Results and Discussion

Results from Particle size distribution (PSD) analases conducted inhouse by Vietnamese Metallurgists in the onsite Metallurgicall laboratory from the Metall Each test's feed stream PSD results were first compared to confirm that their distributions were simmilar to allow for comparitive statictics.

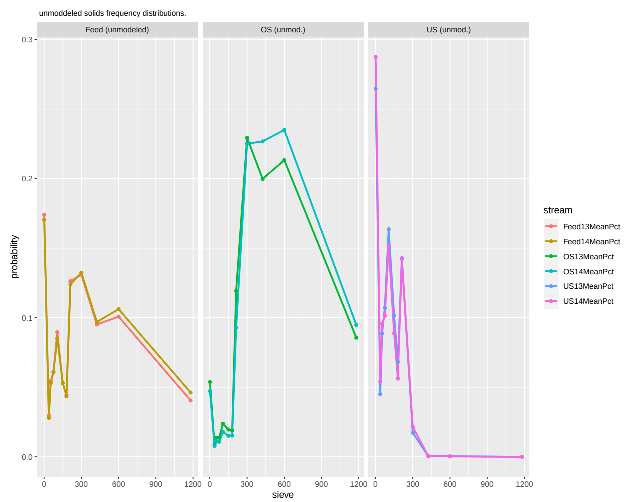

Figure 1: Caption set from chunk options

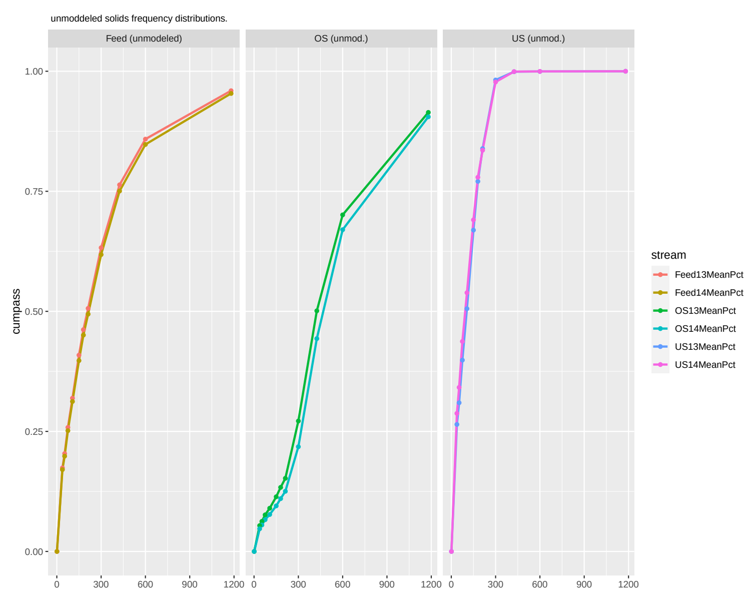

Figure 2: Caption set from chunk options

The two most commmonly used distributions in Geology and Mineral Processing and specifically comminution circuits are the Roslin-Rammler and the Gates-Gaudin-Schumann distributions.

Both models were used to model all PSD screening data to, and the subsequent best fit model was selected in each case. Model selection was determined by comparing each PSD's transformed linear model's determinant (R^2).

RR model fits the feed streams means (Feed13Mean and Feed14Mean) better (near straight line QQ fits)

