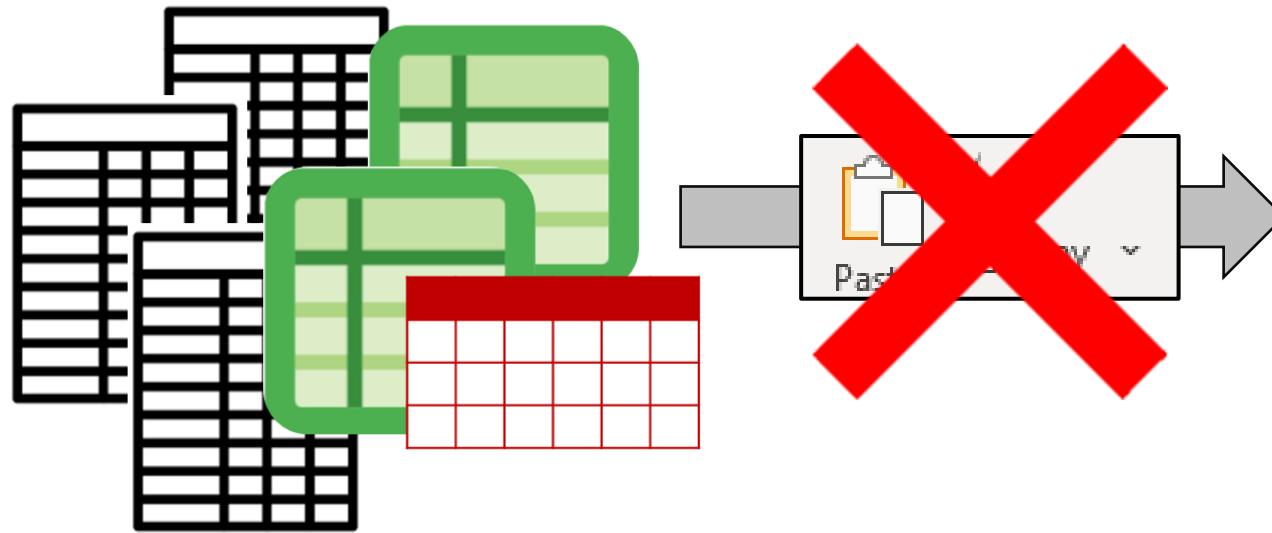
	A	B	C				
1	Plot Title: 10194899						
2	#	Date Time, GMT+00:00	Temp, °C				
3	1	A	B	C	D	E	F
4	2	1 Timestamp(UTC)	Sensor	Record Type	Dissolved Oxygen	Temperature	Device Tilt
5	3	undefined	aquaMeasure-670354	Undefined Record			
6	4	undefined	aquaMeasure-670354	Undefined Record			
7	5	12s after startup (time not set)	aquaMeasure-670354	Power Up			
8	6	13s after startup (time not set)	aquaMeasure-670354	Text			
9	7	2018-04-25 17:04	aquaMeasure-670354	Device Tilt			105.2
		2018-04-25 17:04	aquaMeasure-670354	Battery Voltage			1.649
		2018-04-25 17:04	aquaMeasure-670354	Time Set			
		2018-04-25 17:14	aquaMeasure-670354	Dissolved Oxygen	99.4		
		2018-04-25 17:14	aquaMeasure-670354	Temperature	19.47		
		2018-04-25 17:14	aquaMeasure-670354	Device Tilt			
		2018-04-25 17:24	aquaMeasure-670354	Dissolved Oxygen	98		
		2018-04-25 17:24	aquaMeasure-670354	Temperature	18.93		
		2018-04-25 17:24	aquaMeasure-670354	Device Tilt			
		2018-04-25 17:29	aquaMeasure-670354	Battery Voltage			
		2018-04-25 17:34	aquaMeasure-670354	Dissolved Oxygen	94.3		
		2018-04-25 17:34	aquaMeasure-670354	Temperature	19		
	13	2018-02-20 18:10	VR2AR-547087	Rotation angle			
	14	2018-02-20 18:10	VR2AR-547087	Noise			
	15	2018-02-20 18:10	VR2AR-547087	Seawater depth			
	16	2018-02-20 18:10	VR2AR-547087	Temperature			



