* ( ) Plot CTD profiles and remove points that are (1) not for an OPC tow~~, or (2) beyond the longitudinal extent of the corresponding OPC tow. test~~
  + ( ) Calculate distance from OPC tow (use AAD code), and check within decorrelation limits.
    - ( ) Plot the distances
* ( ) Confirm time zone of OPC and CTD data. Email confirmation from JA and Data Trawler that, yes, UTC
  + ( ) Put start and end times of each into excel and calculate intervals.
  + ( ) Check intervals are within decorrelation limits.
* (1) Plot the CTD samples by depth~longitude
  + Overlay OPC samples (method is sorted!)
  + (2) Interpolate across CTD transect
    - DO (now need to do with OPC sample coordinates)
    - 3 x nutrients (plot them first from bottle samples). (at least the method is sorted in Plot HYD 250319.R)

( ) Is it vertically gridded? No

* ( ) Decide whether to use CTD point data or interpolation (matched by depth~longitude). Interpolation
* ( ) Plot the ADCP samples by depth~longitude
  + Overlay OPC samples
  + ( ) Interpolate across ADCP transect
    - U and V
  + ( ) Decide whether to use ADCP point data or interpolation
* Compare CTD between CTD and OPC
* ( ) Await to hear back from CSIRO with hydrology
  + ( ) Plot and overlay OPC samples
  + (method ) Interpolate across the hydrology transect
  + ( ) Decide whether to use the hydrology point data or interpolation (matched by depth~longitude). Interpolation
* ( ) Talk to Amandine about index of wind driven upwelling from the Coffs Harbour time series
  + I don't need this for the analyses. Remember it is one value per transect.
  + Use in the discussion only.
* Bathymetry, slope and distance from coast.
  + ( ) Extract bathymetry based on latitude and longitude
  + ( ) Calculate slope (AAD code)
  + ( ) Calculate distance to coast
* Talk to Jason about lag (no need) OPC and CTD are on different days, different coordinates, water is shallow (short cable) and so cable length is not important.

* ( ) test and overlay and interpolation of CTD and OPC, for example. Does the interpolation work?
  + ( ) modify code for removal of Nas and 1m vertical binning for all.
* ( ) averaging the depth....needed? What are the rows..
* ( ) compare seasoar CTD and interpolated CTD CTD - how good is the match?? Looks ok?
* ( ) change vertical gridding method for CTD.
* ( ) replicate HYD loops for ADCP
* ( ) do all of the processing and interpolation to generate a starting dataset with all variables
* ( ) data exploration plots - share with team (i.e. Replicated what was done in site comparison 240219
* ( ) Look at R2, could use an indicator of intermittent or recent upwelling? Along with temperature and DO
  + ( ) O2 as a proxy for upwelling? In conjunction with temp...just a comment from JE and AS.
* ( ) Look for more appropriate wind stations. Talk to AS about accessing data
* ~~( ) Clarify the locations of HYD vs CTD~~
* ( ) What units is Chl in? Calibrate/convert if needed. Mark Baird's tasman front paper from JE.
* ~~( ) redo key data exploration with trimmed data set i.e. Without CB and without Nas~~
* ( ) option to plot visreg with ggplot! <https://pbreheny.github.io/visreg/faq.html>
* ( ) try a satellite + Fluoro matchup if possible to change your flour readings to Chlorophyll for the manuscript
* ( ) Temperature is no good. And this should be quite strong. Over fitted? Too many wiggles. How many EDF do you have for the Temp relationships? Perhaps send around the model summaries for each model? (also try taking out F, and LONG)

* ( ) Retain Dbin, Vbin and Site. No. I still removed Vbin.
* ~~( ) Check out missingness after variable exclusion....do you REALLY need anything that remains?? Only fluoro and yes I can do analyses with/without [fluoro Nas + CB data]~~
* ~~( ) Remove OPC rows from 10th September~~
* ~~( ) Time of day - cyclical? No. Not enough spread or balance.~~
* ~~( ) Use depth from underway data? no~~

Go back to GAM and try visreg with different conditions - does it chnage the story?

Have I tried everything suggested by the crew? (e.g. Do fluoescence)

Put together a summary of what you've planned - bust forward with GAM

Questions for JE

* ~~( ) Weird loopy bit in OPC tow~~
* ~~( ) site would be good~~
* ~~( ) What is "depth": median? This is what I am using. THIS IS THE MEAN~~
* ~~( ) all NBSS slopes beyond around 52 are NA. Yes. Just is. Not enough abundance at deeper bins.~~
* ~~( ) which slope? They are different. LINEAR~~
* ~~( ) mean ESD? Yes.~~

Questions for all

* ~~( ) seasoar vs interp sal/temp comparison - all good. Try with and without rows with discrepancies as per AS email.~~
* ( ) interactions

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