Let's take a quick look at the diagnostics for our mean emulators:

```{r, fig.height=8, fig.width=8}

validation\_diagnostics(stoch\_emulators$expectation[-c(7,14)], targets, all\_valid, plt=TRUE)

```

Note that we removed the 7th and 14th emulators, i.e. the emulator for $I450$ and $R450$, since we decided not to set targets for time $t=450$, to keep a symmetry with the deterministic workshop. The plots in the first column clearly show that the further we go in time, the larger is the uncertainty of the mean emulators' predictions. Furthermore, the mean emulator for $R350$ has the worst performance, with a few points in red, i.e. points for which the credible interval provided by the emulator does not contain the actual model output value. Even if the emulator for $R350$ has rather larger uncertainty, it still produces predictions that are sometimes off.

Below we perform a third wave of the process. Everything is as done for the second wave, apart the fact that we use $100$ repetitions here, instead of $50$.

```{r}

new\_new\_results <- list()

with\_progress({

p <- progressor(nrow(initial\_points))

for (i in 1:nrow(new\_new\_points)) {

model\_out <- get\_results(unlist(new\_new\_points[i,]), nreps = 100, outs = c("I", "R"),

times = c(25, 40, 100, 200))

new\_new\_results[[i]] <- model\_out

p(message = sprintf("Run %g", i))

}

})

wave2 <- data.frame(do.call('rbind', new\_new\_results))

new\_new\_all\_training <- wave2[1:10000,]

new\_new\_all\_valid <- wave2[10001:15000,]

new\_new\_stoch\_emulators <- variance\_emulator\_from\_data(new\_new\_all\_training, output\_names, ranges,

check.ranges=TRUE)

new\_new\_new\_points <- generate\_new\_runs(c(new\_new\_stoch\_emulators,

new\_stoch\_emulators, stoch\_emulators), 150, targets)

```