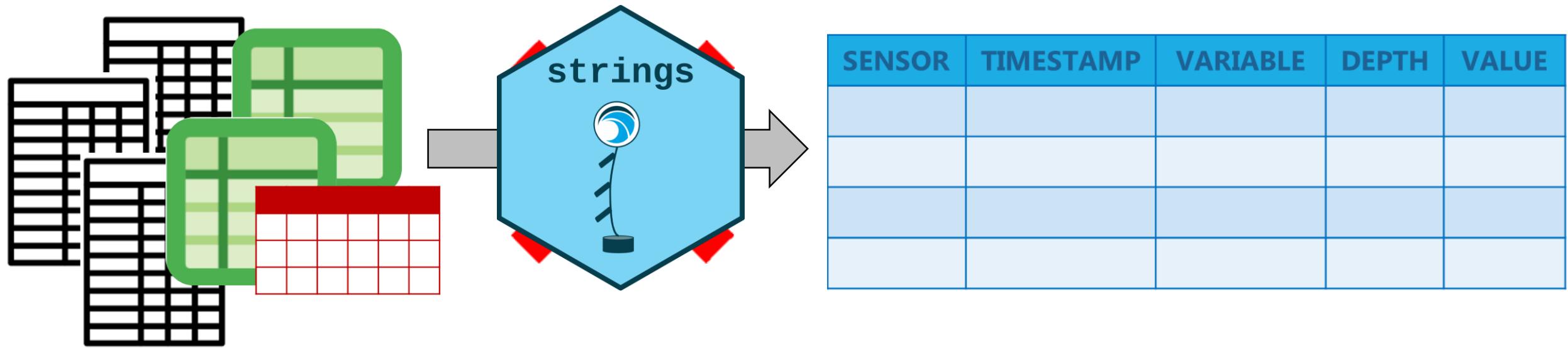
SENSOR	TIMESTAMP	VARIABLE	DEPTH	VALUE



SENSOR	TIMESTAMP	VARIABLE	DEPTH	VALUE



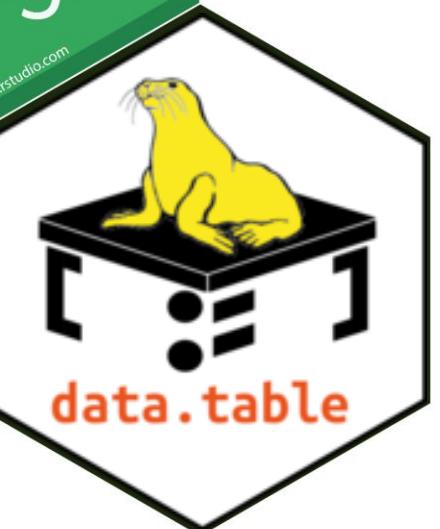
