Graymer *et al.* 2021, International Geology Review, Supplementary Material

Appendix SM1

1. Introduction

Sections 2.1-2.7 of this Appendix provide additional information on each of the 7 issues discussed in Sections 2.1-2.7 of the main Comment. Sections 3-4 of this Appendix list additional minor points not mentioned in the main Comment.

2. More about key issues

2.1 More about detrital zircons and Dmax

The use of Dmax is based on the principle that the depositional age of a sandstone must be slightly younger to much younger than the youngest reliably dated zircon grain it contains, after allowing for statistical uncertainties on the zircon ages. The general approach is to date about 50 to 500 zircon grains per sample, sort the grains in order of age, then plot the ages with their ±2σ uncertainties (our Figure 2). Statistical methods are then used to estimate the age of the youngest zircon population, which serves as the Dmax (e.g., Dumitru *et al.* 2018, Tables DR4-DR5). The errors that are input commonly have a strong effect on the Dmax that is calculated. We used the Dmax calculation method described in Dumitru *et al.* (2018, Tables DR4-DR5) to recalculate the Dmax as shown in our Figure 2. Note that there are a variety of other methods used to calculate Dmax but most yield similar values.

The main source of ambiguity in Dmax is the possible presence of young grains with unreliable ages, which would lead to a Dmax that is too young. In the article's Dmax calculations, ~5% of grains were rejected as too young in each of seven samples, 1 grain in FC07, and no grains in FC11 (ignoring FC08). This is a much higher percentage of rejected young grains than in previous Franciscan studies, which tend to reject no grains in most samples and only about 1 to 3 grains in a few samples (Ernst *et al.* 2009; Snow *et al.* 2010; Dumitru *et al.* 2010, 2013, 2015, 2016, 2018; Prohoroff *et al.* 2012; McPeak *et al.* 2015; Chapman *et al.* 2016). Of the 10 samples listed in the article, we believe excessive rejections have resulted in a Dmax that is much too old for 4 samples (including FC08) and slightly too old for 3 samples, as detailed in our Figure 2. We reject 3 total grains from the 10 samples.

Checking the reliability of grains is a two-stage process. First, the mass spectrometer measures U, Pb, Th, and Hg isotopic concentrations and ratios as the laser ablates down into the grains. If downhole data patterns are poorly behaved, it may indicate unreliable analyses caused by lead loss, U- or Pb-bearing inclusions, grains with zoned ages, drill through, rare instrument glitches, or other issues. Automated and/or manual data filters reject such grains (irrespective of age). Experience suggests that these filters are quite effective at rejecting unreliable young grains in unmetamorphosed to weakly metamorphosed Cretaceous sandstones.

The second stage is to plot the ages of the youngest grains, run statistical routines, and apply judgments. For example, sample FC07 has about 26 grains that cluster near 118 Ma and a single younger grain at 112 Ma (our Figure 2). It is ambiguous whether the 112 Ma is reliable and, as in the article, we would calculate a Dmax of 118 Ma that somewhat arbitrarily excludes this one grain. On the other hand, for FC10, the Dmax reported in the article is 117 Ma, omitting the youngest ~7 grains; we prefer 94 Ma based on the 3 youngest grains which overlap within ±2σ.

Two other points can be made. First, in the article ~5% of the grains in 7 samples are rejected, but this implies that a much higher percentage of total grains are inaccurate. This is because this approach can only detect inaccurate ages that are significantly younger than the final interpreted Dmax and, for example, would not detect and reject a 150 Ma grain that yields a spurious 125 Ma age. Thus perhaps 10-30%(?) of ages would be spurious, which does not seem compatible with experience with Franciscan metasandstones. Second, the youngest fairly voluminous plutons in the northern and central Sierra Nevada are ca. 86 Ma. None of the ~1380 ages reported in the Supplementary Material are younger than 86 Ma (after allowing for ±2σ uncertainties), except for a small number of zircons in three samples that we believe were partly sourced from the Idaho batholith (see our Section 2.7 below). This is evidence that strongly spurious young ages are very rare in the data set, as geologically implausible ages <86 Ma are not seen. Such geologically implausible grains are also very rare in other data sets from the Great Valley Group and Franciscan Complex collected since about 2011.

