



Save an ocean of time: streamline data wrangling with R

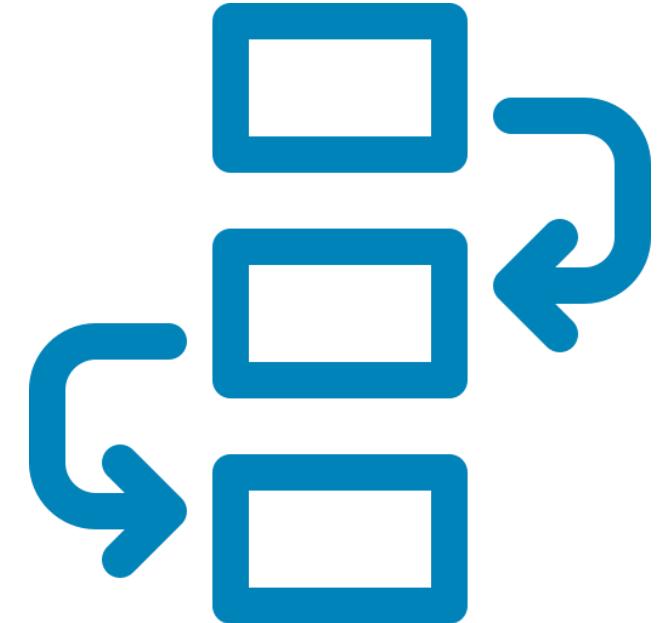
Danielle Dempsey
Centre for Marine Applied Research
Nova Scotia, Canada
rstudio::conf
2022-07-28



