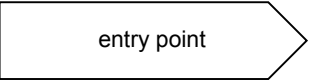
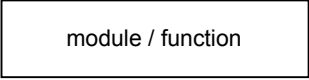


KEY



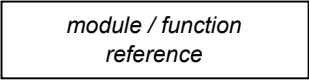
entry point

Entry point
— module / function that calls rest of functions



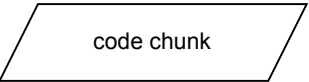
module / function

module / function
— functional component of model, may call other functions



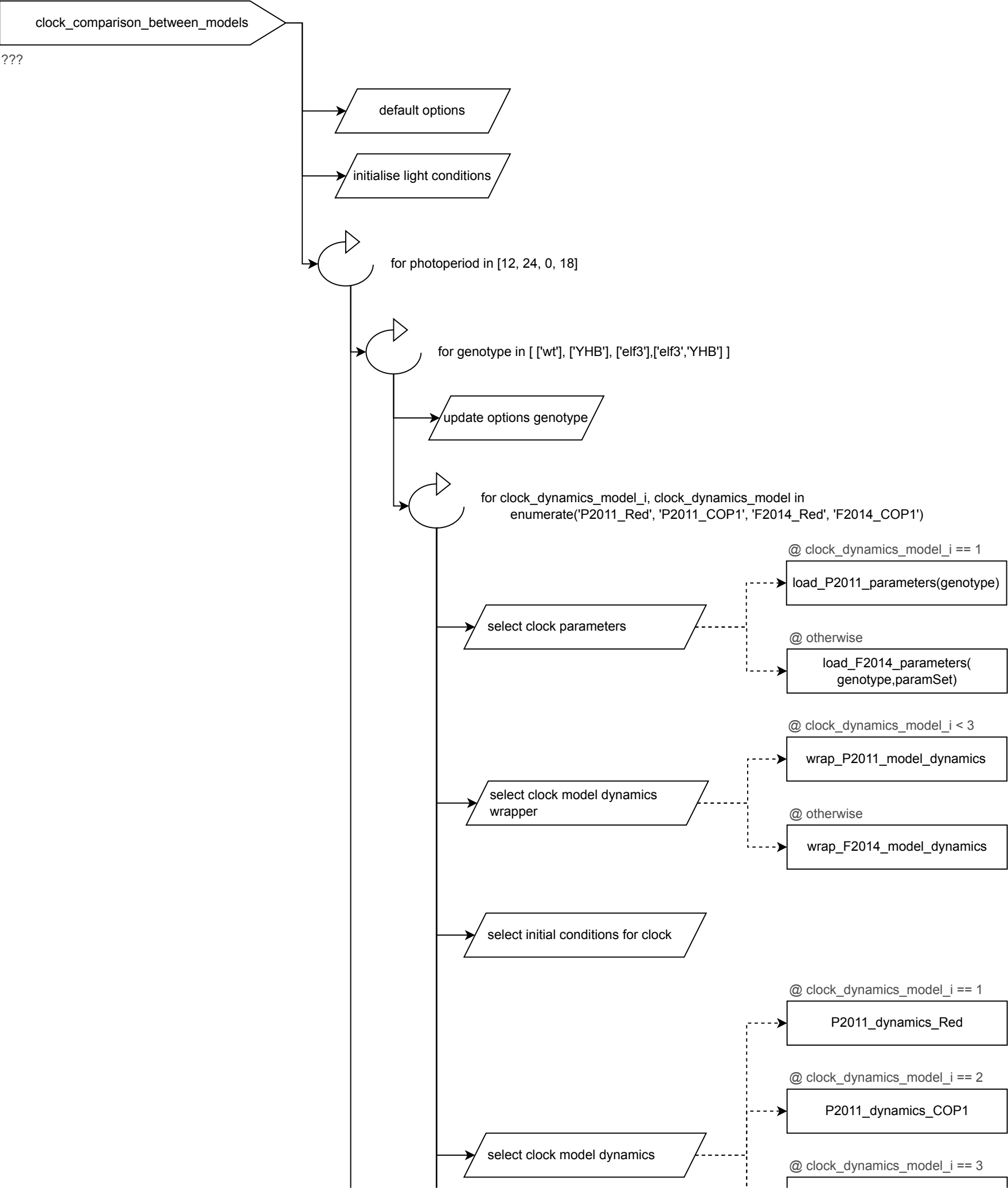
*module / function
reference*

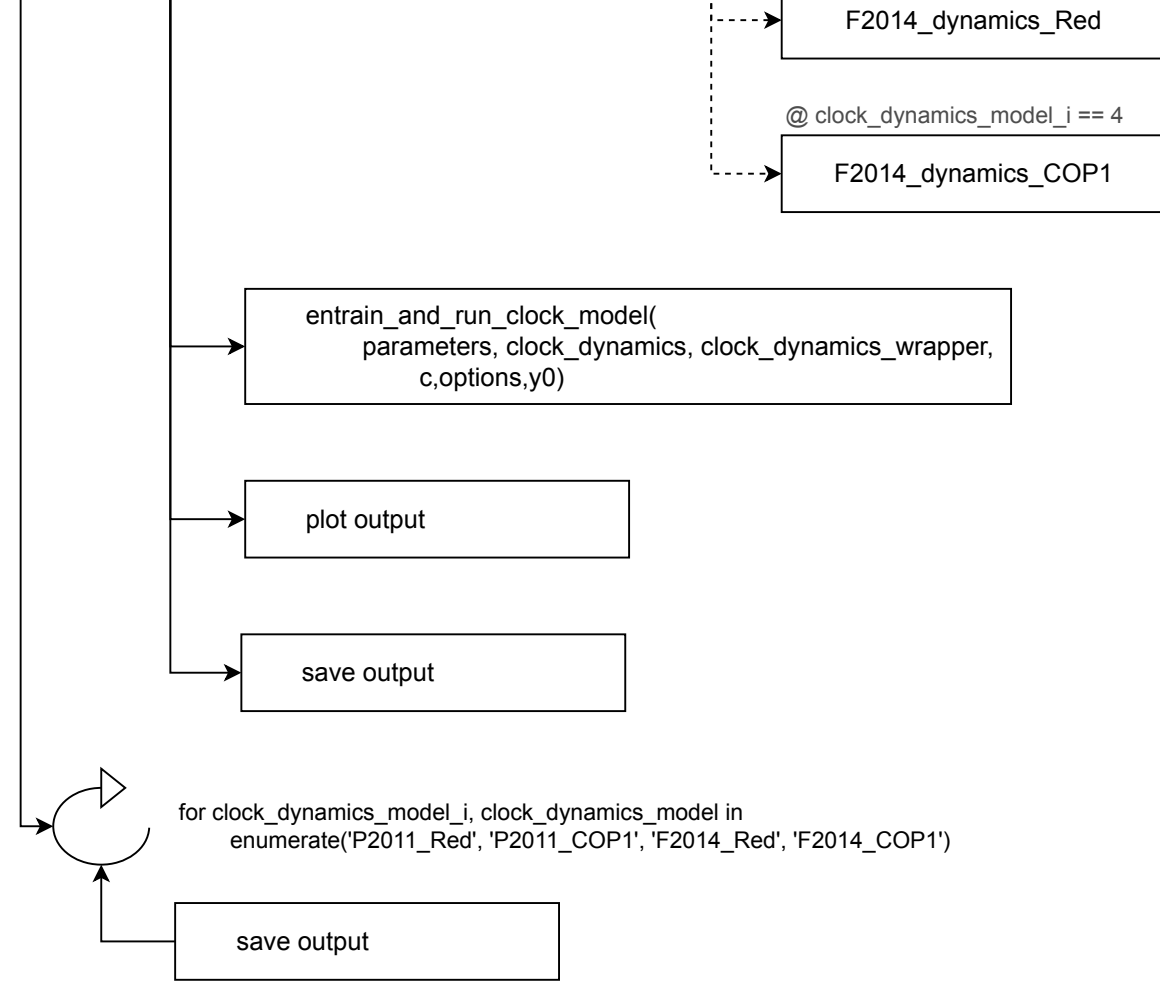
reference
— placeholder / reference for module / function unpacked elsewhere in document