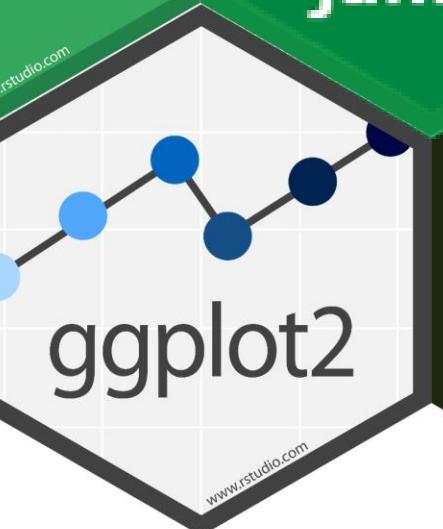
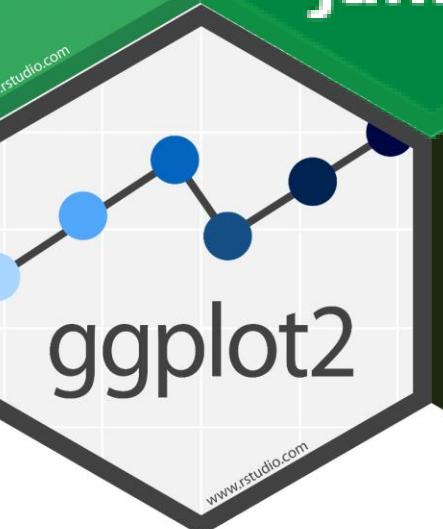
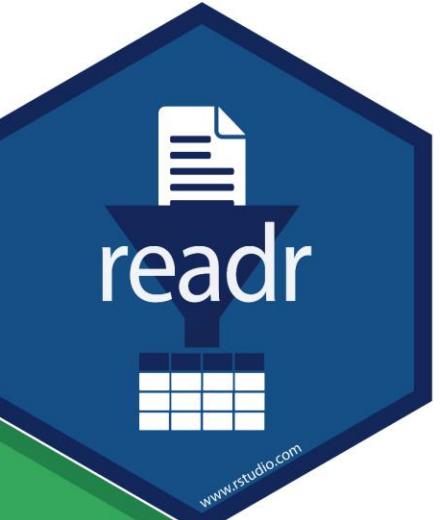
SENSOR	TIMESTAMP	VARIABLE	DEPTH	VALUE