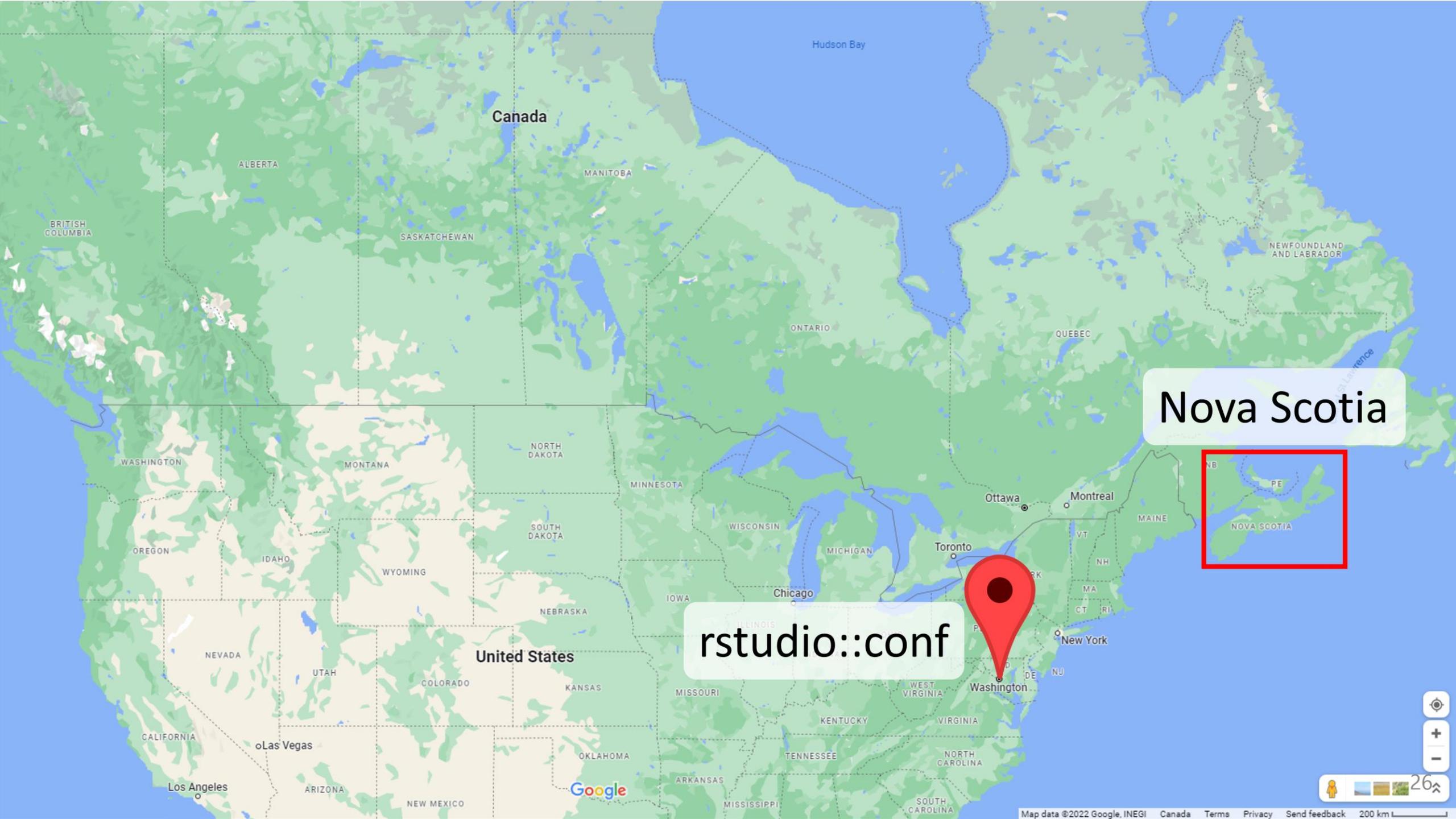
**Save
Time**



**Reduce
Errors**



**Improve
Workflow**

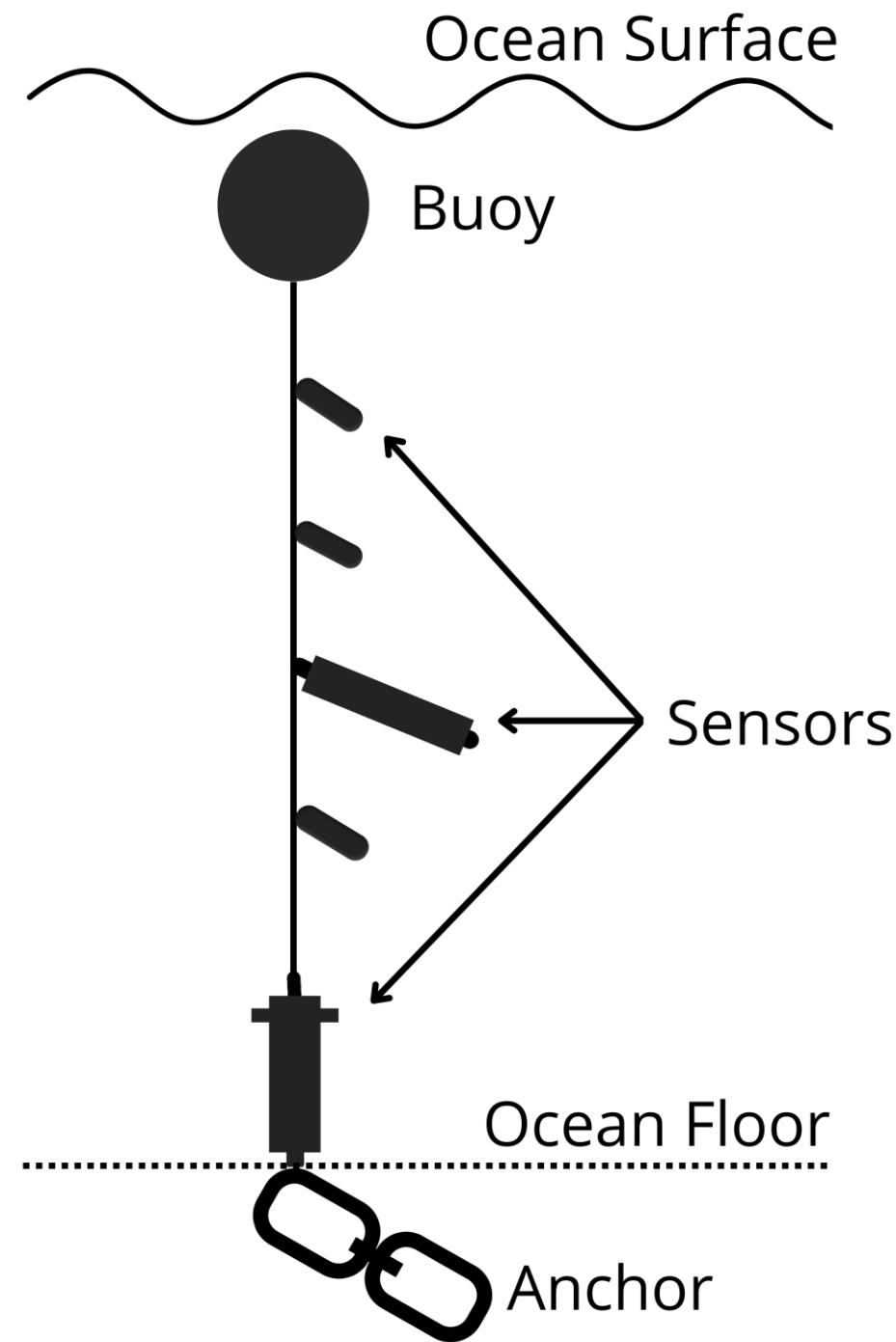


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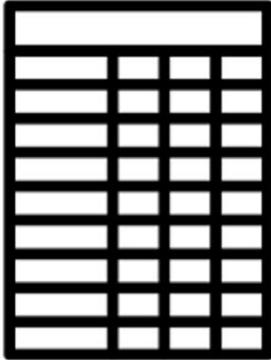
Nova Scotia