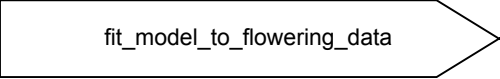


code chunk

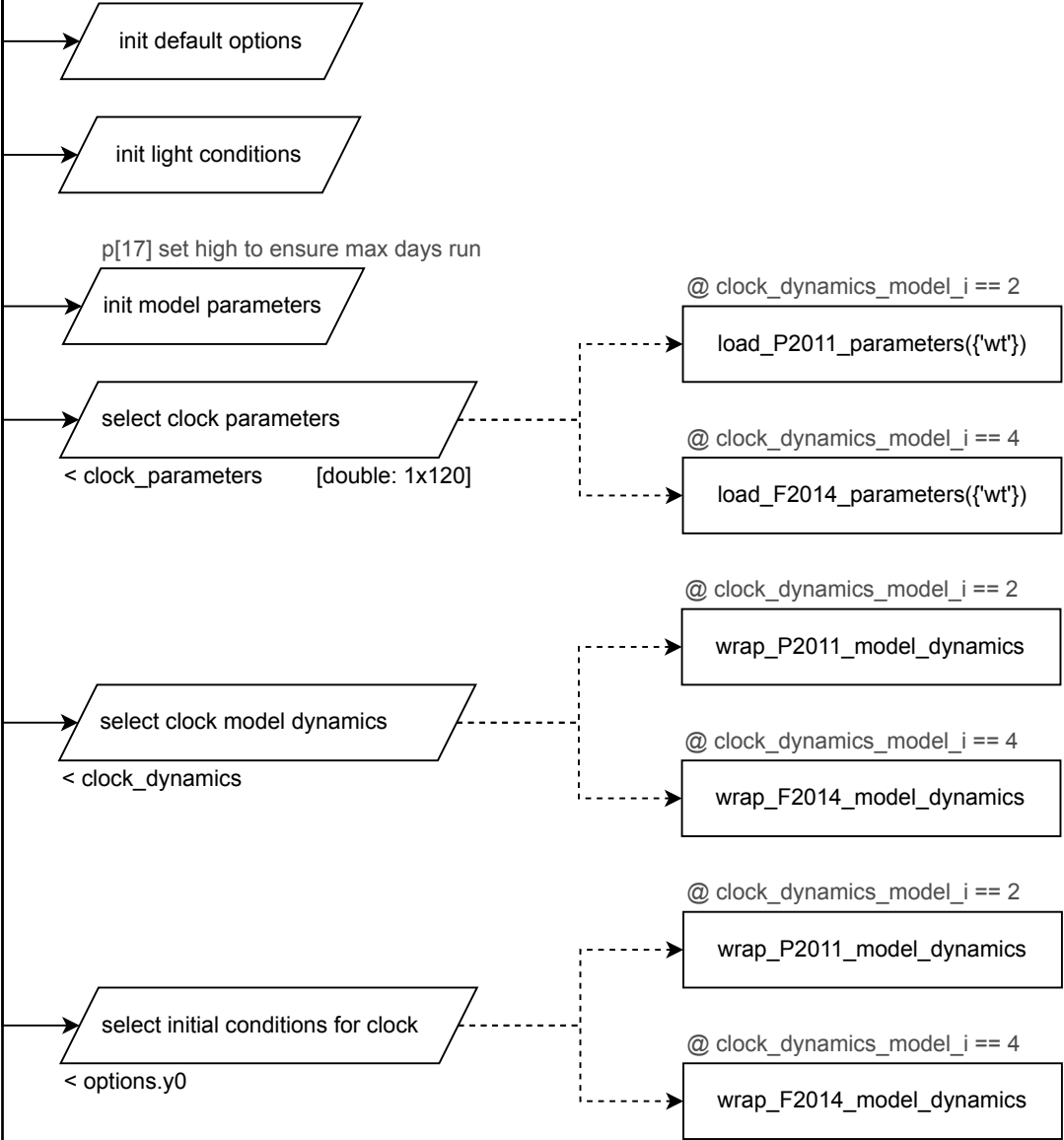
Chunk of code / logic
— logical chunk of code