Spend Time to Save Time

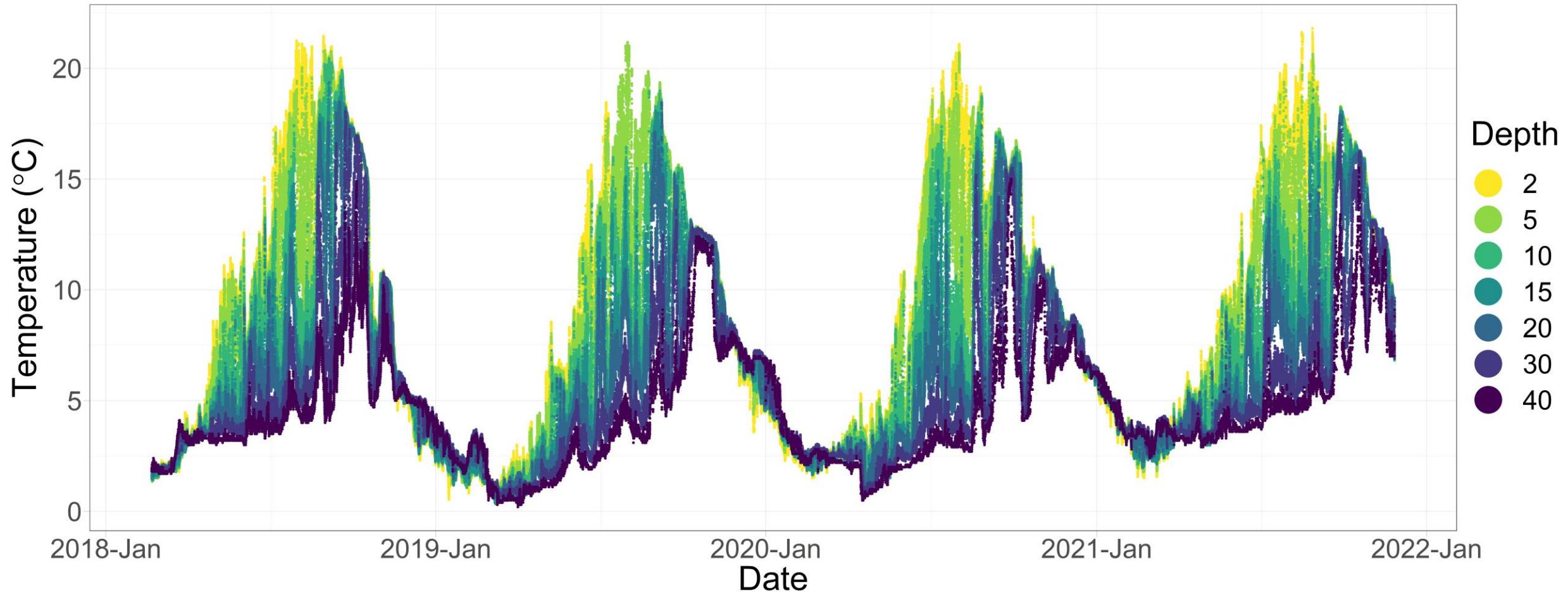






TWO YEARS

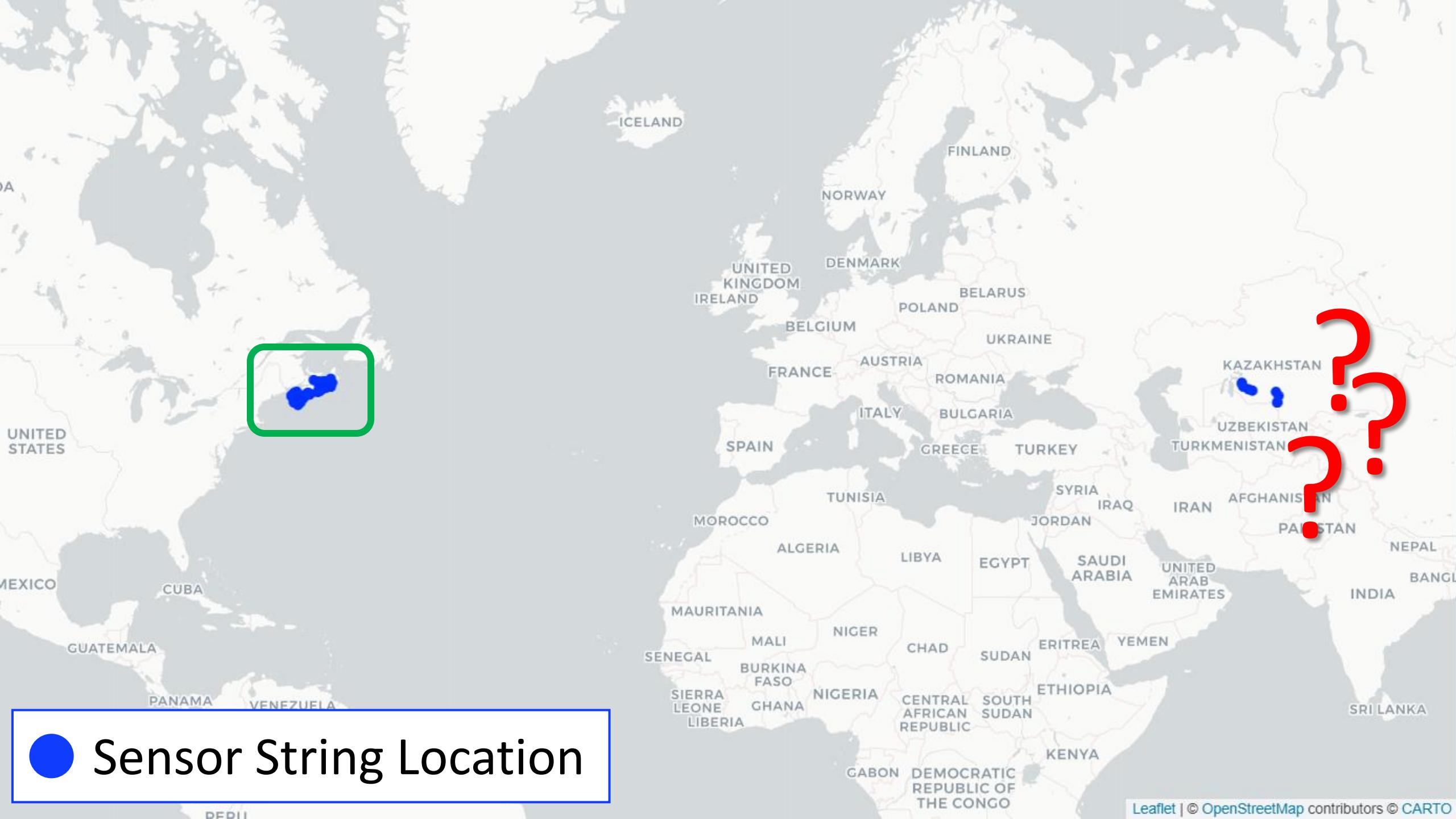
Birchy Head Temperature



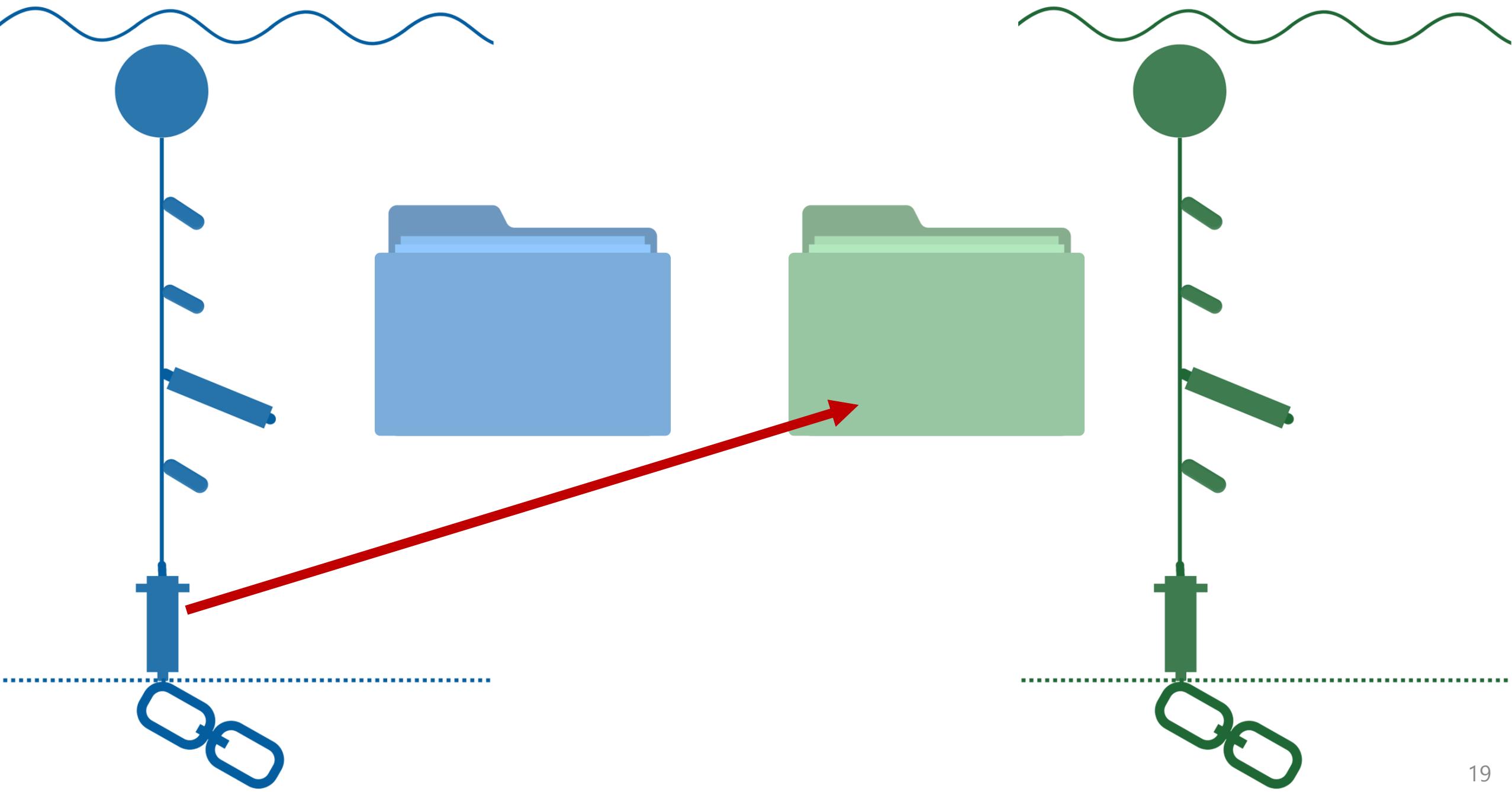


Reduce Errors in Dataset



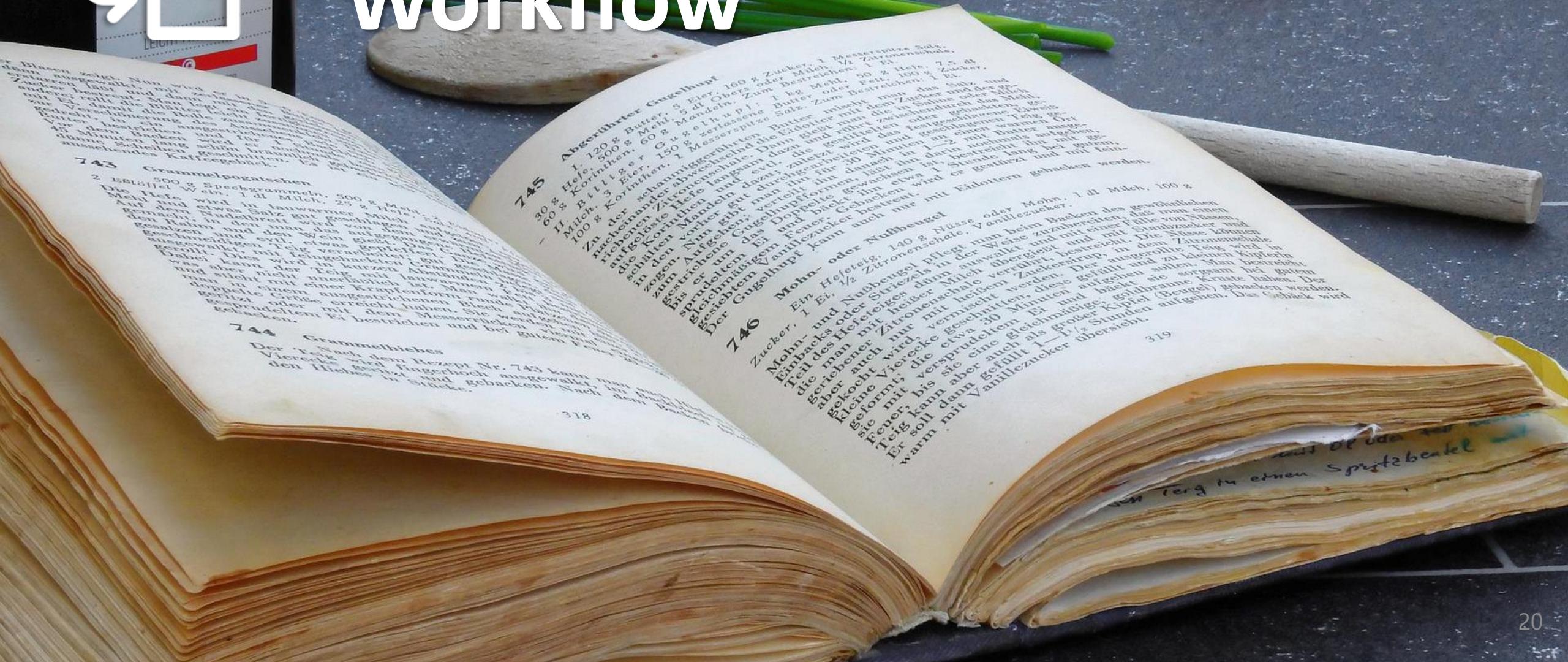


Sensor String Location





Traceable & Reproduceable Workflow





Start here

Before starting, wash and dry all produce.

Bust out

Measuring spoons, strainer, zester, small bowl, whisk, large non-stick pan

Ingredients

	2 Person	4 Person
Lentils, canned	398 ml	796 ml
Dal Spice Blend	1 tbsp	2 tbsp