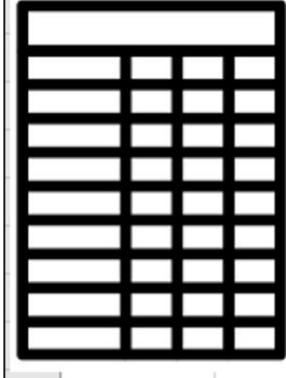
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1	Plot Title:	10194899	
2	#	Date Time, GMT+00:00	Temp, °C
3	1	2018-02-20 18:00	1.751
4	2	2018-02-20 18:15	1.724
5	3	2018-02-20 18:30	1.724
6	4	2018-02-20 18:45	1.67
7	5	2018-02-20 19:00	1.67
8	6	2018-02-20 19:15	1.67
9	7	2018-02-20 19:30	1.643
		2018-02-20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

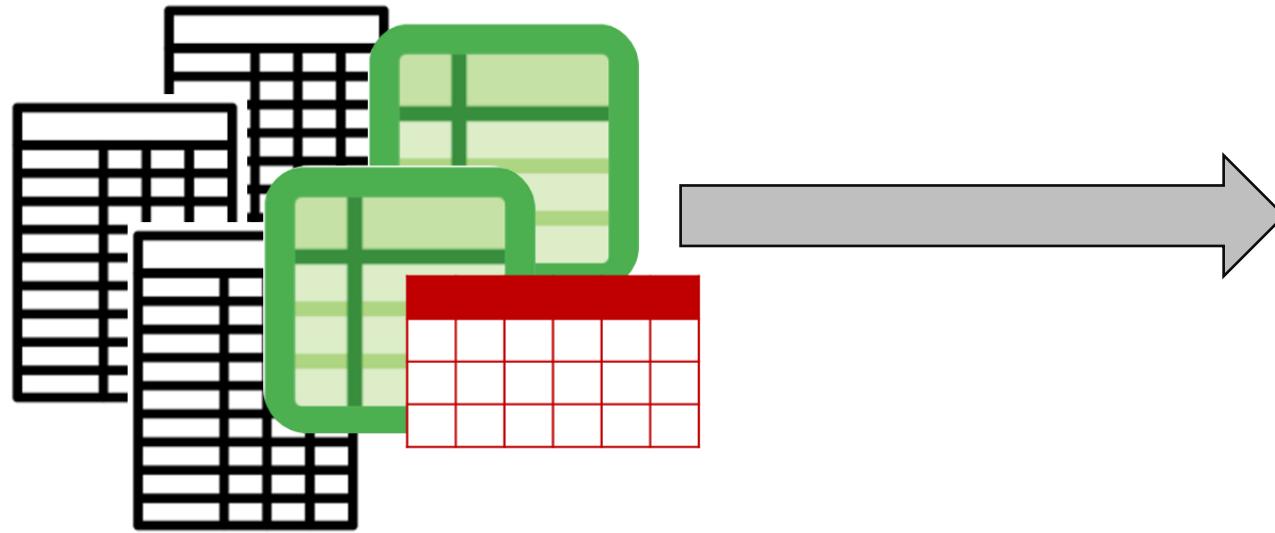
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1	Plot Title: 10194899		
2	#	Date Time, GMT+00:00	Temp, °C
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4	2		
5	3		
6	4		
7	5		
8	6		
9	7		



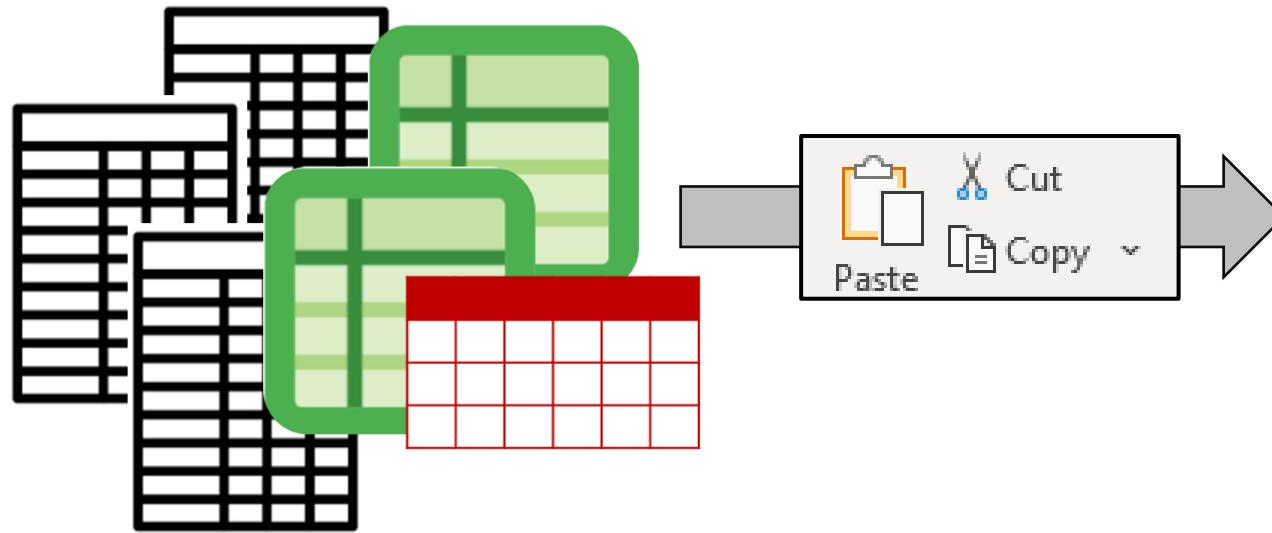
	A	B	C	D	E	F	G
1	Timestamp(UTC)	Sensor	Record Type	Dissolved Oxygen	Temperature	Device Tilt	Battery Voltage
2	undefined	aquaMeasure-670354	Undefined Record				
3	undefined	aquaMeasure-670354	Undefined Record				
4	12s after startup (time not set)	aquaMeasure-670354	Power Up				
5	13s after startup (time not set)	aquaMeasure-670354	Text				
6	2018-04-25 17:04	aquaMeasure-670354	Device Tilt			105.2	
7	2018-04-25 17:04	aquaMeasure-670354	Battery Voltage				1.649
8	2018-04-25 17:04	aquaMeasure-670354	Time Set				
9	2018-04-25 17:14	aquaMeasure-670354	Dissolved Oxygen	99.4			
10	2018-04-25 17:14	aquaMeasure-670354	Temperature	19.47			
11	2018-04-25 17:14	aquaMeasure-670354	Device Tilt				
12	2018-04-25 17:24	aquaMeasure-670354	Dissolved Oxygen	98			
13	2018-04-25 17:24	aquaMeasure-670354	Temperature	18.93			
14	2018-04-25 17:24	aquaMeasure-670354	Device Tilt				
15	2018-04-25 17:29	aquaMeasure-670354	Battery Voltage				
16	2018-04-25 17:34	aquaMeasure-670354	Dissolved Oxygen	94.3			
17	2018-04-25 17:34	aquaMeasure-670354	Temperature	19			