2.2 More about problems with the westward/downward-younging stack

Kfu3 is presently the easternmost and uppermost sandstone unit in the map area, as clearly shown in the cross section in Figure 5, as well as the geologic map in Figure 3, and the photograph in Figure 7. The article notes that unit Kfu3 is 'out of sequence', but otherwise treats it as part of the stack (for example, Figures 4 and 12 clearly show Kfu3 as part of the stack). However, no evidence is presented that Kfu3 was ever structurally between Kfu2 and Kfu4. Because Figure 7 also shows that the sandstone unit Kfu3 structurally overlies the structurally high serpentinite-matrix mélange unit (smm), Kfu3 should not be considered part of the tectonostratigraphic stack at all. Instead, Kfu3 should be treated in the same way as the Nicasio Reservoir Accretionary Unit (NRAU), which is also shown as structurally above unit smm.

The statements *in the article* about the ranges in depositional ages of these units are quoted below, together with the range implied by the text and the Dmax in the article:

Kfu5	98-117 Ma	'Samples FC07 and FC10 from the Kfu5 unit suggest that this unit was deposited after 117 Ma (Dmax), but the data allow for deposition to be as young as 98 Ma'
Kfu4	95-114 Ma	'The Kfu4 unit appears to be considerably older with a Dmax of 114 Ma, although we allow for a true depositional age as young as 95 Ma'
Kfu2	71-91 Ma	'Similar to the Kfu1 unit, the depositional age of the Kfu2 unit likely ranges from the reported Dmax of 88 Ma [sic] to as young as 71 Ma'
Kfu1	71-88 Ma	'it is noted that the true depositional age may be as young as 71 Ma'

Given these ages, it is not possible to say that Kfu2 is older than Kfu1, nor is it possible to say that Kfu5 is older than Kfu4.

The article (paragraphs 18-22 of Section 3.4) uses the tectonostratigraphic-stack model (Figure 15 of the article) to envision a regional tectonostratigraphic section and estimate its thickness. This is problematic on several fronts, even if one accepts the unproven stack hypothesis. First, the article disregards a number of units in the Franciscan Complex of the surrounding area, such as the blueschist-grade Angel Island terrane, when estimating the thickness of the regional tectonostratigraphic section. Second, the article does not account for north-south variability in units of the Franciscan Complex when estimating the thickness for the entire Bay Area. The suite of units, and therefore probably the tectonostratigraphic thickness, of Franciscan Complex in the San Jose area (McLaughlin *et al.* 2002), for example, is very different than that at Mount Tamalpais. Third, it is impossible to measure the original tectonostratigraphic thickness of most Franciscan Complex units, because of deformation accumulated during subduction, unroofing, and later. All of the sandstone units in the article include at least broken, if not dismembered formation. Moreover, in the study area the only units of which both the original top and bottom *might* still be present in the map area are Kfu5 and the Rocky Point Mélange. Furthermore, the presence of slivers of the uppermost unit smm within RPM (Figure 3 and Section 2.1.4 of the article) is difficult to explain in the context of accretion between two sandstone units, so it is likely that the structures bounding RPM are at least in part post-accretionary. All other units in the study area are bounded by young faults with unknown amounts of displacement (Section 2.3 of the article) or extend off the map, so their present thickness is unknown, let alone their original tectonostratigraphic thickness.

2.3 More about problems with the age range of Franciscan Complex sandstones

For the San Francisco Bay Area, the age range of 'Central Terrane Rocks (of USGS Workers)' is not 71-103 Ma as shown in Figure 14. By 'Central Terrane Rocks (of USGS Workers)', the article probably means rocks that many workers consider to be part of the 'Central belt' of the Franciscan Complex (rather than the obsolete Late Jurassic and Early Cretaceous Central terrane of Blake *et al.* 1984). The age range shown in Figure 14 is the same as the 'tentative working hypothesis' of Dumitru *et al.* (2015) for the depositional age of Central belt sandstones located 200-300 km north of the map area. Dumitru *et al.* (2015, 2018) did not, however, intend for this age range to be extrapolated south to rocks in the Bay Area. They did not evaluate fossil and detrital zircon data from the Bay Area, including from sandstones near the study area in Marin County. For example, Murchey and Jones (1984) document Late Jurassic radiolarians from chert interbedded with shale, tuff, and sandstone in the San Quentin area, about 10 km ENE of the map area. Those rocks, however, have been previously mapped as part of mélange matrix (Blake *et al.* 2000), so perhaps they are meant to be excluded from the 'Central Terrane' age range shown in the article. However, Prohoroff *et al.* (2012) have published a Dmax of 122.5 Ma for a coherent (that is, not from mélange matrix or a mélange block) sandstone mapped by Blake *et al.* (2000) as part of the Nicasio Reservoir terrane, about 5.5 km NNW of the center of the map area. Prohoroff *et al.* proposed that the true depositional age of the sandstone could be younger (≤102 Ma), but the article under discussion compares Dmax values with the range of Franciscan sandstone ages, which, as pointed out above, can be much older than depositional age. It is therefore important to compare Dmax values in the study area to the full range of published Dmax ages.