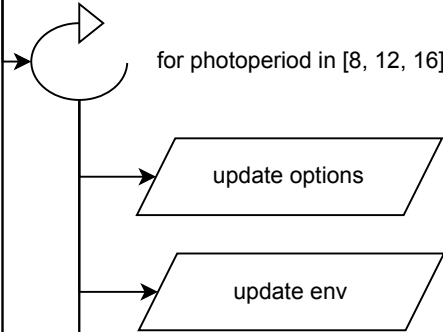




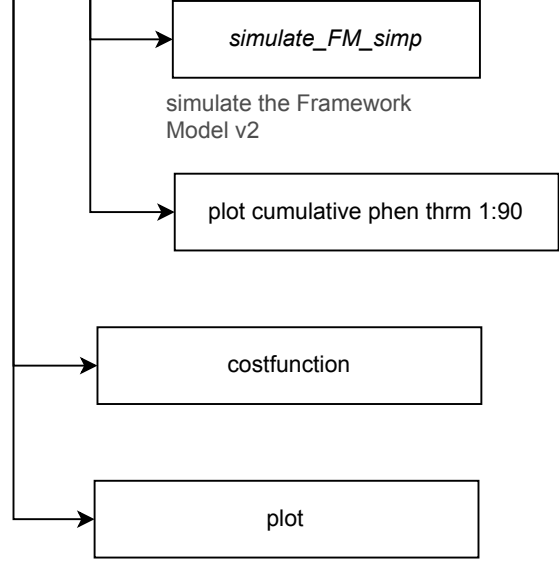
???

