Main points and suggested sequence

draft of 2017-6-28

1. Wide coverage, varying almost independently in temp and precip (Fig 1a and b)
2. On average 64% associated with photosynthesis – 36% with Calvin Cycle, 22% with light reactions (Fig 2a)
   1. this is a higher degree of dominance by top few proteins than observed in [comparison]. It obviously reflects that phot is the primary function of leaves plus that phot reactions require large amounts of particular proteins, rubisco and photosystems being the top-ranked
3. Methodology as it was tuned comfortably captured quantification, detected ~2000 individual proteins total (i.e. down to within xx% of total protein) among which top 500 ranked captured 90% of total protein mass (Fig 2c)
4. Because individual proteins can be quantified, pairwise correlations can be calculated between them, and between any given protein and a range of environment-at-site and physiological quantities (Fig 3a currently)
   1. (However, personally I’d be more inclined to let this point emerge from looking at particular substantive relationships, rather than making it in the abstract and having a figure just for it)
5. Absolute amounts of protein per leaf area adjust along physical gradients as follows (lower row of Fig 3b):
   1. Light reactions decline at higher irradiance but calvin cycle doesn’t change (in other words, at lower irradiance there is more light-capture apparatus relative to CC)
   2. All types decline toward higher temp
   3. toward lower rainfall CC increases, no change to light reactions
   4. each of these make sense for reasonably-well-understood reasons
   5. combined effects in lower row of Fig 3d
6. These adjustments are predominantly (though not exclusively) happening via changes in LMA and total protein per area – increases toward lower rainfall, decreases towards higher temp [?]. Absolute protein amounts per leaf area are all intercorrelated with each other and also with Amax and LMA and total N per area (Fig 3a lower quadrant, also Fig 3c) – in other words, variation in total protein per leaf area is the dominant influence on variation in amount of any one protein.
   1. We need to find the best way to explain and quantify this line of argument
   2. No such tidy intercorrelations among fractional amounts (Fig 3a upper quadrant)
7. Because specific components are responding, there are also relative shifts (upper row of Fig 3b)
8. We believe this study is harbinger of widespread use of one-pass protein quantification to study ecological distribution of proteins, both those with well-understood function and those where function uncertain
   1. Potentially some kind of map?
   2. Possibly might choose to point out that strongly divergent ratios of quantity of certain protein pairs probably indicates strongly-divergent activity? – or could reserve that point to make elsewhere