In addition, the age range shown for 'Eastern Rocks of Northern Coast Ranges', while accurate for these rocks, is not representative of the full age range of sandstones of the eastern part of the Franciscan Complex. It excludes younger sandstones from the Diablo Range, which the article points out would have been roughly adjacent to the study area prior to Neogene offset on the San Andreas Fault System. It also excludes the older sandstones of Little Indian Valley northeast of Clear Lake.

2.4 More about comparison of mapped sandstones with other Coast Ranges sandstones

As a second example of problems with comparisons of sandstones at Mt. Tamalpais with other Cretaceous sandstones in the Coast Ranges, in paragraph 8 of Section 3.4, the article uses the Dmax of 114 Ma for sample FC08 to argue against correlation with Great Valley Group sediments deposited after 100 Ma, but the article's intended Dmax of 97 Ma, or 94 Ma as recalculated by us (our Figure 2), is entirely compatible with a depositional age <100 Ma.

In contrast to the comparisons to more distant sandstones made in the article, there are interesting similarities between the Mt. Tamalpais sandstones and those in the immediately surrounding area. One example is the lithic sandstone of unit Kfu5 with recalculated Dmax values of 118 and 94 Ma that seems comparable to a lithic sandstone with Dmax value of 122.5 mapped ~5 km to the north (Prohoroff *et al.* 2012). Blake *et al.* (2000) showed that sandstone as part of the Nicasio Reservoir terrane (= Nicasio Reservoir Accretionary Unit), which suggests that unit Kfu5 might be best considered part of the Nicasio Reservoir sandstone.

2.5 More about comparison of timing in the map area with regional events

In addition to the example discussed in the main Comment, there is no large 22 m.y. gap in the Dmax ages for the sandstone units Kfu1-5 as stated in paragraph 15 of Section 3.4 of the article. Rather, the recalculated Dmax values are clustered between 87-98 Ma, with much smaller gaps, most notably the 5 m.y. gap between FC04 and FC10 (our Figure 1). A significant Dmax age gap does exist between the sandstone units and sample FC11, but because FC11 is supposed to be an olistolith, it does not constrain the age of the enclosing unit.

In paragraph 16 of Section 3.4, the article also suggests a regional episode of non-accretion between about 107-112 Ma based on detrital zircon data. Because detrital zircon data only constrain the maximum depositional age of a sandstone unit and not the actual age of accretion, the article seemingly means that a gap in Dmax ages between 107-112 Ma might reflect a non-accretion of sandstones deposited in that interval. This is problematic however, as comparison of Dmax cannot define depositional gaps as small as 5 m.y., because, as discussed above and in the article, the actual depositional age of a sandstone can be many m.y. younger than the associated Dmax.

2.6 More about identification of mélange only in the narrow band of Rocky Point Mélange

The presence of a blueschist block in unit Kfu2, perhaps part of a landslide deposit from unit Kfu4, is significant because it shows that at least some of what is mapped in the article as broken to dismembered sandstone is actually sedimentary-matrix mélange. As the article points out in Section 2.1.3, unit Kfu4 is 'very poorly exposed', so it would be difficult to differentiate between mélange and disrupted sandstone, both of which are block in matrix units. In recent mapping (e.g., Blake *et al.* 2002) we recognized that difficulty and mapped an undifferentiated mélange and sandstone unit. In the study area, however, in addition to the high-grade block we point out the presence of several blocks of chert shown on the map within units Kfu2 and Kfu4, and note that the bodies of units smm and NRAU near the Pan Toll Ranger Station are small enough to be considered large mélange blocks (Blake *et al.* 2000 show the NRAU body as a greenstone block, along with two additional greenstone blocks). It seems clear that a significant part of the area mapped as Kfu2 and Kfu4 is actually mélange. Furthermore, Murchey and Jones (1984, locality 45) correlate radiolarians in the large chert mass in the southwest part of map (Figure 3 of the article) with those of the lowest part of the Marin Headlands chert. Because that is older than chert from any other Franciscan Complex accretionary unit, the chert is likely a block derived from Marin Headlands terrane. The juxtaposition of blocks derived from the NRAU and Marin Headlands terrane is also indicative of mélange.