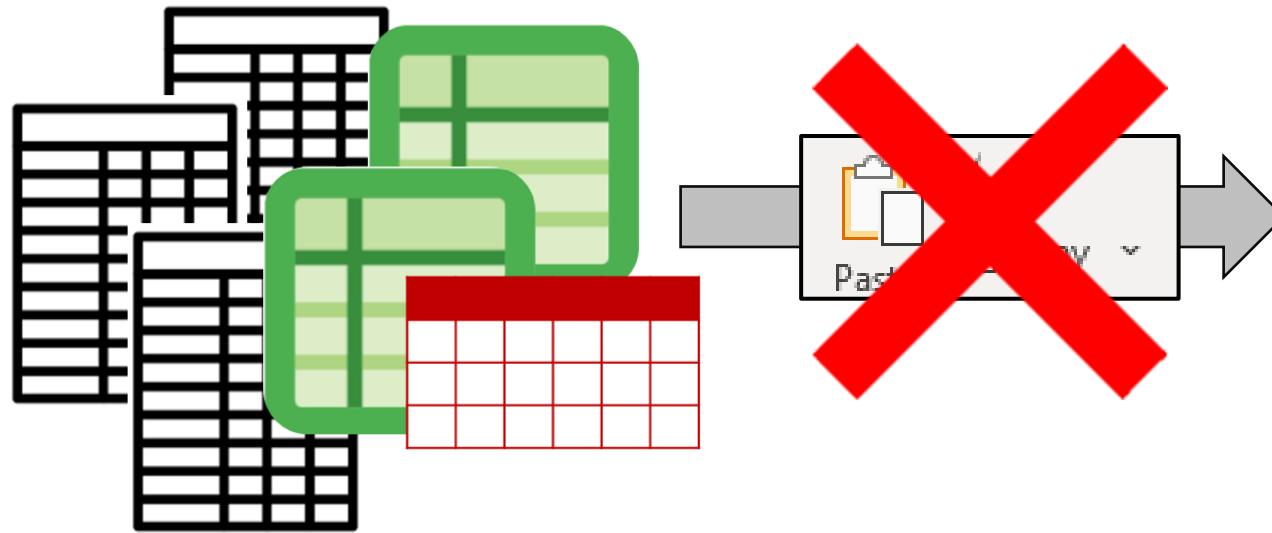
13	2018-02-20 18:10	VR2AR-547087	Rotation angle	
14	2018-02-20 18:10	VR2AR-547087	Noise	
15	2018-02-20 18:10	VR2AR-547087	Seawater depth	
16	2018-02-20 18:10	VR2AR-547087	Temperature	