Navel Orange	1	2
Arugula and Spinach Mix	113 g	227 g
Almonds, sliced	28 g	28 g
Apricot Spread	2 tbsp	4 tbsp
Lemon	1	2
Sweet Bell Pepper	160 g	320 g
Shallot	50 g	100 g
Ginger	15 g	30 g
Garlic, cloves	1	2
Oil*		
Salt and Pepper*		

* Pantry items



HELLO FRESH



Prep

Using a strainer, drain and rinse **lentils**. Peel, then mince or grate **garlic**. Peel, then mince or grate **half the ginger** (use all for 4 ppl). Peel, then finely chop **shallot**. Core, then cut **pepper** into $\frac{1}{4}$ -inch slices. Zest, then juice **lemon**. Zest **orange**. Cut a $\frac{1}{4}$ -inch piece off the top and bottom ends of **orange**. Place one flat end on a cutting board, then cut the peel away from top to bottom, turning **orange** as you go. When peeled completely, place **orange** on its side and cut into $\frac{1}{4}$ -inch rounds.



Cook lentils

Heat the same pan (from step 2) over



Toast almonds

Heat a large non-stick pan over medium heat. When hot, add **almonds** to the dry pan. Toast, stirring often, until golden, 3-5 min. (**TIP:** Keep your eye on them so they don't burn!) Transfer to a plate.



Make vinaigrette

While **almonds** toast, whisk together **apricot spread**, **ginger**, a **quarter of the shallots**, **half the lemon zest**, **half the orange zest**, **lemon juice**, any **orange juice** from the cutting board and **3 tbsp oil** (dbl for 4 ppl) in a large bowl. Season with **salt** and **pepper**, to taste.



Toss salad

Add **arugula** and **spinach mix** and **peppers**



Finish and serve

Arrange **orange** rounds along the plates' edges. Top with the **lentil** mixture and **almonds**.