2.7 More about the source of detrital zircon grains with Proterozoic ages

In 6 of the 10 zircon samples discussed in the article, 8% to 28% of zircon grains exhibit 300-3000 Ma ages, whereas the remaining 4 samples contain little or no old zircon. Dumitru *et al.* (2016) argued that certain Campanian(?) sandstone samples from the Franciscan Complex, Great Valley forearc basin (GVFB), and Hornbrook forearc basin were partly sourced from Idaho, based on distinctive 1379 Ma and 1650-1800 Ma Proterozoic zircon age peaks that matched source rocks in the Lemhi subbasin of the Belt Supergroup basin in Idaho. They argued that this was evidence for a Campanian Kione paleoriver that flowed from Idaho to feed the Campanian Kione-Forbes delta-slope system within the northern end to the GVFB, and that some sediments then transited the GVFB to reach the Franciscan trench. The article (paragraph 14 of Section 3.4) suggests a different source for the old zircon: 'The Sierra roof pendants are the most likely source, because the palaeogeographic considerations render that possibility the least complex.'

Those roof pendants represent the pre-Mesozoic metasedimentary and metavolcanic framework rocks that were subsequently intruded by the Mesozoic Sierra Nevada batholith. The article hypothesizes that the old zircon was reworked from the metasedimentary pendants. In contrast, the hypothesis of Dumitru *et al.* is that although old zircon in pre-Campanian Franciscan sandstone was similarly reworked from the pendants (and/or similar rocks in the Klamath Mountains), many Campanian(?) sandstones contain substantial Proterozoic zircon sourced from Idaho. The article did not compare its samples' distributions of old detrital zircon ages with proposed source areas and did not explore the possibility that samples with different Dmax had different distributions.

Our Figure SM1A-B compares age distributions from 6 older samples from the article (with our Dmax of 94-124 Ma) with 43 samples from the roof pendants; there is a very good match. Figure SM1C-D similarly compares 3 younger samples (with our Dmax of 85-89 Ma) with 19 samples from parts of Idaho; again there is a very good match, supporting Dumitru *et al.* (2016). The figure caption provides more detail on the comparisons.

The article's preference for a less complex model may derive partly from a misreading of Dumitru *et al.* (2016). Paragraph 14 of Section 3.4 of the article says 'Dumitru *et al.* (2016) argue that … sediment with zircons of the Lemhi subbasin was transported from Idaho, *across* [our emphasis] the Holbrook [sic] Basin at the northern end of California and to the south, via basin axial flow, to locations in the central California forearc and trench.' The article suggests that sediment crossing the Hornbrook basin was unlikely. However, Dumitru *et al.* (2016, p. 77 and Figure 1) did not propose that Idaho detritus crossed the Hornbrook basin. Rather they proposed that the Kione paleoriver from Idaho debouched directly into the well-documented Kione-Forbes delta-slope system within the Great Valley forearc basin. They did speculate very briefly that there may have been a less important interval of time when the Kione River shifted from feeding the GVFB to filling the nearby Hornbrook basin, but did not propose that sediment transited the Hornbrook basin to fill depocenters in central California.

Sample FC03 from the article contains ~24% zircon with ages of 1780-1312 Ma and also contains ~6% zircon with ages of 86-81 Ma, slightly younger than expected from the northern and central Sierra Nevada batholith. This zircon was probably sourced from plutons of that age in the Idaho batholith, although this is near the limits of resolution of data. The 87-110(?) Ma zircon in FC03 (as well as in FC04 and FC05) was probably sourced partly from the Sierra Nevada and partly from the Idaho batholith.