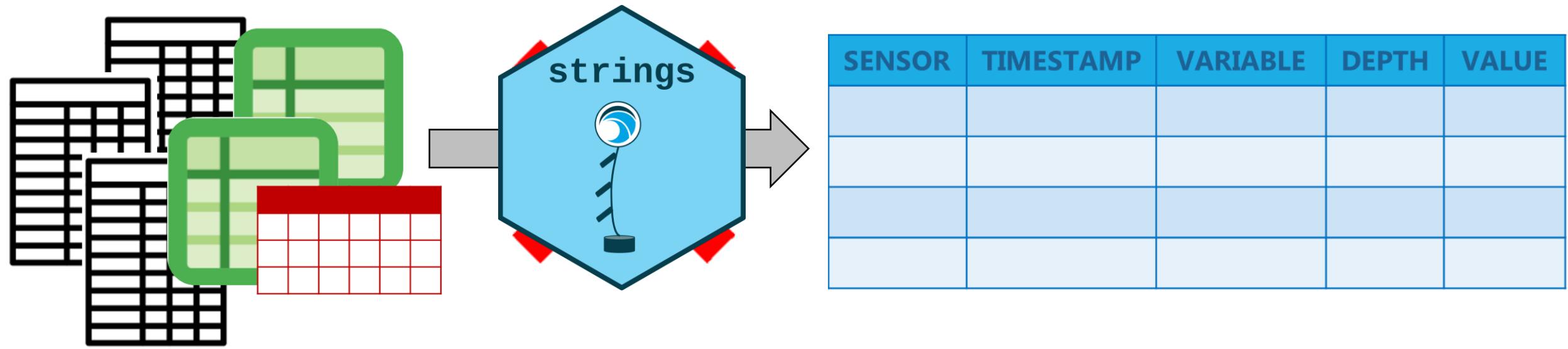


SENSOR	TIMESTAMP	VARIABLE	DEPTH	VALUE



SENSOR	TIMESTAMP	VARIABLE	DEPTH	VALUE

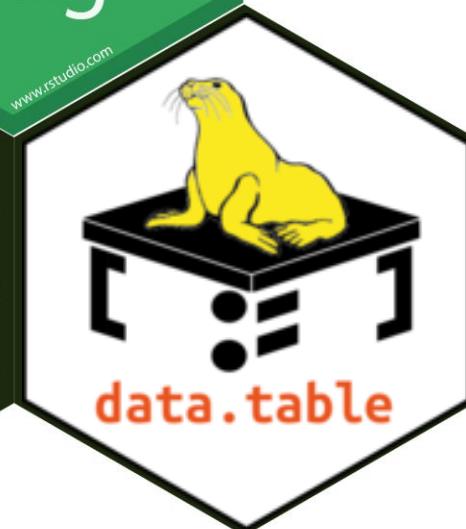
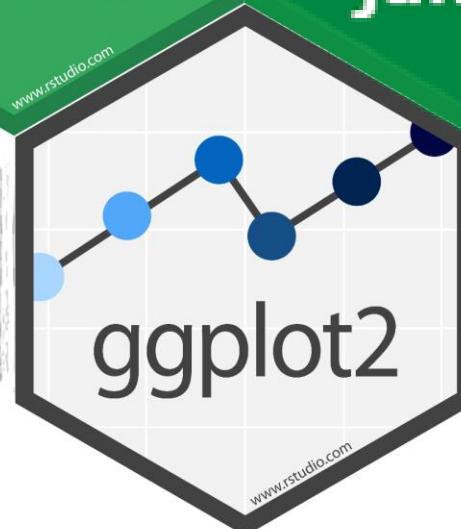
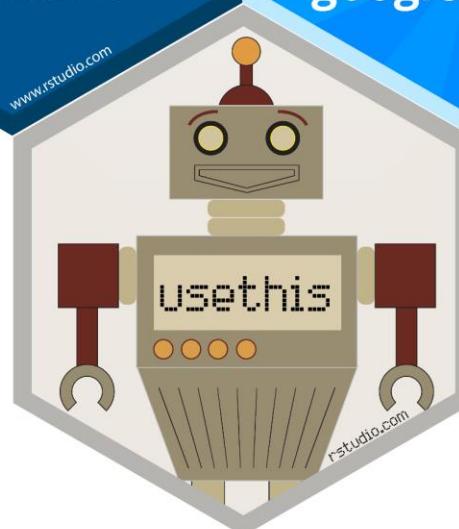