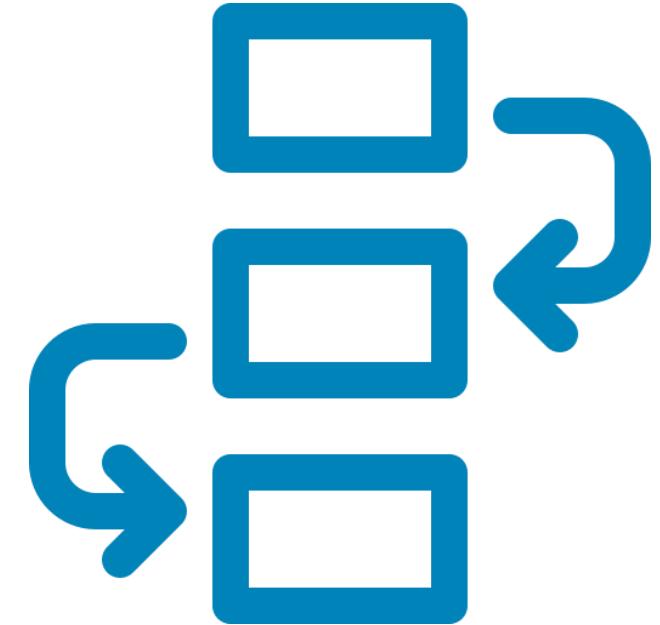
2007-12-18 _Spectacle Island.txt	2008-06-18 _Spectacle Island.txt	2008-07-31 _Freeport.t xt	2008-09-25 _Coffin Island SW.txt	2009-12-08 _Owl's Head.txt	2010-05-04 _East McNutts.tx t	2010-06-25 _Englishto wn Wharf.txt	2010-08-04 _Petite Passage.txt	2010-09-02 _Coffin Island Southwe... st	2010-10-29 _Jordan Bay.txt	2011-01-06 _Rattling Beach.txt	2011-03-30 _Brier Island.txt	2011-05-19 _Borgles Island.txt
2011-10-12 _Beaver Harbour.txt	2011-11-29 _Spry Harbour.txt	2014-07-09 _Eddy Cove Center.txt	2014-07-09 _Eddy Cove Northeast.t xt	2015-10-07 _Saddle Island Southwe... st	2015-11-25 _North Aberdeen.t xt	2016-06-30 _Roy Island.txt	2016-08-05 _Little Harbour Channel.txt	2016-10-07 _Saddle Island Northeas... st	2017-10-05 _Salt Bay.txt	2017-10-24 _Brier Island East.txt	2018-05-31 _Whycoco magh Basin.txt	2018-07-05 _South Aberdeen.t xt
2018-07-09 _Spectacle Island.txt	2018-07-12 _Hunts Point.txt	2018-08-13 _Western Channel.txt	2018-08-15 _Gypsum Mine.txt	2018-10-05 _Ram Island.txt	2018-10-31 _North Aberdeen.t xt	2018-11-20 _Brandy Ledge.txt	2018-12-20 _Meal Rock(1).txt	2018-12-20 _Meal Rock(2).txt	2019-01-17 _Long Beach.txt	2019-02-05 _Tor Bay Center.txt	2019-02-07 _Camerons Cove.txt	2019-03-12 _Long Island.txt
2019-03-19 _Black Island.txt	2019-07-11 _Jerseyman Island.txt	2019-07-11 _Nyanza.txt	2019-08-23 _Loon Point.txt	2019-08-23 _Pilot Point.txt	2019-08-23 _Prices Island.txt	2019-08-29 _Sober Island Outlet.txt	2019-10-15 _Centerville .txt	2019-10-25 _Blue Island.txt	2019-11-14 _Outer Wine Harbour.txt	2020-06-15 _Big Gooseberry Island.txt	2020-06-15 _The Brothers South.txt	2020-06-23 _Boston Rock.txt
2020-07-03 _Shut In Island.txt	2020-07-08 _St Peters Inlet.txt	2020-08-27 _Grand Passage.txt	2020-09-01 _Woods Harbour.txt	2020-09-24 _Canoe Island.txt	2020-09-24 _Pubnico.t xt	2020-10-06 _Blandford. txt	2020-10-22 _Cornwallis Northeast.t xt	2020-10-22 _Cornwallis Southwest. txt	2020-11-18 _Wolfes Island.txt	2021-09-01 _Lazares Island.txt	2021-09-01 _Walshs Deep Cove.txt	2021-09-23 _Big Pond Point.txt



**Save
Time**



**Reduce
Errors**



**Improve
Workflow**



Danielle Dempsey
ddempsey@perennia.ca
Github: [dempsey-CMAR](https://github.com/dempsey-CMAR)
Twitter: [@Dr_DDempsey](https://twitter.com/Dr_DDempsey)