Three of the samples that Dumitru *et al.* (2016) inferred were partly sourced from Idaho are located close to and generally parallel to structural grain with samples FC03-FC05. JW1Z006 (=JW1F006) is ~ 1.0-1.5 km NW of FC03-FC05, TD4F312 is ~8 km NW, and TD4F304 is ~15 km SE. The locations of TD4F312 and TD4F304 had previously been assigned to the then undated Franciscan San Bruno Mountain terrane (e.g., Blake *et al.* 1984, 2000), which is now known to be Eocene based on zircon data and other considerations (Snow *et al.* 2010; Dumitru et al. 2013, 2015; Dumitru *et al.* 2016, Eocene Guadalupe Quarry sample in Table DR1). Dumitru *et al.* (2016, Table DR1) reassigned JW1Z006, TD4F312, and TD4F304 to the previously recognized Late Cretaceous Novato Quarry terrane (sample 'Albany Hill' from the NQT contains abundant zircon from Idaho). Graymer (2018) preferred to reassign them to a newly defined Bolinas Ridge terrane. We infer here that samples FC03-FC05 are part of the Novato Quarry or Bolinas Ridge terrane, based on their zircon age patterns and quartzofeldspathic framework mineralogy.

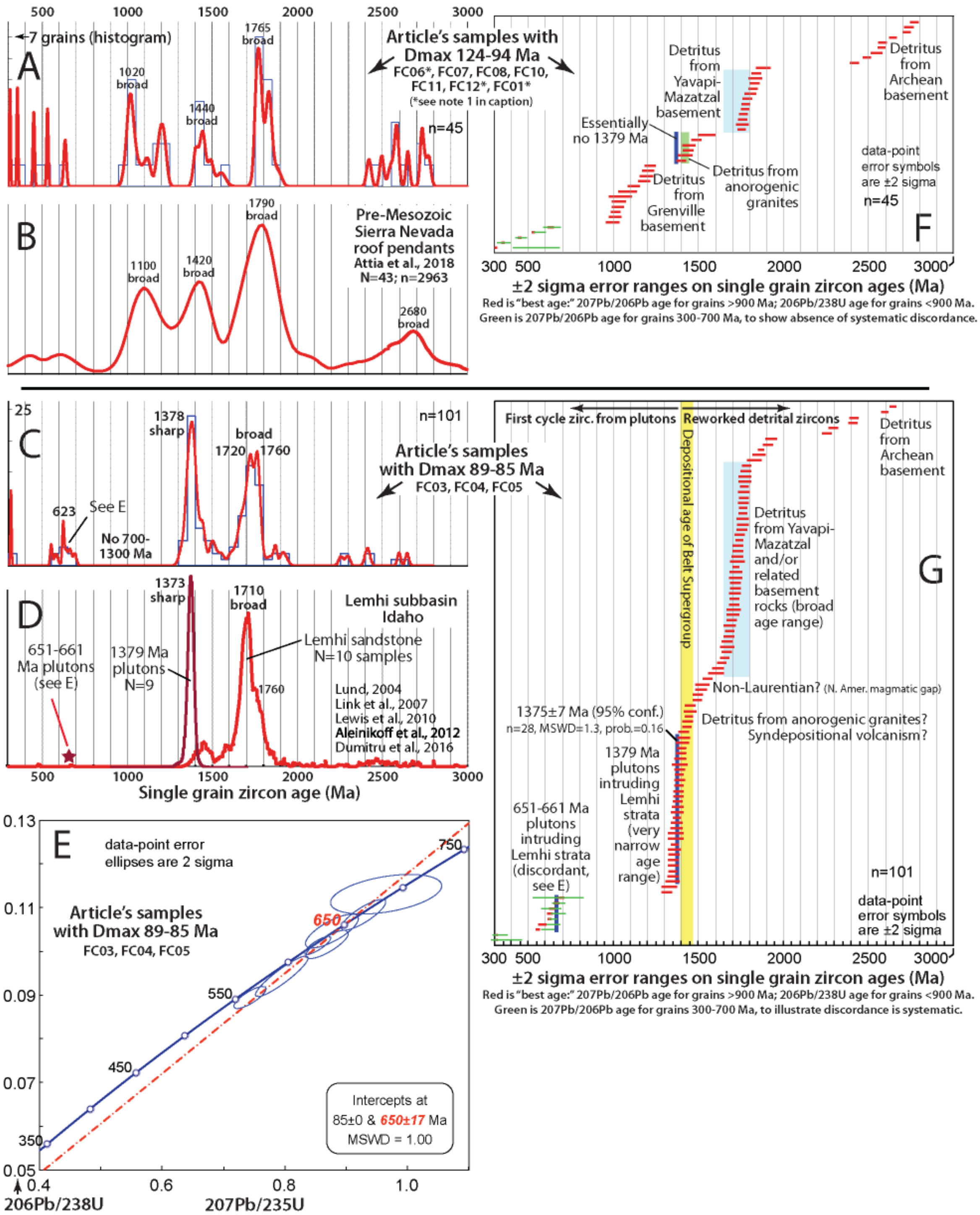

Figure SM1. (Caption on following page)