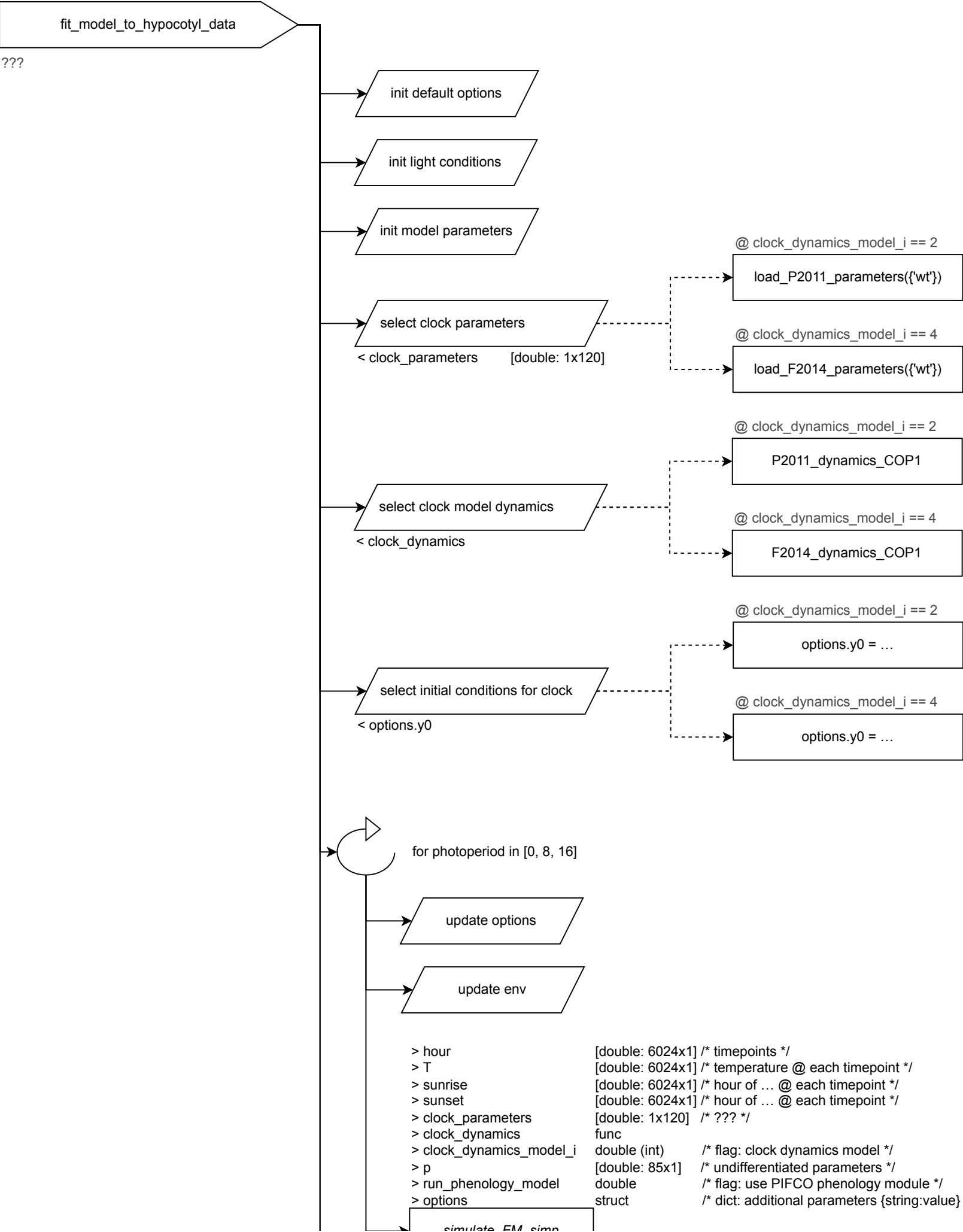


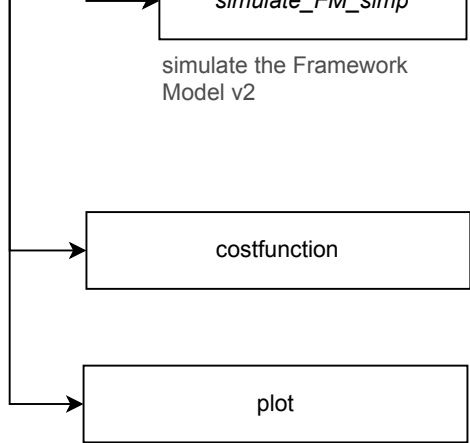
cps:
if clock_dynamics_model_i neither?
- should align with simulate_PIF_CO_FT?



> hour	[double: 6024x1] /* timepoints */
> T	[double: 6024x1] /* temperature @ each timepoint */
> sunrise	[double: 6024x1] /* hour of ... @ each timepoint */
> sunset	[double: 6024x1] /* hour of ... @ each timepoint */
> clock_parameters	[double: 1x120] /* ??? */
> clock_dynamics	func
> clock_dynamics_model_i	double (int) /* flag: clock dynamics model */
> p	[double: 85x1] /* undifferentiated parameters */
> run_phenology_model	double /* flag: use PIFCO phenology module */
> options	struct /* dict: additional parameters {string:value} */








```
> hour [double: 6024x1] /* timepoints */
> T [double: 6024x1] /* temperature @ each timepoint */
> sunrise [double: 6024x1] /* hour of ... @ each timepoint */
> sunset [double: 6024x1] /* hour of ... @ each timepoint */
> clock_parameters [double: 1x120] /* ??? */
> clock_dynamics func
> clock_dynamics_model_i double (int) /* flag: clock dynamics model */
> p [double: 85x1] /* undifferentiated parameters */
> run_phenology_model double /* flag: use PIFCO phenology module */
> options struct /* dict: additional parameters {string:value} */
```

simulate_FM_simp

```
< output struct /* subset of simdata */
< simdata struct /* simulation data */
```

```
> clock_parameters
> clock_dynamics
> sunrise[1] double
> sunset[1] double
> y0 [double: 1x35]
/* = sunrise[1] + options.entrain */
/* = options.y0 */
```

entrain_clock_model

```
< clock_output struct
```

```
> clock_parameters
> clock_dynamics
> sunrise
> sunset
> y0 /* entrained y0 */
```

run_clock_model_for_a_day

```
< clock_output struct
```

cps:
(effectively) code duplication

interp1q(clock_output.T,clock_output.Y,24)

```
< clock_state_0 [double: 1x35]
```

for each day in 1:n && plant not flowered

t = (day - 1) * 24 + 1

```
< t double (int) /* timepoint */
```

```
> clock_parameters
> clock_dynamics
> sunrise[t]
> sunset[t]
> clock_state_0
```

run_clock_model_for_a_day

```
< clock_output
```

interp1q(clock_output.T,clock_output.Y,24)