Spend Time to Save Time

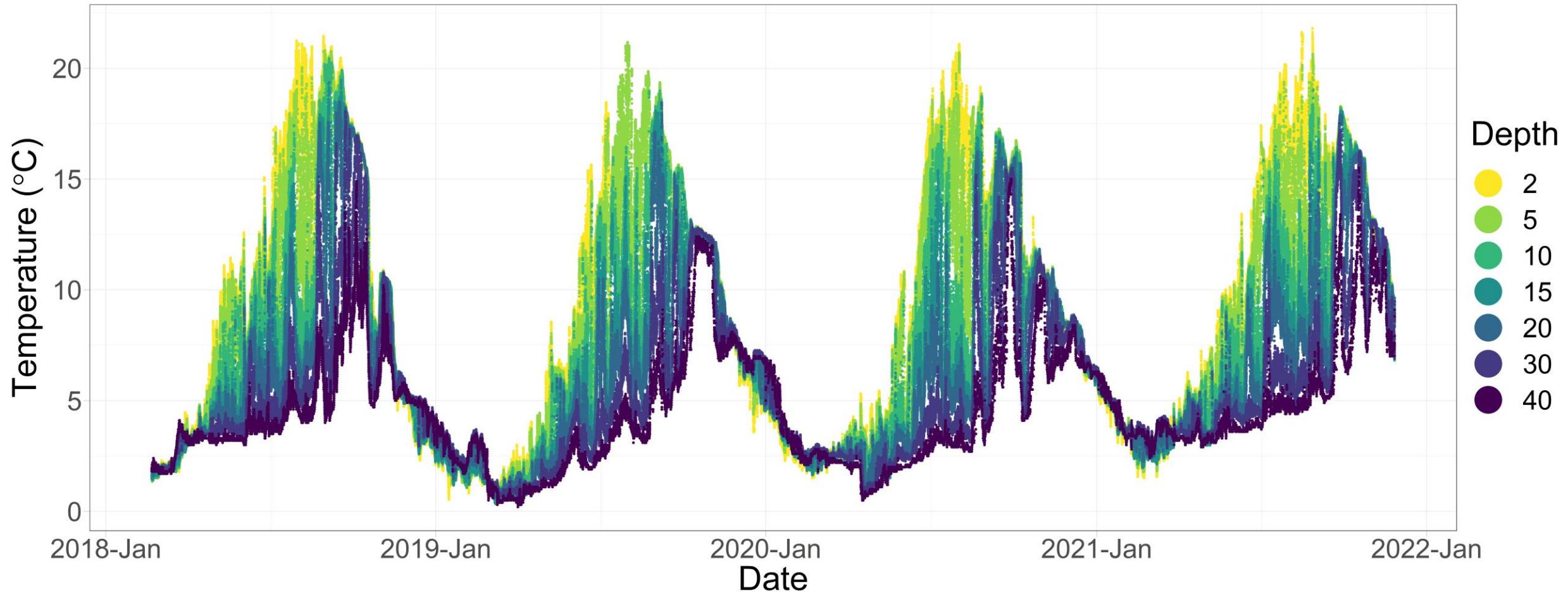






TWO YEARS

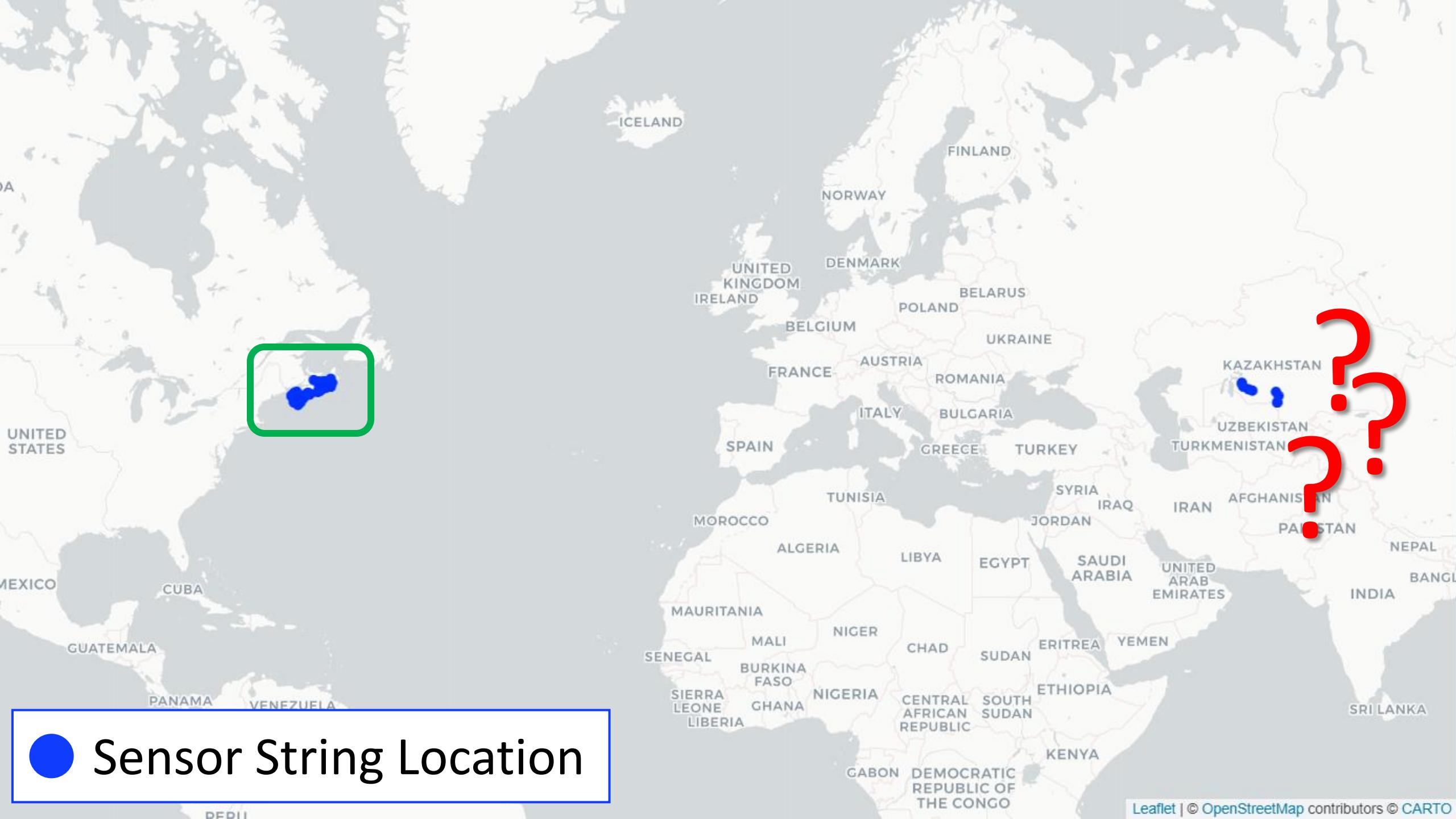
Birchy Head Temperature



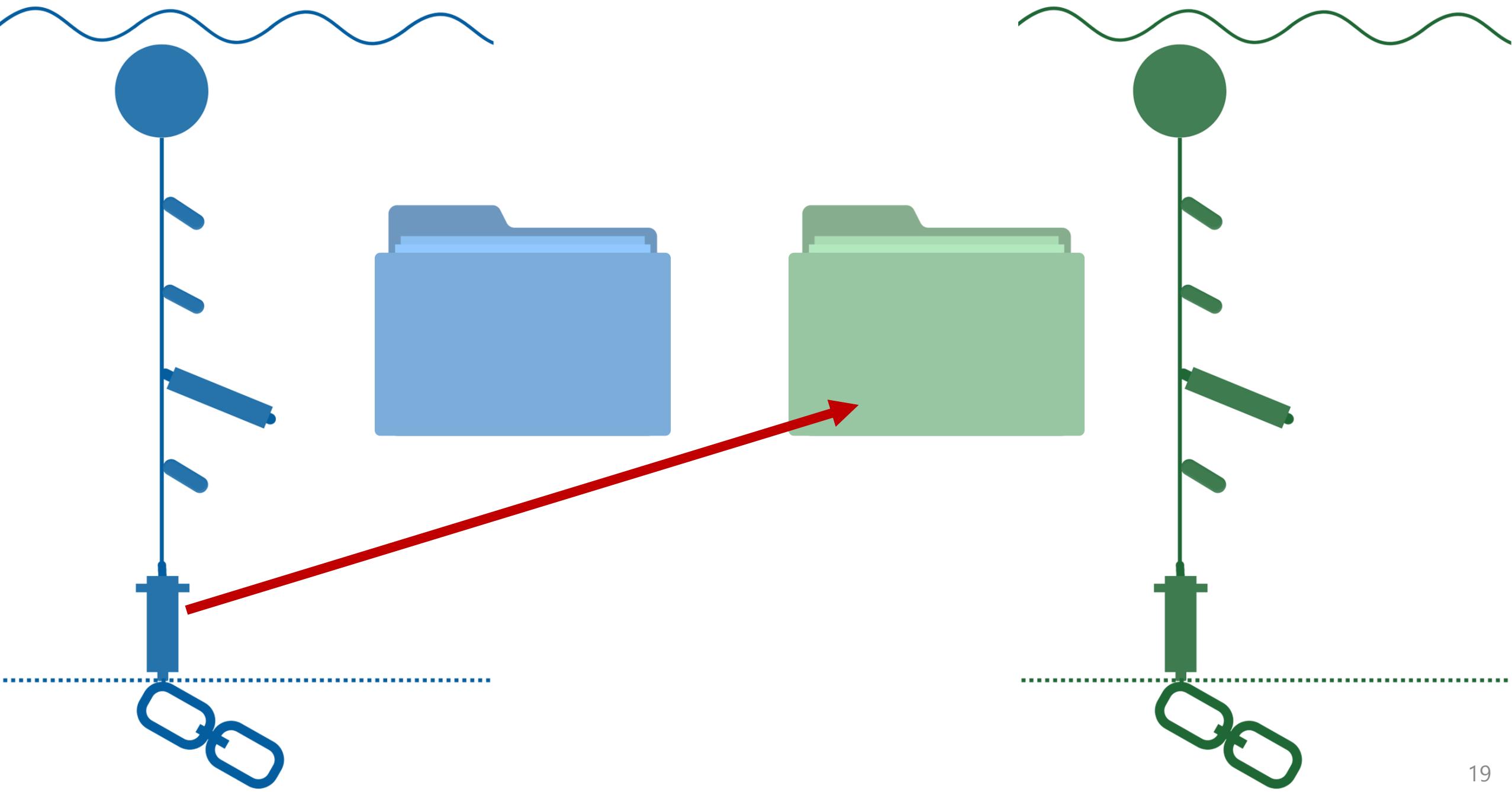


Reduce Errors in Dataset



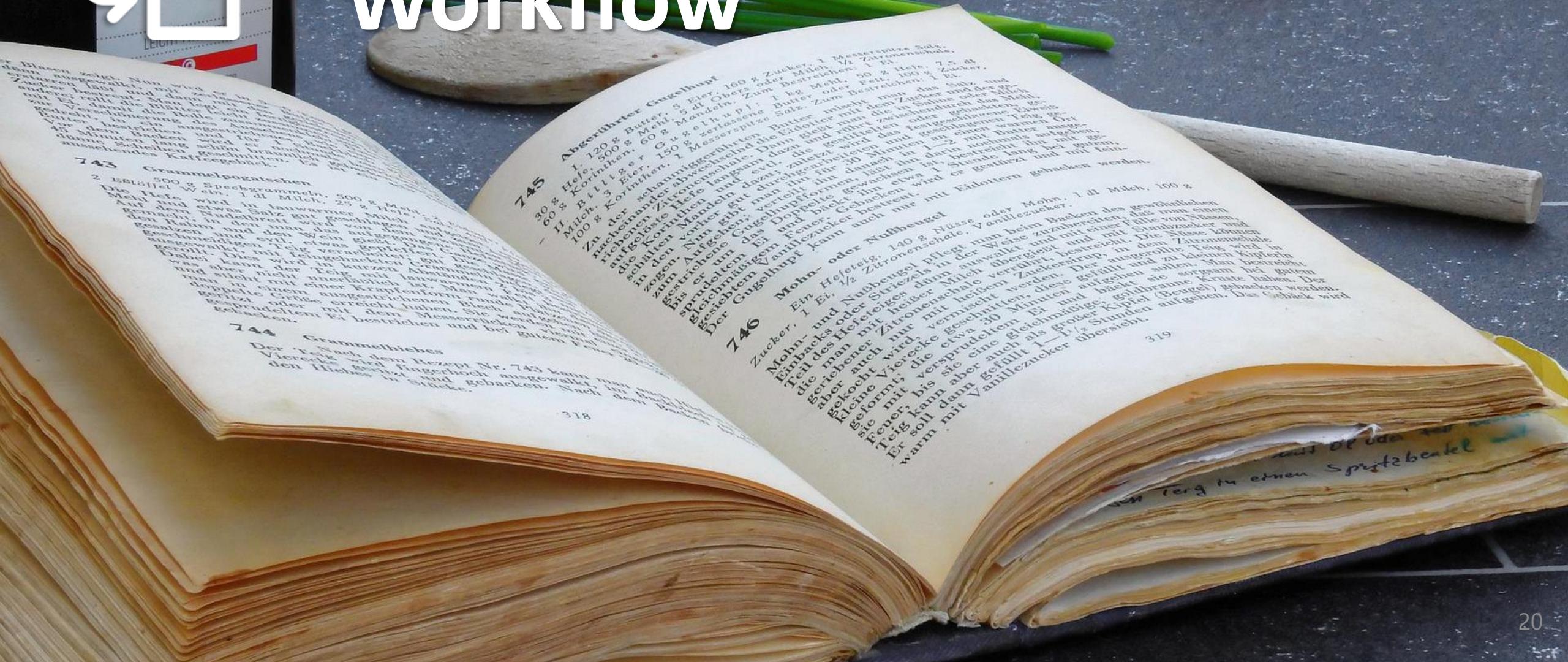


Sensor String Location