Figure SM1 (continued). Comparative plots used to evaluate the sources of old detrital zircon grains (300-3000 Ma) in the samples in the article. (A) Probability density plot (PDP, unsmoothed) for 6 samples from the article with Dmax of 94-124 Ma (see note 1 below); we infer their old zircon was derived from the roof pendants. (B) Kernel density estimate plot (KDE, smoothed) of combined data from 43 samples from Sierra Nevada metasedimentary roof pendants, reproduced from Attia *et al.* (2018). (We thank Francisco Apen and Howard Day for bringing Attia *et al.* to our attention.) Note close match of A and B. Relatively 'spiky' appearance of plot A versus B is an artifact of the small number of grains (n=45) and the lack of the KDE smoothing in A. (C) PDP for 3 samples from the article with Dmax 85-89 Ma; we infer their Proterozoic zircon was derived largely from the Lemhi subbasin of the Proterozoic Belt Supergroup basin in Idaho. Note two prominent peaks, termed the 'Lemhi doublet' or Type E distribution by Dumitru *et al.* (2016). (D) PDP for our proposed source area in the Lemhi subbasin. Red curve represents detrital zircons in Lemhi sandstones (broad spread in ages, mostly 1650-1800 Ma). Magenta curve represents a suite of plutons and sills that intruded Lemhi strata, as dated by SHRIMP-RG ion microprobe single-grain methods (tightly clustered 1379 Ma average U-Pb concordia age; Aleinokoff *et al.* 2012). Relative heights of 1379 Ma and 1650-1800 Ma peaks have been manually adjusted to match C. The composite plot represents the expected source age signature shed from the Lemhi basin. Note excellent match of C and D. Note very sharp 1379 Ma peaks in C and D, versus broader 1420 Ma peak in B. Note absence of 700-1300 Ma grains in C and D versus abundance in A and B. Note greater proportion of 2200-2800 Ma grains in A and B than in C and D. (E) In C, there is a cluster of 7 grains with $^{206}Pb/^{238}U$ ages of 552 to 691 Ma that are somewhat discordant. This preliminary concordia plot shows these are consistent with a crystallization age of about 650 Ma (inferred from the upper intercept of the red discordia line). These grains were probably sourced from a small suite of Neoproterozoic plutons that intruded Lemhi strata, which have yielded unpublished zircon U-Pb ages of 651, 651, and 661 Ma. This suite is summarized by Lund (2004) and appears as unit 'Zi' on the Geologic Map of Idaho (Lewis *et al.* 2012). (F) Ordered age plot of the 7 samples in plot A that lack Idaho zircon. (G) Ordered age plot of the 3 samples in plot C with abundant Idaho zircon. Note that ~30% of grains cluster tightly around 1375 Ma ($^{207}Pb/^{206}Pb$ ages), closely matching the concordia age of 1379 Ma from plutonic rocks in Idaho. In contrast, there are essentially no 1379 Ma grains in F. See Dumitru *et al.* (2016, Figure DR3) for arguments that 1379 Ma zircon sourced from Idaho can be distinguished from 1400-1450 Ma zircon sourced from elsewhere. F and G are labeled with the inferred original source units for zircon of various ages; see Dumitru *et al.* (2016) for more details.

Additional notes: (1) plots A and F also include FC01, which has a Dmax of 87 Ma and has 7 grains from 310 to 1825 Ma which appear to have a roof pendant distribution. We conjecture that FC01 may have been deposited after waning of Kione River transport of detritus from Idaho. Plots A and F also are labeled as including FC06 and FC12 due to their Dmax, but these samples contain no grains older than 300 Ma. (2) The lower intercept in concordia plot E was pinned at 85 ± 0 Ma, the approximate age inferred for uplift and erosion of Idaho detritus that was incorporated in these three samples. (3) Plot A includes 5 grains 310-634 Ma, but these do not form a coherent population or populations on a concordia plot (not shown), in contrast to E. (4) It was impractical for us to generate a PDP plot of the voluminous roof pendant data, so we have copied the KDE plot of Attia *et al.* (2018). (5) As well as the differences in zircon age distributions, the Franciscan samples in C have 15-28% old zircon (300-3000 Ma), distinctly more than the samples in A, which have 0-15% (mean 5%). (6) Figure SM2 in this Appendix is a concordia plot of the 3 samples in C and G. (7) See Section 3.3B of this Appendix for why 300-3000 Ma grains appear so insignificant in Figure 12 of the article.