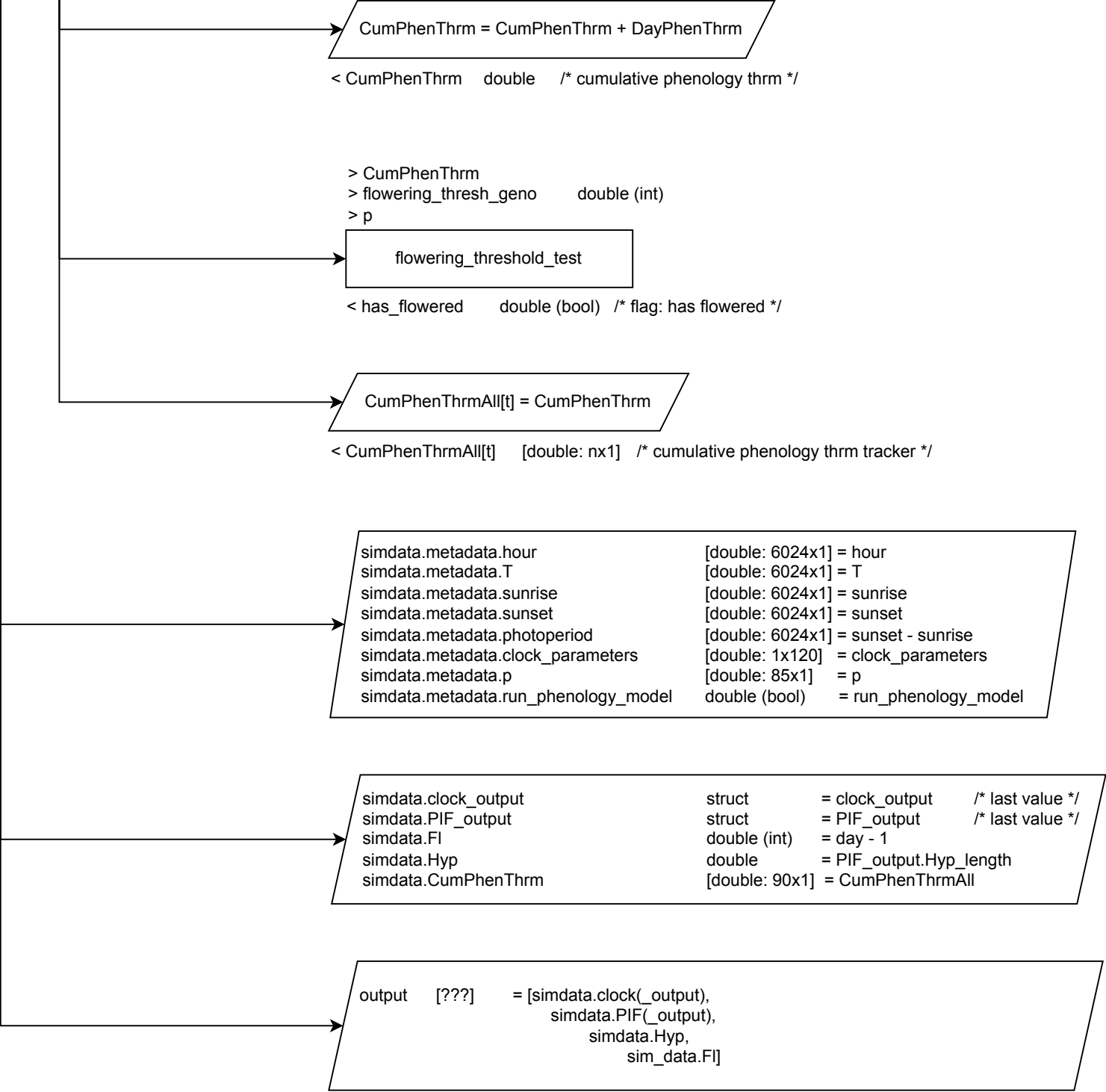
```
< clock_state_0
```

```
> T
> t double (int)
> sunrise[t]
> sunset[t]
> flowering_thresh_geno double (int) /* col accession for phenology model threshold */
> clock_dynamics_model_i double (int)
> clock_output
> FT_module_state [double: 1x18]
> p
> options.genotype [string] /* vector: genotype flags */
> options.hypocotyl_parameters struct /* a1, a2, a3 */
```

