

Challenges

- Data formats and metadata conventions
- Computation with large datasets
- Unit conversions
- Aligning datasets in space and time

Formats

- Datasets are often in a variety of formats
 - NetCDF3, NetCDF4, GRIB, Zarr, Text, etc.
- It is often best to convert all datasets to a common format prior to analysis

	A	B	C	D	E	F	G	H	I	J
1	3.35541	5.97263	0.671082	95.828	78.0188	53.198	26.403335	4.004123	4.585727	-1.901399
2	3.176455	5.905522	1.319795	95.72	78.0152	53.186	26.404162	4.921268	4.764682	-2.080354
3	2.572481	5.525242	1.655336	95.648	78.0152	53.216	26.403099	4.675205	5.681828	-2.147462
4	2.326418	5.927891	1.565858	95.648	78.098	53.218	26.402744	3.869906	6.062107	-1.11847
5	2.61722	6.017369	1.431642	95.612	78.0872	53.21	26.403807	2.885653	5.95026	-0.917145
6	2.23694	6.218693	1.87903	95.666	78.08	53.228	26.402981	3.802798	6.062107	-1.185578
7	1.789552	6.35291	2.214571	95.756	77.9972	53.212	26.404516	2.863283	6.241063	-2.080354
8	2.057985	5.883152	1.968507	95.774	78.0152	53.212	26.403807	3.802798	5.860783	-2.527742
9	2.527742	6.397648	1.319795	95.666	78.0044	53.176	26.40487	3.511996	5.748936	-2.505373
10	1.923768	6.062107	0.782929	95.807	77.9828	53.178	26.401799	4.250186	4.921268	-2.840914
11	1.051362	5.681828	-0.156586	95.504	78.0584	53.352	26.40239	3.981753	4.608096	-2.460634
12	1.051362	5.883152	-0.850037	95.468	78.1232	53.236	26.40617	3.467257	4.317294	-2.460634
13	0.626343	5.480503	-0.469757	95.414	78.0404	53.234	26.402508	2.326418	4.719943	-2.259309
14	0.603974	5.055484	-0.290802	95.396	78.1088	53.206	26.403689	2.9975	4.630466	-2.23694
15	0.35791	4.339664	0.089478	95.342	78.0584	53.24	26.404398	3.310671	4.85416	-2.192201
16	-0.335541	4.026492	0.290802	95.414	78.1088	53.244	26.405461	3.444888	4.85416	-2.080354
17	-1.252686	3.467257	-0.02231							
18	-1.386903	3.534365	-0.51441							
19	-0.872407	3.422518	-0.7601							
20	-1.543489	3.444888	-0.71581							
21	-0.648713	3.959384	-0.89471							
22	-0.134216	3.937014	-0.69341							
23	0.156586	4.071231	0.29081							
24	0.536866	3.71332	-0.04471							
25	0.73819	3.601473	-0.80521							
26	1.342164	3.981753	-0.87241							
27	1.051362	4.205447	-0.3801							
28	0.73819	4.0936	-0.15651							
29	0.201325	3.646212	-0.58161							
30	0.313172	3.35541	-0.71581							

[2]: data

[2]: xarray.Dataset

► Dimensions: (level: 10, time: 540024)

▼ Coordinates:

time	(time)	datetime64[ns]	2019-05-07T19:00:00 ... 2019-05-...
level	(level)	float64	0.9 2.4 4.0 ... 116.5 158.2 200.0

▼ Data variables:

sonic_u_compo...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_v_compo...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_w_compo...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_temperat...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
temperature	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
relative_humidity	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
barometric_pre...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_along_wi...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_cross_wi...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_vertical_...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_wind_spe...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....
sonic_wind_dire...	(level, time)	float64	dask.array<chunks=(10, 10000), meta=np....

▼ Attributes:

history :	Processed from .csv by Tyler Wixtrom
created :	National Wind Institute, Texas Tech University