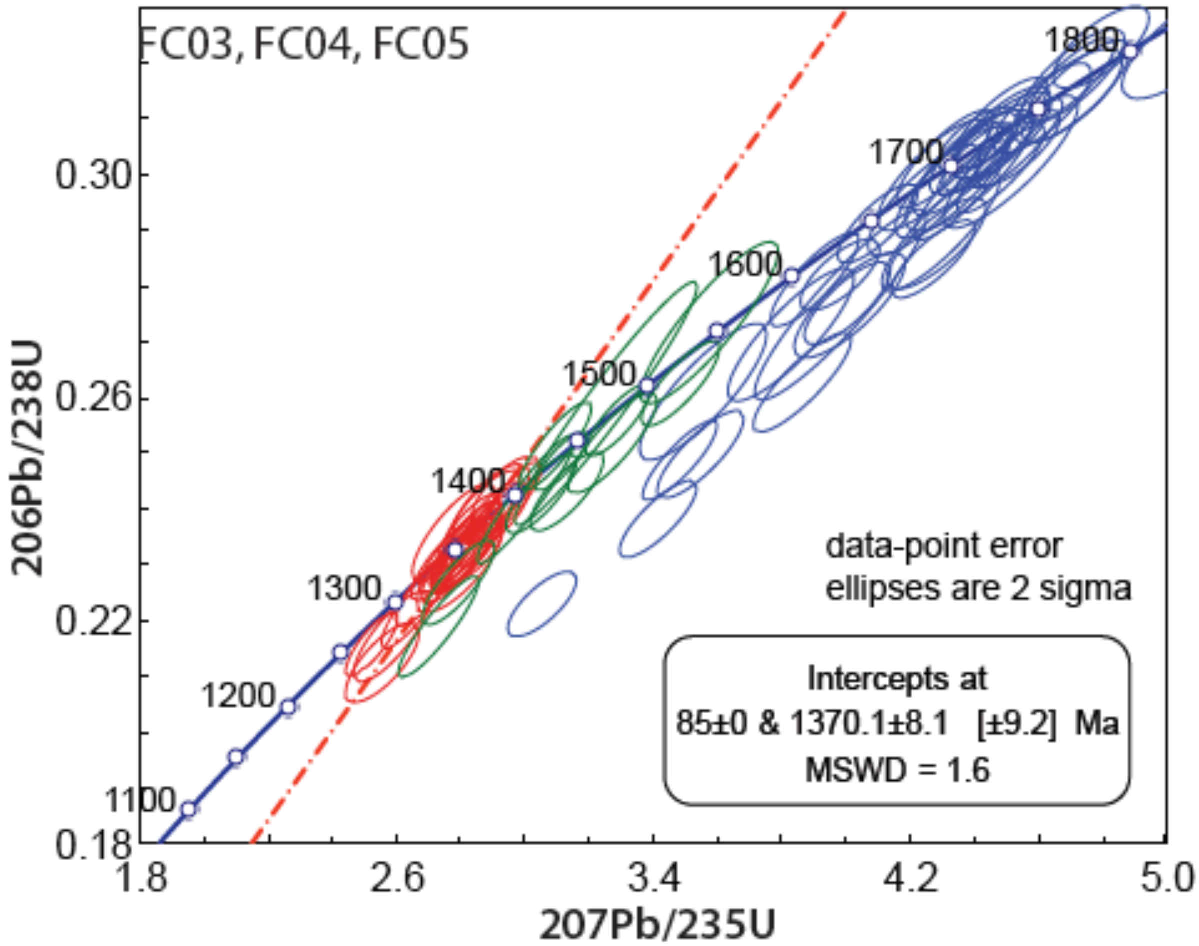

Figure SM2. U-Pb concordia plot of ca. 1100 to 1800 Ma grains in samples FC03, FC04, and FC05 from the article, samples which we infer contain abundant detrital zircon sourced from Idaho. These are the same samples as in our Figures SM1C and SM1G. The lower intercept was pinned at 85 ± 0 Ma. The upper intercept at 1370 ± 8 Ma (±2σ) is a good match to the 1379 Ma average U-Pb concordia age of plutonic rocks that intrude the Lemhi subbasin, as determined by SHRIMP-RG ion microprobe single-grain methods (Aleinokoff *et al.* 2012). This plot was drafted in an identical format for comparison to 19 concordia plots compiled in Figure DR2 of Dumitru *et al.* (2016).