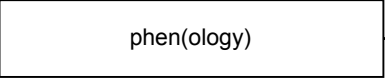
phen(ology)

```
< DayPhenThrm double
< FT_module_state [double: 18x1]
< PIF_output struct
```

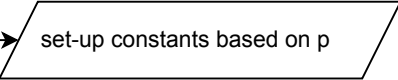
cps:
if run_phenology_model not (true):
- not called
- DayPenThrm = 0
- & others unset



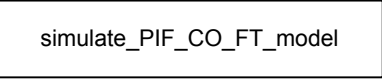

```
> T [double: 6024x1] /* Temperature at time points */
> t double (int) /* timepoint */
> sunrise double (int) /* sunrise @ hours */
> sunset double (int) /* sunset @ hours */
> geno double (int) /* genotype index */
> clock_dynamics_model_i double (int) /* flag: clock dynamics model */
> clock_output struct /* clock model generated time series for parameters */
> FT_module_state [double: 18x1] /* state vector of FT model (conc. model components @ initial time point) */
> p [double: 85x1] /* undifferentiated parameters */
> flowering_genotype [string] /* vector: genotype flags */
> hypocotyl_parameters struct /* a1, a2, a3 */
```



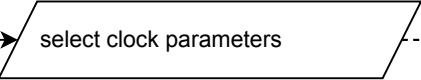
```
< DayPhenThrm double
< FT_module_state [double: 18x1]
< PIF_output struct
```



```
> sunrise double (int) /* sunrise @ hours */
> sunset double (int) /* sunset @ hours */
> clock_output struct /* clock model generated time series for parameters */
> clock_dynamics_model_i double (int) /* flag: clock dynamics model */
> FT_module_state [double: 1x18] /* state vector of FT model (conc. model components @ initial time point) */
> temperatures [double: 6024x1] /* Temperature at time points */
> flowering_genotype [string] /* vector: genotype flags */
> hp struct /* = hypocotyl_parameters: a1, a2, a3 */
```

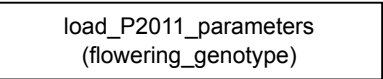


```
< dailyFTarea
< FT_module_state
< PIF_output
```

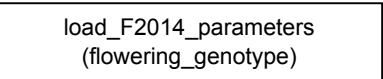


```
< clock_parameters [double: 1x120]
```

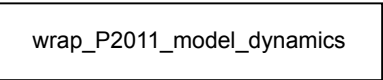
@ clock_dynamics_model_i < 3



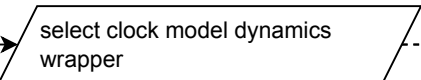
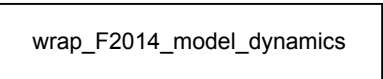
@ otherwise



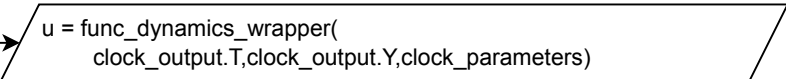
@ clock_dynamics_model_i < 3



@ otherwise

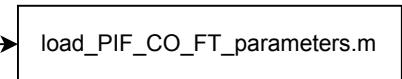


```
< func_dynamics_wrapper
```



```
< u struct
```

```
> flowering_genotype [string] /* vector: genotype flags */
> temperature [double: 6024x1] /* Temperature at time points */
```



cps: tweaks parameters if temperature @ 27 °C

