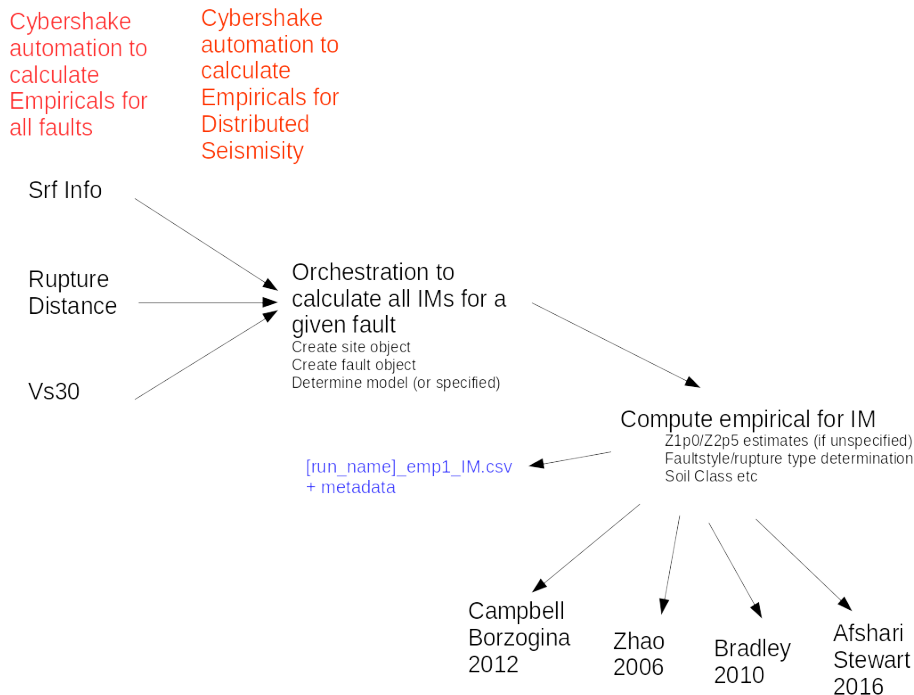


Empirical Engine

For information on how to run the code see the readme: https://github.com/ucgmsim/Empirical_Engine/blob/master/README.md

Conceptual Model



OpenQuake

Models from OpenQuake can be used with Empirical Engine, the class needs to be passed in instead of the model name or shorthand. Some OpenQuake models have shorthand available. Install OpenQuake and then import the wanted class(es) if shorthand isn't available. Some models may have rare parameters that aren't taken care of, most should work as-is and they are self-describing.

Models

Model Name	Year	Shorthand	IMs Calculated	TectonicType
CampbellBorzorgina	2014	CB_14	PGV, PGA, pSA	ACTIVE_SHALLOW
CampbellBorzorgina	2012	CB_12	AI	ACTIVE_SHALLOW
CampbellBorzorgina	2010	CB_10	CAV	ACTIVE_SHALLOW
Bradley	2010	BR_10	PGA, PGV, pSA	ACTIVE_SHALLOW, VOLCANIC
AfshariStewart	2016	AS_16	Ds575, Ds595, Ds2080	ACTIVE_SHALLOW
Zhao	2006	ZA_06	pSA (interpolated above 5.0s), PGA	ACTIVE_SHALLOW, SUBDUCTION_INTERFACE, SUBDUCTION_SLAB
AbrahamsonSilvaKamai	2014	ASK_14	PGV, PGA, pSA	ACTIVE_SHALLOW
BC_Hydro	2016	BCH_16	PGA, pSA	SUBDUCTION_INTERFACE, SUBDUCTION_SLAB
BooreStewartSeyhanAtkins on	2014	BSSA_14	PGV, PGA, pSA	ACTIVE_SHALLOW
ChiouYoungs	2014	CY_14	PGV, PGA, pSA	ACTIVE_SHALLOW
McVerry	2006	MV_06	PGA, PGV, pSA (interpolated above 3.0s)	ACTIVE_SHALLOW, SUBDUCTION_INTERFACE, SUBDUCTION_SLAB
Below models are examples from and part of the GEM OpenQuake package				
ParkerEtAl	2020	P_20_SI P_20_SS	PGV, PGA, pSA	SUBDUCTION_INTERFACE, SUBDUCTION_SLAB

rupture_type	(reverse, normal, strikeslip, oblique, unknown) This is currently estimated by Reverse <- 45 < rake < 135; Normal <- -135 < rake < -45; StrikeSlip <- 0 < abs(rake) < 45, 135 < abs(rake) < 180,											rupture_type in OpenQuake models is calculated from rake if required Different models may have different cu usually 30 or 45 degrees.		
tect_type	(active_shallow, volcanic, subduction_interface, subduction_slab)											OpenQuake model classes are generated by tect_type so will only accept the relevant		
hdepth	focal depth (km) (hypocentral depth)				(None if unknown)									
width	down dip rupture width													
as	flag to indicate aftershock (defaults to False)													

Folder Structure

TBD

File Structure

IM_file