3. Additional minor points

The following points may be helpful to those using the mapping and data in the article and its Supplementary Material. These points have very little to no effect on the interpretations in the article.

1. In the Supplementary Material tables for the article, all uncertainties on the 'Isotopic Ratios' and 'Apparent Ages (Ma)' are given at the ±1σ level.
2. In the same tables, the 'Discordance*' column lists the discordance of ^{207}Pb/^{235}U age versus ^{206}Pb/^{238}U age, not the more commonly used ^{206}Pb/^{238}U age versus ^{207}Pb/^{206}Pb age.

3A. Figure 12 of the article presents smoothed cumulative distribution plots (CDP) and kernel density estimate (KDE) plots of the detrital zircon age distributions for each sample. These were computed using a smoothing 'KDE bandwidth… set to 5', which is equivalent to assuming the error on every grain age is ±5 Ma (±1σ). However, for grains 80 to 200 Ma, the measured uncertainties average about ±1.5 Ma (±1σ) and the number of grains dated per sample is typically about 110. For such data sets, a bandwidth of 5 Ma is wider than optimal and oversmooths the 80-200 Ma data. Previous Franciscan studies used probability density distribution plots and CDP plots which were not smoothed. Caution is therefore needed in comparing Figure 12 to older published plots.

3B. In contrast, for grains 1000-3000 Ma, measured uncertainties average about ±15 Ma and a 5 Ma bandwidth undersmooths the data. The 300-3000 Ma portions of the plots are also strongly compressed to one-twentieth of the age scale (horizontal axis) used for the 0-300 Ma portions. These two factors greatly obscure the distinctive Proterozoic age peaks we have discussed in our Figure SM1. For example, in Figure 12 of the article, the CDP plot shows that sample FC03 contains 28% zircon with ages 300-3000 Ma, but this large population of old grains appears only as tiny specks on the KDE plot. Dumitru *et al.* (2015, 2016, 2018) used a plotting scheme that, for 300-3000 Ma grains, compressed the horizontal age scale to one-tenth size and expanded the vertical scale by 10 times, so that each grain (young and old) contributed an equal area under the probability curve. This made the age distributions for both young and old grains clearly visible. Parameters of ~0.1x and ~10x appears optimal for displaying data from many late Mesozoic to mid-Cenozoic sandstones in the Cordilleran orogen, where there are few zircons around 300 Ma.

4. The scale and scale bars of several figures in the article are incorrect. In Figure 2, the bar labeled 5 km is actually about 6 km long. In Figures 3 and 9, the bars labeled 2000 ft are actually about 2400 ft, the bars labeled 1/2 km are actually about 6/10 km, and the 1:12000 map scales are actually about 1:27000. In Figure 5, the AA bar labeled 1000 feet is about 1800 feet, the BB bar labeled 500 feet is about 600 feet, the AA section probably has a vertical exaggeration (VE) of about 1.8 times, and the BB section probably has a VE of about 1.2 times.

5. Section 2.2 of the article mentions that ‘some units experienced later, fluid-driven metasomatic metamorphism of greenschist facies character’. This might be related to an area of hydrothermal mineralization discussed by McLaughlin *et al.* (1996) and Underwood *et al.* (1999), which they relate to Miocene slab window volcanism.

4. Correction to Prohoroff, Wakabayashi, and Dumitru (2012)

The article mentions detrital zircon samples of Prohoroff *et al.* (2012). The sample localities plotted on the map in Prohoroff *et al.* are correct, but the coordinates listed there have errors. The corrected coordinates (NAD83 datum) are: FB-21, 37.94908°N, 122.63358°W; OHR-10, 37.97265°N, 122.63892°W; KPR-11, 37.96592°N, 122.65520°W; JW1Z006 (same as JW1F006), 37.89351°N, 122.63508°W. A detailed correction sheet is available on request (T.A. Dumitru, written communications, June 2019). This has no effect on the interpretations in Prohoroff et al. or in the current article.

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