Traceable & Reproduceable Workflow





elio[®]
IMPACT

Reusable
PRODUCE BAG
0.071 33 g

REDUCE + REUSE + REUSE

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**.

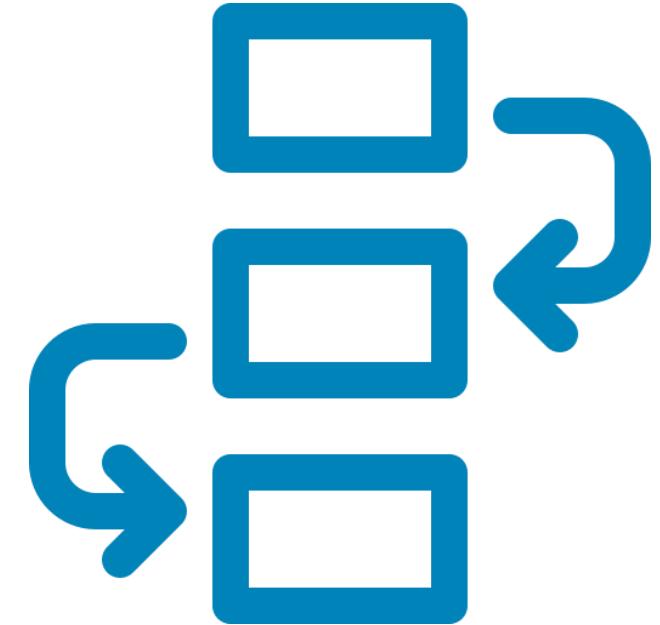
2007-12-18 _Spectacle Island.txt	2008-06-18 _Spectacle Island.txt	2008-07-31 _Freeport.t xt	2008-09-25 _Coffin Island SW.txt	2009-12-08 _Owl's Head.txt	2010-05-04 _East McNutts.tx t	2010-06-25 _Englishto wn Wharf.txt	2010-08-04 _Petite Passage.txt	2010-09-02 _Coffin Island Southwe... st	2010-10-29 _Jordan 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**

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