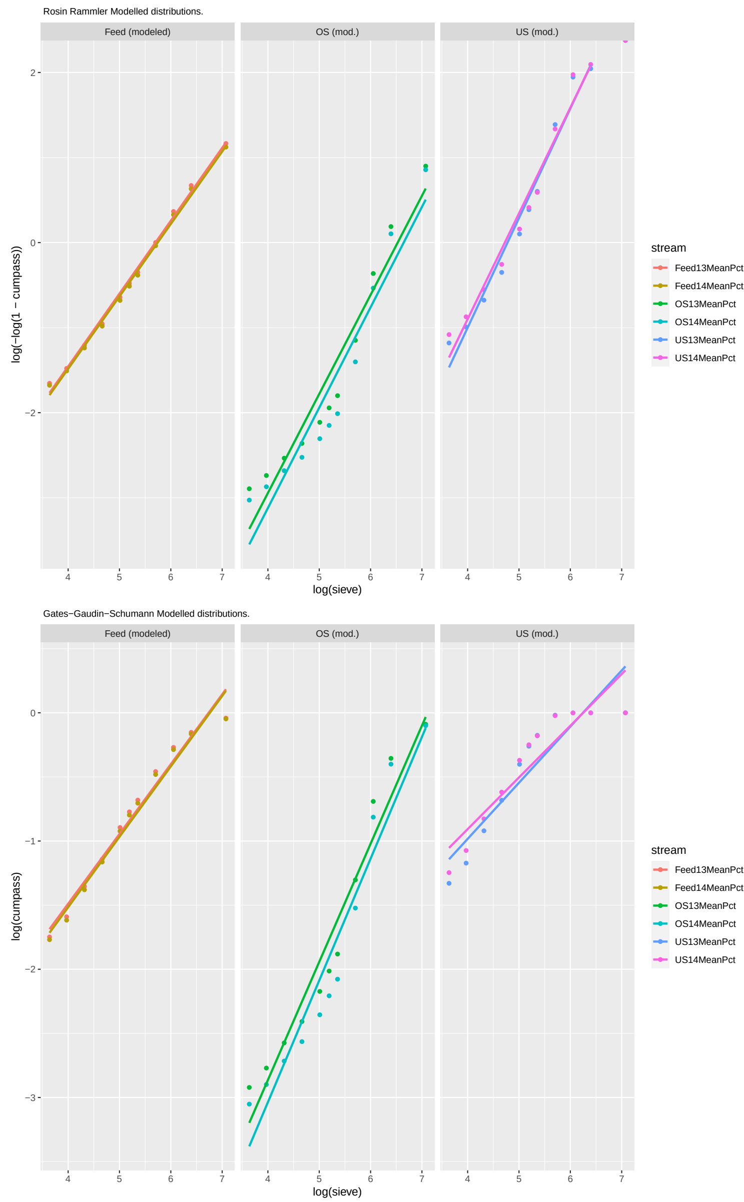

Figure 3: Caption set from chunk options

than the Oversize streams.

If the transformed size distributions from a crushing or grinding operation do not approximate a straight line, it suggests that there may have been a problem with the data collection, or there is something unusual happening in the comminution process (hang-ups or unnuasual recirculation). The size modulus is a measure of how coarse the size distribution is, and the distribution modulus is a measure of how broad the size distribution is. Size modulus for a size distribution can be determined from a graph by extrapolating the straight-line portion up to 100% passing and finding the corresponding size value. The distribution modulus can be calculated by choosing two points in the linear portion of the graph, calculating the logs of the sizes and % passing values, and calculating the slope.

Interpolation betweeen measured sizing points is conducted by the back-transformation of the model-fitted points along the respective model's distribution function.

try another approach for the R2 table: here brought in a s child document. As the previous approach failed to save a readable image of the table.

New child starts here..

Aim of this file: Generate table (r-saquared) for chapter (child) input to base.Rmd (mother)

Reason: i cant get the table to gerate from within a code chunk or r.script, but only once knitted does the table show.., so for now i 'll keep it sepparate here in this (its own) .Rmd.

This file:

- reads code from: "02_rpackages",'projectpackages.R' for libraries.
- reads code from: "03_code/01_code-output","R2RR.csv"
- reads code from: "03_code/01_code-output","R2GGS.csv"

and

- outputs code to: 05_Results-and-discussion.Rmd

Table 1: RR Model(formula)

stream	R2	adj.R2	p.value	AIC
Feed13MeanPct	0.996	0.995	0	-26.0
Feed14MeanPct	0.996	0.995	0	-25.7
OS13MeanPct	0.935	0.928	0	11.2
OS14MeanPct	0.919	0.910	0	14.2
US13MeanPct	0.979	0.977	0	1.4
US14MeanPct	0.978	0.975	0	1.6

Table 2: GGS Model(formula)

stream	R2	adj.R2	p.value	AIC
Feed13MeanPct	0.971	0.968	0e+00	-14.8
Feed14MeanPct	0.973	0.970	0e+00	-15.5
OS13MeanPct	0.951	0.946	0e+00	2.7
OS14MeanPct	0.938	0.931	0e+00	6.2
US13MeanPct	0.851	0.835	1e-04	-0.2
US14MeanPct	0.855	0.839	0e+00	-2.3

and Ends here..

Another New New child starts here..

and Ends here..

try add as footnote in table/s: "RRmodel is a better fit ,according to the simple model applied, i.e. single linear model applied to transformed y-variables and transformed x-factors. When applyinh peicewise (conditional) factors, the GGS model becomes a better model, but at the same tiem more noise (errors (epsilon?) is incorpaorated in the model. double the coefficients.

Table 3: RR Model Coeficients

stream	term	estimate
Feed13MeanPct	(Intercept)	-4.884
Feed13MeanPct	log(sieve)	0.857
Feed14MeanPct	(Intercept)	-4.891
Feed14MeanPct	log(sieve)	0.852
OS13MeanPct	(Intercept)	-7.604
OS13MeanPct	log(sieve)	1.165
OS14MeanPct	(Intercept)	-7.841
OS14MeanPct	log(sieve)	1.180
US13MeanPct	(Intercept)	-6.438
US13MeanPct	log(sieve)	1.349
US14MeanPct	(Intercept)	-6.188
US14MeanPct	log(sieve)	1.311

Table 4: GGS Model Coeficients

stream	term	estimate
Feed13MeanPct	(Intercept)	-3.667
Feed13MeanPct	log(sieve)	0.544
Feed14MeanPct	(Intercept)	-3.713
Feed14MeanPct	log(sieve)	0.549
OS13MeanPct	(Intercept)	-6.549
OS13MeanPct	log(sieve)	0.921
OS14MeanPct	(Intercept)	-6.835
OS14MeanPct	log(sieve)	0.950
US13MeanPct	(Intercept)	-2.735
US13MeanPct	log(sieve)	0.438
US14MeanPct	(Intercept)	-2.520
US14MeanPct	log(sieve)	0.403